BRAIDEN ACOUSTICS LTD

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

NOISE VERIFICATION REPORT

Prepared for : Abdel Razak Alanezy

Date : 28 Apr 2024

Site : 302 Platt Lane, Fallowfield

Report No. : 11256revA

1 INTRODUCTION

Braiden Acoustics has been commissioned by Abdel Razak Alanezy to undertake a verification noise survey at the site of 302 Platt Lane, Fallowfield in order to discharge planning conditions related to noise.

1.1 PLANNING PERMISSION

Planning application CDN/23/0603 proposes "Discharge of condition 4b (acoustic insulation scheme) and 5b (External Plant and equipment) from planning approval reference 135837/FO/2022.". The pertinent conditions are.

Condition 4 Acoustic Insulation

a) The submitted details are considered to be acceptable and should be implemented as part of the development.

b) requires the submission of a verification report to fully comply with condition 4 for the avoidance of doubt part b) of condition 4 states: "Prior to first use of the development a verification report shall be required to validate that the work undertaken throughout the development conforms to the recommendations and requirements in the approved acoustic consultant's report. The report shall also undertake post completion testing to confirm that acceptable 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 agreed noise criteria".

Condition 5 - External Plant

a)The submitted details are considered to be acceptable and should be implemented as part of the development.

b) requires the submission of a verification report to fully comply with condition 5 for the avoidance of doubt part b) of condition 5 states: "Prior to the operation of the agreed scheme a verification report shall be submitted to and approved in writing by the City Council as local planning authority 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 have 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.

This report deals only with the 'verification assessment' as outlined in part b) of the above conditions.

1.2 AIM

This report will assess the following:

- internal noise levels at the completed property,
- Sound Insulation test between ground and the first floor flat
- Noise emissions from the external plant.

Where compliance has not been met then there will be recommendations for solutions.

2 DESCRIPTION OF SITE

2.1 PROPOSED USE

The original application sought to change the use of the ground floor into a laundrette with the following equipment:

- 6no. JLA 30 Tumble Dryers
- 5no. JLA Washing Machines
    - 2 x T20
    - 1 x T30
    - 2 x T40

The rear of the six dryers connect to a passive ducted system and vent to the gable wall[1], as shown in the figure below.

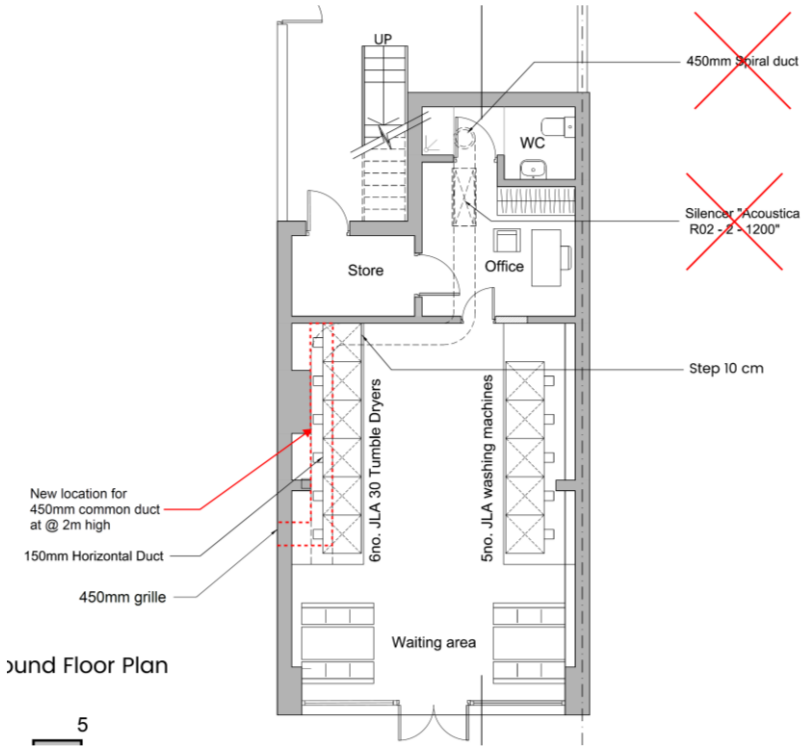


Figure 1
Plan drawing showing the ducted exhaust system

There are 150mm Ø ducts from the back of each dryer and then turn 90° upwards into a 200mm Ø duct and rise approximately 1800mm to a common 450mm Ø duct which is routed to the side of the property via a 90° bend into a flush grille in the gable wall.

