
Our ref: NIA/5623/14/5365/v1 Middlecliff WMC

8th December 2014

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Dear Sirs

NOISE IMPACT ASSESSMENT FOR PROPOSED RESIDENTIAL DEVELOPMENT IN PART OF MIDDLECLIFF WMC, MIDDLECLIFF LANE, LITTLE HOUGHTON, BARNSELY, S72 0HX

1.00 INTRODUCTION

- 1.01 Environmental Noise Solutions Ltd (ENS) have been commissioned by Rhino Pubs to carry out a noise impact assessment for the proposed residential development in part of Middlecliff WMC, Middlecliff Lane, Little Houghton, Barnsley, S72 0HX (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
 - Determine the sound insulation afforded by the existing building façade
 - Provide recommendations for a scheme of sound insulation works, as necessary, to ensure that the future occupants of the proposed development do not experience any unacceptable loss of amenity due to noise
- 1.03 This report details the methodology and results of the assessment and provides recommendations for the building envelope (fenestration and ventilation). It has been prepared to accompany a planning application to be submitted to Barnsley Metropolitan Borough Council (BMBC) for the proposed residential development.
- 1.04 This report has been prepared for Rhino Pubs 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 Rhino Pubs and ENS 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 RESIDENTIAL DEVELOPMENT

- 2.01 For reference, the application site is located in a semi-rural residential setting. It is bound by:
- Middlecliff Lane (a lightly-trafficked road) to the south
 - The B6273 Rotherham Road (a moderately-trafficked road) to the east and
 - Open fields to the north and west
- 2.02 The proposed residential development consists of the conversion of the existing hall of the Working Mens Club into 8 rooms for residential purpose with a communal lounge / kitchen area (a layout plan is shown in Appendix 2 for reference).
- 2.03 It is understood that the existing separating wall between the club lounge and the proposed communal area comprises of 2 no. leaves of 100 mm brickwork separated by a cavity (note: there are existing openings for serving hatches).

- 2.04 Subject to future planning permission, a smoking shelter is proposed at the north eastern corner of club. This is set well away from the proposed residential development and is wholly screened by the existing building. This potential future development is not considered to an issue.
- 2.05 The land to the south of the club is to remain as a car park (however it will be screened from the proposed (single storey) residential development by an 1800 mm high brick wall.
- 2.06 The opening hours of the club are understood to be 1200 to 2300 hours, seven days a week.

3.00 BASELINE NOISE SURVEY AND NOISE BREAKOUT TESTS

- 3.01 In order to establish the ambient noise levels at the application site, a baseline noise survey was undertaken on Friday 7th November 2014.
- 3.02 For the purpose of the assessment, a single noise monitoring positions was adopted in a free field position away from the southern façade of the existing club hall, approximately 22 metres from the nearside kerb of Middlecliff Lane and approximately 60 metres from the B6273 Rotherham Road (see Appendix 2 for reference):
- 3.03 Noise measurements were undertaken using a Bruel & Kjaer 2260 Type 1 integrating sound level meter. A windshield was fitted for all measurements. Measurements were made in a free field environment at 1.5 metres above local ground level. 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.
- 3.04 The following table contains a summary of the measurement data for each measurement session, at each measurement position, rounded to the nearest decibel.

Table 3.1 – Noise Measurement Data

Position	Time	L _{Aeq} (dB)	L _{A90} (dB)	L _{A10} (dB)	L _{A1} (dB)	Comments
MP1	10:16–11:16	55	47	58	65	B6273 Rotherham Road traffic

- 3.05 The daytime ambient noise climate at the application site included road traffic on the B6273 Rotherham Road and noise levels are not significant.
- 3.06 In addition to the external noise measurements, a noise breakout test was carried out in order to predict the impact of club use on the proposed residential development. For the purpose of the noise breakout test, a reverberant internal noise level of 109 dB L_{Aeq, T} was generated within the club lounge (note: this is very significantly above that expected to occur within the club, however, such significantly high levels were generated in order to be able to measure the corresponding noise level at the proposed residential development).
- 3.07 During the breakout tests, the corresponding noise levels were measured at the windows nearest to the northern façade (BR1) and southern façade (BR2) of the proposed residential development (see Appendix 2 for measurement locations). The corresponding noise levels (based on a source level of 109 dB L_{Aeq}) were:
- 59 dB L_{Aeq} at the southern façade with intervening doors open; note: this noise level includes the contribution of the ambient noise level such that the noise level associated with the specific source alone is circa 56 dB L_{Aeq}.
 - Not audible at the southern façade with intervening doors closed (as would be the case as there is a lobbied entrance)
 - Inaudible at the northern façade (irrespective of intervening doors being open or closed)

