



Hann Tucker Associates

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PROJECT TECHNICAL MEMORANDUM

JOB TITLE : Redfern Building,
Allpress Espresso

REF : HT: 30612/PTM1

DATE : 16 March 2023

FROM : George Grenfell

ISSUED TO : Agnes Potter

RE: REDFERN BUILDING – ALLPRESS ESPRESSO

1.0 Introduction

A new coffee shop has been proposed on the ground floor level of the existing Redfern Building, 30 Hanover St, Manchester M4 4AH.

We understand the wider development has been granted planning permission subject to several conditions. Condition 4 relates to a scheme of insulation to control noise break-out as follows:

“Before the fit out of any A3 (restaurants/cafes), A4 (drinking establishments), D1 (Exhibition Space) or D2 (Assembly and Leisure) (Sui Generis) use within the ground and lower ground floor units (1, 2 and 3) hereby approved commences, details of how the unit 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. For the avoidance of doubt this approval is on the basis that only background music levels will be allowed in the units and that no live or amplified music will be played. The approved noise insulation scheme shall be completed before the unit is first occupied. Prior to occupation a post completion report to verify that all the recommended mitigation measures have been installed in the relevant unit shall be submitted and agreed in writing by the City Council as local planning authority and any non-compliance suitably mitigated in accordance with an agreed scheme prior to occupation.”

Hann Tucker Associates have therefore been commissioned to undertake an assessment of the site, addressing potential noise impact the proposed redevelopment may have on surrounding properties.

This letter presents our findings and mitigation guidance where required.

Sponsor Member of The Institute of Acoustics; Members of UKELA & IEMA, The Association of Noise Consultants,
A UKAS Accredited testing laboratory No.4083 for Sound Insulation and Air Tightness Testing; ISO 9001 Accredited
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2.0 Environmental Noise Survey (Historical Planning Application)

2.1 Overview

Fully attended noise measurements were undertaken on Monday 25 June 2018 from 14:00 hours until 16:30 hours to establish representative noise readings during typical office hours in support of the initial planning application for the Redfern Building refurbishment (see Hann Tucker Report 2018_0913 - 25653 - NIA1 (Rev02) for full details).

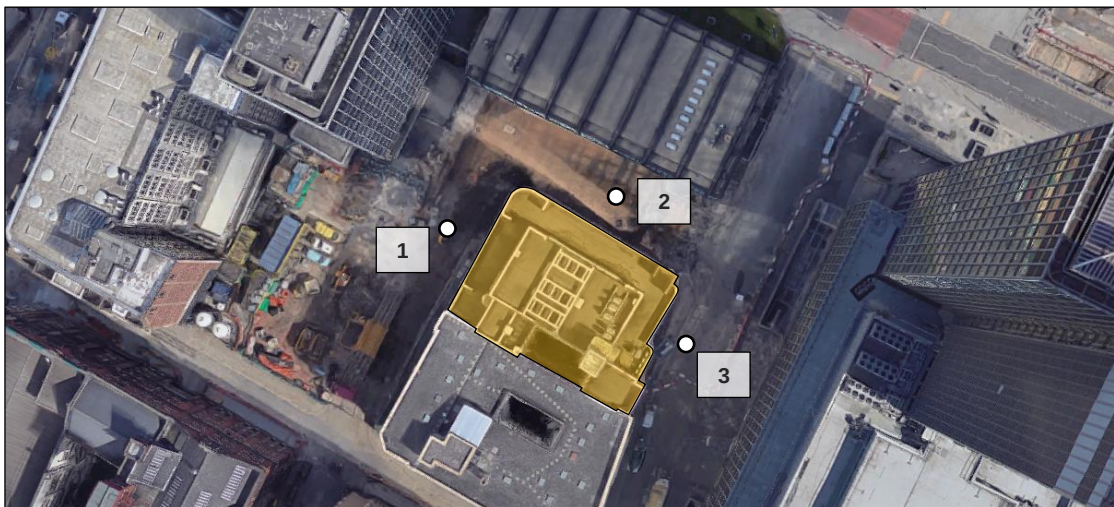
Measurements were taken of the A-weighted (dBA) L_{90} , L_{eq} and L_{Fmax} sound pressure levels over discrete periods. Measurements were undertaken in accordance with BS 7445-1:2003 Description and Measurement of Environmental Noise.

