



Our ref: P3396/L05/PJK

31 May 2019

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Dear Tamer,

San Court, 25-33 Wilmslow Road, Rusholme, Manchester – Assessment of Noise Breaking Out of Commercial Units

Below is our assessment of noise breaking out of the ground floor commercial units at San Court, 25-33 Wilmslow Road, Rusholme, Manchester.

Introduction and Basis of Assessment

The assessment is required to demonstrate compliance with planning condition 8 as set out in Manchester City Councils planning permission document for application number 111739/FO/2016/S1 dated 28 April 2016.

Planning condition 8 is reproduced in italics below:

“8) The commercial premises shall be acoustically insulated and treated to limit the break out of noise in accordance with a noise study of the premises and a scheme of acoustic treatment that has been submitted to and approved in writing by the City Council as local planning authority. The scheme shall be implemented in full before the use commences.

Where entertainment noise is proposed the L_{Aeq} (entertainment noise) shall be controlled to 10dB below the LA_{90} (without entertainment noise) in each octave band at the facade of the nearest noise sensitive location, and internal noise levels at structurally adjoined residential properties in the 63Hz and 125Hz octave frequency bands shall be controlled so as not to exceed (in habitable rooms) 47dB and 41dB, respectively.”

At this stage the operators of the commercial/retail units are unknown, therefore, it has been assumed that the units could operate during both the daytime (0700 to 2300h) and night-time periods (2300 to 0700h). However, it is anticipated that due to the location of the development one of the units could be operated by a restaurant which plays background amplified music.

It should be noted that the units will be rented out as a shell and no frontages will be installed prior to being leased. Therefore, at this stage a noise level limit is proposed for the commercial units which would result in the required noise level limits being achieved in the apartments above.

The noise level limit would be presented to the operators of the units and if they wished to exceed this limit, they would need to provide a noise assessment demonstrating compliance with condition 8 above.

Site Description

San Court is a six-storey mixed-use commercial and residential development fronting onto Wilmslow Road, in Rusholme. The ground floor of the development has space for up to 8 individual commercial/retail units and there are residential apartments on the remaining floors.

All of the ground floor units will open onto Wilmslow Road to the west and, as stated above, currently the units are open on this elevation.

The nearest noise sensitive receptors to the units would be the apartments on the opposite side of Wilmslow Road (approximately 20m from the frontage) and the apartments on the first floor of the development, as identified on Figure 1.

Sound Insulation Test on Separating Floor

A sound insulation test was undertaken on the separating floor between one of the ground floor commercial units and the adjacent living room of apartment 108 on Tuesday 28 May 2019. In order to undertake the test a room was built within the commercial unit.

The floor is constructed from a 200mm thick profiled concrete slab on a steel deck. There was no ceiling in the commercial unit during the test. The sound insulation performance of the floor is presented in Table 1, below.

Table 1 – Airborne Sound Insulation Performance of the Separating Floor

D_w	Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
57	35	40	46	55	62	64	69

Background Noise Measurements

Background noise levels were measured by AEC at location representative of the nearest noise sensitive receptors during the daytime (between 1450 and 1710h) and night-time (between 2300 and 0010h) on Friday 14 October 2016.

The measurement location, identified as A on Figure 1, had full line of site of Wimslow Road. Full details of the noise surveys are presented in Appendix B with measured noise data presented in Tables B1 and B2.

All measurements were undertaken in general accordance with BS7445-1: 2003 '*Description and measurement of environmental noise. Guide to quantities and procedures*'.

The background noise level was consistently around 56dBL_{A90,T} during both the daytime and 55dBL_{A90,T} at night-time. The main source of background noise was road traffic on Wimslow Road.

The measured octave band centre frequency for the daytime and night-time background noise levels are presented in Table 1, below.

Table 2 – Daytime and Background Noise Levels in Octave Band Centre Frequency

Period	dBL _{A90,T}	Octave Band Centre Frequency (Hz)						
		63	125	250	500	1k	2k	4k
Daytime	56	63	57	54	52	52	48	41
Night-Time	55	60	55	54	52	51	47	37

Assessment

In relation to noise transfer into the apartments above, the planning condition only provides a noise level limit for the 63 and 125Hz octave band centre frequencies. Therefore, to control noise levels in the 250 to 4k frequency bands to a suitable level, NR25 has been used. This should result in noise being just perceptible in the apartments but would not be considered intrusive.

The allowable $L_{Aeq,T}$ noise level in the unit has been calculated in Table 3, below taking into account the sound insulation performance of the floor and the noise level limit to be achieved in the apartment.

Table 3 – Airborne Sound Insulation Performance of the Separating Floor

Description	Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Sound Insulation of the Floor	35	40	46	55	62	64	69
Noise Level Limit	47	41	35	29	25	22	20
Allowable Noise Level in Unit, $dBL_{Aeq,T}$	82	81	81	84	87	86	89

Based on the allowable noise level presented in Table 3, the assumed size of the frontage and the distance attenuation to the apartments of the opposite side of Wimslow Road, planning condition 8 would be achieved if the frontage was provided with glazing having a sound insulation performance of 31dBR_w.