- 3.08 With respect to the noise breakout test for the southern façade, the following should be noted:
- An 1800 metre high brick wall is proposed to the south of the proposed development which should provide a further circa 10 decibels attenuation from noise breakout.
 - The source noise level was 109 dB L_{Aeq} ; based on experience of similar establishments, the internal noise levels associated with music (in such relatively small room(s)) would be highly unlikely to exceed 90 dB L_{Aeq} and, as a consequence, the worse case noise breakout level (with all three intervening doors open) would be **circa 27 dB L_{Aeq} externally** (56 dB L_{Aeq} as measured – 19 dB (correction from 109 to 90 dB source levels) – 10 dB (brick wall screening)), which is very, very, low.
 - The probability of all three intervening doors being open at the same time is highly unlikely.
 - The probability of all three intervening doors being open at the same time for any significant length of time is inconceivable.
 - A partially open window provides circa 12 decibels attenuation. Therefore exceptionally good internal noise levels would be maintained even with partially open windows at the proposed residential development and the intervening doors in the club being open (which in itself is inconceivable).
- 3.09 **It is therefore concluded that the impact associated with noise breakout from the club to the proposed residential development is negligible.**
- 3.10 A car parking area is proposed circa 7 metres to the south of the southern façade of the proposed residential development. This area will, however, be screened by the proposed 1800 mm high brick wall.
- 3.11 Monitoring previously undertaken by ENS at various car parks have recorded maximum noise levels of circa 65 dB L_{AFMax} associated with car door slams at 5 metres.
- 3.12 BS 5228:2009 Part 1 'Noise Control on Construction and Open Sites' (BS 5228) states '*In the absence of spectral data, as a working approximation, if there is a barrier or other topographic feature between the source and the receiving position, assume an approximate attenuation of 5 dB when the top of the plant is just visible to the receiver over the noise barrier, and of 10 dB when the noise screen completely hides the sources from the receiver. High topographical features and specifically designed and positioned noise barriers could provide greater attenuation.*'
- 3.13 **Adjusting for distance and screening attenuation, a worst case maximum level of 52 dB L_{AFMax} associated with car door slams is predicted at the southern façade of the proposed residential development. This is considered to be negligible.**
- 3.14 It is noted that the communal area of the proposed residential development is adjacent to the lounge and store room (behind the bar area) of the club. It is recommended that this wall be upgraded on one side as follows (**note: ensure masonry wall continues to roof**):
- 50 mm (minimum) gap to masonry wall
 - 50 mm (minimum) timber (or metal) stud
 - 50 mm mineral wool insulation (45 kg/m³ density) between studs
 - 2 x 15 mm sound bloc plasterboard
- 3.15 The provision of the independent wall lining will increase the airborne sound insulation of the separating wall to at least 60 dB $D_{n,Tw}$ (a standard commonly adopted for residential use adjacent to commercial premises with non-discotheque music). This represents a significant betterment over the standards set out in Building Regulations Approved Document E 'Resistance to the Passage of Sound', ADE 2003. Based on internal noise levels within the club of up to 90 dB L_{Aeq} (which is very robust given the relatively small size of the lounge to the club), good internal noise levels will be achieved within the proposed residential development.

4.00 CONCLUSIONS

- 4.01 A noise impact assessment has been undertaken for the proposed residential development at part of Middlecliff WMC, Middlecliff Lane, Little Houghton, Barnsley.
- 4.02 A scheme of sound insulation has been developed in order to achieve good internal ambient noise levels in keeping with the National Planning Policy Framework and associated guidance.
- 4.03 On this basis, noise is not considered a constraint to the proposed residential development.

I trust the foregoing is sufficient for your needs. Should you have any queries regarding the above, please do not hesitate to contact me.

Yours sincerely

A handwritten signature in black ink, appearing to read 'T. Crabb', written in a cursive style.

Thomas Crabb
AMIOA, Diploma in Acoustics & Noise Control, BSc (Hons)
Environmental Noise Solutions Limited

APPENDIX 1

GLOSSARY OF ACOUSTIC TERMS

Sound Pressure Level (L_p)

The basic unit of sound measurement is the sound pressure level. As the pressures to which the human ear responds can range from 20 μ Pa 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 μ Pa).

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, $L_{Aeq, T}$

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. $L_{Aeq, 16h}$ (07:00 to 23:00 hours) and $L_{Aeq, 8h}$ (23:00 to 07:00 hours) are used to qualify daytime and night time noise levels.

$L_{A10, T}$

The A-weighted sound pressure level in decibels exceeded for 10% of the measurement period, T . $L_{A10, 18h}$ is the arithmetic mean of the 18 hourly values from 06:00 to 24:00 hours.

$L_{A90, T}$

The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T . L_{A90} is typically taken as representative of background noise.

$L_{AF \max}$

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 L_{AE})

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 (R_w)

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

APPENDIX 2
SITE LOCATION AND NOISE MONITORING POSITIONS

