
Noise Impact Assessment

Proposed Residential Development – Cross Road, Chorlton

Client: Southway Housing Trust

Reference: 20.170.1.R3

Issue Date: 30 May 2022



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EXECUTIVE SUMMARY

This Assessment has been undertaken to identify the potential level of noise breakout from any future amplified music events which may take place in the Club, and its impact upon the adjacent proposed residential dwellings at the Site. Accordingly, this Assessment has been completed with due regard to the National Planning Policy Framework and its associated National Planning Practice Guidance in addition to appropriate British Standards and guidance documents relevant to the assessment of noise impacts. Regard has also been paid to the requirements of Manchester City Council's Environmental Health Department and their specific noise criteria for assessing amplified music upon residential amenity.

This Assessment has relied upon noise measurements being taken both inside and outside of the Club whilst amplified music was generated inside to replicate the Club's future operation, albeit in a worst-case situation in which excessively high music noise levels were generated.

This Assessment has shown compliance with the low-frequency noise criteria for the 63Hz and 125Hz octave bands within any habitable room of the Site, allowing for an open window at both the Club and the closest proposed apartment and is thus considered to be worst-case.

In summary, the predicted level of amplified music from within the Club at the closest proposed apartment will be sufficiently low enough to accord with the 'No Observed Adverse Effect Level' as detailed in the PPG and as such, noise should not be a factor in refusing the planning application for this Development.

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1 INTRODUCTION

1.1 Appointment

- 1.1.1 Professional Consult Limited was instructed by Icen Projects on behalf of Southway Housing Trust ('the Applicant') to prepare a Noise Impact Assessment ('the Assessment') for a proposed residential development ('the Development') on a parcel of land located off Cross Road in Chorlton M21 to be referred to hereafter as 'the Site'.

1.2 The Proposal

- 1.2.1 Proposals include for the development of 29 residential units (mix of 1 and 2 beds) in the car park area associated with the adjacent Chorlton Irish Association Club ('the Club').

1.3 Site & Locality

- 1.3.1 The Site is located in a predominantly residential area with existing residential dwellings lying to the north, west and to the east beyond Cross Road. To the south lies Beech Road Park and to the north lies the currently disused Club. It is understood, however, that the Club may become operational again in the future and host amplified music events.
- 1.3.2 The soundscape across the Site is comprised of low-level road traffic noise from vehicles using the A5145 to the north and occasional vehicles using Cross Road to the east.

1.4 Purpose of Assessment

- 1.4.1 This Assessment has been undertaken to identify the potential level of noise breakout from any future amplified music events which may take place in the Club, and its impact upon the adjacent proposed residential dwellings at the Site. Accordingly, this Assessment has been completed with due regard to the National Planning Policy Framework and its associated National Planning Practice Guidance in addition to appropriate British Standards and guidance documents relevant to the assessment of noise impacts. Regard has also been paid to the requirements of Manchester City Council's Environmental Health Department and their specific noise criteria for assessing amplified music upon residential amenity.
- 1.4.2 This Assessment has relied upon noise measurements being taken both inside and outside of the Club whilst amplified music was generated inside to replicate the Club's future operation.
- 1.4.3 All acronyms used within this report are defined in the Glossary presented in Appendix 2.

1.5 Limitations

- 1.5.1 The limitations of this report are presented in Appendix 1.

1.6 Confidentiality

- 1.6.1 Professional Consult has prepared this report solely for the use of the Client. Should any third party wish to use or rely upon the contents of the report, written approval must be sought from Professional Consult; a charge may be levied against such approval.

