

50 Cricklewood Lane London

Post Works Commissioning Report Report 16895.PCR.01

Mrs Gamze Gul
50 Cricklewood Lane
London
NW2 1HG

Report 16895.PCR.01					
Revision History					
First Issue Date: 19/04/2021					
A			D		
B			E		
C			F		
Written by:		Checked by:		Approved by:	
Gonçalo Lemos MIEEnvSc MIOA Senior Acoustic Consultant		Aidan Tolkien MIOA Senior Acoustic Consultant		Kyriakos Papanagiotou MIOA Managing Director	
Disclaimer KP Acoustics Ltd. has used reasonable skill and care to complete this technical document, within the terms of its brief and contract with the resources devoted to it by agreement with the client. We disclaim any responsibility to the client and others in respect of any matters outside the stated scope. This report is confidential to the client and we accept no responsibility to third parties to whom this report, or any part thereof, is made known. KP Acoustics Ltd. accepts no responsibility for data provided by other bodies and no legal liability arising from the use by other persons of data or opinions contained in this report. KP Acoustics Ltd. 2020					

Contents

1.0	INTRODUCTION	1
2.0	DESIGN REQUIREMENTS.....	1
2.1	Local Authority Requirements – Planning Condition 5	1
3.0	CONDITION 5 COMPLIANCE.....	2
3.1	Site Description.....	2
3.2	Cafe ‘Source’ Noise	2
3.3	Prediction of Noise Breakout through Direct Transfer	2
4.0	CONCLUSION	4

List of Attachments

Appendix A	Glossary of Acoustics Terminology
Appendix B	Acoustic Calculations

1.0 INTRODUCTION

KP Acoustics Ltd has been appointed by Mrs Gamze Gul, 50 Cricklewood Lane, London, NW2 1HG to undertake post works commissioning at 50 Cricklewood Lane, London, NW2 1HG, to demonstrate compliance to Planning Conditions 5 of Planning Application 20/0857/RCU.

Further to discussions with the client, access to the residential property above had been requested however, this was not granted by the tenants. Therefore, it was not possible to measure the “in situ” sound insulation performance of the separating floor between the existing Cafe (A3) and the residential property above. Therefore, noise transfer predictions have been undertaken to demonstrate compliance to Planning Condition 5.

The following sections of this report clearly detail the Planning Condition, requirements, calculation methodologies and outcomes.

2.0 DESIGN REQUIREMENTS

2.1 Local Authority Requirements – Planning Condition 5

The planning condition that needs to be discharged with regards to external noise break-in states the following:

a) Within two months of the date of this decision, details of mitigation measures, including details of the construction of the ceiling between the cafe and the residential flat above, to show how the development will be constructed/adapted so as to provide sufficient air borne and structure borne sound insulation against internally/externally generated noise and vibration shall have been submitted for approval in writing by the Local Planning Authority.

This sound insulation shall ensure that the levels of noise generated from the use as measured within habitable rooms of the development shall be no higher than 35dB(A) from 7am to 11pm and 30dB(A) in bedrooms from 11pm to 7am.

The above condition is based on the requirements of BS8233:2014 ‘Guidance on sound insulation and noise reduction for buildings’, which outlines recommended internal noise levels for residential spaces. These levels are shown in Table 2.1 for reference.

Activity	Location	07:00 to 23:00	23:00 to 07:00
Resting	Living Rooms	35 dB(A)	-
Dining	Dining Room/area	40 dB(A)	-
Sleeping (daytime resting)	Bedrooms	35 dB(A)	30 dB(A)

Table 2.1 BS8233 recommended internal background noise levels

3.0 CONDITION 5 COMPLIANCE

3.1 Site Description

The site is bounded by Cricklewood Lane and to the north and West, existing residential and commercial properties to the South and South-east and national railway lines to the East.

3.2 Cafe 'Source' Noise

It is understood that amplified vocals/music are currently not allowed within the existing cafe (A3) and the operating hours are between 11:00am to 23:00pm.

To assess a realistic scenario of noise transfer from the Café (A3) to the external environment, typical source noise data will be used, as shown in Table 3.1 below.

Noise Source	Octave band centre frequency SRI, dB								Overall SPL @1m
	63	125	250	500	1k	2k	4k	8k	
Typical Cafe (A3) noise level	60	60	60	65	65	55	50	50	67

Table 3.1 Typical noise levels

3.3 Prediction of Noise Breakout through Direct Transfer

The calculated sound pressure level within the residential space at First Floor due to the Ground Floor Cafe operations, was calculated using typical noise levels as the maximum levels within the Cafe and also the calculated R_w rating of the existing separating floor construction, as shown in Figure 3.1 below. Full spectral calculations are shown in Appendix B.

