

Project name	Great Ancoats Street, Manchester		
Design note title	Post-Completion Acoustic Validation Note		
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1. INTRODUCTION

1.1 Overview

Hydrock have been appointed to provide acoustic engineering services to support the discharge of the pre-occupation element of Planning Condition 3 associated with the application for the Prior notification of change of use from offices (Class B1) for change of use to apartments (use class C3) comprising 43 no. studios at Outram House, Manchester (ref: 119364/P3OPA/2018).

The Conditions associated with the application are set out below:

Condition 3

Before the development commences a scheme for acoustically insulating the residential accommodation and any associated plant against any other actual or potential sources of noise on or near the site including any approved ground floor uses shall be submitted to and approved in writing by the City Council as local planning authority. The approved noise insulation scheme shall be completed before any of the dwelling units are occupied.

Prior to occupation a post completion report to verify that all of the recommended mitigation measures have been installed in the residential accommodation 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.

Reason - To secure a reduction in noise in order to protect future residents from noise nuisance, pursuant to policies SP1, H1 and DM1 of the Core Strategy.

The Condition is split into a pre-commencement element and a pre-occupation element. The pre-commencement element was addressed by Hoare Lea's Acoustic Planning Report (ref REP-1010249-LR-20180302- Acoustic Planning Report-Rev01-F). This technical note addresses the pre-occupation element of Planning Condition 3, which calls for post-completion verification to demonstrate that the recommended mitigation has been effective.

1.2 Context

The report sets out a scheme for acoustically insulating the residential accommodation so as to achieve the guideline noise levels set out in British Standard BS8233.

This technical note sets out the results of the post-completion survey at the site, and assess the noise levels for validation purposes.

2. F11METHODOLOGY

2.1 Survey Methodology

Details for the survey methodology are set out below and are based on our previous experience in carrying out acoustic surveys to validate schemes of sound insulation prior to occupation.

- Ambient daytime and night time noise level measurements within 10% of apartments (No. 4 apartments), covering a full weekday 16-hour daytime and 8-hour night time period, with MVHR units switched off; and,
- Ambient measurement inside apartments with MVHR units turned on at typical capacity, for approximately 20-minutes during the quiet daytime (10:00-15:00), to establish the specific level of the HVAC noise within each room.

2.2 Internal Noise Levels

The scheme for acoustically insulating the scheme, as set out in PDA's Acoustic Report, is based on British Standard BS8233: 2014 'Guidance on Sound Insulation and Noise Reduction for Buildings'.

- 35dB $L_{Aeq,16hour}$ within living Rooms and bedrooms (daytime 23.00 – 07.00)
- 30dB $L_{Aeq,8hour}$ within bedrooms (night-time 23.00 – 07.00)
- 45dB $L_{Amax,F}$ within bedrooms (night-time 23.00 – 07.00)

Individual maximum noise events should not normally exceed 45dB $L_{Amax,F}$ more than 15 times)

3. NOISE SURVEY

3.1 Survey Procedure

Noise surveys have been carried out at the development site by Hydrock between the 1st and 2nd September 2021, and a total of four monitoring locations (MLs) were carried out.

In accordance with British Standard 7445, the A-weighted, time-equivalent, one-third octave band sound pressure levels have been measured, together with the L_{min} , L_{Fmax} , L_{10} and L_{90} indices. The measurements were carried out with Class 1 integrating sound level meters with the microphone placed vertically on a tripod.

The sound level meters were calibrated both before and on completion of the noise surveys. No drift in calibration occurred greater than 0.5dB.

The monitoring locations are presented in Table 1.

