



BRAIDEN ACOUSTICS LTD

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

INTERNAL NOISE VERIFICATION REPORT

Prepared for : Manchester Plumbing Supplies Ltd

Date : 20 Mar 2024

Site : 2-4 Thorp Rd, Newton Heath M40 5BJ

Report No. : 11249revA

1 INTRODUCTION

Braiden Acoustics has been commissioned by Manchester Plumbing Supplies Ltd to undertake a verification noise survey at the site of 2-4 Thorp Rd, Newton Heath M40 5BJ to support planning application 137289/FO/2023 which proposes:

Retention of 1no. 1 bedroom flat, 1no. 2-bedroom flat and 1no. 4-bedroom flat.

This is a retrospective planning application as the dwellings are construction but remain empty pending full planning permission.

1.1 COUNCIL COMMENTS

Manchester City Council have commented on the requirements and scope of the Noise Verification Report:

Noise Verification Report

As the flats are in situ, we will require a noise verification report to ensure that the flats are acoustically insulated against noise from Oldham Road, Commercial businesses including the premises below and general traffic noise and noise between each flat¹. Once submitted we will then need to consult with our colleagues in Environmental Health to ensure that the works meet the relevant standards. In the event that noise verification report identifies failings in the existing acoustic insulation it should also set out details of the measures that you intend to undertake to achieve the necessary levels and a proposed period for their implementation. A further verification report will then need to be undertaken confirming those additional measures achieve the requirements.

Reason: In the interests of residential amenity, having regard to Policy L7 of the Trafford Core Strategy and the National Planning Policy Framework.

NB This is a revised report following on from comments from Manchester City Council:**

“The internal noise levels are satisfactory; however confirmation is needed if the windows were closed for this? If so, Environmental Health would require noise readings for open windows. If the noise criteria cannot be met then details of ventilation would be required such as MEV, MVHR etc.”

Therefore, internal noise measurements have been repeated but with windows open.

1.2 AIM

This report will assess internal noise within the in-situ apartments, with regard for all surrounding noise sources, either internal or external.

¹ Noise between flats is covered under Building Regulation Part E “Resistance to Passage of Sound”.

Where noise levels breach relevant standards and guidance, recommendations will be made in order to achieve adequate internal noise levels for future tenants.

2 DESCRIPTION OF SITE

The site is a three-story building that was a former cinema - Ceylon Picture Theatre.



Figure 1
Front view of site

2.1 SITE LOCATION AND SURROUNDING USES

The site is within the Newton Heath area of Manchester, just north of Oldham Road and approximately 3km from the outskirts of Manchester city centre.

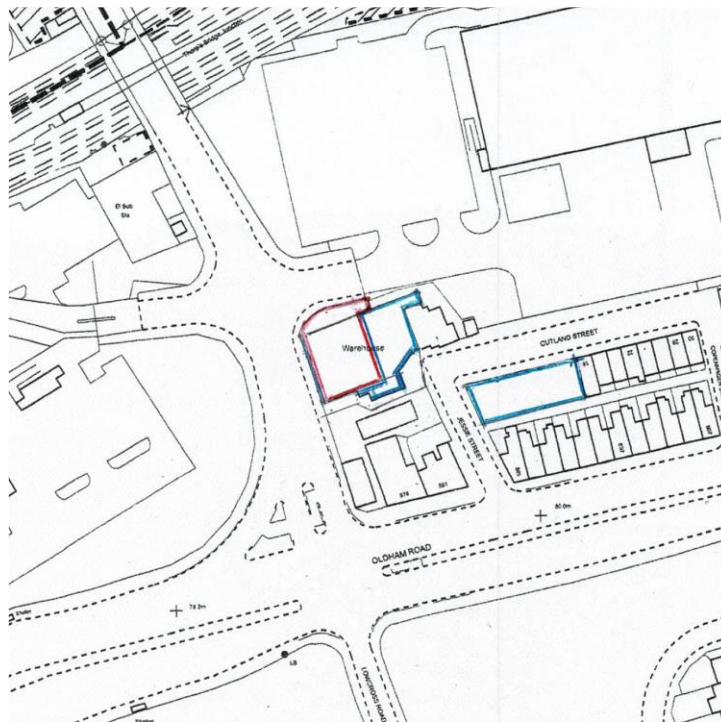


Figure 2
Plan view of site showing surrounding uses

On the opposite side of Thorp Road is The Sharp Project which is a “creative office & production space available to hire”. To the north of which is an electricity substation.



