



212 Burton Road, West Didsbury

Acoustic Planning Report

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Client: Good Time Games

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Introduction

dBx Acoustics Ltd has been appointed by Good Time Games to provide acoustic consultancy services for the conversion of an existing retail unit at 212 Burton Road, Didsbury, into a board games café. This report presents an assessment of the potential noise impact from the development in accordance with the requirements of Manchester City Council.

A glossary of acoustic terminology has been supplied in Appendix A in order to assist the reader.

The Development

The proposed development comprises a café with direct access from Burton Road for members of the public. There are various other commercial units, including restaurants and cafés, in the immediate area.

The intention is to turn the existing retail unit into a board games café. A new extractor fan is proposed within the kitchen at the rear of the building, ducted to roof level via the existing flue. No other external plant is proposed. The proposed opening hours are as follows;

Mondays to Fridays - 1030hrs to 2100hrs

Saturdays - 1000hrs to 2200hrs

Sundays and Bank Holidays - 1000hrs to 2100hrs

The nearest noise sensitive properties are thought to be residential units above the commercial premises on Burton Road. Properties on the far side of the road are approximately 12m away. The nearest adjacent residential property appears to be at first floor level in the adjacent building, approximately 5m away. This does not have line of sight to the Café façade. There is also another residential property to the rear of the site, again, approximately 15m away. This property lies down Arley Avenue and is considered the nearest noise sensitive property when considering noise from the kitchen extract fan.

Assessment Criteria – Noise Emissions

Manchester City Council – Planning & Noise Technical Guidance (December 2015)

This document sets out Manchester City Council's requirements with regard to current guidance and policy, with the aspiration that new developments achieve the highest standards without compromising the health and wellbeing of residents. The guidance refers to the NPPF and NPSE as described below.

The following requirements are considered relevant to this project;

Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a BS 4142 rating level (see below) of 5 dB L_{Aeq} below the typical background L_{A90} level at the nearest noise sensitive location.

Where entertainment noise is proposed the L_{Aeq} (entertainment noise) shall be controlled to 10 dB below the L_{A90} (without entertainment noise) in each octave band at the façade of the nearest noise sensitive location, and internal noise levels at structurally adjoined residential properties in the 63 Hz and 125 Hz octave frequency bands shall be controlled so as not to exceed (in habitable rooms) 47 dB and 41 dB respectively.

Noise Policy Statement for England (NPSE)

NPPF affirms that National Policy Statements form part of the overall framework of national planning policy, and should be a material consideration in decisions on planning applications. The Noise Policy Statement for England came into force in 2010 and states:

This Noise Policy Statement for England (NPSE) should apply to all forms of noise including environmental noise, neighbour noise and neighbourhood noise. The NPSE does not apply to noise in the workplace (occupational noise).

Noise Policy Vision

Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

Noise Policy Aims

Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- *avoid significant adverse impacts on health and quality of life;*
- *mitigate and minimise adverse impacts on health and quality of life; and*
- *where possible, contribute to the improvement of health and quality of life.*

The NPPF noise aims widely reflect those in NPSE. The NPSE does however include some context within the explanatory note to assessing noise impact and uses established concepts from toxicology currently being applied to noise impacts, these include:

- **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.
- **SOAEL** – *Significant Observed Adverse Effect Level*. This is the level above which significant adverse effects on health and quality of life occur.
- **LOAEL** – *Lowest Observed Adverse Effect Level*. This is the level above which adverse effects on health and quality of life can be detected.
- However, it is clear that it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times.

The table on the following page is extracted from the Government's Planning Practice Guidance on noise¹. It summarises the noise exposure hierarchy, based on the likely average response.

¹ https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/69533/pb13750-noise-policy.pdf

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
		Lowest observed adverse effect level (LOAEL)	
Noticeable and intrusive	Noise can be heard and causes small changes in behaviour and/or attitude. E.g. turning up the volume of the television; speaking more loudly; where there is no alternative ventilation, having to close windows are some of the time because of the noise. Potential for some reportedly 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 (SOAEL)	
Noticeable and disruptive	The noise causes 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 the windows closed most of the time because of the noise. Potential for sleep disturbance result in difficulty in getting to sleep. Premature awakening and difficulty 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 the effect of noise leading to psychological stress or psychological effects e.g. regular sleep deprivation/awakening; loss of appetite; significant, medically definable harm e.g. auditoria and non-auditory	Unacceptable adverse effect	Prevent

BS 4142:2014 'Methods for Rating and Assessing Industrial and Commercial Sound'

BS 4142:2014 sets out a procedure for assessing noise impact whereby a Noise Rating is determined and compared with the existing local Background Sound Level.

The Rating Level ($dB_{LA,r,T}$) is evaluated from the Specific Noise Level by including several, cumulative corrections to account for factors such as distinguishable tone, impulse, intermittency or other readily distinguishable sound characteristics.

