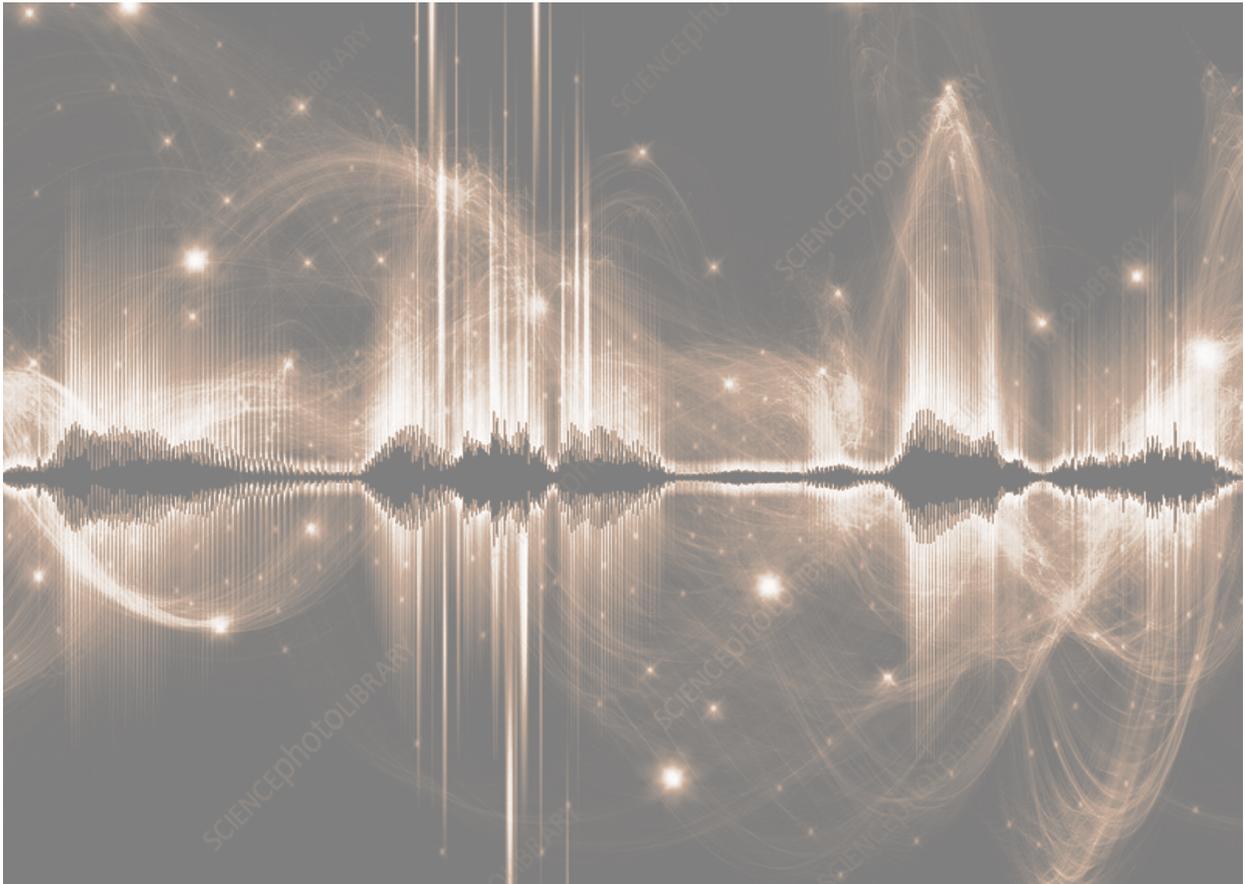


99 LANG AVENUE, BARNSELY, S71 5LU

NOISE IMPACT ASSESSMENT

ACOUSTIC CONSULTANCY REPORT NIA015



Date: Monday 2nd June 2025

Amina Osman Talha

BA HONS and MArch

1.0 DEVELOPMENT PROPOSAL

1.1 Planning Permission

Planning permission is being sought to change the use of 99 Lang Avenue from a residential dwelling into a children's residential care home, intended to accommodate a maximum of two children. To alleviate potential concerns by the noise pollution team regarding the noise transfer through the party wall to the adjacent residential property. As a result, we have provided an acoustic report to support the planning application. However, the need for additional insulation will be determined after a sound test with the new residents, which will assess the actual noise levels. The current report assumes increased noise and disruption, which may not necessarily occur. Should noise levels increase, the recommendations in the report for insulating the adjoining walls should be followed.

The planning application will be submitted along with this report.

It must be noted that the property does benefit from permitted development rights, and my client could foster two children who would live with them, and no planning permission would be required.

Any noise in the future can be dealt with by other statutory bodies of the Local Authority and enforce legislation to ensure noise is kept at acceptable levels.

However, we acknowledge that noise can be a concern not only for neighbouring properties but also for the well-being of both the children and the staff.

Impact on Children's Health

- **Hearing Damage:** Prolonged exposure to high noise levels can impair children's hearing, especially in environments where noise is consistently elevated.
- **Stress and Anxiety:** Persistent noise can cause stress, leading to anxiety, sleep disturbances, and difficulty concentrating. Children, particularly those with a history of trauma, may be especially vulnerable.
- **Learning Difficulties:** High noise levels can impair concentration, making it difficult for children to focus on tasks and engage in learning and communication.

Impact on Staff

- **Stress:** Staff members may experience stress due to high noise levels, which could affect their job performance and potentially lead to burnout.
- **Communication Issues:** In noisy environments, staff may struggle to communicate effectively with one another, leading to misunderstandings or safety risks.

Types of Noise

It is important to acknowledge that noise can come in various forms, and it would be unjust to assume that all noise will result from disruptive behaviour such as screaming or shouting.