To the north of the site is the car park for EDM Precision Engineering whose main building is to the north east of the site. Beyond this is the Newton Heath Train Maintenance Depot some 400m to the north east.

2.1.1 Nearest sensitive receptors

The nearest sensitive receptors will be the apartments on the upper floors of the building.

2.2 PROPOSED USE

The indicative layout is shown in the Appendix.

There are no windows to the rear of the building.

2.3 GLAZING

It is assumed that standard 4mm double glazing has been installed

>> NEED EVIDENCE OF EXACT SPEC OF INSTALLED GLAZING.

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 VISIT 1 – PLOT 1

Noise measurements focussed on noise from within a habitable room facing Thorp Road and Oldham Road – the noisiest part of the site.

Monitoring was unmanned.

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 door closed, in Plot 1 as shown in Figure 3.

NB It should be noted that the room was only partly furnished 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 room will also decrease.**

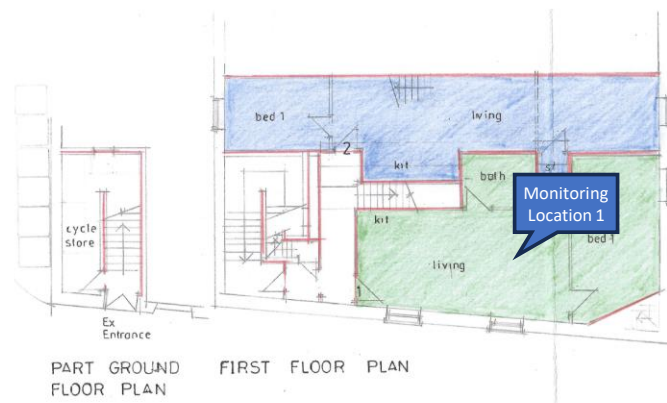


Figure 3
Monitoring location

4.2.2 Results

Noise monitoring took place during a weekday and over a 24-hour period.

The internal noise levels within the habitable room of Plot 1 are shown in Figure 4.

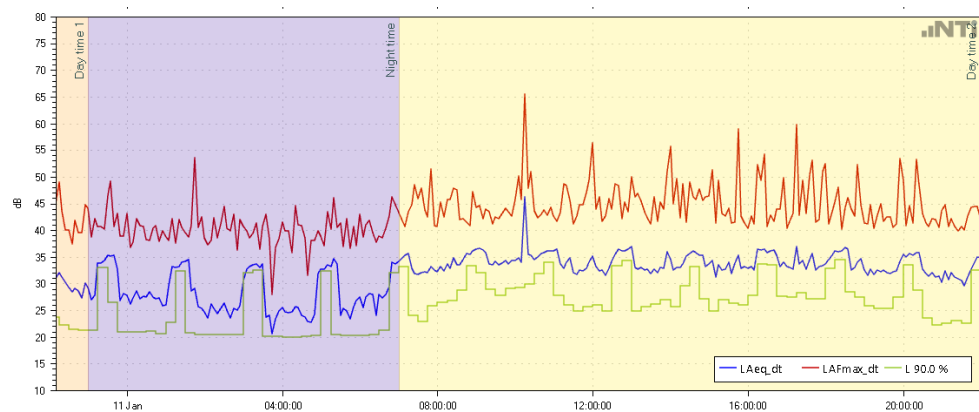


Figure 4
Internal time history – Plot 1

The undulating noise levels were due to the boiler switching on and off.



