



BRAIDEN ACOUSTICS LTD

Innovation Forum // 51 Frederick Road // Salford // Manchester // M6 6FP

NOISE VERIFICATION REPORT

Prepared for : Watson Homes

Date : 3 Nov 2023

Site : Former Chatsworth Mill, Williams Road, Gorton M18 7AY

Report No. : 11209revB

1 INTRODUCTION

Braiden Acoustics has been commissioned by Watson Homes to undertake a verification noise survey at the site of Former Chatsworth Mill, Williams Road, Gorton M18 7AY in order to discharge noise-related planning conditions.

1.1 PLANNING PERMISSION

Planning application 129852/FO/2021 proposed "Erection of 4 storey building to 24 x 1 bedroom and 16 x 2 bedroom apartments (40 total) (Class C3), together with associated external works, car parking and landscaping and highway works.". The application was approved with conditions on the 8 April 2022.

The relevant conditions are:

20) The development hereby approved shall only be implemented in accordance with the acoustic insulation and mitigation measures set out within the submitted Noise Assessment Report, produced by Environmental Noise Solution Ltd (Ref: NIA/9671/21/9732/v1) dated 6 May 2021 and received by the City Council as Local Planning Authority on 6 May 2021.

Prior to first occupation of the residential units, a verification report will be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved Noise Assessment report. The report shall also undertake post completion testing to confirm that the internal noise criteria have been met. Any instances of non-conformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the internal noise criteria.

Reason - In order to safeguard the amenity of existing and future occupiers of nearby residential accommodation, pursuant to saved policy DC26 of the Unitary Development Plan for the City of Manchester and policies SP1, H1 and DM1 of the Core Strategy.

21) Any 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 (LAeq) below the typical background (LA90) level at the nearest noise sensitive location. The scheme shall be submitted to and approved in writing by the City Council as Local Planning authority in order to secure a reduction in the level of noise emanating from the site. The approved scheme shall be completed before the apartments are occupied.

Upon completion of the development a verification report will be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic report. The report shall also undertake post completion testing to confirm that the noise criteria has been met. Any instances of nonconformity with the recommendations in the report shall be detailed along with any measures required to ensure compliance with the agreed noise criteria.

Reason - To safeguard the amenity of existing and future occupiers of nearby residential accommodation, pursuant to saved policy DC26 of the Unitary Development Plan for the City of Manchester and policies SP1 and DM1 of the Core Strategy.

- i. internal noise levels
- ii. external plant noise levels.



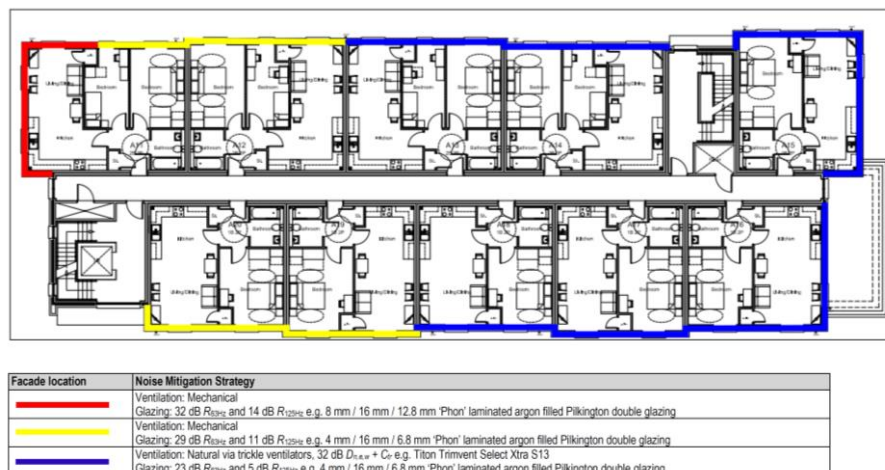


Figure 2
Recommended glazing from the ENS Acoustic Report

The glazing that has been installed is

4-20-4 Clear Low E : 20mm Warm Edge	Argon	33(-1; -5) dB R_w	28 dB $R_w + C_{tr}$
6.8:18:4 Laminate/Tuff Low E : 18mm Warm Edge	Argon	37(-2; -6) dB R_w	31 dB $R_w + C_{tr}$

See the Appendix for further details.

