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PROJECT TECHNICAL MEMORANDUM

JOB TITLE : Sunlight House, Manchester

REF : HT: 30453/PTM1/R0

DATE : 20 March 2024

FROM : Jake Howarth

ISSUED TO : Kinrise, c/o FACTION

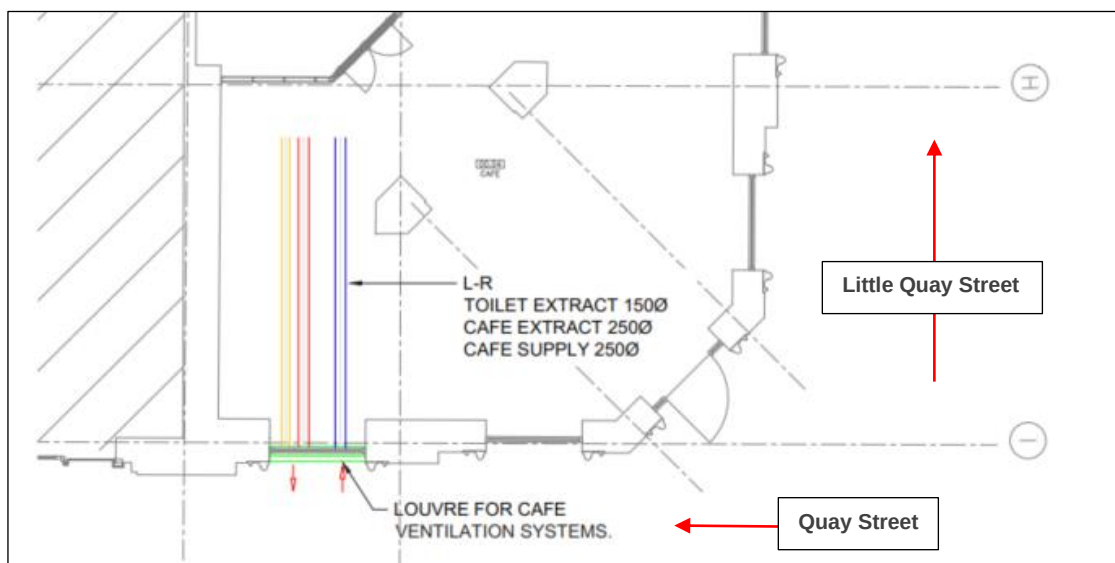
RE: PHASE 1 CAFÉ LOUVRE ASSESSMENT

Further to our recent involvement in the Phase 1 works at Sunlight House, it is understood that a separate planning application for a proposed louvre on Quay Street, that will serve the café unit at ground level, has been submitted.

The application requires a noise assessment for validation purposes. As such, this Technical Note provides an assessment of the louvre based on the original Hann Tucker noise survey carried out on site.

1.0 Proposed Louvre

The proposed louvre will be located on Quay Street on the ground floor of Sunlight House and is intended for use by the café and WC ventilation systems. The location of the louvre is shown on the plan below for clarity.



Plan Showing Location of Proposed Louvre

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A UKAS Accredited testing laboratory No.4083 for Sound Insulation Testing; ISO 9001 Accredited
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2.0 Acoustic Standards and Guidelines

Manchester City Council requirements for noise are outlined in Manchester City Council's Planning & Noise Technical Guidance document (October 2022).

Section 3.7.1.5 of the above document states that "Externally mounted ancillary plant, equipment and servicing shall be selected and/or acoustically treated in accordance with a scheme designed so as to achieve a rating level of 5dB (L_{Aeq}) below the typical background (L_{A90}) level at the nearest noise sensitive location".

3.0 Environmental Noise Survey

3.1 Procedure

Unattended noise monitoring was undertaken on site over an 8-day period to establish full daytime and night-time noise levels over a typical weekday and weekend period. The monitoring was carried out between 14:00 on Tuesday 10th January 2023 and 16:00 on Wednesday 18th September 2022, with equipment set up to record broadband and spectral (octave band) sound pressure levels over discrete 2 and 15-minute periods.

Additional time synchronised attended measurements were also taken to determine the ambient noise level of the nearest residential receptor between 14:30 and 15:00 on Tuesday 10th January 2022.

Further attended measurements were carried out between 15:30 and 19:00 on 29 September 2023.

The survey was performed by Alex Jang BEng(Hons), George Grenfell BSc(Hons) AMIOA and Jake Howarth BEng(Hons) MIOA. All measurements were collated in general accordance with BS 7445-1:2003 Description and Measurement of Environmental Noise..