Table 1: Noise Monitoring Locations

Monitoring No.	Location	Time Period	
		Start	End
ML1	Located in room 107 adjacent to Great Ancoats Street, and on the first floor.	01/09/2021 1630hrs	02/09/2021 1630hrs
ML2	Located in room 103 adjacent to Aston Canal Tow Path away from Great Ancoats Street, and on the first floor.	01/09/2021 1615hrs	02/09/2021 1630hrs
ML3	Located in room 112 adjacent to Millbank Street, and on the first floor.	01/09/2021 1600hrs	02/09/2021 1645hrs
ML4	Located in room G10 adjacent to Great Ancoats Street/Millbank Street, and on the ground floor.	01/09/2021 1545hrs	02/09/2021 1645hrs

3.2 Existing Noise Levels

The measured ambient noise levels during the daytime and night-time, together with the maximum measured noise level during the night-time, within each room, are summarised in Table 2.

Appendix A presents the graphical results measured onsite over the 24-hour period.

The assessment of the maximum noise levels is based on the typical and representative maximum noise level as specified by both The World Health Organisation's 'Guidelines for Community Noise, 1999' (WHO), and 'Professional Practice Guidance: Planning and Noise, 2017 (ProPG), which state that an

allowance can be made for up to the 10th highest maximum measured noise level. Therefore, a typical and representative maximum noise level has been set out in Table 2 below.

Table 2: Measured Ambient Noise Levels within Rooms

Monitoring Location	Daytime Noise Levels, dB LAeq,16hour	Night-time Noise Levels dB LAeq,8hour	Night-time Max Noise Levels dB LAmax,F
ML1 i.e., room 107	30	19	40
ML2 i.e., room 103	25	19	31
ML3 i.e., room 112	34	21	32
ML4 i.e., room G10	32	20	38

The measured noise level with the MVHR turned on in each of the rooms is set out in Table 3.

Table 3: Specific Noise Levels of HVAC within Rooms

Room 107, Leq,20-mins dB(A)	Room 103, Leq,20-mins dB(A)	Room 112, Leq,20-mins dB(A)	Room G10, Leq,20-mins dB(A)
27	25	28	27

4. NOISE ASSESSMENT

4.1 Assessment of Internal Noise Levels

The recommended internal noise level within living rooms and bedrooms during the daytime is 35dB $L_{Aeq,16hour}$, and the recommended level within bedrooms during the night-time is 30dB $L_{Aeq,8hour}$ and 45dB $L_{AMax,F}$, as set out by BS8233.

Measurements were carried out across the ground and first floors of the building, three locations within a studio apartment and the final location within a living room in a standard apartment. All assessment criteria therefore apply for the studio apartments (G10, R107, R112) however, only the daytime criteria apply for the living room (R103).

The results in Table 2 show that the daytime $L_{Aeq,16hour}$, night-time $L_{Aeq,8hour}$ and $L_{AMax,F}$ noise levels are below the respective guideline levels in each of the apartments.

The results of the assessment have shown the daytime and night-time noise levels within noise sensitive rooms satisfy national guidance. Therefore, the installed scheme of insulation is sufficient in mitigating internal noise ingress, discharging Condition 3.

4.1.1 *Internal Noise from Building Services*

The measured noise levels in Table 3 indicate that noise from the building services, in each apartment, are below the BS8233 night-time guideline level, indicating a low noise impact.

5. CONCLUSION

Hydrock has carried out a post-completion noise survey at Great Ancoats Street to validate the scheme of insulation and to show the noise levels achieve their criteria, thereby discharging the associated planning conditions relating to noise.

Measurements were taken within 10% of the constructed apartments, and the internal noise levels have been assessed against the criteria set out in BS8233.

The results of the assessment have shown the daytime and night-time noise levels within noise sensitive rooms satisfy national guidance. Therefore, the installed scheme of insulation is sufficient in mitigating internal noise ingress, discharging Condition 3.

The measured noise levels in Table 3 indicate that noise from the building services, in each apartment, are below the BS8233 night-time guideline level, indicating a low noise impact.