3 ACOUSTIC CRITERIA AND METHODOLOGY

This is a residential development that may be susceptible to environmental noise. Potential mitigation measures are determined by recommended indoor noise levels from BS 8233 “Sound insulation and noise reduction for buildings” [1] which, in turn, takes guidance from the research-based World Health Organisation “Guidelines for Community Noise”.

Noise level thresholds are usually given for the night-time – 2300-0700 hrs and day time – 0700-2300 hrs.

3.1 NATIONAL PLANNING POLICY FRAMEWORK (NPPF)

The National Planning Policy Framework is the current document for planning guidance. Paragraph 123 of the NPPF says that planning decisions should aim to:

- avoid noise from giving rise to significant adverse impacts on health and quality of life as a result of new development;
- mitigate and reduce to a minimum, other adverse impacts on health and quality of life arising from noise from new development, including through the use of conditions;
- recognise that development will often create some noise and existing businesses wanting to develop in continuance of their business should not have unreasonable restrictions put on them because of changes in nearby land uses since they were established; and
- identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason.

3.2 BS 8233: 2014

The British Standard BS 8233:2014 “Guidance on sound insulation and noise reduction for buildings” gives guidance on recommended indoor ambient noise levels for residential dwellings.



Room	Criterion	$L_{Aeq,T}$	
		night	day
Bedroom	Sleeping	30	35
Dining Room/Area	Dining	--	40
Living Room	Resting	--	35

Table 1

Recommending indoor ambient noise level thresholds from anonymous noise (taken from Table 4, BS 8233:2014)

NOTE 7 Where development is considered necessary or desirable, despite external noise levels above WHO guidelines, the internal target levels may be relaxed by up to 5 dB and reasonable internal conditions still achieved.

Internal noise levels in habitable rooms are calculated using either the simple or rigorous method as described in Annex G in BS 8233:2104.

3.2.1 Noise levels in external living areas

For external living areas such as gardens and balconies, BS 8233:2014 § 7.7.3.2 recommends an upper limit of 55dB $L_{Aeq,day}$ although there is a caveat:

However, it is also recognized that these guideline values are not achievable in all circumstances where development might be desirable. In higher noise areas, such as city centres or urban areas adjoining the strategic transport network, a compromise between elevated noise levels and other factors, such as the convenience of living in these locations or making efficient use of land resources to ensure development needs can be met, might be warranted. In such a situation, development should be designed to achieve the lowest practicable levels in these external amenity spaces, but should not be prohibited.

3.2.2 Maximum noise levels

In the 2014 edition of the Standard, the criterion of 45dB L_{AFMax} inside bedrooms has been removed although there is Note 4:

NOTE 4 regular individual noise events (for example, scheduled aircraft or passing trains) can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{Amax,P}$ depending on the character and number of events per night. Sporadic noise events could require separate values.

The use of the phrases ‘may be set’ and ‘could require’ imply that this is a discretionary criterion.

3.3 COUNCIL CRITERIA

It is usual that Councils adhere to noise levels given in BS 8233.

L_{Aeq} 35 dB 16 hours – indoors, daytime (07.00-23.00)

L_{Aeq} 30 dB 8 hours – indoors, night-time (23.00-07.00)

L_{Aeq} 55 dB 16 hours – indoors, daytime (07.00-23.00)

4 MONITORING DETAILS

4.1 MONITORING DETAILS

Personnel: John Braiden, BSc & MSc Acoustics, MIOA.

Equipment: NTi XL2 integrated real time analyser & B&K 4231 calibrator.



The sound level meter was calibrated before after the measurements with no significant drift reported.

4.2 INTERNAL NOISE MONITORING

Noise measurements focussed on noise from within a habitable room facing Williams Road and Hyde Road – the noisier elevations.

Monitoring was unmanned but audio was recorded.

4.2.1 Location

The microphone was approximately 1.2 m from local ground and placed in the middle of a first-floor habitable room with the doors and windows closed but the MVHR unit on.