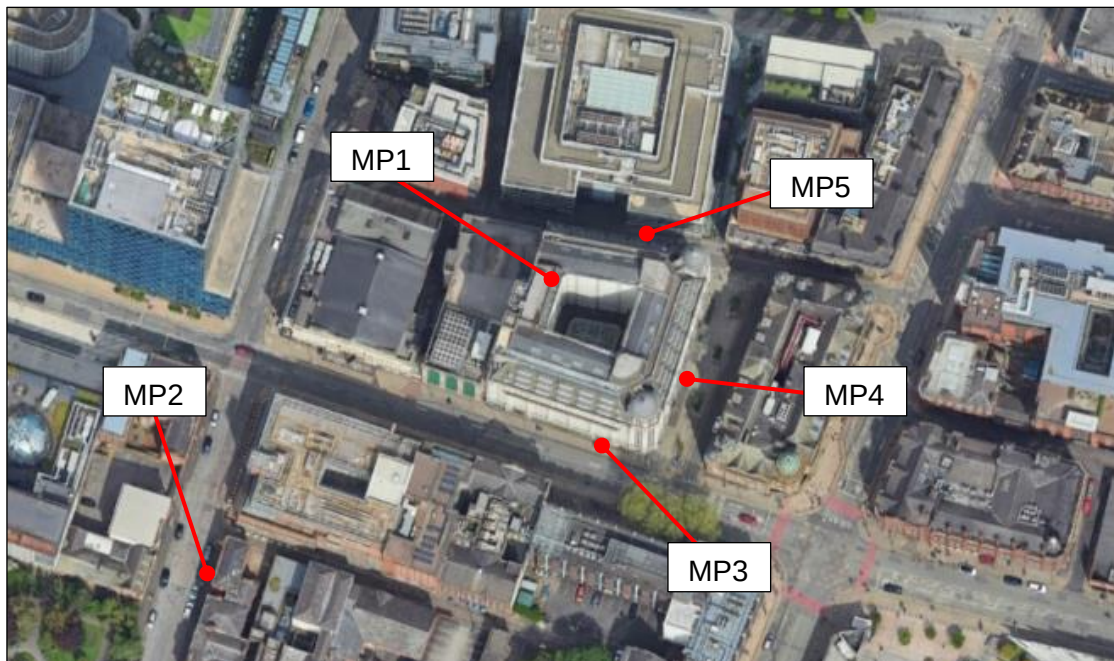
3.2 Measurement Positions

The measurement positions were as described and illustrated below.

Position	Type	Description
1	Unattended	To the west side of the site, on the roof approximately 50m above ground level, approximately 1.5m away from the façade, overlooking the car park and Atkinson Street. This is considered to be a free field position.
2	Attended	At the nearest residential receptor, approximately 75m to the southwest of the site. Attached to a pole, approximately 2m above ground level, approximately 2m



Position	Type	Description
		away from the façade, facing the adjacent road. This is considered to be a free field position.
3	Attended	Attended measurement position long Quay Street approximately 1.5m above ground level, approximately 1m away from the façade, facing the adjacent road. This is considered to be a façade position.
4	Attended	Attended measurement position long Little Quay Street approximately 1.5m above ground level, approximately 1m away from the façade, facing the adjacent road. This is considered to be a façade position.
5	Attended	Attended measurement position long Atkinson Street approximately 1.5m above ground level, approximately 1m away from the façade, facing the adjacent road. This is considered to be a façade position.



Plan Showing Measurement Positions (Map Data ©2023 Google)

3.3 Weather Conditions

For the unattended survey between 14:00 on Tuesday 10th January 2023 and 16:00 on Wednesday 18th September 2022, local weather reports indicated some notable periods of prolonged and/or heavy rainfall. However, these periods have been discounted from assessment. Due to the length of the survey, there were enough periods of time that were deemed suitable for obtaining representative noise readings.

Temperatures ranged from -3°C (night) to 12°C (day) and wind speeds generally less than 5m/s. During our time on site, skies were cloudy, wind conditions were calm and from a southerly direction and road surfaces were generally dry.



During the attended measurements on 29 September 2023 the weather conditions were dry with no rain occurring. Wind speeds were generally low, however, gusts were noted with measurements carried out around these events.