2 POLICY & GUIDANCE

2.1 National Planning Policy Framework & National Planning Practice Guidance

- 2.1.1 The Government updated the National Planning Policy Framework (NPPF) on 20th July 2021 and its associated National Planning Practice Guidance (NPPG) on 24th June 2021. Together, the NPPF and NPPG set out what the Government expects of local authorities. The overall aim is to ensure the planning system allows land to be used for new homes and jobs, while protecting valuable natural and historic environments.
- 2.1.2 The NPPG adds further context to the NPPF and it is intended that the two documents should be read together.
- 2.1.3 Noise needs to be considered when new developments may create additional noise and when new developments would be sensitive to the prevailing acoustic environment. When preparing local or neighbourhood plans, or taking decisions about new development, there may also be opportunities to consider improvements to the acoustic environment.
- 2.1.4 Local planning authorities' plan-making and decision making should take account of the acoustic environment and in doing so consider:
- ② Whether or not a significant adverse effect is occurring or likely to occur;
 - ② Whether or not an adverse effect is occurring or likely to occur; and
 - ② Whether or not a good standard of amenity can be achieved.
- 2.1.5 In line with the Explanatory Note of the Noise Policy Statement for England, this would include identifying whether the overall effect of the noise exposure (including the impact during the construction phase wherever applicable) is, or would be, above or below the significant observed adverse effect level and the lowest observed adverse effect level for the given situation.
- 2.1.6 The Observed Effect Levels are as follows:
- ② Significant observed adverse effect level: This is the level of noise exposure above which significant adverse effects on health and quality of life occur;
 - ② Lowest observed adverse effect level: this is the level of noise exposure above which adverse effects on health and quality of life can be detected; and
 - ② No observed effect level: this is the level of noise exposure below which no effect at all on health or quality of life can be detected.
- 2.1.7 Table 1 summarises the noise exposure hierarchy, based on the likely average response.

Table 1. 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
<i>Lowest Observed Adverse Effect Level</i>			
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
<i>Significant Observed Adverse Effect Level</i>			
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 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

2.1.8 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.

2.1.9 These factors include:

- ② The source and absolute level of the noise together with the time of day it occurs. Some types and level of noise will cause a greater adverse effect at night than if they occurred during the day - this is because people tend to be more sensitive to noise at night as they are trying to sleep. The adverse effect can also be greater simply because there is less background noise at night;
- ② For non-continuous sources of noise, the number of noise events, and the frequency and pattern of occurrence of the noise;
- ② the spectral content of the noise and the general character of the noise. The local topology and topography should also be taken into account along with the existing and, where appropriate, the planned character of the area.

2.1.10 More specific factors to consider when relevant:

- ② where applicable, the cumulative impacts of more than one source should be taken into account along with the extent to which the source of noise is intermittent and of limited duration;
- ② 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; and

- ② If external amenity spaces are an intrinsic part of the overall design, the acoustic environment of those spaces should be considered so that they can be enjoyed as intended.

2.2 Manchester City Council's Environmental Health Department

2.2.1 Consultation with Manchester City Council has been completed and the following correspondence was provided on 2nd November 2021:

'We have been appointed by a client to complete a Noise Assessment for a proposed residential development adjacent to the Chorlton Irish Club at High Lane in Chorlton-cum-Hardy, Manchester M21 9DJ.

It is understood that proposals include for the redevelopment of the car park area associated with the Irish Club for residential use. It should be noted that, as the Irish Club is currently closed but may be used in the future, there is potential for statutory noise nuisance to prevail if noise impacts at the proposed residential development are not adequately controlled and so it is expected that Manchester City Council will request a Noise Impact Assessment to accompany the scheme planning application.

As such, we have recently measured library noise level data acquired at another city-centre venue in Manchester which comprised of live and amplified music which we will adopt for the assessment of noise break-out from the venue and it's potential impact at the proposed residential development.

With regards to criteria, Section 3.6.1.2 'Entertainment Noise' of the Manchester City Council document 'Planning & Noise – Technical Guidance' offers the following for noise-sensitive uses in close proximity to established music venues:

'... a criterion that would achieve a condition of 'inaudible' / 'virtually inaudible' which is applicable for new residential developments that are structurally connected to

entertainment venues (or vice versa) would be: 'Music noise levels in the 63Hz and 125Hz octave centre frequency bands (Leq) should be controlled so as not to exceed (in habitable rooms) 47dB and 41dB (Leq), respectively'. This criterion may also be applicable for new residential developments that are structurally separate from an existing entertainment venue.'

