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PROJECT TECHNICAL MEMORANDUM

JOB TITLE	:	Sunlight House
REF	:	HT: 32835/PTM3/R2
DATE	:	11 March 2026
FROM	:	Nick Mitchell
ISSUED TO	:	Olivier Scherb

RE: Sunlight House
Acoustic Design Review

The purpose of this review is to determine whether enhancements to the existing floor construction are required to ensure that both the Ground Floor area and First Floor Offices can operate simultaneously without adverse noise impacts.

This Technical Memorandum considers the proposed maximum L_{eq} and L_{AFmax} noise levels associated with "Live Music," as set out in the Red Acoustics Noise Impact Assessment Report (Ref: R2404-REP01G-SJW, dated 4 February 2026). These levels have been assessed against measured internal background noise levels (i.e. the assessment criteria) presented in "32835-PTM-2-Rev0-GLG Background Noise Level Survey", summarised herein, and taking into account the existing floor construction as modelled by Hann Tucker using INSUL.

1.0 Assessment Approach

The design limits for music noise transfer are to be set with reference to Manchester City Council's established approach for entertainment noise, namely that entertainment noise should be controlled to at least 5 dB below the prevailing background noise level (L_{90}) in each octave band at the receiving location.

It should be noted that PINS has confirmed proposed operating hours of:

- 09:00–03:00 Monday to Friday
- 11:00–03:00 Saturday and Sunday.

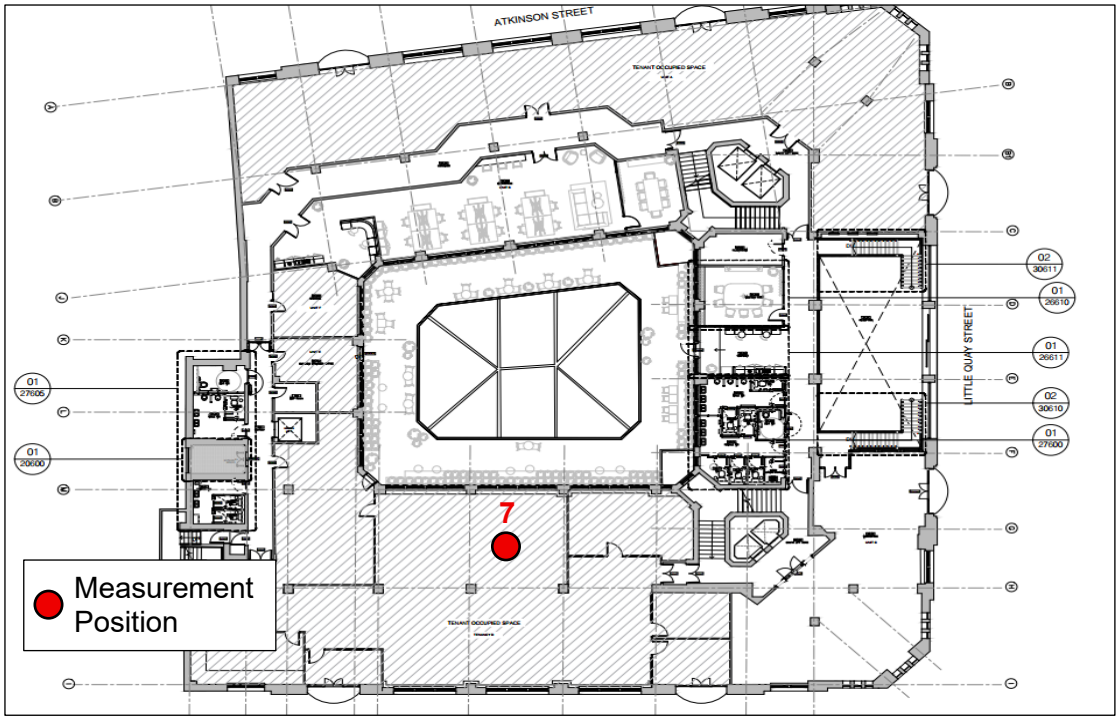
As such, the above periods will be assessed.

2.0 Noise Survey (ref 32835-PTM-2-Rev0-GLG)

2.1 Measurement Positions

A noise survey was carried out by Hann Tucker within the level 01 offices on 18 February 2026. A description of the measurement position is provided in the table below and included on the plan overleaf.

