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Flockton Green WMC
157 Barnsley Road, Flockton, Wakefield, WF4 4AA

Noise Impact Assessment

For:
Cadvis3d Ltd

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1 Introduction

1.1 Overview

Environmental Noise Solutions Ltd (ENS) has been commissioned by Cadvis3d Ltd (hereafter referred to as 'the client') to undertake a noise impact assessment for a proposed extension to the existing Flockton Green Working Men's Club (WMC) (hereafter referred to as 'the site').

This report presents:

- The methodology and results of a noise survey conducted at the site
- The assessment of potential impact of noise emission from the proposals on nearby noise sensitive receptors

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

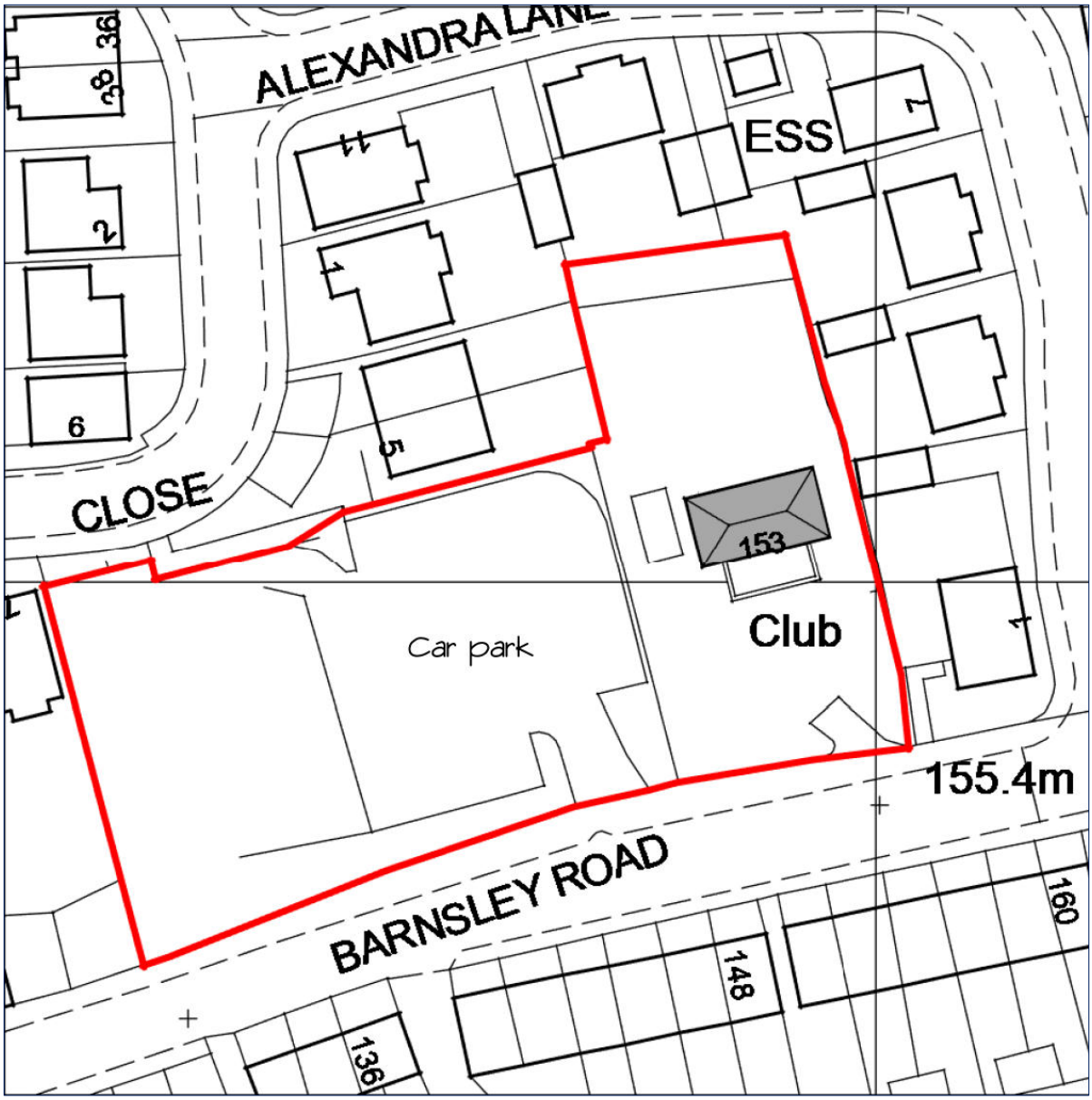
A glossary of acoustic terms used in the main body of the text is contained in Appendix A.