- **Physical Noise:** This includes typical sounds from children playing, talking, or moving around, which is expected in communal living spaces and is similar to noise in a residential home.
- **Environmental Noise:** External factors such as traffic, construction, or other surrounding noise sources may affect the building's soundproofing.
- **Behavioural Noise:** Children may occasionally raise their voices out of excitement, frustration, or anger. However, it is important to note that many children in care homes may be very calm and follow house rules, so noise levels may be lower than expected. A normal family unit may also have the same level of noise.

Any future noise concerns can be addressed by relevant statutory bodies within the Local Authority, who have the authority to enforce noise control measures to ensure acceptable noise levels.

Potential Solutions for Reducing Noise

Various strategies can be implemented to minimise noise, including both physical changes to the property and proactive approaches by the staff:

- **Soundproofing:** Installing soundproofing materials like acoustic panels, carpets, or noise-reducing windows can effectively reduce noise.
- **Noise-Cancelling Devices:** White noise machines or noise-cancelling headphones can be used, especially for children who are more sensitive to noise.

-
- **Designating Quiet Areas:** Creating specific areas for quiet time where children and staff can retreat when needed will help manage noise levels.
 - **Staff Training:** Training staff to manage noise and implement strategies such as setting quiet hours or teaching calming techniques can be effective in controlling disruptions.
 - **Behavioural Management:** Encouraging quieter activities and teaching children to communicate calmly can also help maintain a peaceful environment.

1.2 Council Requirements

The Council requires an acoustic assessment to demonstrate that, with a noise level of 85 dB in the proposed care home, the noise level in the adjacent property will not exceed 30 dB. It is assumed that the noise level of up to 85 dB in the care home primarily represents the sound of children's voices.

2.0 ACOUSTIC ASSESSMENT

2.1 Separating Wall Construction

The property is a semi-detached dwelling. According to the architect, the separating wall at 101 Lang Avenue consists of two skins of blockwork with an insulated cavity. Typically, this construction involves two layers of medium-density blocks with a 75mm cavity in between. A prediction model, identified as LA01 and produced using Insul software, indicates that this construction generally achieves a weighted sound reduction index (Rw) of approximately Rw50. On the other side of the wall is constructed of the same materials; however, there is an alleyway on the ground floor separating 97 Lang Avenue, so the transfer here will be minimal, as there is a natural buffer.