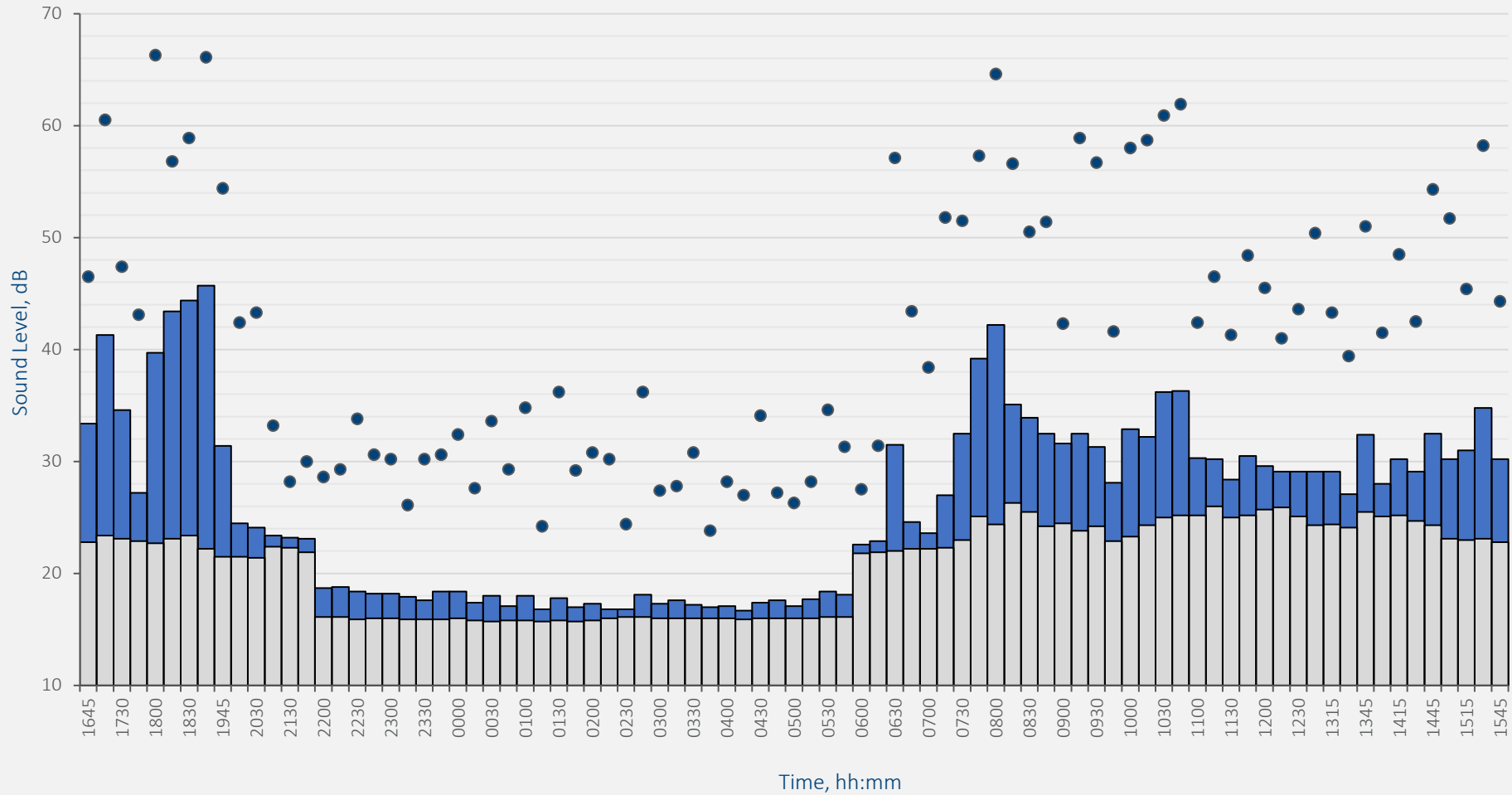
Appendix A Measured Noise Levels

Room 112

Wednesday 1st to Thursday 2nd September 2021



- LAeq, 15mins
- LA90, 15mins
- LAFmax