3.4 Instrumentation

The instrumentation used during the survey is presented in the table below:

Position	Description	Manufacturer	Type	Serial Number	Calibration
MP1	Sound Level Meter	Larson Davis	824	3157	10/06/2022
MP2	Sound Level Meter	Larson Davis	LxT	5111	10/06/2022
MP3-MP5	Sound Level Meter	Larson Davis	LxT	5103	30/05/2023
All	Type 1 Calibrator	Larson Davis	CAL200	3083	27/03/2023

Each sound level meter, including the extension cable, was calibrated prior to and on completion of the surveys. No significant changes were found to have occurred (no more than 0.3 dB).

Each sound level meter was located in an environmental case with the microphone connected to the sound level meter via an extension cable. The microphone was fitted with a windshield.

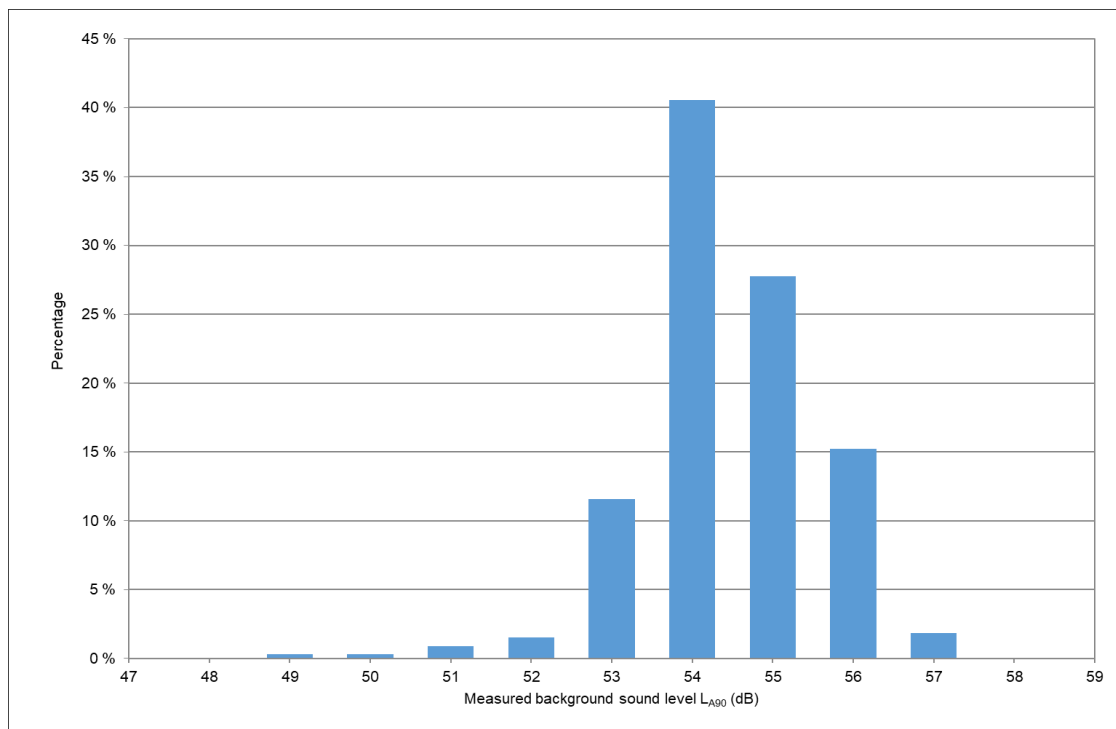
3.5 Results