NB It should be noted that the room was unfurnished and without carpets so reverberation noise contributed to the measured noise levels. When the room is fully furnished then the reverberation noise will decrease and therefore the overall noise level in the rooms will also decrease.**

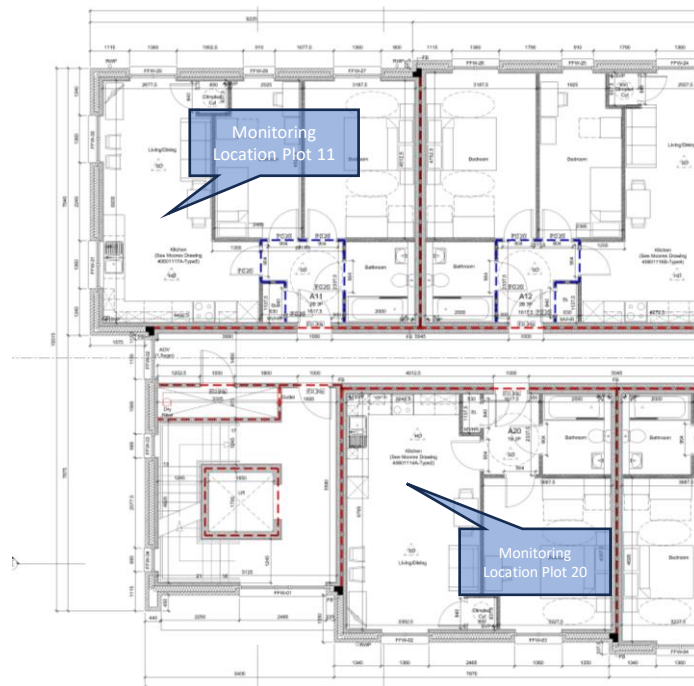


Figure 3
Monitoring locations for internal noise

4.2.2 Results

Noise monitoring took place during a busy weekday (Friday), that included Friday evening rush hour traffic, and throughout the weekend.

4.2.2.1 Plot 11

Plot 11 is at first floor on the northern elevation which is the most exposed to noise, due to Roots café/bar and Hyde Road traffic noise.

The internal noise levels within the habitable room of Plot 11 are shown in Figure 4.





Figure 4
Internal time history – Plot 11

As the Background Noise Levels and ‘average’ equivalent noise levels show, the internal noise levels remained relatively constant. This is due to the MVHR unit being the dominant noise source. There was some extraneous noise ingress, such as sirens and loud engines revving, but these noise events were excluded as they were atypical.

Date	Time		Duration	Time Period	L_{A90} dB	L_{Aeq} dB	L_{Amax} dB
	Start	Finish					
Fri	15:22:02	23:00:00	06:29:22	day	34.3	34.8	38.4
Sat	23:00:00	07:00:00	08:00:00	night	34.4	34.8	39.4
	07:00:00	23:00:00	16:00:00	day	34.4	34.8	40.8
Sun	23:00:00	07:00:00	08:00:00	night	34.4	34.8	44.7
	07:00:00	23:00:00	16:00:00	day	34.4	34.8	43.5

Table 2
Summary of internal noise monitoring results

Table 2 shows even more clearly that the Background L_{A90} and Equivalent L_{Aeq} levels remained absolutely constant throughout.

It was noticed on site that a ceiling vent was not fitted correctly.

****NB the MVHR unit and ducting should be checked in Plot 11 so that everything is connected correctly and securely to ensure that noise leakage is reduced. If required, the MVHR unit should be swapped out for a unit that is operating at the correct noise level.**

A summary of the night and day noise levels is:

Night 35dB(A)
Day 35 dB(A)

After some investigation in to the MVHR unit in Plot 11, the unit was eventually swapped out for another MVHR unit. It was noticed on site that the new MVHR unit was noticeably quieter, so a return visit was schedule to monitor the noise levels within Plot 11.

Again the visit was on a Friday afternoon and ran for 48 hours.



The date of the return visit was Friday 20th October; everything else was as before.

The internal noise levels within the habitable room of Plot 11 are shown in Figure 4.