During the survey period the weather conditions were calm, and the sky was generally overcast. These conditions are considered suitable for obtaining representative measurement results.

2.2 Measurement Positions

Free-field noise level measurements were undertaken at three (3No.) positions around the development site, as described/illustrated below.

Position	Description
1	Free-field measurement at approximately 1.5 metres above ground level within Sadler's Yard (Redfern Street).
2	Free-field measurement at approximately 1.5 metres above ground level on Mayes Street.
3	Free-field measurement at approximately 1.5 metres above ground level on Dantzic Street.



Site Plan (© maps.google.co.uk)



2.3 Results

The full results of the survey are presented in the table below, all results are free-field levels.

Position	Period Start Time (hh:mm)	L _{Aeq,10min} (dB)	L _{A90,10min} (dB)
1	14:07	54	52
	14:57	56	52
	16:07	53	51
2	14:37	54	52
	15:08	54	52
	15:44	55	53
3	14:24	61	56
	15:20	58	55
	15:55	58	55

A summary of the results from the environmental noise survey, as used to inform subsequent assessments against current guidelines, is presented in the table below, all results are free-field levels.

Position	Typical L _{Aeq} (dB)	Lowest L _{A90,10min} (dB)
1	55	51
2	54	52
3	59	55

2.4 Discussion of Noise Climate

During the survey, the dominant noise sources were generally noted to be constant road traffic noise from the surrounding road network and pedestrians passing. At Position 3, there was some plant noise audible from the building opposite the proposed development.

3.0 Project Proposals

3.1 Drawings and Information

All acoustic analyses reported herein, have been based on the following drawings.

Title	Reference	Date
Existing Floor Plan	228-00-01	19.01.2023
Proposed Floor Plan Overview	228-00-100	
Proposed Floor Plan	228-00-101	



Title	Reference	Date
Proposed Finishes Plan	228-00-102	19.01.2023
Proposed Section AA/BB	228-00-300	
Proposed Section CC/DD	228-00-301	
Proposed Section EE/FF	228-00-302	
Proposed Section GG/HH	228-00-303	
Proposed Floor Section	228-00-304	

3.2 Proposed Development

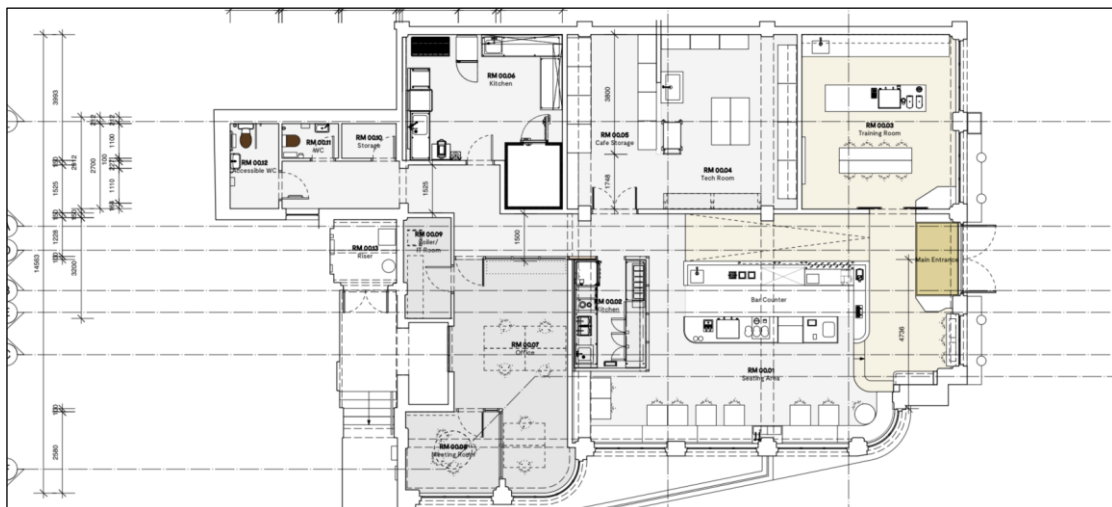
The proposed development is retail unit with access directly from Mayes Street. The retail unit is to be used as a coffee shop, which will include the following spaces:

- Café area (20-25 seating capacity)
- Coffee machine repair area
- Coffee training space
- Office.

