



UNITE, KINCARDINE
COURT, MANCHESTER

Glazing
Commissioning
Report

Reference: 9226.RP04.INL.1

Prepared: 5 January 2023

Revision Number: 1

Bowmer & Kirkland

1st Floor Altitude Building
Atlas Business Park
Manchester
M22 5PR

Glazing Commissioning Report



UNITE, KINCARDINE COURT, MANCHESTER

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Prepared: 5 January 2023

Revision	Comment	Date	Prepared By	Approved By
0	First issue of report	15 September 2022	James Melville	Helen Sheldon
1	Updated to comply with Manchester City Council's October 2022 guidance	5 January 2023	James Melville	Helen Sheldon

Terms of contract:

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The recommendations within this report relate to acoustics performance only and will need to be integrated within the overall design by the lead designer to incorporate all other design disciplines such as fire, structural integrity, setting out, etc. Similarly, any sketches appended to this report illustrate acoustic principles only and again will need to be developed into full working drawings by the lead designer to incorporate all other design disciplines.

In line with our Environmental Policy, up to two hard copies of the report will be provided upon request. Additional copies of the report, or further hard copies of revised reports, would be subject to an administrative cost of £20.00 (+VAT) per copy.



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1.0 INTRODUCTION

An assessment has been undertaken to determine the suitability of internal noise levels in residential bedrooms and studios at UNITE, Kincardine Court, Manchester

RBA Acoustics have been commissioned by Bowmer & Kirkland to undertake unattended internal noise level measurements in bedrooms and studios across the development in order to discharge Planning Condition 13 as well as obtain the 3rd credit under Hea05 of BREEAM.

This report details the results of the noise surveying and compares to the relevant criteria in order to determine if the local authority and BREEAM criteria have been met.

2.0 CRITERIA

2.1 Local Authority Criteria

Manchester City Council's requirements with regards to noise ingress into residential developments from anonymous noise sources (e.g. road and railway noise) are outlined within Section 3.7.1.1 of Manchester City Council's Noise and Planning Guidance document dated October 2022, which states the following criteria:

<i>Bedrooms (night-time - 23:00 – 07:00)</i>	<i>30dB L_{Aeq}</i>
<i>Individual noise events should not normally exceed</i>	<i>45dB $L_{Amax,f}$ by more than 15 times</i>

Section 5.3.1.9 states that the following methodology should be employed to determine compliance with the above:

"It is expected that at least 10% of rooms in buildings are subject to noise validation testing. Measurements should be taken in accordance with the Association of Noise Consultants' Measurement of Sound Levels in Buildings."

2.2 BREEAM Criteria

One BREEAM credit (the 3rd credit) is available under Hea05 for the achievement of suitable Internal Ambient Noise Levels (IANLs). BREEAM states:

Achieve Indoor Ambient Noise Levels that comply with the design ranges given in Section 7 of BS8233:2014.

Therefore, the target criteria required to obtain the credit are as follows:

Bedrooms/Studios:	Night-time (23:00-07:00)	30 dB L_{Aeq}
	Daytime (07:00-23:00)	35 dB L_{Aeq}

3.0 UNNATTENDED INTERNAL NOISE LEVEL MEASUREMENTS

3.1 General

Monitoring of internal ambient noise levels in various locations was undertaken over the following period:

- 20:30 hours 7th September to 07:00 hours on 8th September 2022 – Bedroom D5.1
- 21:00 hours 7th September to 07:00 hours on 8th September – Studio D6

Measurements were made of the L_{A90} , L_{Amax} and L_{Aeq} noise levels over sample periods of 15 minutes.

Due to ongoing site activities, it was not possible to undertake measurements of the entire daytime period. Measurements undertaken of the daytime hours that have been affected by onsite works have been excluded (i.e. 07:00 hours to 20:30 hours) from the assessment and hence not shown in the time histories.

We view the results of the available evening hours unaffected by on-site activity measured during our surveys to be representative of the entire daytime period, and as such, sufficient for this assessment, albeit the night-time period is deemed to be the most critical for sleep and rest in a bedroom/studio.