1.2 Site Description

The site is located to the north of Barnsley Road (A637), centred on grid reference: 423972,414907, in an area of primarily residential land uses.

The approximate site boundary is presented on Figure 1.1 below.

Figure 1.1: Development Site Boundary



The development is bounded to the north, east and west by new residential dwellings, with further residential dwellings to the south beyond Barnsley Road.

2 Noise Criteria

2.1 Assessment Guidance

Noise Policy Statement for England

The National Planning Policy Framework (NPPF)1 was updated in December 2023 and sets out the Government's planning policies for England and how these are expected to be applied.

Where issues of noise impact are concerned the NPPF provides brief guidance in paragraph 180 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'.

Paragraph 191 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'.

The NPPF also refers to the 2010 DEFRA publication, the Noise Policy Statement for England (NPSE) which reinforces and supplements the NPPF.

Planning Practice Guidance on Noise

Planning Practice Guidance[2] (PPG) is an online resource providing additional guidance and elaboration on the NPPF. It advises that:

'Plan making and decision making need to take into account the acoustic environment and in doing so consider:

- *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; and*
- *whether or not a good standard of amenity can be achieved.'*

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'.

Table 2.1 summarises the PPG noise exposure hierarchy.

1 National Planning Policy Framework. Ministry of Housing, Communities and Local Government (2021)

[2] Planning Practice Guidance on Noise (http://planningguidance.planningportal.gov.uk/blog/guidance/noise/). Ministry of Housing, Communities and Local Government (2019)

Table 2.1: PPG Noise Exposure Hierarchy

Perception	Examples of Outcomes	Increasing Effect Level	Action
Not Noticeable	No Effect	No Observed Effect	No specific measures required
Noticeable and not intrusive	Noise can be heard, but does not cause any change in behaviour or attitude. Can slightly affect the acoustic character of the area but not such that there is a perceived change in the quality of life.	No Observed Adverse Effect	No specific measures required
Lowest Observed Adverse Effect Level			
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude, e.g. turning up volume of television; speaking more loudly; where there is no alternative ventilation, having to close windows for some of the time because of the noise. Potential for some reported sleep disturbance. Affects the acoustic character of the area such that there is a perceived change in the quality of life.	Observed Adverse Effect	Mitigate and reduce to a minimum
Significant Observed Adverse Effect Level			
Noticeable and disruptive	The noise causes a material change in behaviour and/or attitude, e.g. avoiding certain activities during periods of intrusion; where there is no alternative ventilation, having to keep windows closed most of the time because of the noise. Potential for sleep disturbance resulting in difficulty in getting to sleep, premature awakening and difficulty in getting back to sleep. Quality of life diminished due to change in acoustic character of the area.	Significant Observed Adverse Effect	Avoid
Noticeable and very disruptive	Extensive and regular changes in behaviour and/or an inability to mitigate effect of noise leading to psychological stress or physiological effects, e.g. regular sleep deprivation/awakening; loss of appetite, significant, medically definable harm, e.g. auditory and non-auditory	Unacceptable Adverse Effect	Prevent

The PPG also provides general advice on the typical options available for mitigating noise, suggesting 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'.