This can be achieved with 4mm glass / thermal cavity / 4mm glass (which is considered standard double glazing)

It is recommended that any unit which plays amplified music should have lobbied doors and not be ventilated via openings on the Wilmslow Road elevation.

Therefore, in order to comply with planning condition 8, the allowable noise level limit presented in Table 3, should be written into any lease agreements.

Any tenants who propose to exceed the limit presented in Table 3 should provide mitigation measures to control noise transfer into the apartments above and noise breaking out of the unit. The mitigation measures would have to be provided in a report and issued to Manchester City Council.

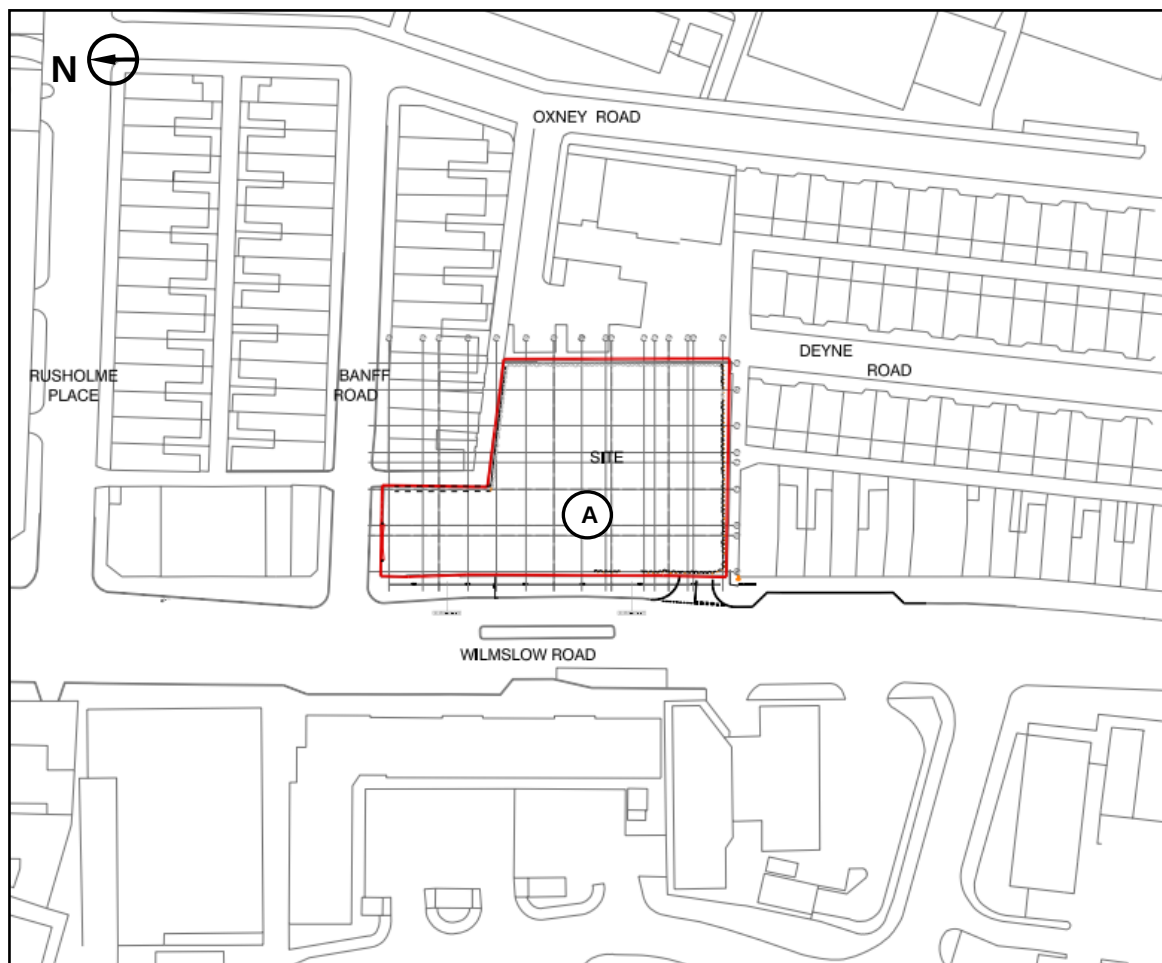
I trust the above is clear and of assistance at this stage, however, if you have any queries please give me a call.