We will complete a Noise Impact Assessment for the proposal adhering to the above criteria and, where noise mitigation is required, this would be in the form of upgraded glazing and alternative ventilation for any affected proposed dwellings.'

2.2.2 There was various email correspondence between Professional Consult and Manchester City Council regarding the use library noise level data to inform the Assessment as the Irish Club was closed and the associated difficulty of obtaining noise measurements of amplified music. Nevertheless it was stipulated by Manchester City Council that such a test was required and the following correspondence was received:

'Our preference is to do a noise test with a PA system (loudspeaker) that can replicate DJ performance (so will need tracks that have a heavy bass content for worse case) - no need for a band setup. Consultants have supplemented this with pink noise so as to get other data (in situ performance). This will also help with a subjective assessment with respect to hotspot areas in relation to breakout etc. The history of complaints for the premises show that most breakout was from the rear of the building and not the front, which I can confirm from monitoring visits that I made to the premises several years ago.'

3 NOISE SURVEY

3.1 Amplified Music Noise Survey

3.1.1 Professional Consult has completed an amplified music noise survey at the Club in order to replicate a worst-case amplified music event taking place. A pair of loud speakers and amplifier were setup in the main ground floor room where events can take place. Music was played which comprised of dance music which was low frequency dominant in order to be able to reliably test any music noise breakout against the low frequency criteria stipulated by MCC. Noise measurements were completed as follows:

② Noise Measurement Position 1: Located internally in the centre of the main ground floor room where events can take place. This noise measurement was completed in order to ensure noise level were sufficiently high enough (90 – 95dB L_{Aeq}) in reverberant conditions. Noise sources at the microphone location comprised solely of amplified music;

② Noise Measurement Position 2: Located 1m from the façade of the rear of the building in façade conditions. The microphone was located on a pole through an open window of the rear bar room which is separate room lying beyond the main room where amplified music can be generated. The purpose of this microphone was to measure the level of music noise breakout from an open window which will be used to act as the noise source for the noise model. It should be noted that the open window used for the test is the only openable window on the southern façade as the other windows are screwed closed. Noise sources at the microphone location comprised of music noise breakout from the Club, intermittent DIY noise from the adjacent property and intermittent albeit low-level road traffic noise from vehicles using Cross Road; and

② Noise Measurement Position 3: Located 9m from the southern façade of the Club at the proposed build-line of the proposed dwellings in free-field conditions. The purpose of this microphone was to measure the level of music noise breakout from an open window which will be used to calibrate the predicted level in the noise model, from noise measured at NMP2. Noise sources at the microphone location comprised of music noise breakout from the Club, intermittent DIY noise from the adjacent property and intermittent albeit low-level road traffic noise from vehicles using Cross Road.

3.1.2 Figures 1 and 2 in Appendix 3 show photographs of noise measurement locations.

3.1.3 Table 2 details the measured noise levels for Measurement Positions 1 – 3.

Table 2. Measured Noise Levels

Noise Measurement Position	Time	Measured Sound Pressure Level (dB)										
		31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz	$L_{Aeq,T}$
1	15/12/2021 12:16	57.8	84.9	93.4	87.9	89.9	82	85.6	80.8	70.1	58.9	91.5
	15/12/2021 12:17	48.1	86.9	95.1	87.1	91.1	85.3	84.8	77	71.1	52.3	92.0
	15/12/2021 12:18	55.2	81.9	91.4	86.8	91.4	85.9	84.2	75.9	68	47.6	91.9
	15/12/2021 12:19	56.9	85.9	94.2	87.5	92.7	85.9	85.6	77.8	71.9	51.7	93.0
	15/12/2021 12:20	48.4	86.7	94.8	87.4	92.6	84.6	85.3	77.9	72	53.1	92.7