3.2 Measurement Locations

Measurements were undertaken at the following locations:

Table 1 – Measurement Positions

Measurement Position	Floor Location	Room Number
1	1st Floor	Bedroom D5.1
2	1st Floor	Studio D6

These rooms were selected to be representative of the worst-case locations given the installed glazing type and façade zone, as well as considering the proximity of the rooms to the primary external noise sources affecting the development, i.e. the roads. The locations of the measurements are shown in the attached Figure 1 in Appendix C.

3.3 Instrumentation

Details of the instrumentation used to undertake the survey are provided in Appendix B attached. The sound level meters were calibrated both prior to and on completion of the surveying with no significant calibration drifts observed.

3.4 Results

The internal noise levels measured are shown as time-histories on the attached Graphs 1-4 in Appendix C.

Table 2 – Results

Room / Position	Measurement Period	Measured Internal L_{Aeq}	No. of L_{Max} Occurrences > 45dB
Bedroom D5.1	Daytime * (07:00 – 23:00 hours)	25	N/A
	Night-time (23:00 – 07:00 hours)	20	2
Studio D6	Daytime * (07:00 – 23:00 hours)	20	N/A
	Night-time (23:00 – 07:00 hours)	17	1

* Daytime taken as represented by the available hours of measurements possible, due to site works.

The resultant internal noise levels are substantially below the required criteria, and it is therefore summarised that the installed glazing, ventilation, external wall and other relevant elements of the façade are suitable, comply with the criteria and are fit-for-purpose and should therefore be considered acceptable and that the planning condition requirement is met. Additionally, it is therefore assumed that the 3rd credit for suitable internal ambient noise levels under BREEAM Hea05 is achieved.

4.0 ATTENDED INTERNAL NOISE LEVEL MEASUREMENTS

4.1 General

Attended Monitoring of internal ambient noise levels in various locations across the development. Short Term measurements were taken in line with the guidance given in the Association of Noise Consultants' Measurement of Sound Levels in Buildings.

4.2 Instrumentation

Details of the instrumentation used to undertake the survey are provided in Appendix B attached. The sound level meters were calibrated both prior to and on completion of the surveying with no significant calibration drifts observed.

4.1 Results

The results of the attended measurements are presented in Table 3 below. The noise in the bedrooms was considered steady continuous sound and all measurements were taken for 30 seconds. All measurements were undertaken during the daytime on Tuesday 7th September.

Table 3 – Results

Room / Position	Measured Internal L_{Aeq}
D31 Studio	24
D26 Studio	28
D16.1 Bedroom	28
D12.1 Bedroom	23

D5.2 Bedroom	30
D13 Studio	27
D14 Studio	28
D16.1 Bedroom	27
D16.2 Bedroom	29
D9.1 Bedroom	25
D5.1 Bedroom	25
D9.2 Bedroom	27

The above measurements represent 10% of bedrooms as required by the local authority's guidance.

5.0 CONCLUSION

Measurements of the internal ambient noise levels into the student bedrooms of UNITE, Kincardine Court, Manchester have been undertaken.

The results of the measurements have been used in order to assess the suitability of internal ambient noise levels with regards to compliance with the requirements of the local authority and BREEAM Hea05.

All measured levels are considerably within the criteria and should therefore be deemed acceptable.