As indicated in the site plan, the café area is the largest space and it lies adjacent to the largest façade area, it is also likely to be the most significant source of noise on a day-to-day basis. Music will be limited to background through two speakers located in the café space and opening hours are as follows:

- Mon-Fri: 7.30am- 5.00pm
- Sat-Sun: 9.00am- 5.00pm.

There is no kitchen extraction fan as cooking will be limited. See proposed floor plan overleaf:



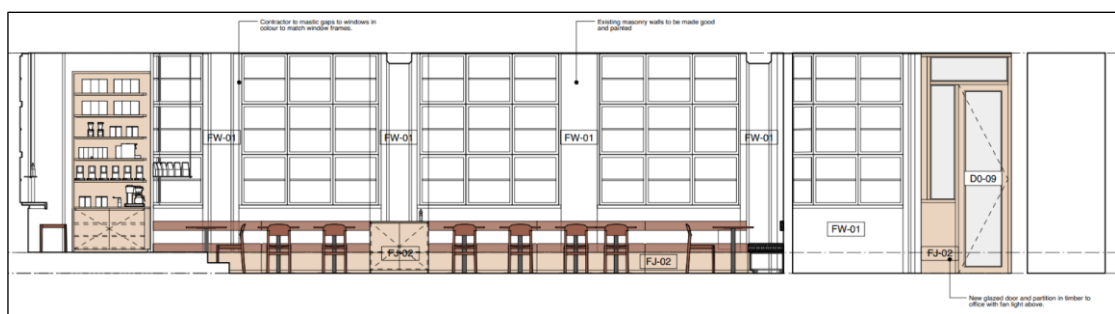
Proposed Site Plan (c/o EBBA)



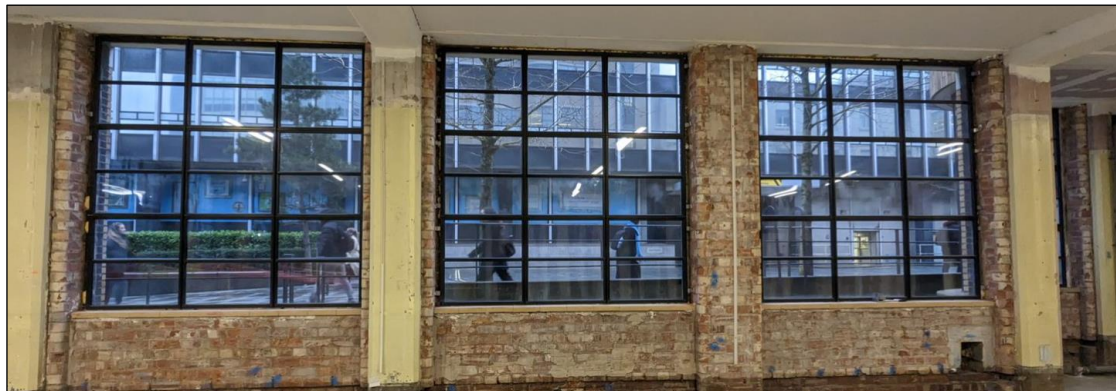
3.3 Critical Façade Elements

We understand the façade of the development to comprise solid masonry with punched in double glazed windows. Window frames appear to be painted metal and have been roughly sealed with foam insulation around the perimeter. The main entrance door is of a similar construction to the main glazing with the same foam insulation around the perimeter.

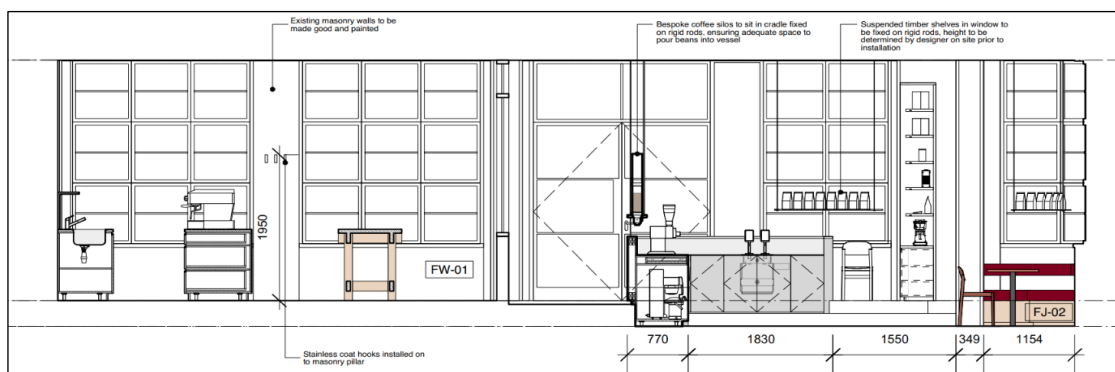
The following drawings and photographs highlight the retail unit's critical façade elements (existing masonry and glazing) all of which is to be retained:



Dantzig Street façade proposals c/o EBBA 2023



Existing Dantzig Street façade (to be retained)



Mayes Street façade proposals c/o EBBA 2023



Existing Mayes Street façade, Main Entrance (to be retained)

4.0 Sound Insulation Testing

4.1 Procedure

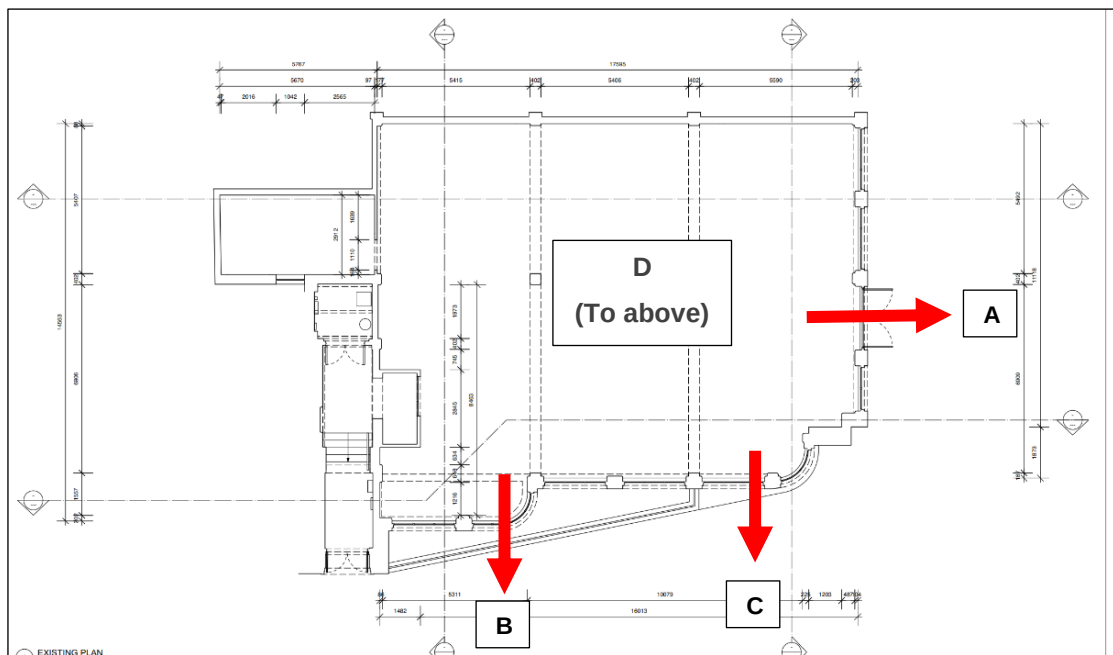
Hann Tucker Associates has attended site to undertake sound insulation testing across the separating floor between the retail unit and offices above, as well as external facades between the unit and Dantzic/Mayes Street.

The testing was undertaken on Wednesday 08 March 2023 by George Grenfell (MSc, BSc, AMIOA).

The sound internal insulation testing across the floor was undertaken in general accordance with BS EN ISO 140-4:1998 'Acoustics – Measurement of airborne sound insulation in buildings and of building elements.'

Sound insulation tests across the facade were carried out in general accordance with BS EN ISO 140-4:1998 'Acoustics – Measurement of sound insulation in buildings and of building elements – Part 5: Field measurements of airborne sound insulation of facade elements and facades.

In total 3no façade tests were carried out: 1no. test of the Mayes Street façade, which is understood to be the main entrance to the retail unit, and 2no. of the Dantzic Street façade. The location of the facades tested are indicated below:



Plan indicating Sound Insulation testing locations.

The tests were undertaken with the premises empty of all fixtures and fittings. From observations while at the site, the separating floor appears to comprise timber flooring with suspended plasterboard ceiling below, although the exact depth/construction is unknown.