2	15/12/2021 12:16	52.7	49.4	58.2	49.3	51.1	46.4	44.3	38.8	27.6	11.2	52.5
	15/12/2021 12:17	53.4	52.7	59.9	48.4	51.8	47.6	41.3	32.3	23.4	11.5	52.7
	15/12/2021 12:18	53.9	50.8	55.8	48	52.7	47.8	41.5	31.9	29.3	12.9	52.8
	15/12/2021 12:19	53.7	50.8	55.1	48.1	52.5	47.7	41.2	30	22	10.2	52.6
	15/12/2021 12:20	52.4	53.6	59	48.9	53.8	47.7	43	31.9	23.7	9.7	53.7
3	15/12/2021 12:25*	54.8	52.9	47.8	43.3	42.1	42.3	34.5	28.2	21.4	8.5	45.4
	15/12/2021 12:26*	54.6	53.6	49	43.2	42.2	42.3	34.3	30.4	19.1	8.4	45.5
	15/12/2021 12:27*	55.7	55.3	48.9	43.1	42.9	41.9	33.1	26.3	25.4	8.9	45.3
*3-minute period at NMP3 when there was no extraneous noise from DIY activities at the adjacent property interfering with the noise measurement, however low-level road traffic noise was present.												

3.1.4 It should be noted that the low-frequency noise criteria presented by Manchester City Council is over a 5-min averaging period, but given the limited availability to complete the noise measurements so as not to include interference from DIY at the adjacent property, a 1-min time average has been adopted in this assessment. Nevertheless, a shorter time-average will present a higher noise level and thus the assessment is worst-case and robust

3.2 Noise Survey Equipment

3.2.1 The following equipment was used for the Noise Survey.

Table 3. Noise Measurement Equipment

Measurement Position	Equipment Description	Manufacturer & Type No	Serial No.	Calibration Due Date
1 & 3	Sound Level Meter	01dB Fusion	12586	24 June 2022
	Pre-amplifier	01dB PRE22	2004163	
	Microphone	GRAS 40CD	367351	
	Calibrator	01dB CAL-31	92222	30 June 2022
2	Sound Level Meter	01dB Fusion	11755	03 July 2022
	Pre-amplifier	01dB PRE22	1707173	
	Microphone	GRAS 40CE	291693	
	Calibrator	01dB CAL-31	84086	30 June 2022

- 3.2.2 The sound level meters were field calibrated prior to and following the noise survey and there was no drift beyond the allowable limit of 1dB.
- 3.2.3 During the noise survey the weather conditions were conducive to the measurement of environmental noise, i.e. wind speeds of no more than 5m/s and dry conditions and Table 4 details the measured weather conditions.

Table 4. Range of Measured Wind Speeds

Period	Range of Measured Wind Speeds (m/s)	Rainfall Recorded?
Noise Survey	0 – 0.6	No

4 NOISE IMPACT ASSESSMENT

4.1 Calculation of Music Noise Level at Receptors

4.1.1 The highest measured 1-minute noise level at NMP2 has been used for inclusion in the noise model in order to predict the music noise levels at the Site across all floors. Table 5 details the calculation of the sound power level for inclusion in the noise model.

Table 5. Calculation of Sound Power Level

	Octave Band Centre Frequency										L _{Aeq,T}
	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	16 kHz	
Measured Sound Pressure Level – 1m from Open Window	52.4	53.6	59	48.9	53.8	47.7	43	31.9	23.7	9.7	53.7
Calculated Sound Power Level of Open Window, L _w	60.4	61.6	67	56.9	61.8	55.7	51	39.9	31.7	17.7	61.7

4.1.2 In order to calculate an accurate sound pressure level, for each octave band, at the proposed apartments facing the Club, a noise model has been built using CadnaA and the following inputs have been included in the model:

- ② Proposed Scheme Layout;
- ② Site elevations have been taken as existing using 1m contours;
- ② The open window has been included as a point source at a height of 2.6m above local ground level;
- ② A reflection order of 2 has been used in all calculations; and
- ② Noise levels generated using ISO 9613-1 and ISO 9613-2 "Acoustics - Attenuation of sound during propagation outdoors" as incorporated into CadnaA software.

4.1.3 Figure 1 in Appendix 4 details the grid noise map which is applicable for both the daytime and night-time periods. The noise model has predicted the following noise levels at the apartments facing the open window at the Club. It should be noted that the noise modelling software CadnaA cannot predict the 16kHz frequency, but nevertheless, the noise level in this frequency band is not significant.