Position	Date Start	Time Start	Survey Period	Description
7	18/02	13:53	1 Hour	Level 1 CAT A Office – Road Traffic Noise from Quay Street and Building Services dominant



Level 01 Measurement Position

2.2 Measurement Results

The result of the above measurement is summarised in the table below, alongside the survey period. The presented values are representative of the 'typical' lowest background noise levels observed during the monitoring period, which have been determined through statistical analysis of the measured noise levels.

Position	Typical Lowest measured background Noise Level, $L_{90,T}$,(dB) at each Octave Band Frequency (Hz)								L_{A90}	NR
	63	125	250	500	1000	2000	4000	8000		
7	54	47	42	40	38	32	23	14	43	38

3.0 Noise Transfer Limits

3.1 Proposed Limits

Proposed noise limits for the offices are provided in the table below:

Position	Proposed Noise Transfer Limit, $L_{eq,5min}$, (dB) at each Octave Band Frequency (Hz)								NR
	63	125	250	500	1000	2000	4000	8000	
7	49	42	37	35	33	27	18	9	33

Maximum noise levels should be controlled so that they do not exceed 5 dB above the limits presented above in each octave band (i.e. the L_{90} in each octave band).

4.0 Assessment to L01 Offices on Quay Street

4.1 Overview

To determine whether enhancements to the floor/ceiling construction are required, the proposed operating levels have been assessed against the performance of the existing floor construction to calculate the likelihood of achieving the relevant criteria.

It is understood that the existing floor is a 130mm concrete slab with a typical Raise Access Floor (RAF) above with timber flooring and the following options are being considered:

1. Providing sound absorbent material within the RAF void
2. Providing a mass barrier ceiling comprising 3x15mm SoundBloc on acoustic hangers with mineral wool in the cavity.
3. A combination of item 1 and 2 above.

4.2 Red Acoustics Source Noise Levels

Figures 6.1 to 6.4 on pages 36 and 37 of the Red Acoustics Report (*R2404-REP01G-SJW*) present the noise levels from the existing Pins Social site in Liverpool in graphical form. These values have been interpreted visually to derive the levels. As a result, minor discrepancies between the raw data and the interpreted values may occur (typically within ±1 to 3 dB), which is generally considered acceptable for acoustic modelling where the original datasets are unavailable. The third-octave band data have subsequently been converted to 1/1 octave bands for the purposes of this assessment.

The L_{eq} noise levels are presented below for a Live Music scenario in 2No locations. These are:

- Measured close to the band location.
- Measure within the bowling area (ie set away from the band).

The two scenarios have been given as the exact noise level directly below the L01 space is unknown. It may be that the actual level falls somewhere between the two values, however, this cannot be known at this stage. As such, the two values are presented and assessed.

Description	Operating Noise Level, $L_{eq,T}$ at each Octave Band Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
Close to Live Music (97 dB L_{Aeq})	102	98	99	98	96	94	92	88
Bowling Activity with Music (85 dB L_{Aeq})	92	88	87	86	84	82	79	72

The L_{AFmax} noise levels are presented below for the same scenarios.

Description	Operating Noise Level, L_{max} at each Octave Band Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
Close to Live Music (113 dB L_{AFmax})	115	110	112	110	108	105	102	98
Bowling Activity with Music (104 dB L_{AFmax})	98	96	95	94	92	90	88	82

4.3 Red Acoustics Sound Insulation Test

Red Acoustics carried out a sound insulation test between the proposed PINs unit and the L01 offices on the Quay Street façade.

The sound insulation test results are not presented in the Red Acoustic Report, however, a noise transfer assessment has been presented, and the sound insulation can be inferred from this.

The inferred sound insulation performance is provided below. Please, note Hann Tucker cannot take responsibility for the validity of the results presented below. They have been inferred from the information presented by Red Acoustics only.

Position	Inferred Sound Insulation Performance, D, at each Octave Band Frequency (Hz)								D_w
	63	125	250	500	1000	2000	4000	8000	
GF to L01	30	50	56	62	61	61	64	63	62

4.4 Hann Tucker Acoustic Modelling of Existing Floor Construction

We have modelled the existing floor construction to compare against on-site measurements.