2.1.1 Building services

There will be no other building service, except for the extraction system for the dryers mentioned above.

[1] Due to on-site issues, the design has been changed so that the common extract duct now vents via a 450mm grille in the gable wall.

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:

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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 LAmax,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

The Council have guidance for noise criteria and assessment methodologies that are described in their planning document [2]. It states:

The guidance aims to provide help and advice in relation to noise in a planning context to encourage good acoustic design. It outlines what is expected in relation to current guidance and policy with the aspiration that new developments achieve the highest possible standards without compromising the health and well-being of people that live and work within the City of Manchester.

3.3.1 Residential Developments

Section 3.6.1.1 of the Council's guidance states:

Manchester City Council has adopted the following internal noise limits for residential properties:

- ***Bedrooms***
  - ***30 dB LAeq (night time - 23.00 - 07.00)***
  - ***45 dB LAmax,F (individual noise events should not normally exceed by more than 15 times)***
- ***Living Rooms (daytime - 07.00 - 23.00) 35 dB LAeq***
- ***Gardens and terraces (daytime - 07.00 - 23.00) 55 dB LAeq***

3.3.2 Noise and Vibration from Fixed Plant / Equipment

Section 3.6.1.5.1 of the Council's planning guidance states:

Any noise assessment needs to consider not only the overall level of noise emitted but also its particular characteristics. The noise assessment should be based on BS 4142: 2014 and any application for fixed plant, equipment or machinery must demonstrate that:

'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'.

By designing the sound pressure level of any plant items to generate a noise impact of at ***least 5dB below the existing background level****, any plant noise impact should be of a negligible level which should not give rise to complaints from users or occupiers of existing noise-sensitive usages.*

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 – 23/02/24

Noise measurements focussed on noise within the laundrette.

Monitoring was unmanned.

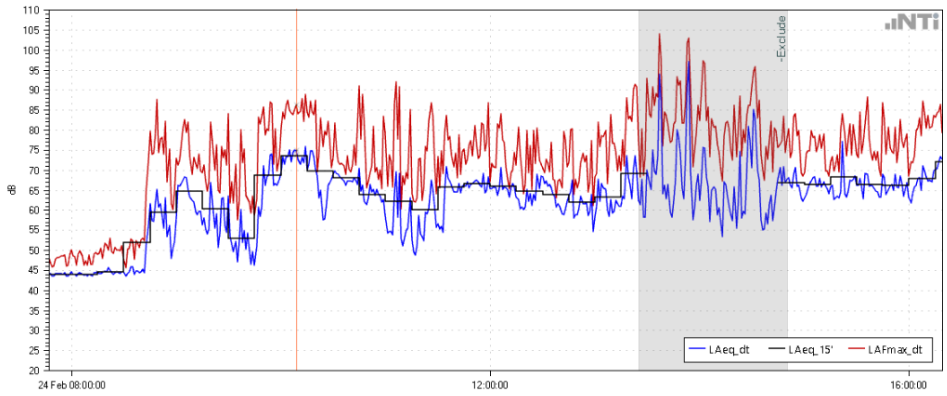
4.2.1 Location

The microphone was placed in a location that was away from any nearby reflective surfaces as possible and about 0.7m from the side wall.

4.2.2 Results

Noise monitoring took place during a busy weekday.

The internal noise levels within the laundrette are shown in Figure 2.



Cursor: Position=2024-02-24 10:09:00 LAeq_dt=74.7 dB LAeq_15'=73.4 dB LAFmax_dt=86.1 dB

Figure 2
Internal time history – laundrette

The highest 15-minutre noise level with the laundrette was:

73 dB(A).

4.3 Visit 2 – 02/03/24

On the second visit, the following noise measurements were taken:

- Sound insulation test of the separating floor and
- Noise emissions from the extract grille.

4.3.1 Sound Insulation Test

A sound insulation test was conducted through the separating floor between the shop and the first floor flat with the following result:

54 dB D_w.