2.2 Sound Insulation Upgrade

To significantly enhance the sound insulation properties of the existing separating wall, the installation of an independent wall lining system is recommended, as shown in the attached sketch LA02. The key specifications for this system are as follows:

- The studs must not be connected to the existing wall.
- Studs should be spaced no closer than 600mm centres.
- A cavity width of at least 75mm is required.
- At least 25mm of acoustic insulation quilt should be installed in the cavity.
- The wall should be finished with two layers of 15mm acoustic plasterboard.

A proprietary system is not required, though options such as the British Gypsum Gypliner Independent or the Hush HD1055 system are available. When applied to just one side of the existing wall, this upgrade is expected to substantially improve the acoustic performance. The Insul prediction LA02 suggests that the performance could increase to around Rw90, though actual performance may be constrained by flanking transmission. Even so, with correct installation, an Rw65 performance level should be achievable.

2.3 Predicted Sound Transfer Levels

Calculation LA03 predicts that with an internal noise level of 85 dB(A) in the care home, the resultant noise level in the adjacent property, following the wall upgrade, would be 23 dB(A). This prediction assumes that the upgraded wall achieves an Rw65 rating and that noise sources and receivers are positioned directly on either side of the separating wall.

2.4 Conclusion

The analysis in this report indicates that the proposed wall lining upgrade will enable the separating structure to achieve a sound attenuation level exceeding 60 dB. Consequently, it can be concluded that the installation of the recommended independent wall-lining system within the care home will comfortably meet the Council's noise attenuation requirements.

We agree to the following conditions:

1. The development must begin within three years from the date of this permission to comply with Section 91 of the Town and Country Planning Act 1990 (as amended).
2. The development shall be carried out in accordance with the approved plans and details unless otherwise approved by the Local Planning Authority.
3. The total number of residents, excluding carers and managers, shall not exceed three at any time.

Sound Insulation Prediction (v8.0.11)

Program copyright Marshall Day Acoustics 2015

- Key No. 2567

Margin of error is generally within $R_w \pm 3$ dB

Job Name:

Job No.:

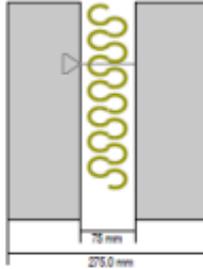
Date: 16 May 24

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Notes:



R_w	51 dB
C	-1 dB
C_{tr}	4 dB
$D_{nT,w}$	53 dB

System description

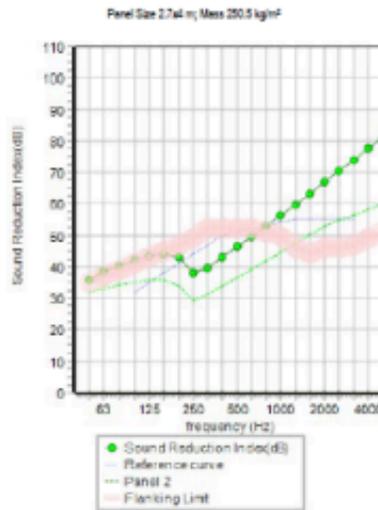
Panel 1 : 1 x 100.0 mm mm Concrete Block (μ :1250 kg/m³, E:8.30Pa, ν :0.02, μ :125 kg/m², f_0 :252 Hz)

Cavity: Butterfly Tite Stud spacing 500 mm, Infil Fibreglass (10kg/m³) Thickness: 80 mm (μ :10 kg/m³, Rf:4000 Pa.s/m²)

Panel 2 : 1 x 100.0 mm mm Concrete Block (μ :1250 kg/m³, E:8.30Pa, ν :0.02, μ :125 kg/m², f_0 :252 Hz)