Element	Modelled Sound Insulation Performance, R, at each Octave Band Frequency (Hz)								R_w
	63	125	250	500	1000	2000	4000	8000	
Floor	36	41	44	58	62	68	78	-	59

From review of the above information, it is considered that the modelled results are reasonable when comparing against the on-site measurements and assessing the potential enhancements via modelling would yield sensible results.

4.5 Assessment of Existing Floor Construction

4.5.1 L_{Aeq} Assessment

Comparing the limits with typical activity noise levels for live music shows the following:

Desc.	Noise Level, $L_{eq,5min}$, at each Octave Band Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
Close to Live Music (97 dB L_{Aeq})	102	98	99	98	96	64	92	-
Receive Room RT	0.8	0.8	0.8	0.8	0.8	0.8	0.8	-
Existing Floor Construction, SRI	36	41	44	58	62	68	78	-
Receive Room, L_p	69	60	58	43	37	29	17	-
Criteria	49	42	37	35	33	27	18	-
Difference	**20**	**18**	**21**	**8**	**4**	**2**	**-1**	**-**
Bowling Activity with Music (85 dB L_{Aeq})	92	88	87	86	84	82	79	-
Receive Room RT	0.8	0.8	0.8	0.8	0.8	0.8	0.8	-
Existing Floor Construction, SRI	36	41	44	58	62	68	78	-
Receive Room, L_p	59	50	46	31	25	17	4	-
Criteria	49	42	37	35	33	27	18	-
Difference	**10**	**8**	**9**	**-5**	**-9**	**-11**	**-15**	**-**

4.5.2 L_{Amax} Assessment

Comparing the limits with typical activity noise levels for live music shows the following:

Desc.	Noise Level, L_{max}, at each Octave Band Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
Close to Live Music (113dB L_{AFmax})	115	110	112	110	108	105	102	-
Receive Room RT	0.8	0.8	0.8	0.8	0.8	0.8	0.8	-
Existing Floor Construction, SRI	36	41	44	58	62	68	78	
Receive Room, L_p	69	60	58	43	37	29	17	-
Criteria	54	47	42	40	38	32	23	-
Difference	**28**	**25**	**29**	**15**	**11**	**8**	**4**	**-**
Bowling Activity with Music (104 dB L_{AFmax})	98	96	95	94	92	90	88	-
Receive Room RT	0.8	0.8	0.8	0.8	0.8	0.8	0.8	-
Existing Floor Construction, SRI	36	41	44	58	62	68	78	-
Receive Room, L_p	65	58	54	39	33	25	13	-
Criteria	54	47	42	40	38	32	23	-

Desc.	Noise Level, L_{max}, at each Octave Band Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
Difference	11	11	12	-2	-6	-8	-11	-

4.5.3 Comments

As demonstrated in Sections 4.5.1 and 4.5.2, Live Music is expected to exceed both the L_{eq} and L_{max} criteria in almost all octave bands. Using the Bowling Activity with Music noise is expected the criteria will be exceeded in low and low-mid frequencies.

It is therefore recommended that enhancements to the existing floor/ceiling construction are implemented to control noise transfer to the above Offices.

4.6 Acoustic Modelling of Enhanced Floor Constructions

Acoustic Modelling of Option 1, 2 and 3, as detailed in Section 4.6, have been undertaken to demonstrate the level of uplift on the existing floor. The calculated values are set out below.

Mitigation Option	Modelled Sound Insulation Performance, R, at each Octave Band Frequency (Hz)								R_w
	63	125	250	500	1000	2000	4000	8000	
1	37	42	44	57	62	68	78	-	59
2	48	68	82	104	110	111	122	-	93
3	48	67	81	103	110	111	122	-	92

When comparing Option 1 against the modelled existing performance, there is a 1 dB increase at 125 Hz, and 1 dB decrease at 500 Hz. As such, it is likely that installing insulation below the RAF will not be an effective solution in controlling noise.

When comparing Option 3 against Option 2, there is a reduction in performance of 1 dB between 125 Hz and 500 Hz. Whilst in reality, it is unlikely that there would be a decrease in performance with additional materials, the modelling exercise demonstrates there is no meaningful increase in performance it likely when applying mineral wool within the raised access floor above in addition to the mass barrier ceiling.

Therefore, the following assessment considers Option 2 as the most appropriate mitigation measure for controlling noise transfer (i.e. mass barrier on acoustic hangers).