IEMA Guidelines for Environmental Noise Impact Assessment

The IEMA Guidelines for Environmental Noise Impact Assessment provide recommendations for approaches to noise impact assessment in the context of the Environmental Impact Assessment (EIA) process. However, the principles in the guidelines are relevant to all types of projects where noise effects are likely to occur, regardless of size including small developments which are not screened as EIA development.

The guidelines provide a number of examples regarding approach to impact assessment. In circumstances where a noise environment may be altered by addition or removal of a noise source, considered to be within the prevailing acoustic character of an area, assessment of impact magnitude may be performed by considering the relative change in ambient noise level, as shown in Table 2.2 below.

Table 2.2: Example noise impact magnitude descriptors

Relative change (dB)	Magnitude / Scale of change
≤ 2.9	Negligible
3.0 – 4.9	Small
5.0 – 9.9	Medium
≥ 10.0	Large

2.2 Noise Sensitive Receptors

The closest noise sensitive receptors are indicated on the site location plan included as Appendix B, and described in Table 2.3 below.

Table 2.3: Noise Sensitive Receptors

NSR	Description	Direction	Approximate minimum distance to site boundary (m)
A	Residential dwellings on Alexandra Lane	North	10
B	Residential dwellings on Alexandra Lane	East	10
C	Residential dwellings on Grange Ash Close	West	12
D	Residential dwellings on Barnsley Road	South	15

3 Noise Survey and Results

3.1 Representative Noise Levels

Noise monitoring was undertaken between Monday 13th and Tuesday 14th May 2024 to assess the existing noise climate at the site and in the vicinity of nearby noise sensitive receptors. Noise monitoring locations are presented on the site location plan presented as Appendix B and described below:

- Position 1 – at the northern site boundary in the vicinity of NSRs A, B and C
- Position 2 – at the north-western site boundary
- Position 3 – at the southern boundary, representative of NSR D

Measurements were undertaken using Bruel & Kjaer 2250 Type 1 integrating sound level meters. Meters were connected to a windshield covered microphone at a height of approximately 4 metres above ground level. External measurements were undertaken in free field conditions, a minimum of 3 metres from any reflective surfaces.

The calibration of the measurement system was verified immediately before and after the survey period using a Bruel & Kjaer Type 4231 calibrator. No drift in calibration levels greater than 0.5 dB was noted.

Measurements consisted of A–weighted broadband parameters including $L_{Aeq,\,T}$, and L_{A90} together with linear 1/3rd octave band data.

Weather conditions throughout the survey were generally considered appropriate for noise monitoring. Some rain occurred during the early Sunday night time period into Monday morning, however this does not appear to have significantly affected the measured results, with similar noise levels recorded on Friday, Saturday and Sunday.

3.2 Summary of Results

Table 3.1 presents a summary of the noise data for each measurement period, rounded to the nearest decibel.

Table 3.1: Summary of Noise Measurement Data

Position	Date	Time (hh:mm)	$L_{Aeq,T}$ (dB)	$L_{A10,T}$ (dB)	$L_{A90,T}$ (dB)
1	13/05/24	11:13-23:00	50	52	41
	13/05/24-14/05/24	23:00-09:00	51	50	36
2	13/05/24	11:22-12:23	54	57	47
		13:25-14:25	55	58	49
		15:29-15:59	55	57	50
		21:22-22:22	52	56	32
3	13/05/24	12:25-13:24	63	67	50
		14:27-15:28	61	64	52
		22:22-23:23	55	59	29

The noise climate at and in the vicinity of the site is controlled by local and distant road traffic noise. Some noise from patrons in the beer garden was observed during the Monday evening. No music noise from either external or internal sources was observed from the WMC.

4 Assessment

4.1 Introduction

The proposals are for a single storey extension to the ground floor of the existing WMC providing a larger function room and seating area, with the existing external beer garden retained at a reduced capacity.