Table 6. Calculated Octave Band Sound Pressure Level at Receptors

Apartment	Octave Band Centre Frequency – Façade Sound Pressure Level (dB)									L _{Aeq,T}
	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	
Apartment 1, Ground Floor	30.1	33.3	39.8	34	37.6	35.8	31.6	25.3	24.5	39.9
Apartment 2, Ground Floor	29.2	32.3	38.8	33.1	36.4	34.6	30.5	24.2	23.3	38.7
Apartment 3, Ground Floor	28.2	31.3	37.8	32.1	35.5	33.6	29.6	23.2	22.2	37.7
Apartment 4, Ground Floor	25.2	28.3	34.8	29	32.4	30.6	26.7	20.1	18.7	34.7
Apartment 5, Ground Floor	24.2	27.3	33.8	28.1	31.5	29.6	25.8	19.2	17.6	33.8

Apartment 6, Ground Floor	17.3	20.1	26.5	20.6	23.7	24.1	19.3	11.8	8.2	27.3
Apartment 7, Ground Floor	21	24.1	30.6	24.8	28.2	27.5	23.2	16.4	14	31.2
Apartment 8, Ground Floor	7.1	7.4	10.8	1.7	1.9	-1.2	-6.4	-13.9	-17.9	3.8
Apartment 9, 1 st Floor	30	33.1	39.7	33.9	37.5	35.7	31.5	25.2	24.4	39.8
Apartment 10, 1 st Floor	29.1	32.2	38.7	33	36.4	34.5	30.4	24.1	23.2	38.6
Apartment 11, 1 st Floor	28.1	31.2	37.7	32	35.4	33.6	29.5	23.1	22.1	37.7
Apartment 12, 1 st Floor	25.1	28.2	34.7	29	32.4	30.6	26.7	20.1	18.6	34.7
Apartment 13, 1 st Floor	24.2	27.3	33.8	28.1	31.5	29.6	25.8	19.2	17.6	33.8
Apartment 14, 1 st Floor	17.4	20.2	26.5	20.6	23.7	24.1	19.3	11.8	8.2	27.3
Apartment 15, 1 st Floor	21	24	30.5	24.8	28.2	27.5	23.2	16.4	14	31.2
Apartment 16, 1 st Floor	19.4	22.4	28.9	23.2	26.6	24.7	20.4	13.6	10.8	28.7
Apartment 17, 1 st Floor	29.2	32.3	38.8	33.1	36.5	34.7	30.5	24.2	23.4	38.8
Apartment 18, 2 nd Floor	28.4	31.5	38	32.3	35.7	33.9	29.7	23.3	22.4	37.9
Apartment 19, 2 nd Floor	27.6	30.7	37.2	31.5	34.8	33	28.8	22.4	21.4	37.1
Apartment 20, 2 nd Floor	24.8	28	34.4	28.7	32.1	30.3	26.2	19.7	18.2	34.4
Apartment 21, 2 nd Floor	24	27	33.6	27.8	31.2	29.4	25.4	18.8	17.1	33.5
Apartment 22, 2 nd Floor	17.6	20.3	26.5	20.5	23.6	24	19.3	11.8	8.2	27.2
Apartment 23, 2 nd Floor	20.8	23.9	30.4	24.7	28.1	27.4	23.1	16.3	13.8	31
Apartment 24, 2 nd Floor	19.3	22.4	28.9	23.1	26.5	24.7	20.4	13.5	10.7	28.7
Apartment 25, 3 rd Floor	19.7	21.3	26.4	18.7	19.8	15.4	8.7	-0.6	-2.2	20.5
Apartment 26, 3 rd Floor	18.7	20.6	25.9	18.4	19.6	15.3	8.9	-0.5	-4.4	20.4
Apartment 27, 3 rd Floor	17.7	19.8	25.1	17.9	19.9	15.9	9.2	0.1	-4	20.6
Apartment 28, 3 rd Floor	17.4	19.9	25.4	18.2	19.8	15.7	8.9	-0.5	-5.5	20.5
Apartment 29, 3 rd Floor	7.4	7.4	9.9	0.1	1.2	-2.3	-6.9	-14.1	-17.5	2.9

4.1.4 Table 7 calculates the internal noise level within an apartment using the highest predicted noise level from Table 6 and compares the noise levels in the 63Hz and 125Hz bands against the Manchester City Council criteria.