3.5.1 Unattended Results

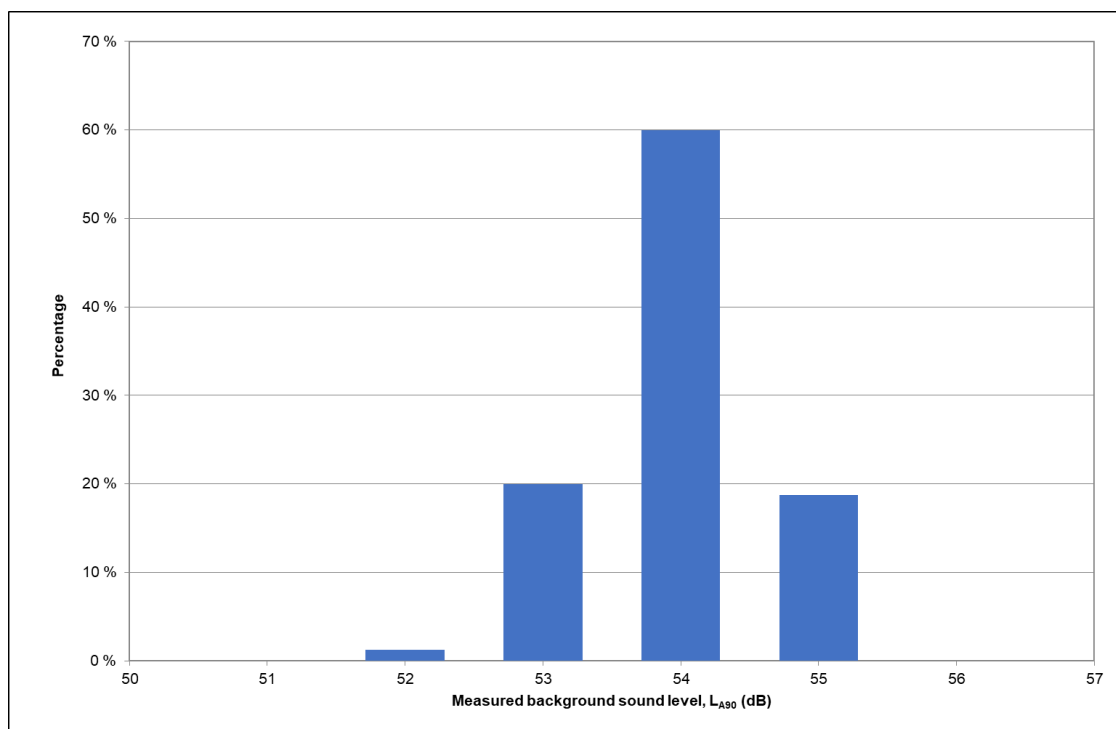
The results have been plotted on Time History Graphs 30453/TH1 enclosed, presenting the 15-minute A-weighted (dBA) L_{90} and L_{eq} façade noise levels at each measurement position throughout the duration of the survey.

BS 4142 states that “the background sound level must be reliable and suitably represent the particular circumstances and periods of interest. For this purpose, the objective is not simply to ascertain a lowest measured background sound level, but rather to quantify what is typical during particular time periods.”

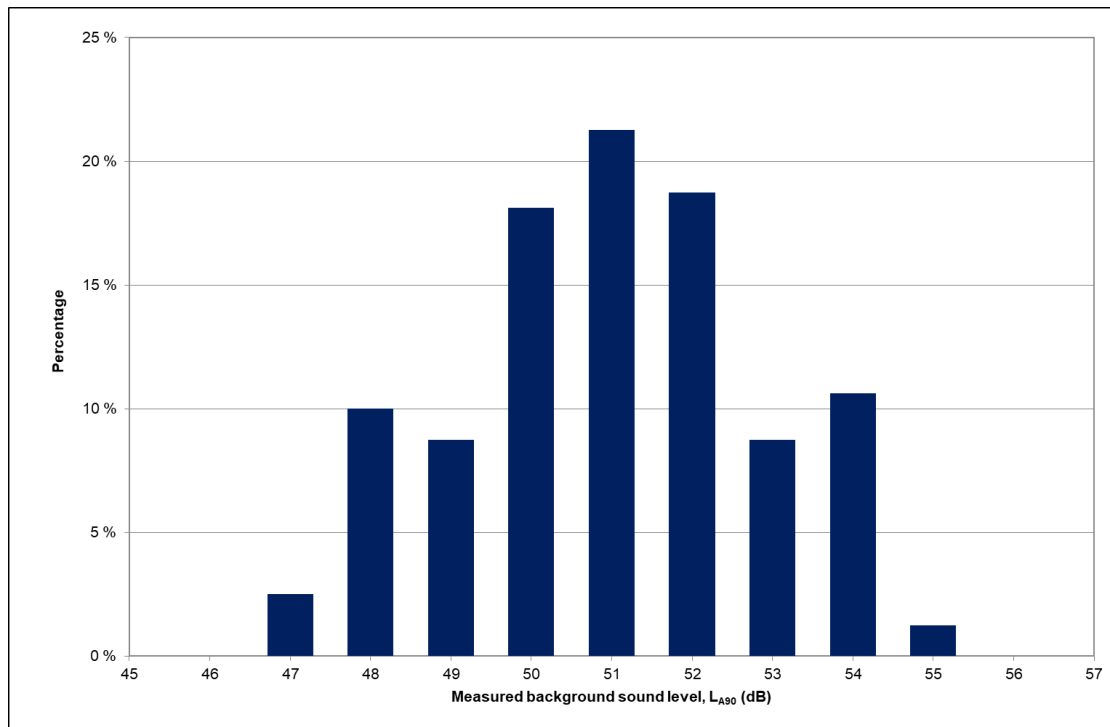
Taking this into account, the following histograms show the occurrence of each sound level (L_{90}) as a percentage for the day and night-time periods in Position 1.