Yours sincerely



Paul Knowles

FIGURE 1 – Proposed Site Layout Identifying Monitoring Location and Nearest Noise Sensitive Receptors



APPENDIX A – Acoustic Terminology in Brief

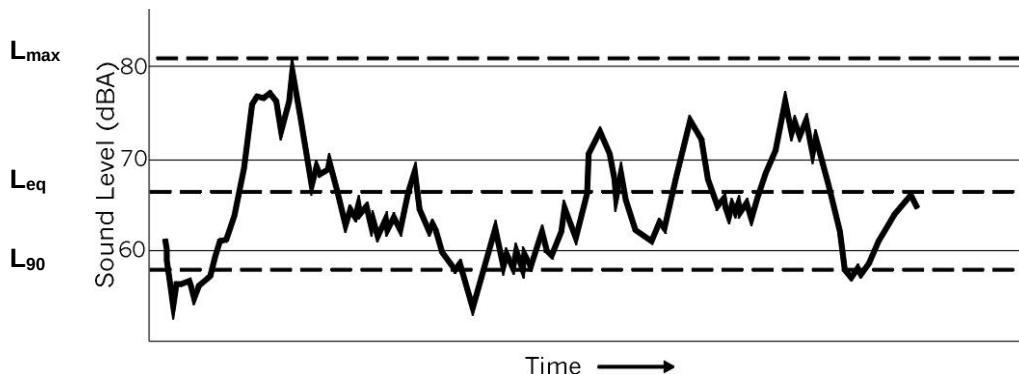
Sound is produced by mechanical vibration of a surface, which sets up rapid pressure fluctuations in the surrounding air. The rate at which the pressure fluctuations occur determines the pitch or *frequency* of the sound. The frequency is expressed in Hertz (*Hz*), that is, cycles per second. The human ear is sensitive to sounds from about 20 Hertz to 20,000 Hertz. Although sound can be of one discrete frequency - a 'pure tone' - most noise is made up of many different frequencies.

The human ear is more sensitive to some frequencies than others, and modern instruments can measure sound in the same subjective way. This is the basis of the A-weighted sound pressure level *dBA*, normally used to assess the effect of noise on people. The *dBA* weighting emphasises or reduces the importance of certain frequencies within the audible range.

Noise Units

In order to assess environmental noise, measurements are carried out by sampling over specific periods of time, such as fifteen minutes or one hour, the statistically determined results being used to quantify various aspects of the noise.

The figure below shows an example of sound level varying with time. Because of this time variation the same period of noise can be described by several different levels. The most common of these are described below.



Example of Sound Level Varying With Time

$L_{Aeq,T}$	The equivalent continuous (A-weighted) sound level may be considered as the "average" sound level over a given time, <i>T</i> . It is used for assessing noise from various sources including transportation, industrial and construction sources and can be considered as the "ambient" noise level.
L_{A90}	The (A-weighted) sound level exceeded for 90% of a measurement period. It is the value used to describe the "background" noise.
L_{Amax}	The maximum (A-weighted) sound level during a measurement period.
Free-field Level	This refers to the sound level measured outside, away from reflecting surfaces.
$L_{Ar,Tr}$	The specific noise level of a source plus any adjustment for the characteristic features of the noise.

APPENDIX B – Measurement Procedure

Dates & Times of Survey Day: Friday 14 October 2016, 1430 to 1730h.
Night: Friday/Thursday 14/15 October 2016, between 2300 and 0030h.

Personnel Present Danny Bradley (AEC).

Equipment Used Cirrus CR: 171B (AEC Kit 2).

Weather Conditions Day: Dry, 13°C, clear skies and calm.
Night: Dry, 8°C, clear skies and light breeze.

Measurement Procedure Ambient, background and maximum noise levels were measured at two locations, identified as Location A on Figure 1 and described below.

A – On the western site boundary 5m from the edge of the nearest carriageway of Wimslow Road.

All locations were selected to measure baseline noise levels, which were measured in terms of L_{Aeq} , L_{A10} , L_{A90} and L_{Amax} (fast response) typically over 5 to 15 minute periods.

All the measurements were taken at a height of 4m above ground and all were free field measurements.

The sound level analyser, which conforms to BS EN 61672-12003 '*Electro acoustics – sound level meters - Part 1 Specifications*' for Class 1 Type Z meters, was in calibration and check calibrated before and after the measurement periods using a Cirrus calibrator. There was no significant drift of calibration. Calibration certificates are available on request.

Measured Data A summary of the results are presented in Tables B1 and B2.

TABLE B1 – Measured Daytime Noise Levels

Location	Period, h	Noise Level, dB				Comments
		L_{Aeq}	L_{A10}	L_{A90}	$L_{Amax, F}$	
A	1450 - 1505	63.3	66.4	57.2	77.5	Background noise level due to road traffic on Wimslow Road.
	1534 - 1549	63.7	66.8	56.3	77.5	
	1613 - 1628	67.8	68.2	58.5	93.6	
	1652 - 1707	62.5	65.3	55.9	77.0	

TABLE B2 – Measured Night-Time Noise Levels

Location	Period, h	Noise Level, dB			Comments
		L_{Aeq}	L_{A90}	$L_{Amax, F}$	
A	2313 - 2323	63.8	58.0	79.1	Background noise level due to road traffic on Wimslow Road.
	2344 - 2354	63.8	55.2	75.9	
	0012 - 0022	68.1	55.4	88.9	