4.2 Internal Noise Breakout – Function Room

To inform the assessment of noise breakout from internal spaces within the WMC to nearby noise sensitive receptors, a CadnaA noise model has been developed.

Noise model geometry is based on Ordnance Survey mapping and terrain data, along with drawings and information provided by the Client. All buildings within the model are reflective, with second order reflections considered. All off-site buildings have a height of 8m above ground level. Propagation of noise has been calculated in spectral terms according to ISO 9613: 1996 assuming mixed ground.

The noise model includes a 2.4m tall boundary fence, assumed to be constructed of close boarded timber with a superficial mass ≥ 10kg/m².

Noise measurements have previously been taken within a number of public houses under the following scenarios:

- Patron noise plus background music; and
- Patron noise plus loud amplified music.

Table 4.1 presents a summary of the internal source noise levels

Table 4.1: Internal Noise Levels

Scenario	Measured sound pressure level (dB $L_{eq,T}$)								dB $L_{Aeq,T}$
	63	125	250	500	1000	2000	4000	8000	
Patrons plus background music	80	80	78	76	75	71	70	65	**80**
Patrons plus amplified music	87	92	78	83	82	79	78	67	**87**

Noise emission from internal spaces has been modelled using vertical area sources with dimensions corresponding to both the garden access doors at the northern façade, and the fixed windows of the function room (see drawing reference: 2074 A(10)-02 Proposed Elevations). All fixed glazed elements have been assigned a sound insulation performance of 25 dB $R_w + C_{tr}$ assuming thermal double glazing with a low acoustic performance to provide the most onerous assessment.

The noise model assumes that the garden access doors are ordinarily closed, however to present the most onerous assessment, an additional vertical area source has been included with a sound insulation value of 0 dB representing doors being fully open. This source includes a correction to represent the doors being open for up to 5 minutes in any one-hour assessment period.

Table 4.2 presents a summary of the predicted noise levels for each scenario at the NSRs identified in Table 2.3.

Table 4.2: predicted noise levels

NSR	Patrons plus background music	Patrons plus amplified music
A	23	28
B	26	30
C	25	30
D	7	14

Table 4.3 and 4.4 below presents the predicted noise levels (as set out in Table 4.2) along with a comparison to the prevailing noise level measured in the vicinity of the NSRs and the corresponding change in noise levels which results. Prevailing noise levels are based on measurements made between 19:00-23:00.

Table 4.3: Noise from patrons plus background music

NSR	Predicted Noise Level (dB $L_{Aeq,1hour}$)	Existing Noise Level (dB $L_{Aeq,1hour}$)	Level Difference (dB)	Change in prevailing noise level (dB)
A	23	47	-24	0
B	26		-21	0
C	25		-22	0
D	7	55	-48	0

Table 4.4: Noise from patrons plus amplified music

NSR	Predicted Noise Level (dB $L_{Aeq,1hour}$)	Existing Noise Level (dB $L_{Aeq,1hour}$)	Level Difference (dB)	Change in prevailing noise level (dB)
A	28	47	-19	0
B	30		-17	0
C	30		-17	0
D	14	55	-41	0

The results presented in Tables 4.3 and 4.4 indicate that noise from the proposals would not exceed a noise level 10 dB below the existing prevailing noise level at the façade of each of the nearest noise sensitive receptors. Noise levels at NSR D are lower than the remaining NSRs due to building massing of the WMC which provides a significant acoustic barrier to noise from the function room.

With reference to the IEMA guidance set out in Table 2.2, the predicted change in noise levels would be considered negligible in the context of the existing noise climate. When considered in terms of the PPG hierarchy set out in Table 2.1, the noise levels are at a level which may be audible at the NSRs, but would not affect the acoustic character such that there would be an adverse effect on the quality of life (NOAEL).

In terms of context, it should be noted that the existing WMC has been operating in a similar manner to the proposed without complaints for a number of years at this point.