Appendix A – Acoustic Terminology

dB	Decibel – Used as a measurement of sound pressure level. It is the logarithmic ratio of the noise being assessed to a standard reference level.
dB(A)	The human ear is more susceptible to mid-frequency noise than the high and low frequencies. To take account of this when measuring noise, the 'A' weighting scale is used so that the measured noise corresponds roughly to the overall level of noise that is discerned by the average human. It is also possible to calculate the 'A' weighted noise level by applying certain corrections to an un-weighted spectrum. The measured or calculated 'A' weighted noise level is known as the dB(A) level. Because of being a logarithmic scale noise levels in dB(A) do not have a linear relationship to each other. For similar noises, a change in noise level of 10dB(A) represents a doubling or halving of subjective loudness. A change of 3dB(A) is just perceptible.
L_{eq}	L_{eq} is defined as a notional steady sound level which, over a stated period of time, would contain the same amount of acoustical energy as the actual, fluctuating sound measured over that period (1 hour).
L_{Aeq}	The level of notional steady sound which, over a stated period of time, would have the same A-weighted acoustic energy as the A-weighted fluctuating noise measured over that period.
L_{An} (e.g. L_{A10} , L_{A90})	If a non-steady noise is to be described it is necessary to know both its level and the degree of fluctuation. The L_n indices are used for this purpose, and the term refers to the level exceeded for n% of the time, hence L_{10} is the level exceeded for 10% of the time and as such can be regarded as the 'average maximum level'. Similarly, L_{90} is the average minimum level and is often used to describe the background noise.
$L_{max,T}$	The instantaneous maximum sound pressure level which occurred during the measurement period, T. It is commonly used to measure the effect of very short duration bursts of noise, such as for example sudden bangs, shouts, car horns, emergency sirens etc. which audibly stand out from the general level of, say, traffic noise, but because of their very short duration, maybe only a very small fraction of a second, may not have any effect on the L_{eq} value.

Appendix B – Instrumentation

The following equipment was used for the measurements.

Manufacturer	Model Type	Serial No.	Calibration	
			Certificate No.	Valid Until
Norsonic Type 1 Sound Level Meter	Nor140	1405945	U38055	2 June 2023
Norsonic Pre Amplifier	1209	15314		
Norsonic ½" Microphone	1225	208218	38054	2 June 2023
Norsonic Sound Calibrator	1251	34057	U38053	2 June 2023
Norsonic Type 1 Sound Level Meter	Nor140	1406007	U41328	22 June 2024
Norsonic Pre Amplifier	1209	20043		
Norsonic ½" Microphone	1225	208146	41327	22 June 2024
Norsonic Sound Calibrator	1251	34127	U41326	22 June 2023

