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Dear Omar

54 OLDHAM STREET, MANCHESTER ACOUSTIC CONSULTANCY SERVICES

Further to our desktop assessment of external noise break-in to the proposed office space we are pleased to present our findings below.

1.0 Introduction

It is proposed to refurbish the existing retail premises situated at 54 Oldham Street, Manchester to form open plan office accommodation. Manchester City Council have requested that an assessment is undertaken to establish whether acceptable noise levels are achievable within the proposed open plan office accommodation. The assessment is presented in this correspondence.

2.0 Objectives

To undertake a desktop assessment based on typical environmental noise data for the area to demonstrate that acceptable internal noise levels are achievable within the proposed open plan office space with suitable glazing.

3.0 Noise Data

Based on noise survey data for other developments along Oldham Street, the daytime $L_{Aeq,16hour}$ noise level typically ranges between 64-66dB in free field conditions. The table below presents a typical road traffic noise spectrum shifted to achieve 66dB.

Daytime $L_{Aeq,16hour}$ Sound Pressure Level (dB) at Octave Band Centre Frequency (Hz)								dBA
63	125	250	500	1k	2k	4k	8k	
68	68	64	62	62	58	53	50	66

4.0 Local Authority Requirements

With regard to office developments, the Planning & Noise Technical Guidance document (dated December 2015) produced by Manchester City Council does not contain any specific requirements for internal noise levels.

As such, it is proposed that the requirements of BS 8233:2014, "Guidance on sound insulation and noise reduction for buildings" for office spaces are targeted in the first instance.

Based on BS 8233:2014 guidance, the following indoor ambient noise levels should be achieved within each type of space when unoccupied.

Room Type	$L_{Aeq,T}$ Indoor Ambient Noise Level (dB)
Open plan office	45-50

5.0 Environmental Sound Assessment

5.1 Assessment Method

In order to establish the acoustic specification for the façade required to achieve the internal daytime $L_{Aeq,8hour}$ requirements an assessment has been undertaken in accordance with the more rigorous calculation method detailed in BS 8233:2014, "Guidance on sound insulation and noise reduction for buildings".

This calculation method takes into account the external sound pressure level, the sound reduction indices of the façade elements, the area of the facade and the absorption within the room at octave band centre frequencies.

5.2 Proposed Development

The assessment has been based on the following drawing.

Author	Drawing No.	Revision	Date
Create it Studios (NW) Ltd	A1255(02)AP004	C	24/03/20

The proposals include the replacement of the existing windows in the front façade with new larger windows at all three floor levels.

5.3 Acoustic Requirements

It is understood that the proposed development is to comprise open plan office space.

Based on the requirements detailed in Section 4.0, the following internal sound limits have been assessed to.

Room Type	$L_{Aeq,T}$ Indoor Ambient Noise Level (dB)
Open plan office	45-50

5.4 Room Assumptions

The following typical dimensions and finishes have been assumed for the purpose of the assessment.

Room Type	Typical Room Dimensions	Typical Facade Dimensions	Typical Room Finishes
Open Plan Office	5m x 10m x 2.4m	5m x 2.4m	Office grade carpet, Class C acoustically absorptive treatment (to min. 90% equivalent floor area coverage)

5.5 Construction Proposals

It is understood that the external walls and roof of the office space comprise the following typical constructions.

Element	Typical Construction
External Walls	Brickwork with cavity, insulation and internal plasterboard lining
Roof	Tiles with insulation in void and plasterboard ceiling

The following typical Sound Reduction Indices have been assumed for the various elements.

Element	Sound Reduction Index (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
External Walls	32	40	44	45	51	56	56	56
Roof	20	28	34	40	45	49	49	49

5.6 Glazing Specification

In order to achieve the internal daytime requirements, the glazing system as a whole including glass, frame, seals, openings and infill panels shall provide the following minimum sound insulation performance when tested in accordance with BS EN ISO 10140-2: 2010.

Façade	Sound Reduction Index (dB) at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Front	21	25	22	33	40	43	44	48

The table below presents a typical configuration and R_w sound insulation value which may be expected to achieve the sound insulation performance specified above.

Facade	Room Type	Typical R_w Sound Insulation Value (dB)	Typical Configuration
Front	Open plan offices	35	10mm/16mm/4mm

The above would be considered to be a typical glazing configuration for an office development.

5.7 Ventilation Provision

It is understood that ventilation to internal areas will be provided via trickle ventilators to the Oldham Street façade with openable windows to the rear facades.

Trickle ventilators in the Oldham Street façade shall provide the following minimum element normalised level differences in the open position when tested in accordance with BS EN ISO 10140-2: 2010.

Façade	Element Normalised Level Difference, $D_{n,e}$ (dB) in Open Position at Octave Band Centre Frequency (Hz)							
	63	125	250	500	1k	2k	4k	8k
Front	27	33	39	39	43	50	50	50

Should more than one ventilator be required per room the above element normalised level differences shall be increased by the following values:

Number of Ventilators Required Per Room	Additional Performance Required Per Ventilator (dB)
1	0
2	+3
3	+5
4	+6

The table below presents typical configurations and $D_{n,e,w}$ sound insulation values which may be expected to achieve the sound insulation performance specified above.

Façade	Typical Open $D_{n,e,w}$ Sound Insulation Value (dB)	Typical Configuration
Front	40	Acoustic Window Ventilators (e.g. Greenwood EAR42W)

6.0 Conclusions

A desktop assessment has been undertaken based on typical environmental noise data for the area. The assessment indicates that acceptable internal noise levels are achievable within the proposed open plan office space with a typical glazing configuration.

Yours sincerely
for LIGHTHOUSE ACOUSTICS



Robin Wood