Mass-air-mass resonant frequency =34 Hz

Frequency (Hz)	R(dB)	R(dB)
50	36	
63	38	38
80	40	
100	42	
125	44	43
160	44	
200	43	
250	38	40
315	40	
400	43	
500	46	45
630	50	
800	53	
1000	56	56
1250	60	
1600	63	
2000	67	66
2500	70	
3150	74	
4000	78	77
5000	81	



Description

Predicted Performance of Existing Wall

Project

99 LANG AVENUE

Date

04/06/2025

Drawing No.

LA01

Sound Insulation Prediction (v8.0.11)

Program copyright: Marshall Day Acoustics 2015

- Key No. 2567

Margin of error is generally within $R_w \pm 3$ dB

Job Name:

Job No.:

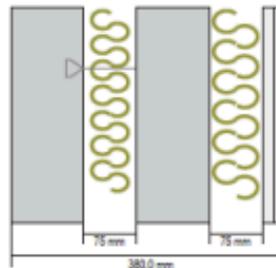
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Notes:



R_w	94 dB
C	-5 dB
C_p	-12 dB
$D_{nT,w}$	96 dB

System description

Panel 1 : 1 x 100.0 mm mm Concrete Block ($\rho=1250$ kg/m³, $E=8.30$ Pa, $\nu=0.02$, $\mu=125$ kg/m², $f_0=252$ Hz)

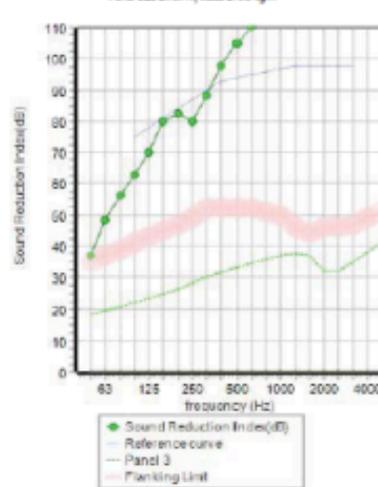
Cavity: Butterfly Tie: Stud spacing 600 mm, Infill Fibreglass (10 kg/m³) Thickness: 50 mm ($\rho=10$ kg/m³, $R=4000$ Pa.s/m²)
 Panel 2 : 1 x 100.0 mm mm Concrete Block ($\rho=1250$ kg/m³, $E=8.30$ Pa, $\nu=0.02$, $\mu=125$ kg/m², $f_0=252$ Hz)

Cavity: None: Stud spacing 600 mm, Infill Fibreglass (10 kg/m³) Thickness: 60 mm ($\rho=10$ kg/m³, $R=4000$ Pa.s/m²)
 Panel 3 : 2 x 15.0 mm Gyproc SoundBloc 15mm ($\rho=842$ kg/m³, $E=3.10$ Pa, $\nu=0.01$, $\mu=12.6$ kg/m², $f_0=2246$ Hz)