Appendix C – Graphs and Figures

UNITE, Kincardine Court

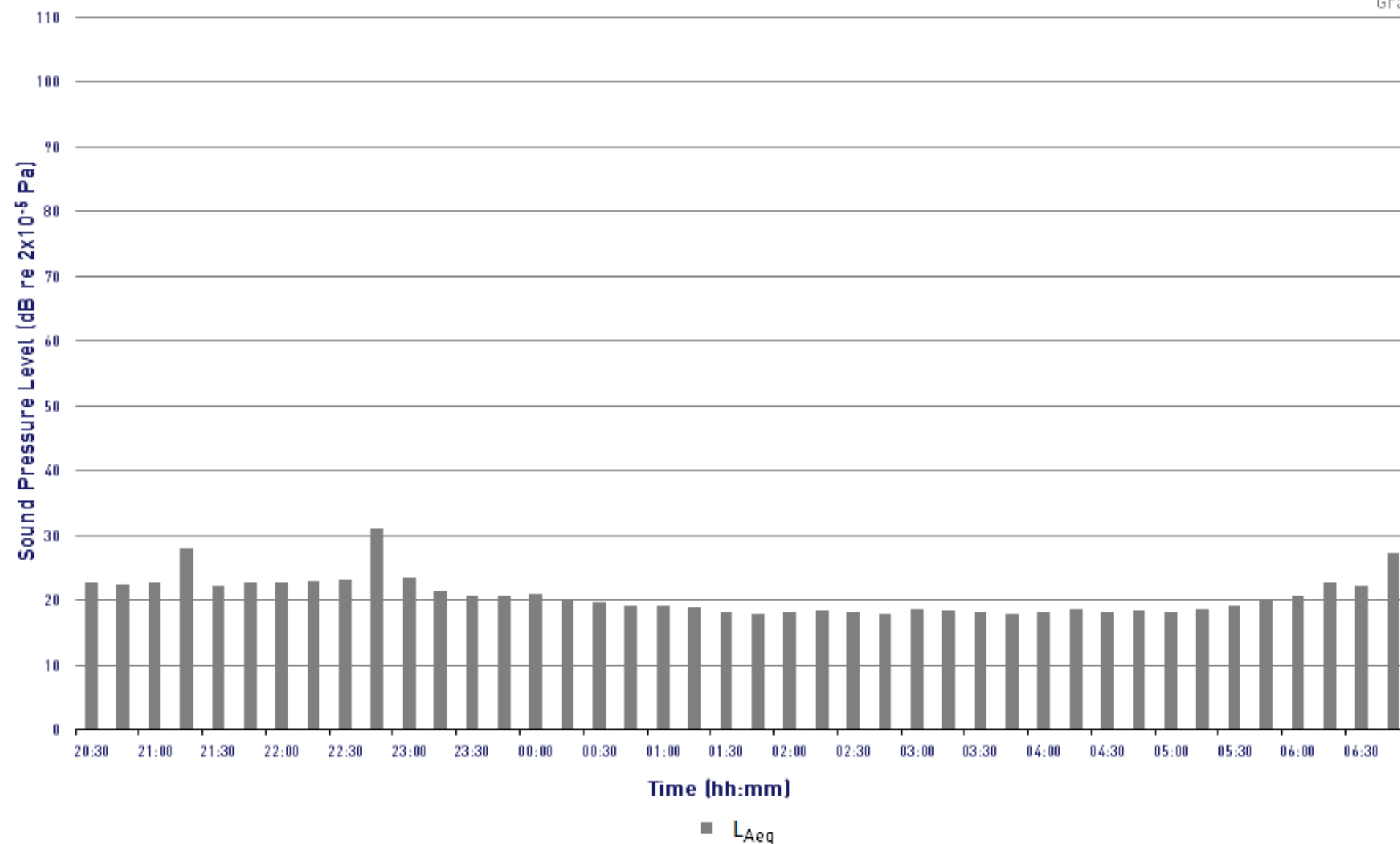