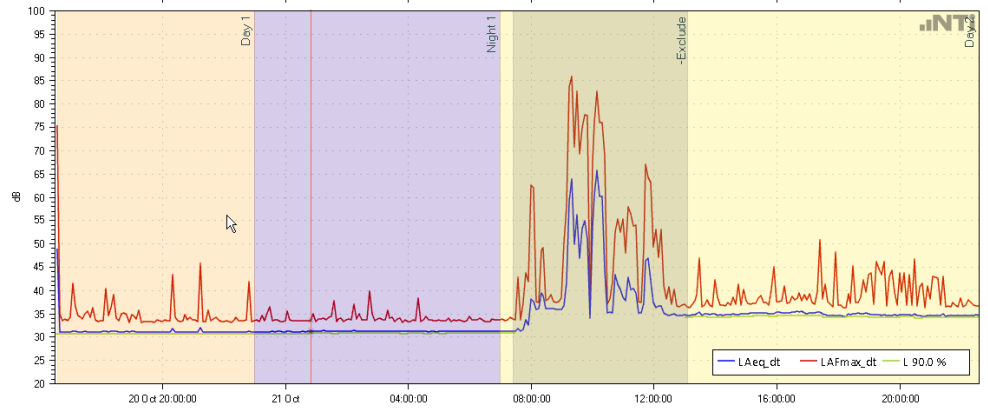


Figure 5
Internal time history – Plot 11, 2nd visit

As the Background Noise Levels and ‘average’ equivalent noise levels show, the internal noise levels remained relatively constant. This is due to the MVHR unit being the dominant noise source. There was some extraneous on Saturday morning due to workers onsite but these noise events were excluded as they were atypical.

Date	Time		Duration	Time Period	L_{A90} dB	L_{Aeq} dB	L_{Amax} dB
	Start	Finish					
Fri 20 th Oct 2023	16:31:54	23:00:00	06:28:06	day	30.6	32.8	75.4
Sat	23:00:00	07:00:00	08:00:00	night	30.8	31.1	39.8
	07:00:00	23:00:00	16:00:00	day	34.4	34.8	43.5

Table 3
Summary of internal noise monitoring results – Plot 11, 2nd visit

Table 2 shows even more clearly that the Background L_{A90} and Equivalent L_{Aeq} levels remained absolutely constant throughout.

It was noticed on site that the new MVHR was quieter than before.

****NB the MVHR unit and ducting should be checked in Plot 11 so that everything is connected correctly and securely to ensure that noise leakage is reduced. If required, the MVHR unit should be swapped out for a unit that is operating at the correct noise level.**

A summary of the night and day noise levels is:

Night 31dB(A)
Day 34 dB(A)

There was an improvement for both night and day time internal noise levels, compared to the first visit.

4.2.2.2 Plot 20

Plot 20 is at first floor level on the western elevation facing Williams Road with the railway line beyond.

The internal noise levels within the habitable room of Plot 20 are shown in Figure 6.



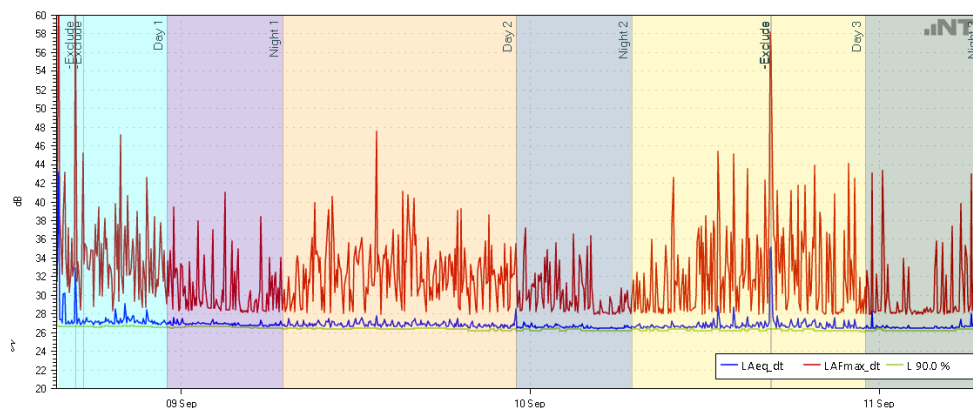


Figure 6
Internal time history – Plot 20

As the Background Noise Levels and ‘average’ equivalent noise levels show, the internal noise levels remained relatively constant. This is due to the MVHR unit being the dominant noise source.

The time history graph for Plot 20 is ‘noisier’ than Plot 11 due to passing vehicles using Williams Street.

