

Post-completion Validation Assessment

Site Address:	Plots 1 & 2, South Side of William Street, Littleborough, OL15 8JP
Project Reference No:	NP-010080
Subject:	Internal Noise Survey Assessment
Client:	Dimora Construction Ltd.
Reported By:	H Wilson, BSc
Checked By:	M Caley, MSc, MIOA
Date:	31/10/2023

Introduction

NOVA Acoustics Ltd has been commissioned to undertake a post-completion internal noise survey at the above address. The aim of the assessment is to ascertain whether the installed sound insulation scheme achieves the noise criteria specified by the local authority.

Local Authority Correspondence and Conditions

The applicant received conditional planning approval for the development in April 2023 from Rochdale Borough Council. The application was titled as follows:

Ref: 20/01325/FUL

"Demolition of existing building and construction of 7 no. houses to include erection of garages for plots 5 and 7, garden office for plot 6 and removal of telecoms mast- Part Retrospective".

The purpose of this technical assessment is to assist in discharging Condition 9, which relates specifically to internal noise levels within the development. The condition is worded as follows:

Condition 9

"The development hereby approved shall be constructed in complete accordance with the recommendations of sections 6 of the submitted Environmental Noise Survey, Noise Break-In Assessment & Sound Insulation Scheme by Nova Acoustics dated 17/05/2021, Project Number 5941JP, Version 01. The units hereby approved shall not be occupied until a verification report has been submitted to and approved in writing by the Local Planning Authority to demonstrate that the following internal and external noise levels have been achieved:

- 35 dB(A) Leq (1 hour) in the bedrooms with windows shut and other means of ventilation provided between 7 am and 11pm;

- 30dB(A) Leq (5mins) in the bedrooms with windows shut and other means of ventilation provided between 11pm and 7am;
- 35 dB(A) Leq (1 hour) in the living room/s with windows shut and other means of ventilation provided between 7 am and 11pm;
- 40dB(A) Leq (1 hour) in other habitable rooms with windows shut and other means of ventilation provided at all times”.

Survey Methodology

The survey was undertaken in general accordance with the Association of Noise Consultants' publication “ANC Guidelines: Measurement of Sound Levels in Buildings 2020”.

Noise levels were measured at a single location within each room, with the measurement microphone positioned at a height of 1.5m above floor level and at least 1.5m from any external wall / window.

The survey included a combination of unattended measurements within the most exposed room over a 3-day period in addition to short-term attended measurements (during daytime hours only). All windows were closed with trickle ventilators open, allowing for suitable levels of ventilation. During the time of the survey, rooms were unfurnished.

The sound levels meters were configured to measure $L_{Aeq,T}$ and $L_{Amax,F}$ over consecutive 10 seconds intervals for the duration of the survey.

The measurement equipment used was Type 1 as defined in BS EN 61672:2003. The equipment was calibrated at the start and at the end of the survey using a handheld calibrator compliant with BS EN 60942:2003 (Class 1), with negligible deviation noted. All sound level meters are calibrated every 24 months and all calibrators are calibrated every 12 months, by a third-party calibration laboratory.

A summary of the equipment used during the survey is outlined below.

Piece of Equipment	Serial No.	Calibration Deviation (dB)
CESVA SC420 Class 1 Sound Level Meter	T246471	≤0.1
CESVA CB006 Class 1 Calibrator	T253524	
CESVA SC250 Class 1 Sound Level Meter	T252917	≤0.1
CESVA CB006 Class 1 Calibrator	T253524	

Table 1 – Survey Equipment Details

Long-term Internal Noise Levels Assessment

Continuous measurements were undertaken from Wednesday 25th October 2023 to Thursday 26th October 2023 within Plot 1, Bedroom 2 and Plot 2, Bedroom 1. This covers both façades that are at highest risk of noise exposure which overlook the industrial units to the rear and the road on the front

façade. The table below presents the sound levels measured inside the development compared with the internal noise level criteria presented by the Local Authority.

It should be noted that during the time of the survey the rooms were unfurnished. Due to effects on the reverberation characteristics, this can significantly change the response of the room to external noise intrusion to that when fully furnished. Accordingly, a correction for reverberation within the room should be included in line with the “ANC Guidelines: Measurement of Sound Levels in Buildings 2020”. Using a measured reverberation time within the bedroom of 1.06s T_{mf} and a reference reverberation time of 0.5s, a correction of -3 dB is appropriate.