L_{Aeq} Time History

Measurement Position 1 - Bedroom D5.1

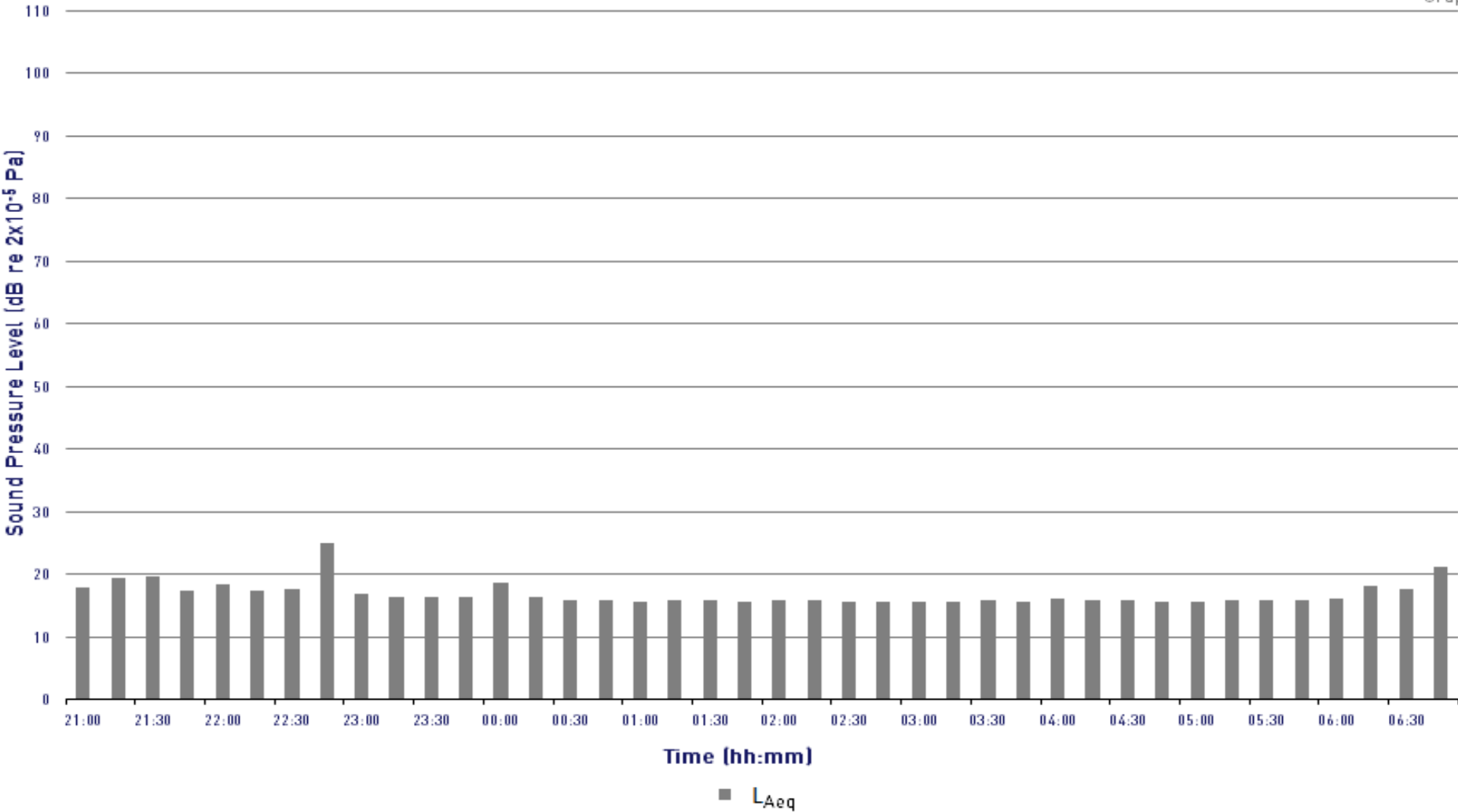