4.3 Noise from external beer garden

It is understood that the external beer garden area will not be used for playing live or amplified music, therefore noise emission would be limited to noise from patrons.

To assess potential noise emission from the beer garden, the Cadna-A noise model has been used. The assessment is based on the assumption that up to 5 patrons are speaking in raised voices simultaneously at any one time.

Noise emission from external patrons is calculated based on a speech spectrum for adult raised voices derived from the American Standard ANSI 3.5. Noise emission from each person speaking has been calculated using an area source simulating moving point propagation at a height of 1.2m relative to the ground height.

Table 4.5 below summarises the octave band noise level data used in the assessment, with all figures rounded to the nearest 1 dB.

Table 4.5: Spectral source data

	Octave band centre frequency (Hz)							
	63	12	250	500	1000	2000	4000	8000
ANSI 3.5 Sound Power Level Spectrum – Raised Voices (dB L_w)	48	59	70	75	72	64	57	48

The results are presented in Table 4.6 below. Noise contour plots illustrating the propagation of noise from the site are presented in Appendix C.

Table 4.6: Predicted external seating area noise

NSR	Predicted Noise Level (dB $L_{Aeq,1hour}$)	Existing Noise Level (dB $L_{Aeq,1hour}$)	Level Difference (dB)	Change in prevailing noise level (dB)
A	38	47	-9	0
B	39		-8	0
C	36		-11	0
D	27	55	-28	0

Noise emission from the beer garden has been assessed having regard to the prevailing noise climate at the façade of the nearest noise sensitive receptors during the evening (19:00-23:00). Table 4.7 below presents the predicted worst case noise levels (as set out in Table 4.4) along with a comparison to the prevailing noise level at the NSRs, and the corresponding change in noise levels which results.

The results presented in Table 4.6 indicate that noise from the external seating area would not exceed the prevailing noise level at the façade of each of the nearest noise sensitive receptors. With reference to the IEMA guidance set out in Table 2.2, the predicted change in noise levels would be considered negligible in the context of the existing noise climate. When considered in terms of the PPG hierarchy set out in Table 2.1, the noise levels are at a level which may be audible at the NSRs, but would not affect the acoustic character such that there would be an adverse effect on the quality of life (NOAEL).

5 Summary and Conclusions

A noise impact assessment has been undertaken for the existing Flockton Green Working Men's Club in Wakefield

Noise monitoring was undertaken between Monday 13th and Tuesday 14th May 2024 to assess the existing noise climate at the site and in the vicinity of nearby noise sensitive receptors. The noise climate during the survey period was controlled by local road traffic noise. The results of the survey are presented in Section 3 of this report.

Section 4 presents an assessment of noise from the development, including noise from human activities externally and noise breakout from internal areas. The results indicate that the change in noise level at the receptors would not result in adverse impacts at nearby noise sensitive receptors.

Based on the assessment included herein, noise is not considered to be a constraint for the proposed development.

Appendix A – Abbreviations and Definitions

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 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:

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

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

A-weighting
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.