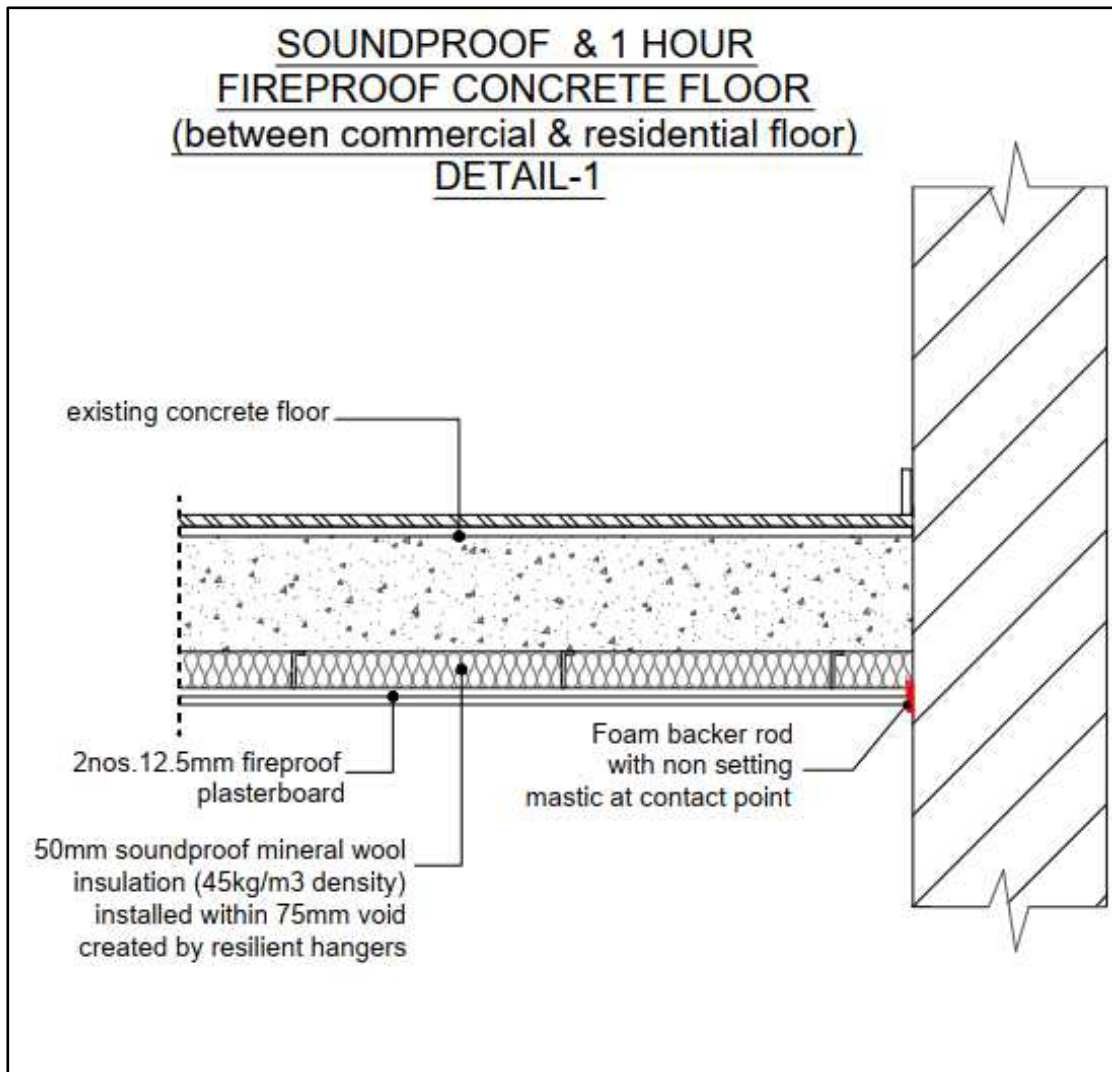


Figure 3.1 Separating floor construction

The Table 5.3 shows the predicted sound pressure level within the residential space above due to the Cafe (A3) operations.

Receiver	Internal Noise target for daytime (Condition 5)	Noise Level at Receiver (Within Room)
1 st Floor Flat, Bedroom	35 dB(A)	13 dB(A)

Table 3.2: Predicted noise level at receiver on First floor via direct transfer

As noted in Table 3.2 and Appendix B, noise transfer from the existing Cafe (A3) would comply with the requirements of Planning Condition 5 and the recommended by BS8233:2014, with no additional mitigation measures in place.

4.0 CONCLUSION

Planning Condition commissioning have been undertaken for 50 Cricklewood Lane, London, NW2 1HG.

Noise transfer predictions of typical Cafe (A3) activity to the first floor flat above has been calculated. The results of these predations demonstrate that sufficient sound insulation has been provided, and noise targets within the flat are fully compliant with the requirements of Planning Condition 5 and the recommended by BS8233:2014.