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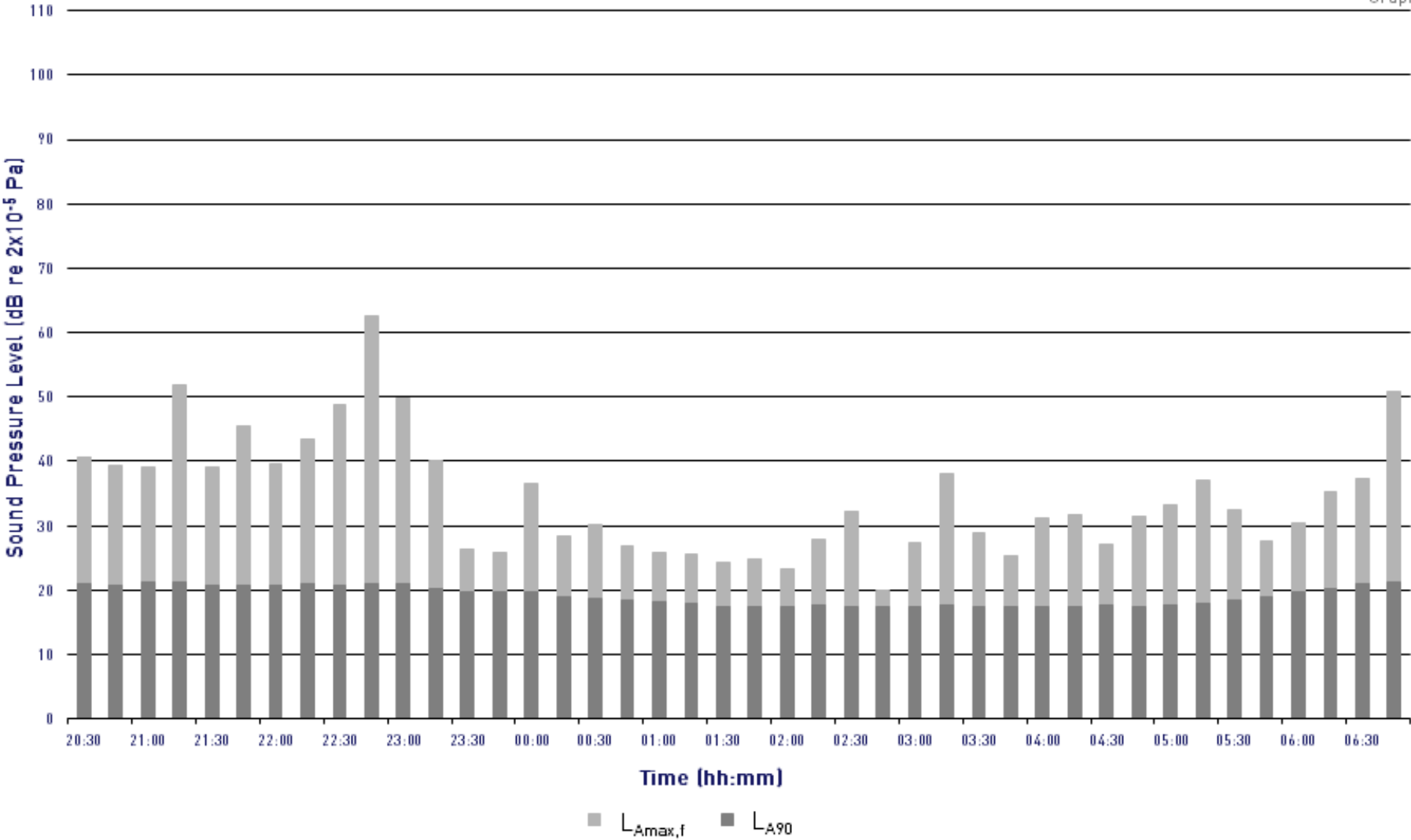
Graph 1