Date	Time		Duration	Time Period	L _{A90} dB	L _{Aeq} dB	L _{Amax} dB
	Start	Finish					
Wed 10/01/2024	22:10:00	23:00:00	0:50:00	day	21.7	29.8	49.0
	23:00:00	07:00:00	08:00:00	night	20.4	30.1	53.6
	07:00:00	22:05:00	15:05:00	day	26.6	34.6	66.5

Table 2
Summary of internal noise monitoring results

A summary of the night and day noise levels is:

Night 30 dB(A)

Day 34 dB(A)

4.2.3 Discussion

Noise measurements were made at the noisiest part of the site with direct line of sight, via window, of Thorp Road and Oldham Road.

To the north of the site there was no industrial noise, just some infrequent vehicle movements accessing EDM Engineering.

No noise was detected in the first-floor apartment that came from the ground floor plumber's merchant.

The dominant noise source impacting on the residential dwellings was road traffic noise from Oldham Road and, to a lesser extent, Thorp Road.

4.3 VISIT 2

The second visit measured internal noise levels within two habitable rooms with windows open.

4.3.1 Location

Internal noise measurements were taken at two locations:

1. South west - focussed on noise from within a habitable room facing Thorp Road and Oldham Road.
2. North east – facing EDM Ltd and the railway beyond.

Monitoring was unmanned and located as far from reflective surfaces as possible.



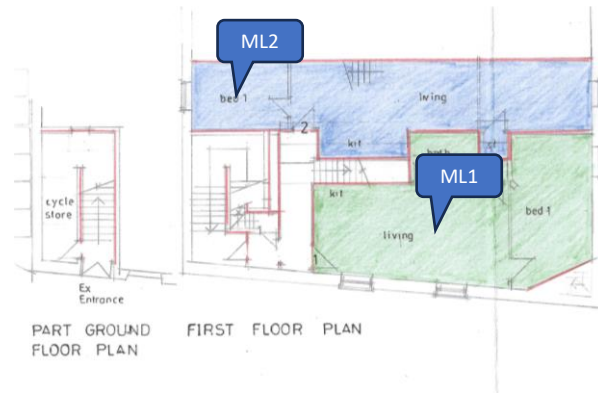


Figure 5
Monitoring locations

4.3.2 Results

4.3.2.1 Flat 1 - lounge

Noise monitoring took place during a weekday and over a 24-hour period.

The internal noise levels within the habitable room of Plot 1, with windows open, are shown in Figure 4.

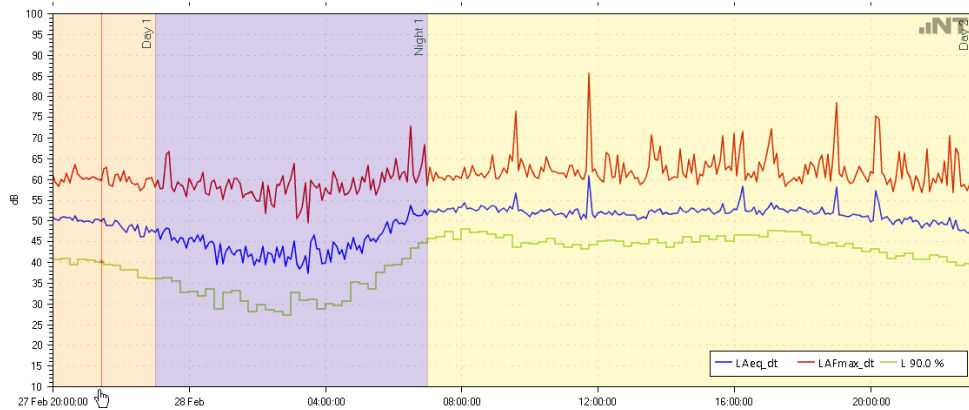


Figure 6
Internal time history – Plot 1 with window open

Date	Time		Duration	Time Period	L_{A90} dB	L_{Aeq} dB	L_{Amax} dB
	Start	Finish					
Tues 27/02/2024	20:00:00	23:00:00	03:00:00	day	38.9	49.4	63.6
	23:00:00	07:00:00	08:00:00	night	31.2	46.0	72.8
	07:00:00	23:00:00	16:00:00	day	43.9	52.2	85.5

Table 3
Summary of internal noise monitoring results – Flat 1 with windows open

A summary of the night and day noise levels is:

Night 46 dB(A)
Day 52 dB(A)