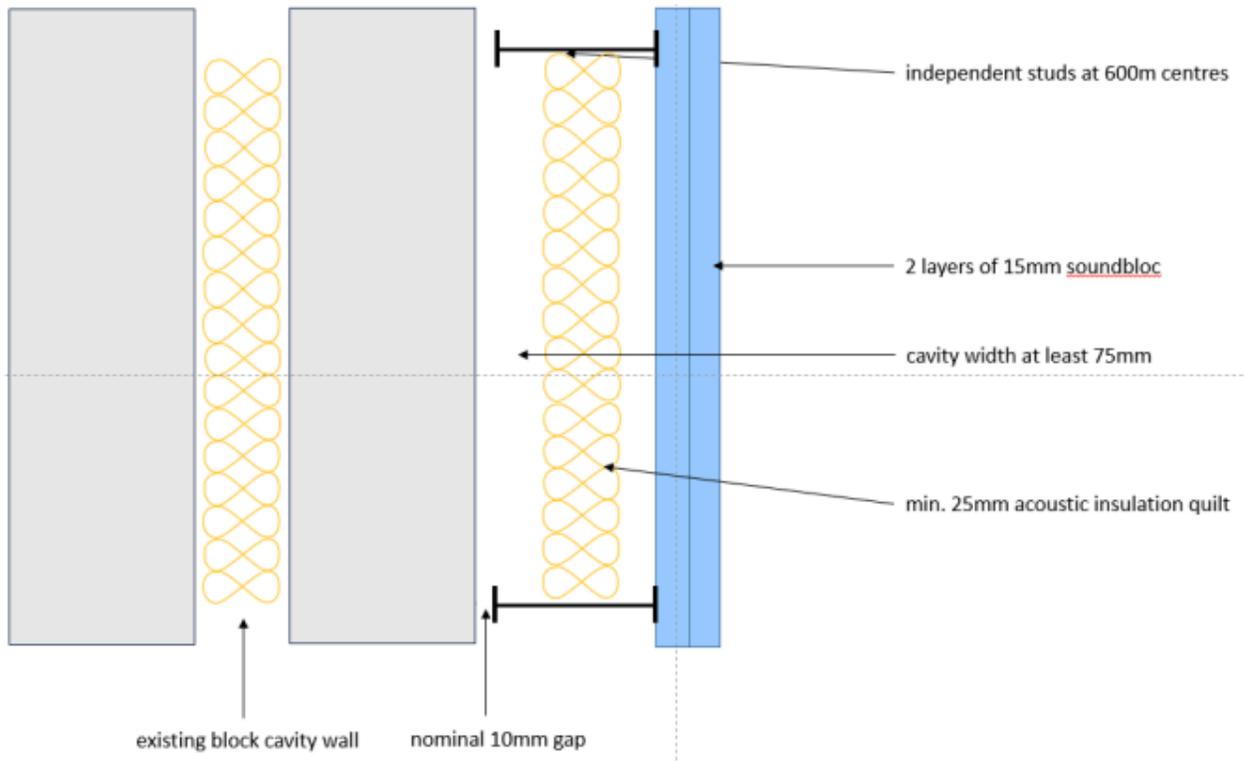
Mass-in-mass resonant frequency ≈ 25 Hz, 49 Hz

Panel Size 2.744 m, Mass 276.3 kg/m²

frequency (Hz)	R ₁ (dB)	R ₂ (dB)
50	37	
63	48	41
80	56	
100	63	
125	70	67
160	80	
200	83	
250	80	82
315	88	
400	98	
500	105	101
630	110	
800	114	
1000	118	117
1250	121	
1600	124	
2000	124	124
2500	125	
3150	137	
4000	140	139
5000	143	



	Description	
	Predicted Performance of Upgraded Wall	
	Project	
	99 LANG AVENUE	
Date	04/06/2025	Drawing No.
		LA02



	<u>Description</u>	
	Predicted Performance of Upgraded Wall	
	<u>Project</u>	
	99 LANG AVENUE	
	<u>Date</u>	<u>Drawing No.</u>
	04/06/2025	LA03

SOUND TRANSFER PREDICTION

26 18 27 23 13 7 1 -8 23

	Octave Band Centre Frequency - Hz								dB (A)
	63	125	250	500	1K	2K	4K	8K	
Reverberant sound pressure levels in a Care Home	64	70	80	84	81	76	70	61	85
SRI of separating structure (allowing for flanking transmission)	42	56	57	65	70	70	70	70	
reverberant to reverberant L_p	26	18	27	22	12	6	0	-9	
reverberant to direct L_p	16	8	17	13	5	0	-6	-15	
Total L_p at receiver position (sum of reverberant and direct fields)	26	18	27	23	13	7	1	-8	23

CALCULATIONS LA04

Appendix 1
 PROPOSED FLOOR PLANS