Statistical Analysis of Daytime Background Façade Noise Levels (07:00-19:00)



Statistical Analysis of Evening Background Façade Noise Levels (19:00-23:00)



Night-time Background Façade Noise Levels (23:00-07:00)

Based on the above, the typical $L_{A90(15\text{ min})}$ measurements recorded during the survey have been corrected to free-field levels and are presented in the table below:

Position	Typical Measured $L_{A90(15\text{ min})}$ Background Noise Level (dB re 2×10^{-5} Pa)		
	Daytime (07:00 – 19:00) Hours	Evening (19:00 – 23:00) Hours	Night-Time (23:00 – 07:00) Hours
1	54	54	50

The background noise levels were also calculated in accordance with Appendix A of Manchester City Council's Planning & Noise Technical Guidance. The typical background noise levels calculated based on that method are in line with the typical background noise levels we have selected above.

3.5.2 Attended Results

Time synchronised measurements between the meter set up on site and the meter set up at the nearest residential receptor were taken and are shown in the table below:



Position	Start Time	Time Period	Sound Pressure Level (dB)		
			$L_{Aeq,T}$	$L_{A90,T}$	$L_{Amax,T}$
MP2	14:30	15 minutes	57	53	68
MP2	14:45	15 minutes	59	54	76
MP3	13:45	10 minutes	67	61	80
	14:20	10 minutes	70	59	88
MP4	13:20	10 minutes	63	58	80
	14:00	10 minutes	63	57	89
MP5	13:35	10 minutes	62	60	75
	14:10	10 minutes	62	60	73

3.6 Discussion of Noise Climate

Due to the nature of the survey, i.e., unattended, it is not possible to accurately describe the dominant noise sources, or specific noise events throughout the entire survey period. However, at the beginning and end of the survey period, the noise climate was noted to be dominated by road traffic noise, primarily from Quay Street and the main road of Deansgate.

On the day of collection of equipment, it was noted that there was noise coming from existing plant from other developments.

4.0 Fixed Plant Noise Emissions

On the basis of the aforementioned acoustic standards and guidance we propose that the following plant noise emission criteria be achieved at 1 metre from the nearest noise sensitive window, in free field conditions, with all plant associated with the proposed development operating simultaneously.

Period	Cumulative Plant Rating Level $L_{Ar,Tr}$ (dB)
Daytime (07:00-19:00)	49
Evening (19:00-23:00)	49
Night-time (23:00-07:00)	45

Noise shall be assessed in accordance with BS 4142:2014 with corrections applied for any plant emitting noise of a tonal or irregular quality.



We have also calculated the plant noise emission criteria using the method stated in Manchester City Council's Planning & Noise Technical Guidance document. The levels are in line with the criteria stated above.

The above limits shall be subject to the final approval of MCC.

5.0 Plant Noise Assessment

At this stage the plant has not been selected so a direct assessment of the proposals is not possible. However, the size and location of the louvre is known as are the locations of the nearby noise sensitive receptors and the MCC requirements for plant noise egress. For clarity, the noise sensitive locations are considered to be:

- Offices along Quay Street, 22m from the louvre
- The Opera House, 58m from the louvre.

Based on the above, limiting sound pressure levels at 1m from the louvre have been established to comply with the limits set out in Section 4.0. These are presented below:

Period	Limiting Sound Pressure Level at 1m from Louvre L_{Aeq} (dB)
Daytime (07:00-19:00)	72
Evening (19:00-23:00)	72
Night-time (23:00-07:00)	68

The above limits should be readily achieved by standard mechanical systems and it is likely that noise from the louvre would be lower than the above limits through suitable plant selection. It should also be noted that the impact on the street itself should also be minimal if the limits are achieved as the existing ambient noise levels measured along Quay Street (see MP3 in Section 3.5.2) are close to the same level as the proposed limits.

As such, the above limits should therefore be used to inform the final plant selections.

Yours sincerely

Jake Howarth

for HANN TUCKER ASSOCIATES