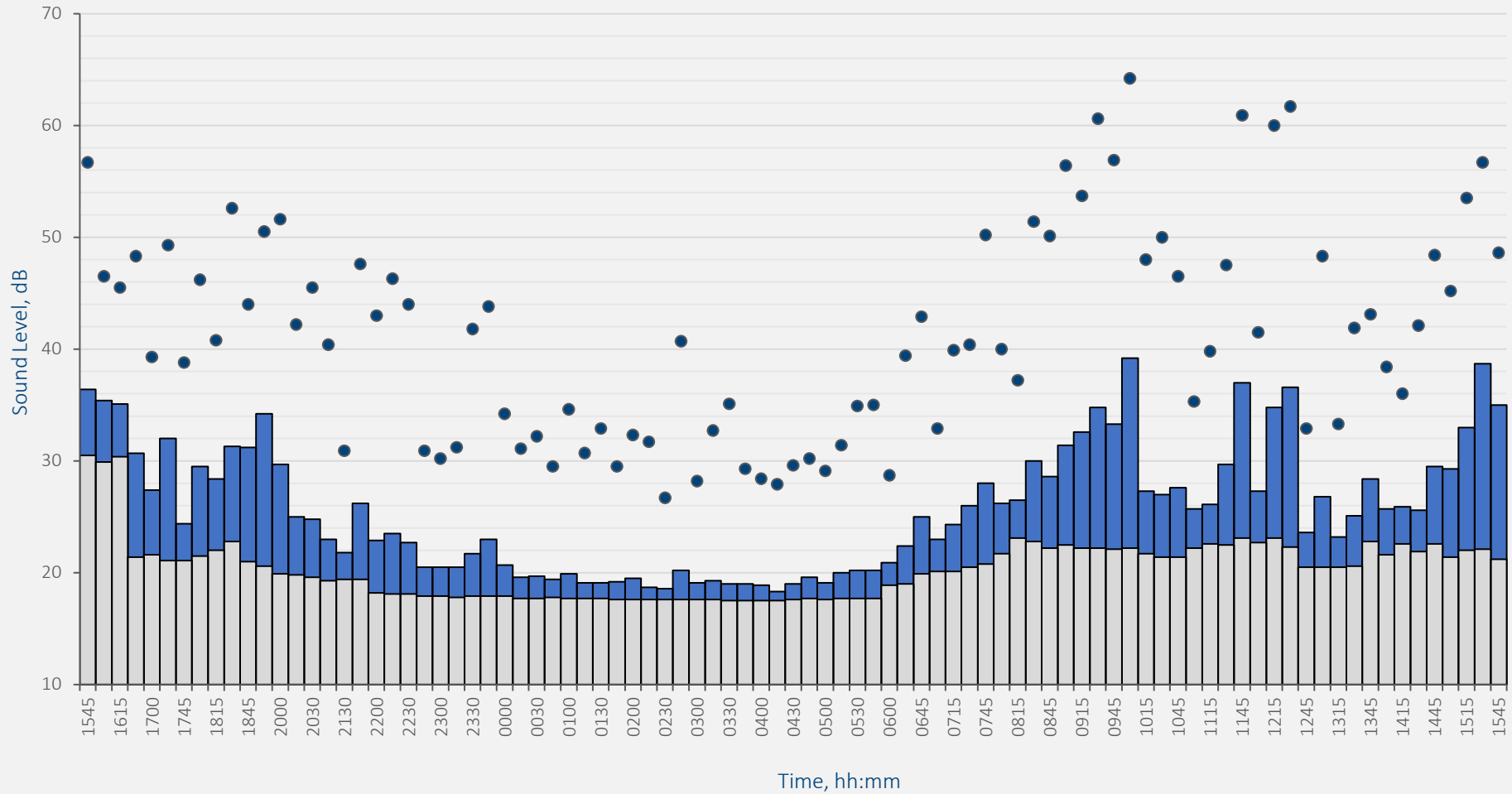


Room G10

Wednesday 1st to Thursday 2nd September 2021



- LAeq, 15mins
- LA90, 15mins
- LAFmax

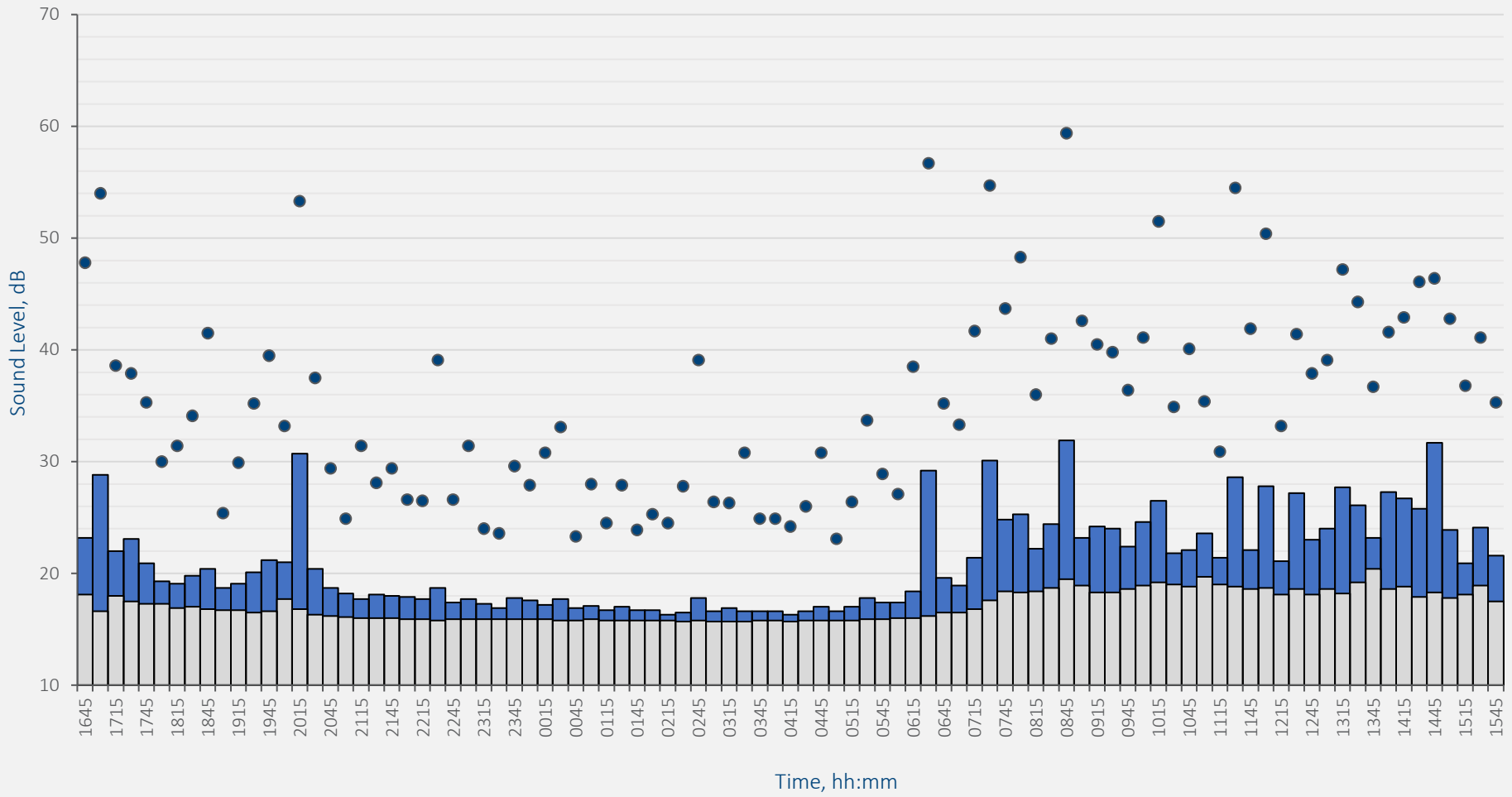


Room 103

Wednesday 1st to Thursday 2nd September 2021



- LAeq, 15mins
- LA90, 15mins
- LAFmax



Room 107

Wednesday 1st to Thursday 2nd September 2021



- LAeq, 15mins
- LA90, 15mins
- LAFmax