Table 7. Calculated Internal Octave Band Sound Pressure Level

	Octave Band Centre Frequency – Sound Pressure Level (dB)								
	31.5 Hz	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz
Predicted Noise Level at Worst-case Apartment (Apartment 1, Ground Floor)	30.1	33.3	39.8	34	37.6	35.8	31.6	25.3	24.5
Noise Attenuation Afforded by a Partially Open Window	-10	-10	-10	-10	-10	-10	-10	-10	-10
Calculated Internal Noise Level	20.1	23.3	29.8	24	27.6	25.8	21.6	15.3	14.5
Manchester City Council Noise Criteria	-	47	41	-	-	-	-	-	-
Difference +/-	-	-23.7	-11.2	-	-	-	-	-	-

4.1.5 Table 7 indicates that the internal noise criteria presented by Manchester City Council for the 63Hz and 125Hz octave bands are not exceeded and so no noise mitigation measures are considered necessary. It should be noted that the calculation is worst-case as it has relied on an open window at the Club and an open window at the Site.

4.1.6 The overall A-weighted noise level outside Apartment 1 is 39.9dB LAeq,1min which compares favourably with the measured noise level of 45.5dB which also included for low-level contribution from distant road traffic in addition to music noise breakout.

4.1.7 It should also be noted that further calculation indicates that the internal overall A-weighted noise level ($L_{Aeq,1min}$) is 29.9dB which falls below the internal target noise criteria level for bedrooms which is 30dB L_{Aeq} , however this is an 8-hr time-averaged noise criteria level.

5 CONCLUSION

- 5.1.1 Professional Consult Limited was instructed by Iceni Projects on behalf of Southway Housing Trust ('the Applicant') to prepare a Noise Impact Assessment for a proposed residential development on a parcel of land located off Cross Road in Chorlton M21.
- 5.1.2 Proposals include for the development of 29 residential units (mix of 1 and 2 beds) in the car park area associated with the adjacent Chorlton Irish Association Club.
- 5.1.3 The Site is located in a predominantly residential area with existing residential dwellings lying to the north, west and to the east beyond Cross Road. To the south lies Beech Road Park and to the north lies the currently disused Chorlton Irish Association Club. It is understood that the Club may become operational again in the future and host amplified music events.
- 5.1.4 The soundscape across the Site is comprised of low-level road traffic noise from vehicles using the A5145 to the north and occasional vehicles using Cross Road to then east.
- 5.1.5 This Assessment has been undertaken to identify the potential level of noise breakout from any future amplified music events which may take place in the Club, and its impact upon the adjacent proposed residential dwellings at the Site. Accordingly, this Assessment has been completed with due regard to the National Planning Policy Framework and its associated National Planning Practice Guidance in addition to appropriate British Standards and guidance documents relevant to the assessment of noise impacts. Regard has also been paid to the requirements of Manchester City Council's Environmental Health Department and their specific noise criteria for assessing amplified music upon residential amenity.
- 5.1.6 This Assessment has relied upon noise measurements being taken both inside and outside of the Club whilst amplified music was generated inside to replicate the Club's future operation, albeit in a worst-case situation in which excessively high music noise levels were generated.
- 5.1.7 This Assessment has shown compliance with the low-frequency noise criteria for the 63Hz and 125Hz octave bands within any habitable room of the Site, allowing for an open window at both the Club and the closest proposed apartment and is thus considered to be worst-case.
- 5.1.8 In summary, the predicted level of amplified music from within the Club at the closest proposed apartment will be sufficiently low enough to accord with the 'No Observed Adverse Effect Level' as detailed in the PPG and as such, noise should not be a factor in refusing the planning application for this Development.

APPENDIX 1: LIMITATIONS

This report and its findings should be considered in relation to the terms of reference and objectives agreed between Professional Consult Limited and the Client.