4.3.2 Extract grille

Noise measurements at one metre from the extract grille gave a result of:

70 dB L_{Aeq}.

5 Acoustic Assessment

5.1 Sound insulation of separating floor

The typical upper noise level within the laundrette was 73 dB and the sound insulation of the floor was measured to be 54 dB; therefore, the noise level with the first floor flat was calculated to be 19 dB. This is well below the daytime threshold of 35 dB.

Hence no further mitigation is required for sound insulation and Condition 4 – Acoustic Insulation, can be fully discharged.

5.2 External plant noise

Noise measured at 1m from the grille was 70dB(A).



Figure 3
Extract grille in relation to Nearest Sensitive Receiver

The following was used to determine the noise level at the Nearest Sensitive Receiver (NSR):

- Grille area and directivity angle
- Distance
- Barrier effect.

Full calculation in the Appendix.

5.2.1 BS 4142 Assessment

The Specific Noise Level at the Nearest Sensitive Receiver was calculated to be 35 dB(A)[2]; this is used as the basis for the BS 4142 assessment.

[2] Even though there is only 8m distance between the grille and the Nearest habitable room, there is reduced noise due to the off-axis directivity of the grille and the significant barrier effect of the neighbouring building.

BS 4142 Noise Assessment (Extract Grille)	Value	dB
Total Specific Noise Level @ NSR		35
BS 4141		
Tonality	0/2/4/6	0
Impulsivity	0/3/6/9	0
Intermittency	0/3	3
Rating Noise Level		**38**
Background Noise Level (day)	L_{A90}	43
Rating minus Background		**-5**

Table 2
BS 4142 Extract Grille

The above Table shows that the Rating Level of the noise from the extract grille is 5 dB below the background; therefore, within acceptable limits.

Not further mitigation is required for the extract grille.

Condition 5 can now be fully discharged.

6 Conclusion

A verification acoustic survey has taken place at 302 Platt Lane, Fallowfield to discharge condition 4 (Acoustic Insulation) and Condition 5 (External Plant) of planning application 135837/FO/2022 for the change of use to a laundrette.

The results show that noise levels are within acceptable thresholds; hence Condition 4 and Condition 5 can be discharged.

7 References

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

[2] Environmental Protection
Planning & Noise - Technical Guidance
Manchester City Council, Dec 2015.

Appendix

A1 FULL CALCULATION OF PLANT NOISE

302 Platt Lane		Duct Calculation	Dryers Exhaust	Octave band centre frequency								
Item	Quantity	Description	Details	63	125	250	500	1000	2000	4000	Total level	
1a	1 m	Sound Pressure Level @ Xm	Project Result LZeq	73.7	71.1	68.8	72.7	66.7	64.5	61.9		
6		Silencer attenuation (1)	no silencer or n/a	0	0	0	0	0	0	0		
7		Silencer attenuation (2)	no silencer or n/a	0	0	0	0	0	0	0		
8		Att due to end reflection	no end reflection or n/a	0	0	0	0	0	0	0		
9		Louvre attenuation	no acoustic louvre or n/a	0	0	0	0	0	0	0		
		A weighting	yes	-26.2	-16.1	-8.6	-3.2	0.0	1.2	1.0		
10		Sound pressure at termination		47.3	54.8	60.0	67.5	62.7	59.7	56.9	70.1	
		Directivity	0.25m2 @ 60° - 0 surface	0	0	-1	-1	-1	-3	-3		
11	Q 1	No. of reflective surfaces	0 surfaces	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
12	8 m	Distance Attenuation	20*log10(r)	-18.06	-18.06	-18.06	-18.06	-18.06	-18.06	-18.06		
		Air absorption	15°C; 80% humidity	0.00	0.00	-0.01	-0.02	-0.03	-0.07	-0.19		
		Numerical correction	no	0.00	0.00	0.00	0.00	0.00	0.00	0.00		
	δ 0.6	Barrier	yes	-8.7	-10.7	-13.1	-15.8	-18.6	-21.5	-24.5		
		SPL(A) at NSR	$L_{p,NSR}$	**20.5**	**26.0**	**27.8**	**32.6**	**25.0**	**17.0**	**11.1**	**35.2**	**dB**

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