4.2 Equipment

The following equipment was used for the testing.

Equipment	Model	Serial Number	Calibration Date	Certificate No
Precision Sound Analyser Meter	Brüel & Kjær Type 2250	2600445	05/12/2022	04944/2
Sound Level Calibrator	Brüel & Kjær Type 4231	2115545	05/12/2022	04944/1

4.3 Results

The results of the airborne sound insulation testing are presented in the table below:

Description	Element	Test Reference	Measured Level Difference (dB D) at Octave Band Centre Frequency (Hz)						
			63	125	250	500	1k	2k	4k
Retail Unit to Mayes Street (Including Main Entrance Door)	Façade	A	23	25	25	28	27	33	36



Description	Element	Test Reference	Measured Level Difference (dB D) at Octave Band Centre Frequency (Hz)						
			63	125	250	500	1k	2k	4k
Retail Unit to Dantzic Street ⁽¹⁾	Façade	B	24	29	29	30	32	33	36
Retail Unit to Dantzic Street	Façade	C	24	30	31	32	34	39	40
Retail Unit to Interview Room Above	Floor	D	34	41	45	52	60	65	68

Note 1: It was noted while on site that the primary weakness in the façade was a small openable windowpane in the existing glazing. As such 2no. tests were undertaken along the Dantzic street façade, next to and away from the openable window (See Image below):



5.0 Operational Noise Breakout Assessment (Façade)

5.1 Criteria

The nearest residential receptor is a hotel/apartment building over 150m away and fully screened by buildings.

As such, if reasonable noise breakout levels are achieved at the commercial office windows of the Redfern Building directly above, it is unlikely that there would be any adverse impact to the residential receptors which are over 150m away and fully screened by buildings.

We therefore propose to adopt the following noise limits (as used for the historical Redfern Building planning application) when measured at 1m from any nearby noise sensitive window. This limit is 5 dB below the minimum background noise levels detailed in Section 2.3. As such, the noise break-out should not exceed the following:

Period	Commercial Operational Noise Emission Limit
Operational Hours (07:30hrs-17:00hrs)	46 dB L _{Aeq,1h}

5.2 Assessment

The façade comprises solid masonry walls with punched in single glazed window systems.

The Measured Sound level differences for each facade are detailed in section 4.3, these were measured at 2.5m from the façade.

To inform our assessment of the unit operating as a cafe, we have drawn upon previously measured noise levels within a similar café in Manchester City Centre during a busy service with 'background' music. These typical noise levels are presented below.

Location	Typical Highest Reverberant Noise Level (dB Leq,5-min) at Octave Band Centre Frequency (Hz)							dBA
	63	125	250	500	1k	2k	4k	
Within café	59	65	64	62	59	56	53	64

The following table details the noise break-out assessment to the Redfern Building offices above the retail unit:

Dantzie Street Faade A							
Operational Hours (07:30 – 17:00) (Retail Unit to Offices Above)	Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Predicted Internal Noise Level (food and drink) (dB L _{eq})	59	65	64	62	59	56	53
Level difference provided by faade (dB D)	24	29	29	30	32	33	36
External noise level (dB Leq) SPL Corrected for background noise	35	36	35	32	27	23	17
A-weighted external noise level (dB L _{Aeq}) SPL	33						
Criteria (dB L _{Aeq})	46						
Compliance Note	✓						
Dantzie Street Faade B							
Operational Hours (07:30 – 17:00) (Retail Unit to Offices Above)	Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Predicted Internal Noise Level (food and drink) (dB L _{eq})	59	65	64	62	59	56	53
Level difference provided by faade (dB D)	24	30	31	32	34	39	40
External noise level (dB Leq) SPL Corrected for background noise	35	35	33	30	25	17	13
A-weighted external noise level (dB L _{Aeq}) SPL	31						
Criteria (dB L _{Aeq})	46						
Compliance Note	✓						



Mayes Street Façade (Main Entrance Door)							
Operational Hours (07:30 – 17:00) (Retail Unit to Offices Above)	Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Predicted Internal Noise Level (food and drink) (dB L_{eq})	59	65	64	62	59	56	53
Level difference provided by façade (dB D)	24	30	31	32	34	39	40
External noise level (dB L_{eq}) SPL Corrected for background noise	36	40	39	34	32	23	17
A-weighted external noise level (dB L_{Aeq}) <i>SPL</i>	36						
Criteria (dB L_{Aeq})	46						
Compliance Note	✓						

Based on the above assessment, it is unlikely that the proposed operation of a coffeeshop in the ground floor retail unit would cause the external noise criteria at the nearby receptor (offices above) to be exceeded. As such the existing façade and glazing are deemed suitable to be retained.