UNITE, Kincardine Court
L_{Aeq} Time History
Measurement Position 2 - Studio D6



UNITE, Kincardine Court
L_{Amax,f} and L_{A90} Time History
Measurement Position 1 - Bedroom D5.1



UNITE, Kincardine Court

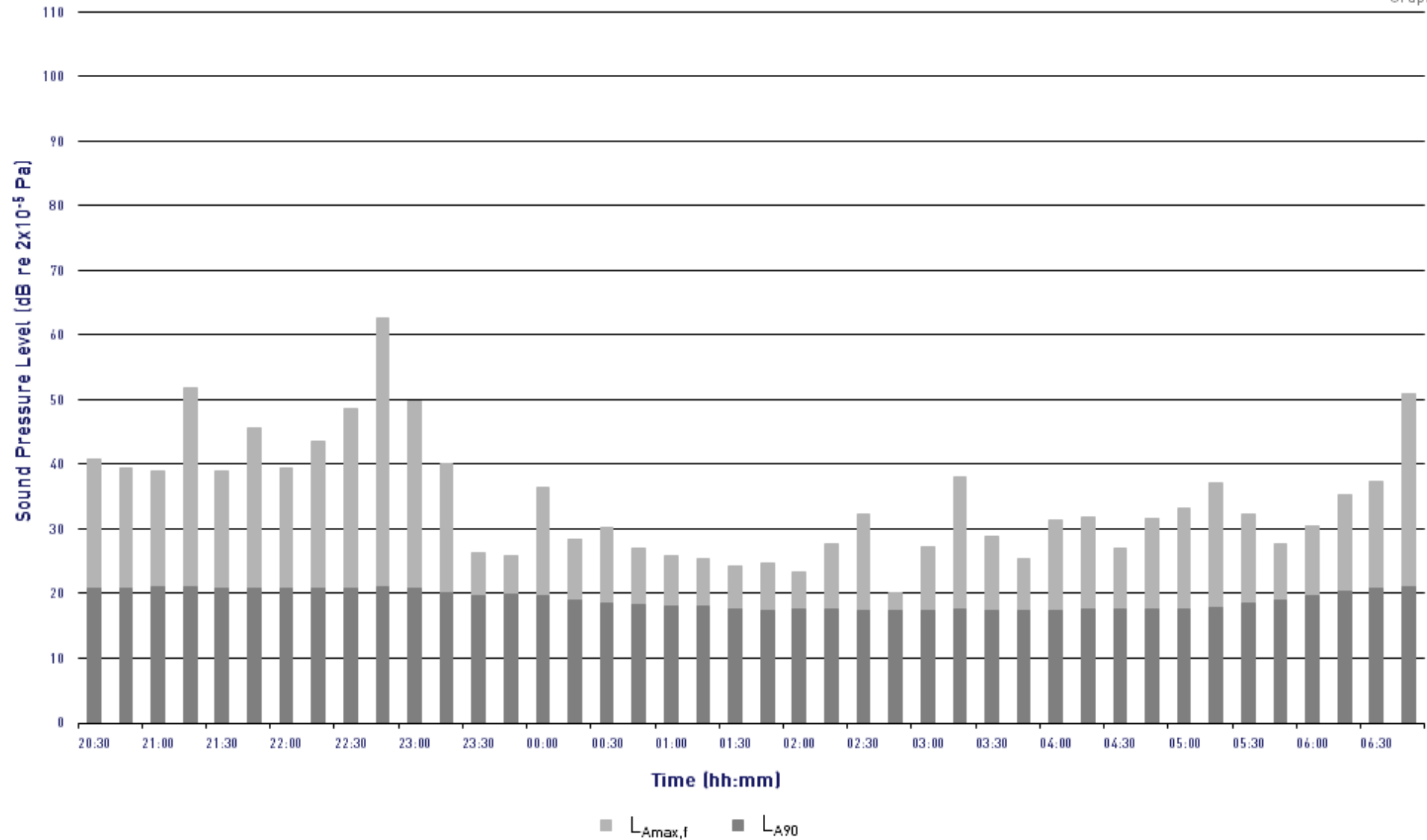
$L_{Amax,f}$ and L_{A90} Time History

Measurement Position 1 - Bedroom D5.1



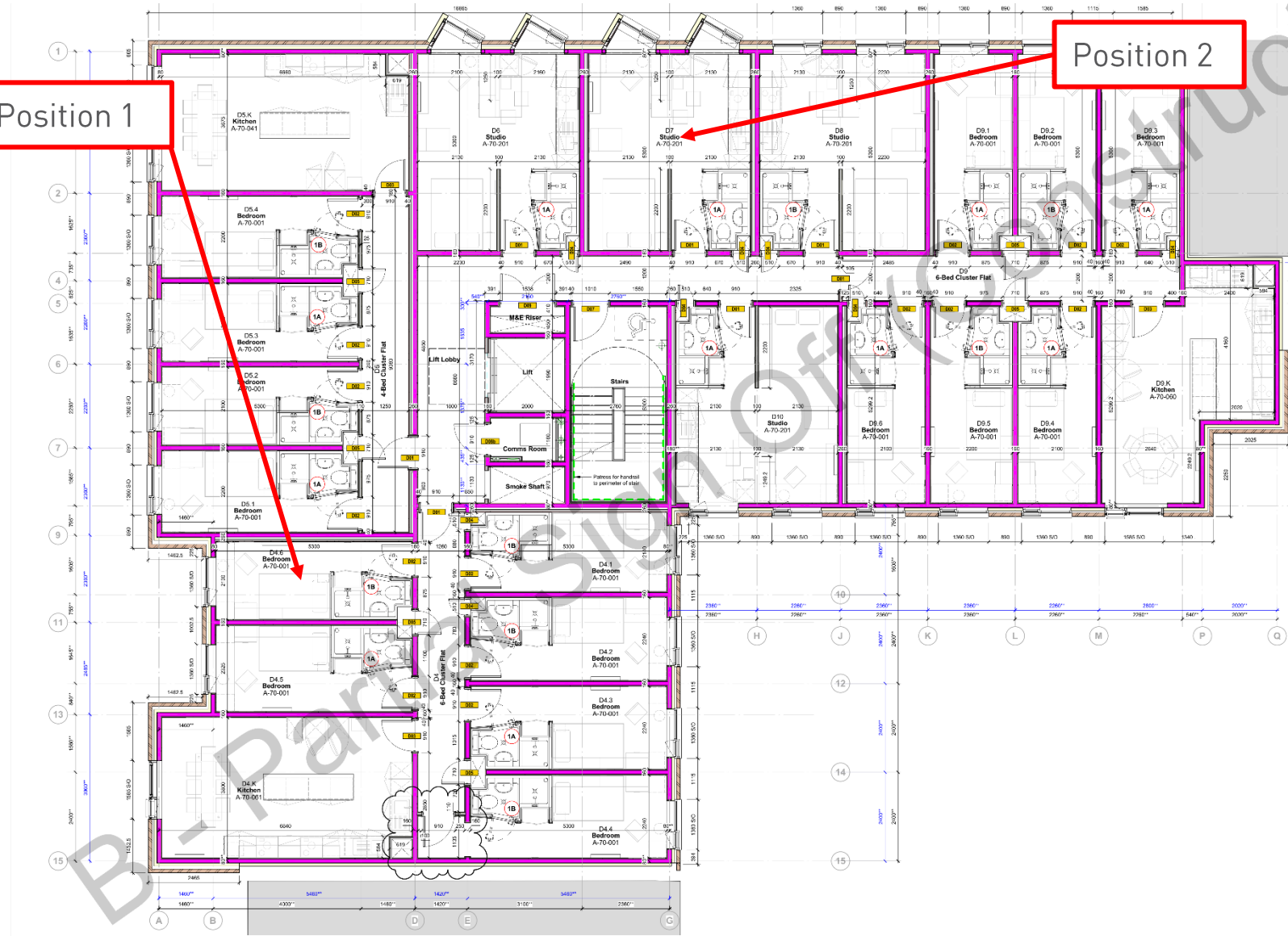
Project: 9226

Graph 4



Position 1

Position 2



party information:
OS Survey Plan: Ordnance Survey Information: Crown Copyright, Licence Number 100022432.
Delta Patman Redler: Topographical Survey, Drawing Number: 18007-1 - Additional Area, dated: Feb 2019.
SEP Ltd: Topographical & Utility Surveys, Drawing Number: S20022-1, Topo Survey, dated: Feb 2020, Drawing Number: S20022-U, Utility Survey, dated: Feb 2020.
Wedge Landscape Design: Landscape Masterplan, Drawing numbers TBC.

THERMAL PERFORMANCE
 Minimum U-values for the building will be in accordance with building regulation requirements at time of construction and in accordance with the overall energy assessment. See Watmans Energy Statement, Rev A, dated: 14/06/2019.

ACOUSTIC PERFORMANCE
 The minimum acoustic performance spec for the building will be in accordance with building regulation and those stated in the acoustic assessment to suit UNITE requirements. RBA Acoustic Report: 226.RP01.EBF.1, dated: 13/06/2019.

STRUCTURE
 Lightweight Steel Frame (LSF) structural design subject to input from subcontractor with full design responsibility.