4.3.2.2 Flat 2 – bedroom

Internal noise measurements were also made within the north facing bedroom in Flat 2 with the windows

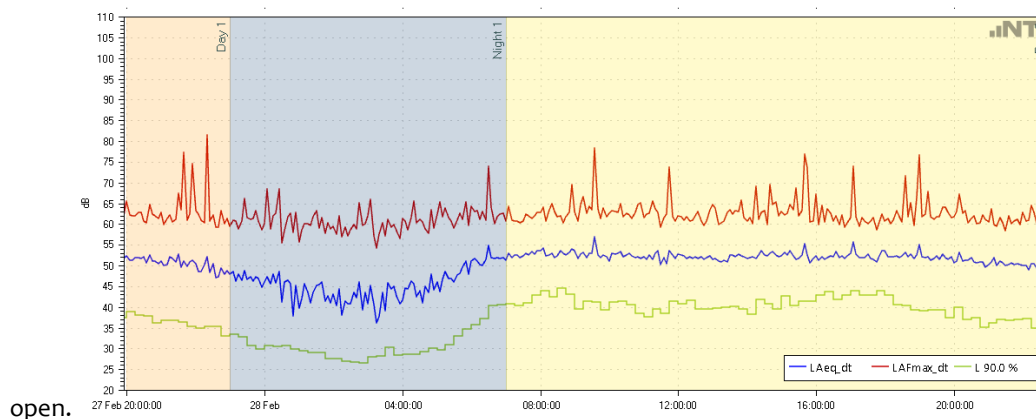


Figure 7
Internal time history – Plot 2 with window open

Date	Time		Duration	Time Period	L_{A90} dB	L_{Aeq} dB	L_{Amax} dB
	Start	Finish					
Tues 27/02/2024	20:00:00	23:00:00	03:00:00	day	35.8	50.6	81.4
	23:00:00	07:00:00	08:00:00	night	28.6	47.0	74.0
	07:00:00	23:00:00	16:00:00	day	39.3	52.1	78.3

Table 4
Summary of internal noise monitoring results – Flat 2 with windows open

A summary of the night and day noise levels is:

Night 47 dB(A)
Day 52 dB(A)

The noise levels in Flat 2 were very similar to those in Flat 1.

4.3.3 Discussion

To the north of the site there was no industrial noise, just some infrequent vehicle movements accessing EDM Engineering. However, road traffic and railway noise were evident.

No noise was detected in the first-floor apartment that came from the ground floor plumber's merchant.

The dominant noise source impacting on the residential dwellings was road traffic noise from Oldham Road and, to a lesser extent, Thorp Road.



5 ACOUSTIC ASSESSMENT

5.1 RESULTS OVERVIEW

5.1.1 Windows closed

Even though noise measurements were made at the most noise-exposed area of the site, the same noise levels will be applied to the whole site, for the closed windows situation.

Façade	period	room	Internal Levels L_{Aeq} (dB)			Result
			Limit	Meas	Diff	Discussion
ALL	night	bedroom	30	30	0	Noise level on the limit
	day	lounge	35	34	-1	under the limit by 1dB

Table 5
Measured noise level compared with day and night limits.

The measured night time noise level was at the limit of 30 dB.

All other internal noise monitoring was within recommended noise levels.

Even with partly unfinished rooms, the night and day time noise levels have been met when the windows are closed.

5.1.2 Windows open

When noise measurements were with the windows open, the noise levels at the north and south of the site were almost identical. The highest noise levels will be used in the assessment and applied to all elevations, for the open windows condition.

Façade	period	room	Internal Levels L_{Aeq} (dB)			Result
			Limit	Meas	Diff	Discussion
ALL	night	bedroom	30	47	+17	Noise level on the limit
	day	lounge	35	52	+17	under the limit by 1dB

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

When the windows are open, the interlay noise levels are 17 dB above the recommended thresholds for both the day and night time periods. Therefore, there should be alternative ventilation for all habitable rooms.

5.2 MITIGATION - VENTILATION

The Sonair 3 by Titon is a mechanical acoustic vent.