6.0 Commercial Unit Operational Noise Transfer via Floor

6.1 Criteria

In the absence of specific MCC criteria for noise transfer to non-habitable office spaces it is recommended that, in order to prevent loss of amenity to the offices/meeting rooms directly above the aim should be 10 dB below the standard BS 8233:2014 internal ambient noise level criteria.

Based on the above, we would propose that reverberant noise levels from the commercial units should be controlled so as to not exceed NR 30 (~35 dB L_{Aeq}) within the office/meeting room spaces directly above.

6.2 Assessment

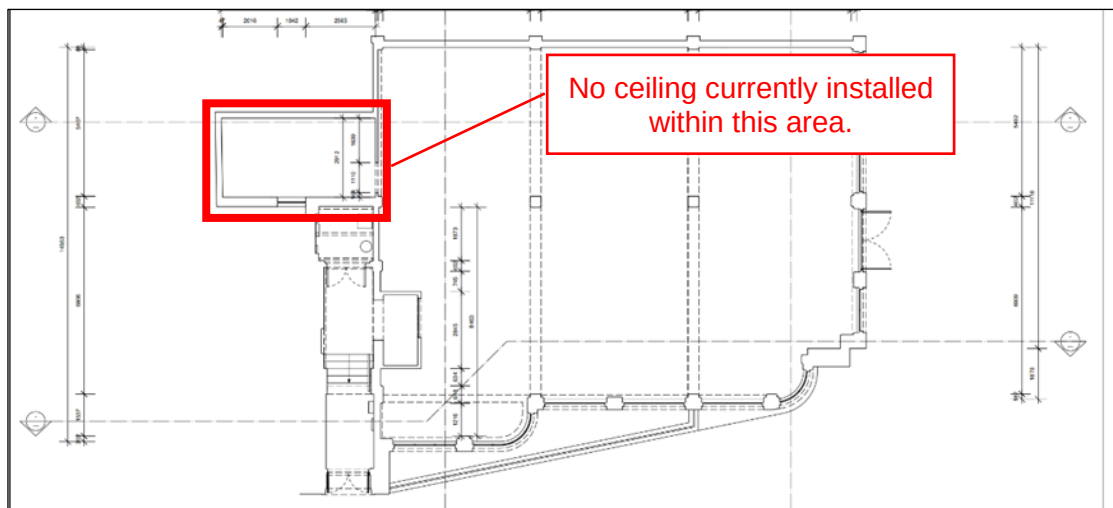
We have assessed noise transfer based on representative source noise levels presented In Section 5.2 and the measured level difference across the retained floor, the results of the assessment are presented in the table overleaf:



Separating Floor							
Proposed Coffee shop	Octave Band Centre Frequency (Hz)						
	63	125	250	500	1k	2k	4k
Source reverberant noise level (dB L _{eq})	59	65	64	62	59	56	53
Corrected level difference of existing floor (dB D)	34	41	45	52	60	65	68
Predicted noise level within offices (dB L _{eq})	25	24	19	10	0	0	0
Criteria (NR 30)	59	48	40	34	30	27	25
Compliance notes	✓	✓	✓	✓	✓	✓	✓

The assessment above indicates that the sound insulation performance of the main floor area is sufficient to control noise transfer through the floor from the proposed coffee shop to the existing offices above to well below the proposed criteria. As such, no additional mitigation measures should be required here, providing any gaps in the plasterboard ceiling are sealed and made good.

Notwithstanding the above, there is currently no ceiling installed within the small room at the edge of the unit (proposed to be WC's/storage), this is highlighted in the plan below and the subsequent image:



Plan indicating areas where ceiling is missing.



Photograph of the exposed timber flooring within the proposed WC/storage area.

It should be noted that the above location was not tested on-site, however it is unlikely to meet the sound insulation requirements with an exposed timber floor, and we recommend that a suspended plasterboard ceiling should be installed to match the finished construction of the rest of the unit.

George Grenfell

for HANN TUCKER ASSOCIATES