The assessment of the impact depends upon the margin by which the Rating Level of the specific sound source exceeds the Background Sound Level. An initial estimate of the impact of the specific sound is made by subtracting the Background Sound Level from the Rating Level, while considering the following points:

- a) Typically, the greater this difference, the greater the magnitude of the impact.
- b) A difference of around +10 dB or more is likely to be an indication of a significant adverse impact, depending on the context.
- c) A difference of around +5 dB is likely to be an indication of an adverse impact, depending on the context.
- d) 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.

Noise Climate

Due to the Covid19 outbreak in Spring 2020, attended noise measurements were not able to be taken. What follows is therefore a desktop assessment of the likely noise environment based on previously measured data in the area, and similar noise environments previously measured by dBx Acoustics in mixed commercial and residential areas.

The following planning applications for nearby properties have been referenced;

122105/FO/2018 222 Burton Road

In support of this application, Lighthouse Acoustics carried out a noise survey in April 2018 which included measurements at both the front and rear of the building.

The lowest measured background sound level at the rear of the building during the daytime period was 47dB LA90,15min. This is likely to be representative of the daytime background sound levels at the rear of 212 Burton Road which can be used in assessing the potential impact of sound from the kitchen extract fan.

120213/P30PA/2018 165D Burton Road

In support of this application, Soundtesting carried out a noise survey in May 2019. The survey location is set back from the road and may therefore be considered as an indication of the daytime background sound levels at the rear of 212 Burton Road which can be used in assessing the potential impact of sound from the kitchen extract fan.

The lowest measured background sound level at the rear of the building during the daytime period was 49dB LA90,15min.

Levels at this location may also represent daytime ambient noise levels at the noise sensitive receptors to the rear of the Proposed Development. A daytime level of 57dBLAeq,T was reported.

114751/FO/2016 220 Burton Road

Hann Tucker Associates conducted a noise survey for 220 Burton Road in 2016. These results can be seen in their report '23635 NIA1 220 Burton Road – Noise Impact Assessment' dated 21 October 2016.

Measurements were made at the front and rear of the building which may be considered representative of conditions which will be experienced at the nearby 212 Burton Road.

The daytime ambient sound levels reported by Hann Tucker are 67-71 dB LAeq at the front of the building and 55-56 dB LAeq at the rear. The lowest measured background sound levels during the daytime period were 48 dB LA90 at the front of the property and 45 dB LA90 at the rear.

Table 2 shows the reported octave band background sound pressure levels at the front of the building.

Table 2: External Background Noise Levels L90

Background sound levels in octave bands, L90 (dB)								
63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
46	48	47	46	44	40	32	23	48

Summary of Noise Levels Used

It can be seen that the noise data reported around the site between 2016 and 2019 is consistent and can be assumed to be a good representation of the noise environment around the proposed development at 212 Burton Road.

In carrying out this assessment, we have therefore assumed the following noise levels;

- Daytime ambient sound level at Burton Road 67 dB $L_{Aeq,15min}$
- Daytime ambient sound level at rear of building 55 dB $L_{Aeq,15min}$
- Daytime lowest background sound level at front of building 48 dB $L_{A90, 15 min}$
- Daytime lowest background sound level at rear of building 45 dB $L_{A90, 15 min}$

Noise Impact Assessment

The existing façade is to be retained and comprises a single glazed façade with timber framing and door.

It is likely that the doors to the café will be opened frequently, and so a door with relatively low sound insulation performance has been used in the calculations to reflect this. In the calculation, a door with a sound insulation performance of 26dBR_w was used.

The glazing used in the calculation is 4mm single glazing, which has a sound insulation performance of 30dBR_w .

A composite sound reduction index for the overall façade has been calculated based on the performance and area of each individual element. This has then been used in subsequent calculations in which the maximum octave band sound pressure level within the café which would still allow MCC requirements for noise breakout to be met is determined.

This calculation is presented as Calculation 1, below. In each case the 'Room Lp' has been adjusted until the difference between the calculated sound pressure level at the receiver is at least 10dB below the measured L90 background sound level in accordance with Manchester City Council requirements for the control of entertainment noise emissions. In order to provide a 'worst case' assessment a distance of 5m with no allowance for screening has been used.

Calculation 1: Noise Break-Out Calculation – Daytime



Room to Exterior

Date: 14-May-20
 Job No: 20029
 Project: 212 Burton Road
 Title: Noise Break Out

Frequency	63	125	250	500	1k	2k	4k	8k	A	NR
Room Lp	66	73	73	78	81	77	65	61	84	81
Shop Front SRI	14	19	20	26	31	31	27	32	Calculated Composite Sound Reduction Index	

Wall dimensions length: 5.00 m
 height: 2.50 m

Distance from wall to receive: 5.0 m

Directivity index of location (0, 3, 6 or 9): 3

0 = free space
 3 = junction with surface
 5 = junction of two surfaces
 6 = junction of three surfaces

Frequency	63	125	250	500	1k	2k	4k	8k	A	NR
Receive Lp	35.6	37.6	36.7	35.7	33.7	30.3	21.9	12.9	38.1	33.7
Background L90	46	48	47	46	44	40	32	23	Measured L90 (Hann Tucker)	
Difference	-10	-10	-10	-10	-10	-10	-10	-10		

nb MCC requires 10dB below in all octave bands

The resultant limiting sound pressure level within the café/ for the daytime period is confirmed in Table 3 below.