Location	Description	L_P (dB)	L_P (dB)
Plot 1 – Bedroom 2	Measured – Day	38 $L_{Aeq,1hour}$	--
	Corrected – Day	35 $L_{Aeq,1hour}$	--
	Local Authority Criteria	35 $L_{Aeq,1hour}$	--
	Exceedance above Criteria	0	--
	Measured – Night	29 $L_{Aeq,5MIN}$	40 $L_{AFmax,1MIN}$ ^[1]
	Corrected – Night	26 $L_{Aeq,5MIN}$	39 $L_{AFmax,1MIN}$
	Local Authority Criteria	30 $L_{Aeq,5MIN}$	45 $L_{AFmax,1MIN}$ ^[2]
	Exceedance above Criteria	-4	-6
Plot 2 – Bedroom 1	Measured – Day	27 $L_{Aeq,1hour}$	--
	Corrected – Day	24 $L_{Aeq,1hour}$	--
	Local Authority Criteria	35 $L_{Aeq,1hour}$	--
	Exceedance above Criteria	-11	--
	Measured – Night	22 $L_{Aeq,5MIN}$	31 $L_{AFmax,1MIN}$ ^[1]
	Corrected – Night	19 $L_{Aeq,5MIN}$	28 $L_{AFmax,1MIN}$
	Local Authority Criteria	30 $L_{Aeq,5MIN}$	45 $L_{AFmax,1MIN}$ ^[2]
	Exceedance above Criteria	-11	-17

Table 2 – Internal Ambient Noise Level Analysis

Notes:

[1] $L_{AFmax,1MIN}$ exceeded fewer than ten times during the night (23:00 – 07:00), as per the WHO guidelines.

[2] No criteria are specifically defined by the Local Authority. As such, the WHO guidelines criteria have been used.

Short-term Internal Noise Levels Assessment

In addition to the long-term survey, a series of spot measurements were undertaken on 25th October 2023 within the following rooms:

- Plot 1 Living Room/Kitchen,
- Plot 2 Living Room/Kitchen.

Measurements with a minimum duration of 1 hour were undertaken at one location within each room during daytime hours. The logarithmically averaged results are presented in the table below alongside the internal noise level criteria provided by the Local Authority.