Date	Time		Duration	Time Period	L_{A90} dB	L_{Aeq} dB	L_{Amax} dB
	Start	Finish					
Fri	15:33:00	23:00:00	07:26:55	day	26.6	27.3	47.1
Sat	23:00:00	07:00:00	08:00:00	night	26.5	26.9	41.0
	07:00:00	23:00:00	16:00:00	day	26.3	26.8	47.5
Sun	23:00:00	07:00:00	08:00:00	night	26.2	26.6	37.2
	07:00:00	23:00:00	16:00:00	day	26.2	26.7	45.4

Table 4
Summary of internal noise monitoring results for Plot 20

Table 4 shows clearly that the Background L_{A90} and Equivalent L_{Aeq} levels remained almost constant throughout the monitoring, thus external noise did not influence internal noise levels, so the MVHR system was the dominant noise source.

A summary of the night and day noise levels is:

Night 27dB(A)
Day 27 dB(A)

4.3 EXTERNAL PLANT NOISE MONITORING

Noise monitoring was made one meter from an external grille with the MVHR system on and set to ‘boost’, and also when the MVHR system was off.

Noise monitoring at the MVHR grille took place around 3pm on Friday 8th September.



MVHR	L_{A90} dB	L_{Aeq} dB	L_{Amax} dB
OFF	41.9	46.2	51.0
ON (Boost)	43.	46.1	50.3

Table 5
Summary noise monitoring 1m from MVHR external grille

Table 5 shows that there was no real change in noise level when the MVHR was switched on, thus concluding that the noise level from the MVHR was at least 10dB less than the residual noise level¹ at the time of monitoring.

5 ACOUSTIC ASSESSMENT

5.1 INTERNAL NOISE LEVELS

5.1.1 Results overview

Façade	period	room	Internal Levels L_{Aeq} (dB)			Result Discussion
			Limit	Meas	Diff	
Northern	night	bedroom	30	31	+1	above threshold
	day	lounge	35	34	-1	Noise level on the limit
Western	night	bedroom	30	27	-3	under the limit
	day	lounge	35	27	-8	under the limit

Table 6
Measured noise level compared with day and night limits.

Internal noise levels met the threshold, except for night time noise levels in Plot 11.

Plot 11's internal noise level has improved by 4 dB. Even so, the night time noise level was 1dB over the limit of 30 dB. However, as mentioned above in Section 4.2.1, the room was unfurnished and so the internal noise level will decrease once furnished. The amount of absorption needed to reduce the internal level by 1 dB is negligible, so the internal noise level once inhabited will be within the limit.

5.2 EXTERNAL PLANT NOISE LEVELS

In Section 3.2 of the ENS Acoustic Report number NIA/9671/21/9732/v1/ Chatsworth Mill, Gorton, dated 6th May 2021, gives the typical Background Noise Levels for the day and night periods as:

45 dB L_{A90} during the daytime and 35 dB L_{A90} during the night.

From Table 5 it can be assumed that the noise level from the MVHR unit is no more than 36 dB(A). Essentially, there was no noise picked up at the grille, even when the MVHR unit was in 'boost' mode, nor was it audible in any way. Therefore, the noise level at the grille is much likely to be lower than 36 dB(A).

¹ 'residual noise level' is the ambient noise level when the MVHR system is turned off.



Night time	+1 dB over typical Background
Day time	-9 dB below typical Background

6 CONCLUSION

A verification acoustic survey has taken place at Former Chatsworth Mill, Williams Road, Gorton M18 7AY to discharge noise conditions of planning application 129852/FO/2021 for the erection of residential dwellings.

Condition 20 – internal noise levels

Internal noise levels met the relevant thresholds, except for Plot 11 at night time. However, the MVHR units has been swapped out and the noise level has improved by 4 dB. The night time internal noise level is now only 1dB over the 30dB threshold. Once the flat is furnished then the reverberation noise will reduce and thus the internal noise level will be within the threshold.

Condition 21 – external plant noise levels

External noise measurement at the MVHR grille with the MVHR unit on (in boost mode) and off was not able to determine the noise level of the MVHR unit alone. Furthermore, noise from the grille was inaudible when the MVHR unit was on. It is estimated that the noise MVHR is no more than 36 dB. This is +1 dB over the typical night time Background Noise Level of 35 dB L_{A90} and -9 dB less than the daytime typical Background Noise Level of 45 dB L_{A90} .

7 REFERENCES

- [1] BS8233: 2014
Sound Insulation and noise reduction for buildings – Code of Practice,
 British Standards Institute, 2014.



A1 AS-BUILT SITE LAYOUT – GROUND FLOOR