GENERAL ACOUSTIC TERMINOLOGY

Decibel scale - dB

In practice, when sound intensity or sound pressure is measured, a logarithmic scale is used in which the unit is the 'decibel', dB. This is derived from the human auditory system, where the dynamic range of human hearing is so large, in the order of 10^{13} units, that only a logarithmic scale is the sensible solution for displaying such a range.

Decibel scale, 'A' weighted - dB(A)

The human ear is less sensitive at frequency extremes, below 125Hz and above 16Khz. A sound level meter models the ears variable sensitivity to sound at different frequencies. This is achieved by building a filter into the Sound Level Meter with a similar frequency response to that of the ear, an A-weighted filter where the unit is dB(A).

L_{eq}

The sound from noise sources often fluctuates widely during a given period of time. An average value can be measured, the equivalent sound pressure level L_{eq} . The L_{eq} is the equivalent sound level which would deliver the same sound energy as the actual fluctuating sound measured in the same time period.

L_{10}

This is the level exceeded for no more than 10% of the time. This parameter is often used as a "not to exceed" criterion for noise.

L_{90}

This is the level exceeded for no more than 90% of the time. This parameter is often used as a descriptor of "background noise" for environmental impact studies.

L_{max}

This is the maximum sound pressure level that has been measured over a period.

Octave Bands

In order to completely determine the composition of a sound it is necessary to determine the sound level at each frequency individually. Usually, values are stated in octave bands. The audible frequency region is divided into 11 such octave bands whose centre frequencies are defined in accordance with international standards. These centre frequencies are: 16, 31.5, 63, 125, 250, 500, 1000, 2000, 4000, 8000 and 16000 Hertz.

Environmental noise terms are defined in BS7445, *Description and Measurement of Environmental Noise*.

APPLIED ACOUSTIC TERMINOLOGY

Addition of noise from several sources

Noise from different sound sources combines to produce a sound level higher than that from any individual source. Two equally intense sound sources operating together produce a sound level which is 3dB higher than a single source and 4 sources produce a 6dB higher sound level.

Attenuation by distance

Sound which propagates from a point source in free air attenuates by 6dB for each doubling of distance from the noise source. Sound energy from line sources (e.g. stream of cars) drops off by 3dB for each doubling of distance.

Subjective impression of noise

Hearing perception is highly individualised. Sensitivity to noise also depends on frequency content, time of occurrence, duration of sound and psychological factors such as emotion and expectations. The following table is a guide to explain increases or decreases in sound levels for many scenarios.

Change in sound level (dB)	Change in perceived loudness
1	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	About twice as loud

Transmission path(s)

The transmission path is the path the sound takes from the source to the receiver. Where multiple paths exist in parallel, the reduction in each path should be calculated and summed at the receiving point. Outdoor barriers can block transmission paths, for example traffic noise. The effectiveness of barriers is dependent on factors such as its distance from the noise source and the receiver, its height and construction.

Ground-borne vibration

In addition to airborne noise levels caused by transportation, construction, and industrial sources there is also the generation of ground-borne vibration to consider. This can lead to structure-borne noise, perceptible vibration, or in rare cases, building damage.

Sound insulation - Absorption within porous materials

Upon encountering a porous material, sound energy is absorbed. Porous materials which are intended to absorb sound are known as absorbents, and usually absorb 50 to 90% of the energy and are frequency dependent. Some are designed to absorb low frequencies, some for high frequencies and more exotic designs being able to absorb very wide ranges of frequencies. The energy is converted into both mechanical movement and heat within the material; both the stiffness and mass of panels affect the sound insulation performance.

APPENDIX B 50 Cricklewood Lane, London, NW2 1HG

DIRECT NOISE TRANSFER CALCULATIONS

Source: Ground Floor Cafe (A3) Receiver: First Floor Flat Bedroom	Frequency, Hz								dB(A)
	63	125	250	500	1k	2k	4k	8k	
Typical cafe (A3) noise level, dB(A)	60	60	60	65	65	55	50	50	67
Calculated R_w (assumed as the on-site composite SRI), dB	-30	-46	-50	-54	-58	-60	-65	-65	
Approximate area (S) of the separating floor (13m ²)	13	13	13	13	13	13	13	13	
Correction for area (S), dB	11	11	11	11	11	11	11	11	
Volume of receiving room (35m ³)	35	35	35	35	35	35	35	35	
Reverberation time of receiver space	0.50	0.50	0.50	0.50	0.50	0.50	0.50	0.50	
Correction for absorption in receiver space, dB	-11	-11	-11	-11	-11	-11	-11	-11	
Sound Pressure Level at Within Receiver Space	30	14	10	11	7	0	0	0	13