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Dear Phil

RED SEA CAFÉ, 113 PRINCESS PARKWAY, MANCHESTER ACOUSTIC CONSULTANCY SERVICES

Further to your recent enquiry regarding the above project we are pleased to confirm our proposals as detailed below.

1.0 Introduction

The Red Sea Café currently occupies the ground floor level of 113 Princess Parkway, Manchester which comprises a mid-terrace 3 storey building. The first and second floors are currently residential flats. It is proposed to convert the first floor to an additional seating area for the café and the second floor to office space.

It is understood that the first and second floors of the adjoining buildings are residential flats. Lighthouse Acoustics has been appointed to undertake an assessment of operational noise transfer from the proposed first floor additional seating area for the café through the separating walls to the adjoining residential properties.

2.0 Objectives

To establish the existing level of sound insulation provided by the separating walls between the proposed first floor additional seating area for the café and adjoining residential properties by means of a desktop assessment based on the known construction of the separating walls.

To undertake an assessment of operational noise transfer from the proposed first floor additional seating area for the café through the separating walls to the adjoining residential properties based on typical source noise levels.

To comment on the calculated operational noise levels within the adjoining residential properties and advise on additional treatment where required in order to minimise sound transfer.

3.0 Project Details

3.1 Operating Hours

It is understood that the operating hours of the proposed first floor additional seating area for the café are 11:00 to 23:00 hours Monday to Sunday.

3.2 $L_{Aeq,T}$ Operational Sound Levels

Typical café L_{Aeq} operational sound levels for similar size premises to that proposed are detailed in the table below along with the corresponding L_{eq} octave band sound pressure levels.

Source Description	Leq Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								dBA
	63	125	250	500	1k	2k	4k	8k	
Cafe with background music (no subwoofers)	69	69	69	74	73	69	63	56	77

The above includes background music (no subwoofers) and customer/staff conversations.

3.3 Existing Construction

The separating wall constructions between the proposed first floor additional seating area for the café and adjoining residential properties are understood to comprise solid masonry at least 2 leaves thick (206mm). The following typical sound reduction indices have been assumed for the separating wall constructions.

Element	Sound Reduction Index (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Separating Wall 206mm Brick	34	41	44	48	55	55	55	55

3.4 Receive Room Assumptions

The following typical dimensions and finishes/furnishings for the rooms of the existing adjoining residential flats have been assumed for the purpose of the assessment.

Room Type	Typical Room Dimensions	Typical Room Finishes / Furnishings
Lounge	4m x 3m x 2.4m	Hard floor finish, plastered walls, plasterboard ceiling, sofa, cupboards, table, chairs, curtains
Bedroom	3m x 2.5m x 2.4m	Carpeted floor finish, plastered walls, plasterboard ceiling, bed, curtains

4.0 Local Authority Requirements

Whilst the Planning & Noise Technical Guidance document (dated December 2015) produced by Manchester City Council states requirements for entertainment venues, they are applicable to venues where music is the dominant sound source of operational activities.

We are unaware of any requirements that Manchester City Council have for venues where conversation is the dominant sound source of operational activities with background music only.

For sound transfer, it is proposed that L_{Aeq} cafe operational sound levels are designed to achieve $L_{Aeq,15min} \leq 30dB$ daytime (07:00 to 23:00) and $L_{Aeq,15min} \leq 25dB$ night-time (23:00 to 07:00) within structurally connected noise sensitive receptors.

5.0 Assessment

5.1 Calculation

The reverberant L_{Aeq} sound pressure level within the rooms of the existing adjoining residential flats due to cafe operational sound levels has been calculated using the following formula:

$$L_{pr2} = L_{pr1} - SRI + 10 \log (S/A)$$

Where:

L_{pr2} is the reverberant sound pressure level in the receiving room, dB;

L_{pr1} is the reverberant sound pressure level in the source room, dB;

SRI is the sound reduction indices of the separating element, dB;

S is the surface area of the separating element, m²;

A is the total absorption area in the receiving room, m².

5.2 Results

The reverberant L_{Aeq} sound pressure level within the rooms of the existing adjoining residential flats due to cafe operational sound levels are presented in the table below.

Receptor	Calculated L_{Aeq} (dB)
Lounge of existing adjoining residential flats	28
Bedroom of existing adjoining residential flats	27

The assessment indicates that the reverberant L_{Aeq} sound pressure levels within the lounge and bedroom of the existing adjoining residential flats due to cafe operational sound levels are likely to be 28dB and 27dB respectively during the daytime period with no impact during the night-time period.

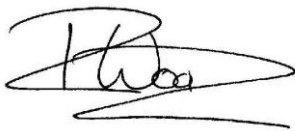
The assessment therefore indicates that the proposed requirement to achieve $L_{Aeq,15min} \leq 30dB$ daytime and $L_{Aeq,15min} \leq 25dB$ night-time within structurally connected noise sensitive receptors is likely to be achieved.

5.3 Music Level Limits

For the cafe in-house loudspeaker system, amplified music levels should be limited by means of an electronic noise limiter/compressor. The device should be capable of limiting individual octave bands over the frequency range 20Hz to 20kHz and controlling the number of speakers/zones required.

In order to set the device to achieve the proposed requirements a commissioning visit will be required in conjunction with an acoustic consultant upon completion of the fit-out works and prior to the operation of the bar. The devices should be lockable once set to prevent tampering. Upon completion, a commissioning report should be issued to the Local Authority specifying details of the devices installed and the limits that they have been set to.

Yours sincerely
for LIGHTHOUSE ACOUSTICS

A handwritten signature in black ink, appearing to read 'Robin Wood', with a stylized flourish underneath.

Robin Wood