The brochure (see Appendix) states:

Sonair provides mechanical input ventilation when switched on, when switched off provides background trickle ventilation which includes a controllable shutter.



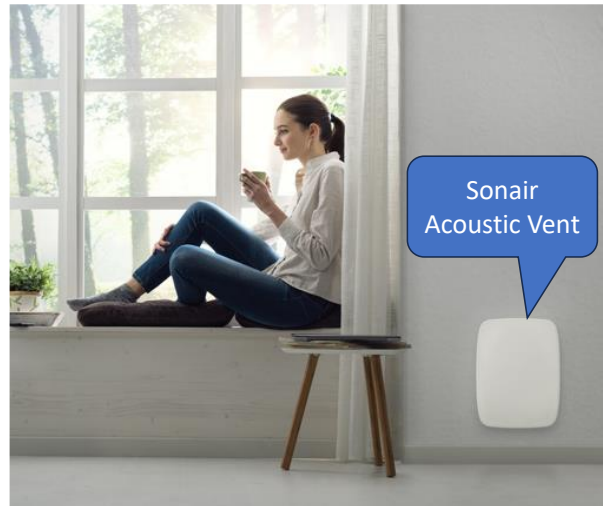


Figure 8
In-situ Titon Sonair acoustic vent

The Sonair unit provides a minimum sound reduction index of $50 \text{ dB } D_{n,e,w} + C_{tr}$ – this clearly achieves the minimum required of 17 dB.

The unit can also clean the air via filters. More details can be found at:

https://www.titon.com/uk/products/ventilation-systems/supply_ventilation/sonair3/

NB The above mechanical ventilation should be installed in ALL habitable rooms.**

Installation guidance should be sought from the manufacturers above.

6 CONCLUSION

A verification acoustic survey has taken place at 2-4 Thorp Rd, Newton Heath M40 5BJ to discharge condition 20 of planning application 124265/FO/2019 for the conversion to residential dwellings.

The results show that, when the windows are closed, the day and night internal noise levels within habitable rooms facing both Thorp Road and Oldham Road are within Council limits.

However, internal noise levels are increased when the same internal measurements are made with windows open. In this case, noise levels are 17 dB above the recommended threshold.

Therefore, the following mechanical ventilation unit is recommended for ALL habitable rooms:

The Sonair 3 by Titon mechanical acoustic vent.

7 REFERENCES

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



Appendix

A1 AS-BUILT SITE LAYOUT



Sonair 3

Acoustic (sound attenuating) filtered air supply units

For use fitted through walls

Sonair 3 provides mechanical input ventilation when switched on, when switched off provides background trickle ventilation which includes a controllable shutter.

It is designed with sound attenuating features to reduce noise transferring from outside to inside the home

Sonair 3 is a wall mounted input fan featuring a detachable remote control with an LED speed indicator.

- Sonair 3 ventilates and filters the air
- Independently tested for acoustic performance
- Exceptional sound attenuation (up to 58dB)
- Air cleaning
- Low energy

Sonair 3



Features & Benefits

- Meets guidelines for occupant accessibility
- Increase occupant awareness of system operation
- Discreet design
- power lead is 1.8m long and fitted with a 3 pin plug
- Supplied with a flexible 1.8m long cable with a 13 amp 3 pin plug fitted with a 3 amp fuse

Performance

Approximate input airflow rate (m³/h) – 20–150m³/h

Acoustic Dn,e,w (‘/’) – Dn,e,w (C;Ctr) 58(–1;–2)dB*

Tested to the ‘Noise Insulation Regulations’.

Background ventilation rate of 2400EA when the unit is switched off, recirculation flap closed and with the shutter open

*Sound insulating tube D100 required

Product	Product Code
Sonair 3 including G4/ISO Coarse 60%	352004
Sonair 3 Filter G4/ISO Coarse 60%	535083
Sonair 3 Sound Insulating Tube D100	110361
100mm dia (non-sound insulating) duct 350mm long	8960097
White external grille	8960105
Brown external grille	8960102
Beige external grille	8960103

All items supplied separately

Control

The Sonair 3's portable remote control lets you control the amount of freshly supplied outdoor air. The Sonair 3 has 10 ventilation settings.

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