4.7 Assessment of Enhanced Floor Construction

4.7.1 L_{Aeq} Assessment

Comparing the limits with typical activity noise levels for live music shows the following:

Description	Noise Level, $L_{eq,5min}$, at each Octave Band Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
Live Music (97dB L_{Aeq})	102	98	99	98	96	64	92	-
Receive Room RT	0.8	0.8	0.8	0.8	0.8	0.8	0.8	-
Enhanced Floor Construction, SRI	48	68	82	104	110	111	122	-
Receive Room, L_p	57	33	20	-4	-12	-15	-28	-
Criteria	49	42	37	35	33	27	18	-
Difference	**8**	**-10**	**-18**	**-39**	**-45**	**-42**	**-46**	**-**
Bowling Activity with Music (85 dB L_{Aeq})	92	88	87	86	84	82	79	-
Receive Room RT	0.8	0.8	0.8	0.8	0.8	0.8	0.8	-
Enhanced Floor Construction, SRI	48	68	82	104	110	111	122	-
Receive Room, L_p	47	23	8	-16	-24	-27	-41	-
Criteria	49	42	37	35	33	27	18	-
Difference	**-2**	**-19**	**-29**	**-51**	**-57**	**-54**	**-59**	**-**

4.7.2 L_{Amax} Assessment

Comparing the limits with typical activity noise levels for live music shows the following:

Description	Noise Level, L_{max}, at each Octave Band Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
Live Music (113dB L_{AFmax})	115	110	112	110	108	105	102	-
Receive Room RT	0.8	0.8	0.8	0.8	0.8	0.8	0.8	-
Enhanced Floor Construction, SRI	48	68	82	104	110	111	122	-
Receive Room, L_p	69	45	33	9	1	-4	-18	-
Criteria	54	47	42	40	38	32	23	-
Difference	**15**	**-3**	**-10**	**-32**	**-38**	**-36**	**-41**	**-**
Bowling Activity with Music (104 dB L_{AFmax})	98	96	95	94	92	90	88	-
Receive Room RT	0.8	0.8	0.8	0.8	0.8	0.8	0.8	-
Enhanced Floor Construction, SRI	48	68	82	104	110	111	122	-
Receive Room, L_p	53	31	16	-8	-16	-19	-32	-
Criteria	54	47	42	40	38	32	23	-

Description	Noise Level, L_{max}, at each Octave Band Frequency (Hz)							
	63	125	250	500	1000	2000	4000	8000
Difference	-1	-16	-27	-48	-54	-51	-55	-

4.7.3 Comments

As demonstrated in Sections 4.7.1 and 4.7.2, the recommended mitigation as set out in Red Acoustics Report increases the likelihood that all 1/1 octave band frequencies are controlled to achieve a desirable operational level for the worst case live music noise levels with the exception of 63 Hz octave band.

In reality, the live music area is located away from the offices (ie it is located into the PINS unit rather than directly below the slab). As such, noise levels may not reach the worse case levels noted above. However, at this stage, that cannot be known for certain.

5.0 Conclusion

Hann Tucker has carried out an assessment of noise transfer between the proposed PINS unit to the L01 offices on the Quay Street Façade at Sunlight House. The activity assessed within PINS was Live Music.

Based on the results of the assessment, it is clear that enhancements to the separating floor would be required to control noise transfer and allow simultaneous use of the spaces without causing undue impact on the office receptor or undue restrictions on the operation of PINS.

Various options of enhancement have been investigated including:

1. Providing sound absorbent material within the RAF void
2. Providing a mass barrier ceiling comprising 3x15mm SoundBloc on acoustic hangers with mineral wool in the cavity.
3. A combination of item 1 and 2 above.

The results show that Option 1 is unlikely to result in a notable increase in performance above the baseline levels. Option 3 is unlikely to result in a notable increase in performance when compared to Option 2. As such, Option 2 was deemed to be the most appropriate and the assessment was carried out on that basis.

N.B. Please note, the assessment has used noise levels measured previously by Red Acoustics. As such, Hann Tucker cannot accept responsibility of the validity of these noise levels, however, they appear reasonable based on the descriptions of the measurements.

Yours sincerely

Nick Mitchell
for HANN TUCKER ASSOCIATES