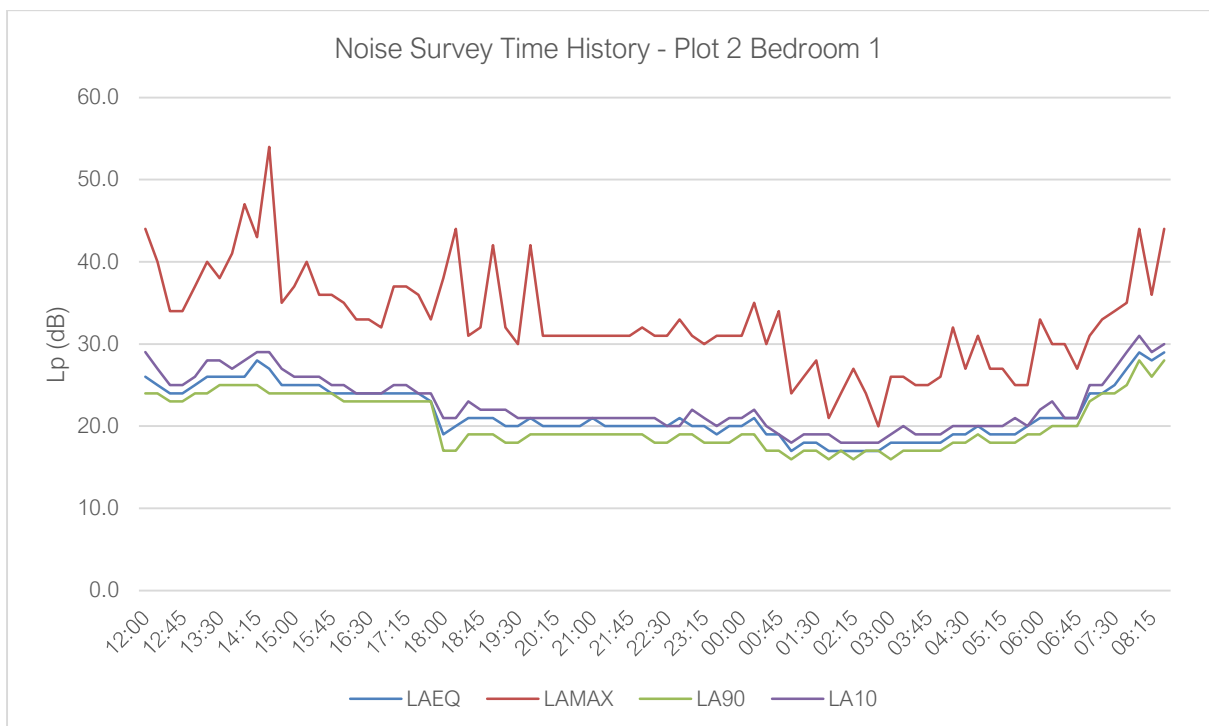
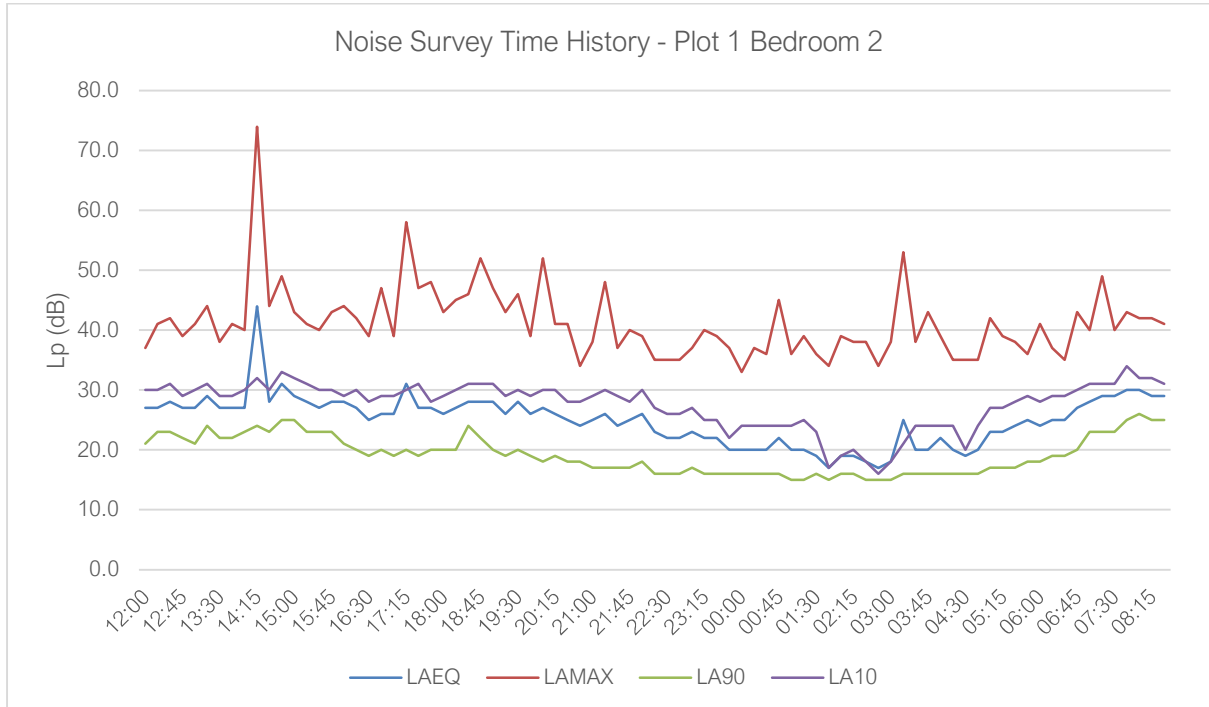
Location	Description	L_P (dB)
Plot 1 Living Room/Kitchen	Measured – Day	28 $L_{Aeq,1hour}$
	Corrected – Day	25 $L_{Aeq,1hour}$
	Local Authority Criteria	35 $L_{Aeq,1hour}$
	Exceedance above Criteria	-10
Plot 2 Living Room/Kitchen	Measured – Day	26 $L_{Aeq,1hour}$
	Corrected – Day	23 $L_{Aeq,1hour}$
	BS8233 Criteria	35 $L_{Aeq,1hour}$
	Exceedance above Criteria	-12

Table 3 – Internal Ambient Noise Level Analysis – Short-term Measurements

Conclusion

The internal noise measurements are within the Local Authority and WHO guidelines criteria. As such, it is thought that the development is suitable for residential habitation and Condition 9 can be discharged.

Appendix A – Time History



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