 HCD Detail Plans based on Metsec Metframe Loading Scheme Drawings:
 SAKC-MET-09-22-DR-Y-0001, S1 P05
 SAKC-MET-00-22-DR-Y-0002, S1 P05
 SAKC-MET-00-22-DR-Y-0003, S1 P05

Key
 Dim XXXXX** to Centre Line of LSF
 Dim XXXXX** to Grid Line
 LSF walls
 Non-structural walls
 Full height wall

REVISIONS:
 NO. BY DATE
 001 BY DJV 24/02/2022
 Bedroom D4 4 entrance door revised
 002 BY DJV 27/01/2022
 Kitchen layout revised to reflect steel grade save. Patnes indicated to staircase. Common room layout revised. Drawing issued for construction.
 003 BY DJV 14/12/2021
 Cleanroom door reference revised. LSF omitted between lift shaft & corridor and smoke shaft & corridor
 004 BY DJV 01/10/2021
 Flat & room references added, bathroom pool references added, internal door references added
 005 BY DJV 27/08/2021
 Stair and lift core revised to suit Kone requirements and accommodate disabled refuge.
 006 BY NH 23/07/2021
 First issue.

A | FOR CONSTRUCTION

UNITE STUDENTS & Bowmer & Kirkland

**Kincardine Court
Manchester**

Detail Floor Plan - Level 01

Hadfield Cawkwell Davidson
 Birmingham: Lodge 13 Birmingham Rd, Sheffield, DN2 1JZ, T: 0114 266 1881 www.hcd.co.uk
 2017-2024 As indicated @ A1 C02
 500991 HCDI ZZ 01 DR A-2001

UNITE, Kincardine Court, Manchester
 Site Plan
 Project 9226

Figure 1
 5 January 2023
 Not to Scale



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