Table 3: Maximum internal noise level limits – octave bands

Period	Maximum Ambient Noise Level Limits (dB)								
	63 Hz	125 Hz	250 Hz	500 Hz	1 kHz	2 kHz	4 kHz	8 kHz	dBA
Daytime	66	73	73	78	81	77	65	61	84

The maximum allowable internal noise level of 84dB(A) is relatively high is unlikely to be exceeded during normal café operations. Should amplified music be used in future, the Tenant will be required to ensure that these limits are not exceeded, particularly at 63Hz and 125Hz, in order to ensure continued compliance with MCC requirements.

Plant Noise Assessment

Manchester City Council requires that externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level $L_{Ar,T}$ of 0-5 dB below the typical background L_{A90} level at the nearest noise sensitive location.

An extract fan is proposed at the rear of the building serving the kitchen. This is an Airvent 150mm Extractor Fan with a quoted sound pressure level of 32dB(A) at 3m. The assumed daytime background sound level at the nearest noise sensitive location, which is assumed as a worst-case to be a residential window 3m from the fan, is 45dB $L_{A90,15min}$.

Using this information and the derived background sound levels, a BS4142 assessment can be made of the noise impact of this proposed unit at the nearest noise sensitive receptor to the rear of the site. This is presented in the table below.

Table 4: BS4142 Assessment of External Plant

	Results	Relevant Clause	Comments
Assumed background sound level	45 dB $L_{A90, 1hr}$	8.3	The typical background sound level measured during the day-time period.
Specific sound level	32 dB L_{Aeq}	7.3.3	A prediction made based on distance correction to premises 3m away from the fan.
Assessment made during the daytime period so reference period is 1 hour		7.2	-
Acoustic feature correction	6 dB	9.2	Fan could potentially display tonality (6dB)
Rating Level	38 dB $L_{Ar,T}$	9.2	The predicted Rating Level during the day-time period.
Background sound level	45 dB $L_{A90, 1hr}$	8	The typical background sound level measured during the day-time period.
Excess of Rating Level over background sound level	-7 dB	11	-
Assessment indicates low likelihood of significant adverse impact		11	Predicted Rating Level does not exceed the lowest measured background level. This is an indication of the development having a low impact.
Uncertainty of the assessment	Minor	10	Background sound level based on repeatable measurements. The predicted Rating Level is based on established prediction methodologies.

The assessment shows that the proposed extract fan would not be expected to have an adverse impact on the nearby residential receptors and would be compliant with MCC requirements.

Conclusions

This report presents an assessment of potential noise emissions from the proposed A3 café use at 212 Burton Road, West Didsbury.

Using previously measured noise levels in the surrounding area, an assessment of potential noise emissions from the café has been carried out. It is identified that typical Café operations would not be expected to impact upon residential amenity at the surrounding premises. Limiting internal noise levels have been presented in accordance with MCC requirements such that should amplified music be used in future, the requirements of MCC can continue to be met.

The BS4142 assessment found that the proposed extract fan at the rear of the building has a low likelihood of adverse impact and is compliant with MCC requirements.

Noise should therefore not be a limiting factor in any planning application.

Appendix A – Glossary of Acoustic Terminology

Decibel, dB	A unit of level derived from the logarithm of the ratio between the value of a quantity and a reference value. For sound pressure level (L_p) the reference quantity is 2×10^{-5} N/m ² . The sound pressure level existing when microphone measured pressure is 2×10^{-5} N/m ² is 0 dB, the threshold of hearing.
L	Instantaneous value of Sound Pressure Level (L_p) or Sound Power Level (L_w).
Frequency	Number of cycles per second, measured in hertz (Hz), related to sound pitch.
A weighting	Arithmetic corrections applied to values of L_p according to frequency. When logarithmically summed for all frequencies, the resulting single "A weighted value" becomes comparable with other such values from which a comparative loudness judgement can be made, then, without knowledge of frequency content of the source.
$L_{eq,T}$	Equivalent continuous level of sound pressure which, if it actually existed for the integration time period T of the measurement, would possess the same energy as the constantly varying values of L_p actually measured.
$L_{Aeq,T}$	Equivalent continuous level of A weighted sound pressure which, if it actually existed for the integration time period, T, of the measurement would possess the same energy as the constantly varying values of L_p actually measured.
L_n,T	L_p which was exceeded for n% of time, T.
$L_{An,T}$	Level in dBA which was exceeded for n% of time, T.
$L_{max,T}$	The instantaneous maximum sound pressure level which occurred during time, T.
$L_{Amax,T}$	The instantaneous maximum A weighted sound pressure level which occurred during time, T.