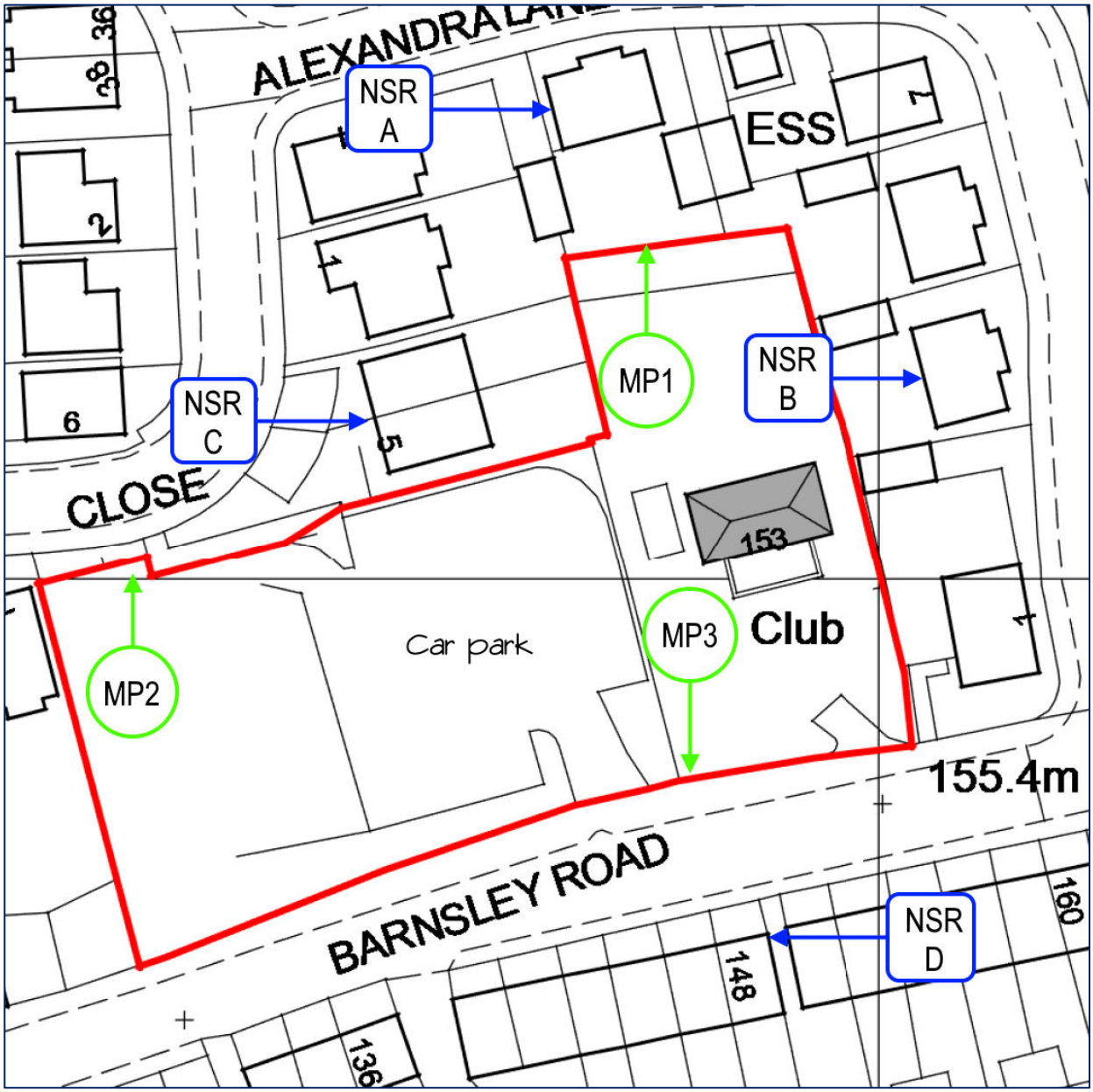
$L_{A90,\,T}$
The A-weighted sound pressure level of the residual noise in decibels exceeded 90% of a given time interval, T. L_{A90} is typically taken as representative of background noise.

$L_{AF\,max}$
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.