The executive summary, conclusions and recommendations sections of the report provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

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APPENDIX 2: GLOSSARY OF ACOUSTIC TERMINOLOGY

Noise is defined as unwanted sound. Human ears are able to respond to sound in the frequency range 20 Hz (deep bass) to 20,000 Hz (high treble) and over the audible range of 0 dB (the threshold of perception) to 140 dB (the threshold of pain). The ear does not respond equally to different frequencies of the same magnitude, but is more responsive to mid-frequencies than to lower or higher frequencies. To quantify noise in a manner that approximates the response of the human ear, a weighting mechanism is used. This reduces the importance of lower and higher frequencies, in a similar manner to the human ear.

Furthermore, the perception of noise may be determined by a number of other factors, which may not necessarily be acoustic. In general, the impact of noise depends upon its level, the margin by which it exceeds the background level, its character and its variation over a given period of time. In some cases, the time of day and other acoustic features such as tonality or impulsiveness may be important, as may the disposition of the affected individual. Any assessment of noise should give due consideration to all of these factors when assessing the significance of a noise source.

The most widely used weighting mechanism that best corresponds to the response of the human ear is the 'A'-weighting scale. This is widely used for environmental noise measurement, and the levels are denoted as dB(A) or L_{Aeq} , L_{A90} etc., according to the parameter being measured.

The decibel scale is logarithmic rather than linear, and hence a 3 dB increase in sound level represents a doubling of the sound energy present. Judgement of sound is subjective, but as a general guide a 10 dB(A) increase can be taken to represent a doubling of loudness, whilst an increase in the order of 3 dB(A) is generally regarded as the minimum difference needed to perceive a change under normal listening conditions.

An indication of the range of sound levels commonly found in the environment is given in the following table.

Table 1: Typical Sound Pressure Levels

Sound Pressure Level (dB)	Location/Example
0	Threshold of hearing
20 - 30	Quiet bedroom at night
30 - 40	Living room during the day
40 - 50	Typical office
50 - 60	Inside a car
60 - 70	Typical high street
70 - 90	Inside factory
100 - 110	Burglar alarm at 1m away
110 - 130	Jet aircraft on take off
140	Threshold of pain

Table 2: Terminology

Descriptor	Explanation
dB (decibel)	The scale on which sound pressure level is expressed. It is defined as 20 times the logarithm of the ratio between the root-mean-square pressure of the sound field and a reference pressure (2x10 ⁻⁵ Pa).
dB(A)	A-weighted decibel. This is a measure of the overall level of sound across the audible spectrum with a frequency weighting (i.e. 'A' weighting) to compensate for the varying sensitivity of the human ear to sound at different frequencies.
L _{Aeq, T}	L _{Aeq} is defined as the notional steady sound level which, over a stated period of time (T), would contain the same amount of acoustical energy as the A - weighted fluctuating sound measured over that period.
L _{Amax}	L _{Amax} is the maximum A - weighted sound pressure level recorded over the period stated. L _{Amax} is sometimes used in assessing environmental noise where occasional loud noises occur, which may have little effect on the overall Leq noise level but will still affect the noise environment. Unless described otherwise, it is measured using the 'fast' sound level meter response.
L ₁₀ & L ₉₀	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The Ln indices are used for this purpose, and the term refers to the level exceeded for n% of the time. Hence L ₁₀ is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L ₉₀ is the 'average minimum level' and is often used to describe the background noise. It is common practice to use the L ₁₀ index to describe traffic noise.
Free-field Level	2A sound field determined at a point away from reflective surfaces other than the ground with no significant contributions due to sound from other reflective surfaces. Generally as measured outside and away from buildings.
Fast	A time weighting used in the root mean square section of a sound level meter with a 125millisecond time constant.
Slow	A time weighting used in the root mean square section of a sound level meter with a 1000millisecond time constant.

APPENDIX 3: PHOTOGRAPHS OF NOISE MEASUREMENTS

Figure 1 NMP1



Figure 2 NMP2 (FAÇADE) & NMP3 (FREE-FIELD)



APPENDIX 4: GRID NOISE MAP