Single Event Level / Sound Exposure Level (SEL or L_{AE})
The energy produced by a discrete noise event averaged over one second, regardless of the event duration. 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 B –Site Location Plan and Monitoring Positions



Appendix C –Noise Contour Plots (dB $L_{Aeq,T}$) at 1.5m AGL

Figure C1: Noise emission from closed doors with background music

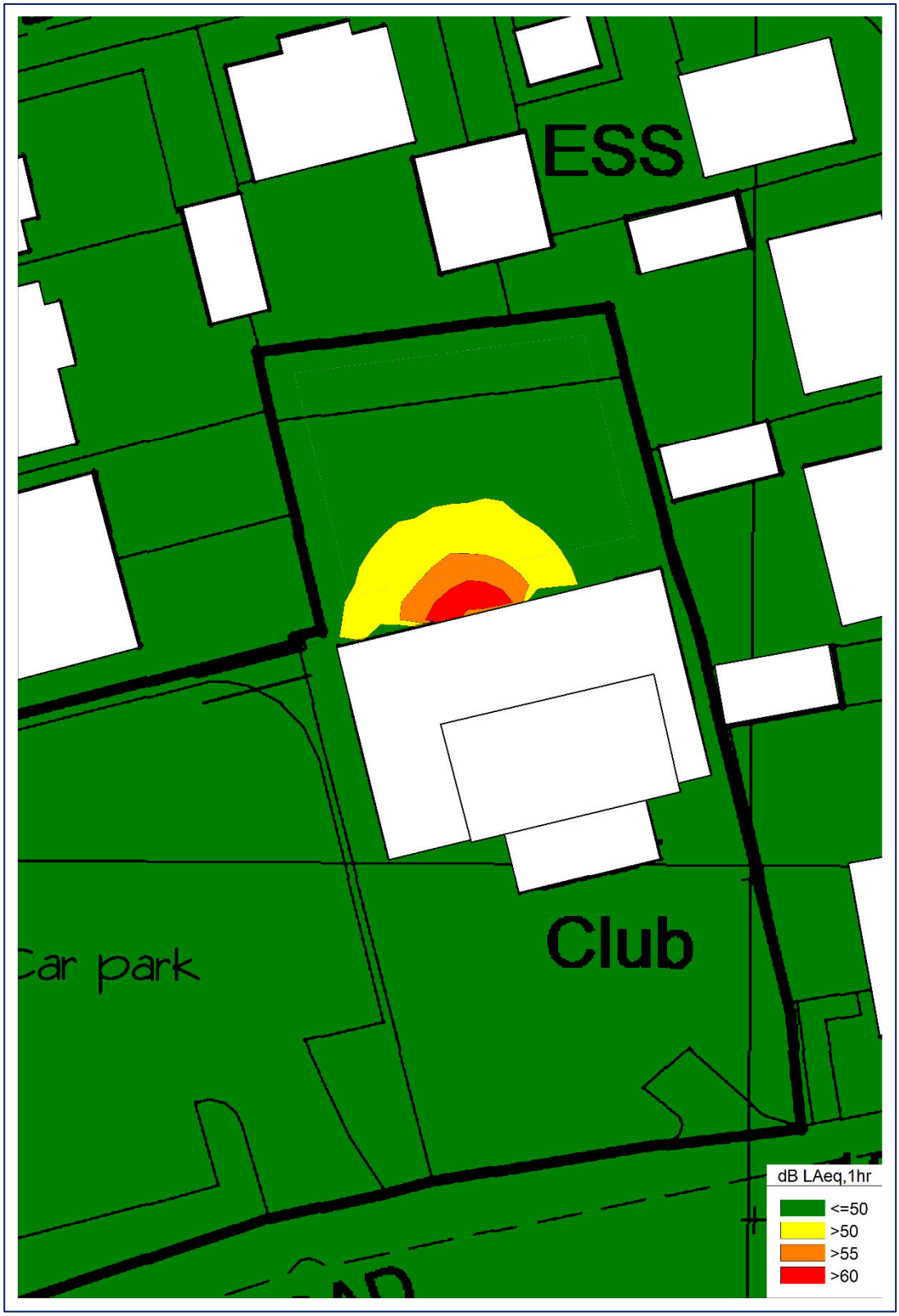


Figure C2: Noise emission from closed doors with amplified music

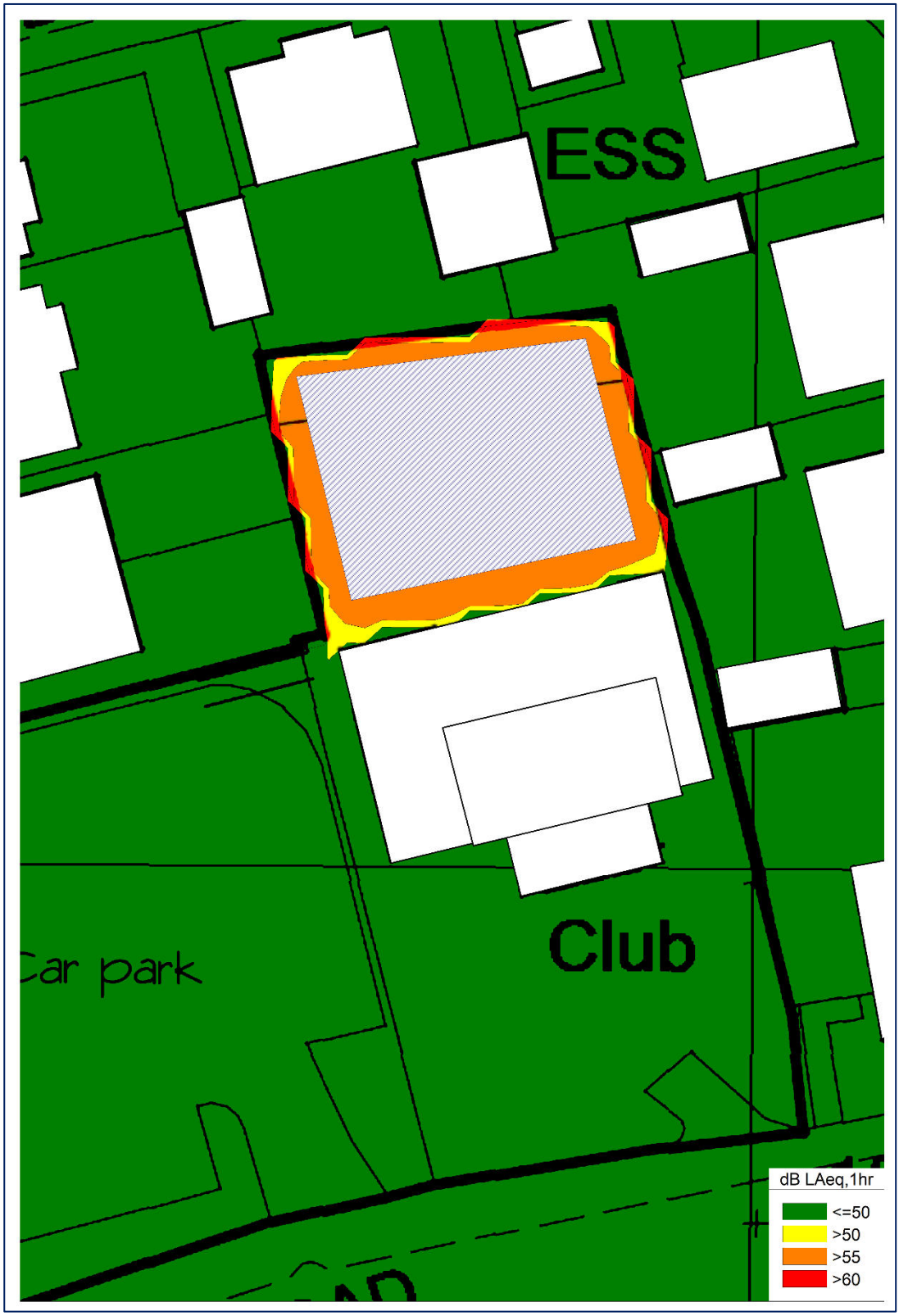


Figure C3: Noise emission from open doors with background music and beer garden