21 CHURCH ROAD NORTHWOOD HA6 1AR

BS8233 NOISE ASSESSMENT REPORT

10 February 2026

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-	First Issue - Noise Assessment Report	Damien Hesnan	10/02/2026

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1.0 INTRODUCTION

Aran Acoustics Ltd, in collaboration with Airtight Building Solutions Ltd, have been appointed to undertake an environmental noise assessment for the proposed residential development at 21 Church Road, Northwood.

The proposals comprise the change of use and internal reconfiguration of the existing detached dwelling to form an eight-bedroom House in Multiple Occupation (HMO), together with associated alterations including rear, first floor and loft-level works. The site is located within the London Borough of Hillingdon.

As part of the current planning application, the Local Planning Authority has requested the submission of a Noise Assessment to establish the prevailing environmental noise climate affecting the site and to demonstrate that appropriate internal and external noise criteria can be achieved for the proposed noise-sensitive accommodation.

An environmental noise survey has been undertaken to determine representative ambient and background sound levels at the site over a 24-hour period. The survey data has been used to inform an assessment of potential noise ingress into the proposed habitable rooms and to define suitable façade sound insulation, glazing and ventilation measures in accordance with British Standard BS 8233:2014 Sound insulation and noise reduction for buildings – Code of practice, Approved Document O of the Building Regulations, and other relevant guidance.

This report describes the noise survey methodology and results, reviews the applicable planning and acoustic guidance, and sets out the mitigation measures required to ensure that appropriate internal noise levels are achieved within the proposed development.

2.0 SITE DESCRIPTION

The proposed development is located at 21 Church Road, Northwood, within the London Borough of Hillingdon. The site comprises an existing detached residential dwelling positioned on the western side of Church Road.

The scheme includes the conversion, part extension and internal reconfiguration of the existing dwelling to form an eight-bedroom House in Multiple Occupation (HMO), including rear, first-floor and loft-level alterations. Habitable rooms are proposed on both front- and rear-facing façades across multiple storeys.

Church Road forms a local distributor route connecting Northwood Way to the north and Chester Road to the south, and experiences regular vehicular traffic throughout the day and evening. Traffic movements include private cars, light goods vehicles and occasional service vehicles associated with nearby residential and local commercial activity.

The surrounding area is predominantly residential in character, comprising detached and semi-detached dwellings with private rear gardens. The immediate vicinity includes junctions with Green Lane, Gatehill Road and Townsend Way, which contribute to local traffic movements, particularly during daytime and early evening periods.

The application property is set back only marginally from the Church Road carriageway, resulting in direct exposure of the front elevation to road traffic noise. The rear of the site comprises private garden space and is screened from Church Road by the existing building, with additional screening provided by neighbouring properties, boundary treatments and vegetation. As a result, the rear façade is subject to a lower noise exposure relative to the front elevation.

A location plan and aerial photograph of the site and surrounding area are provided in Figure 2.1.

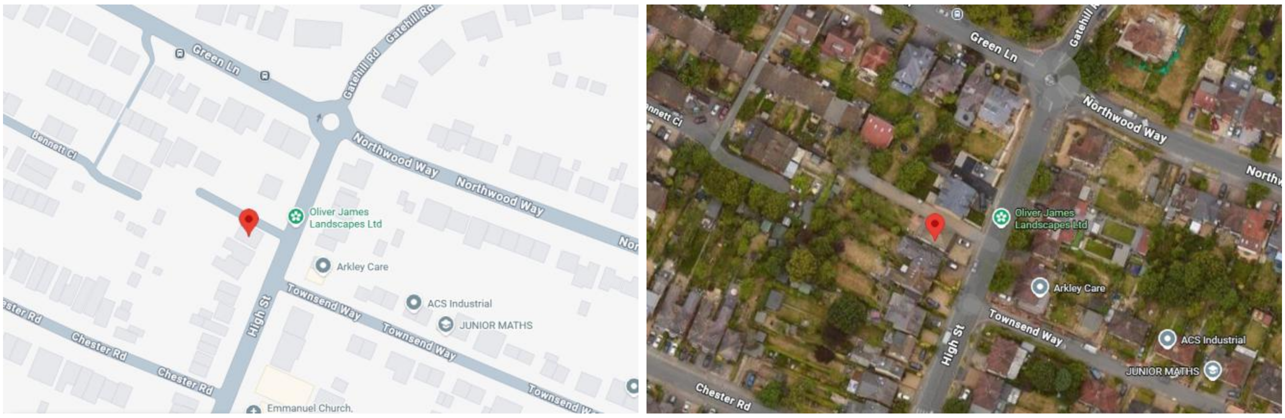

Figure 2.1 - Location map and aerial photo of proposed site*

**Imagery courtesy of Google Maps*

3.0 NOISE SURVEY

An environmental noise survey was undertaken on 29 January 2026 to establish representative external noise levels affecting the proposed residential development. The survey data has been used to inform the assessment of potential noise ingress into the proposed habitable rooms and to determine appropriate façade, glazing and ventilation performance requirements.

3.1 Measurement Position

Noise monitoring was undertaken using unattended Class 1 instrumentation positioned at first-floor level, facing the Church Road. The microphone was mounted externally from a front-facing window to ensure a secure and uninterrupted 24-hour dataset. The position was selected to represent the worst-case noise exposure at the site, being directly exposed to road traffic and local activity.

This location provides a conservative dataset for façade assessment, as rear-facing elevations are screened by the existing building and are subject to lower ambient noise levels.

A site plan showing the microphone location is provided in Appendix A. Site photos of the measurement position are provided in Appendix B.

3.2 Measurement Equipment

The following measurement equipment was used, which complies with the performance specifications for Class 1 devices in accordance with BS EN 61672-1:2003.

Name	Serial Number	Last Calibrated	Calibration Due
Norsonic Precision Sound Analyser Type 140	1404768	Nov 2024	Nov 2026
Norsonic Type 1209 Pre-amplifier	31313	Nov 2024	Nov 2026
Norsonic Type 1225 Microphone	157320	Nov 2024	Nov 2026
Rion Type NC-74 Acoustic Calibrator	35046846	Feb 2025	Feb 2026

Table 3.1 - Measurement equipment used on site

The meter was calibrated before and after the noise survey where no significant deviations were found. The meters were set to measure consecutive ‘A’ weighted 10-minute time samples.

3.3 Weather Conditions

Weather conditions during the survey were dry and calm with wind speeds below 5 m/s and ambient temperatures between 04 °C and 11 °C.

These conditions were suitable for environmental noise monitoring in accordance with BS 7445-1:2003 ‘Description and measurement of environmental noise’.

4.0 SURVEY RESULTS

The noise levels measured at the fixed measurement position are shown in Figure 4.1 below. The full set of acoustic data measured on site is available upon request.

4.1 24-Hour Measurement

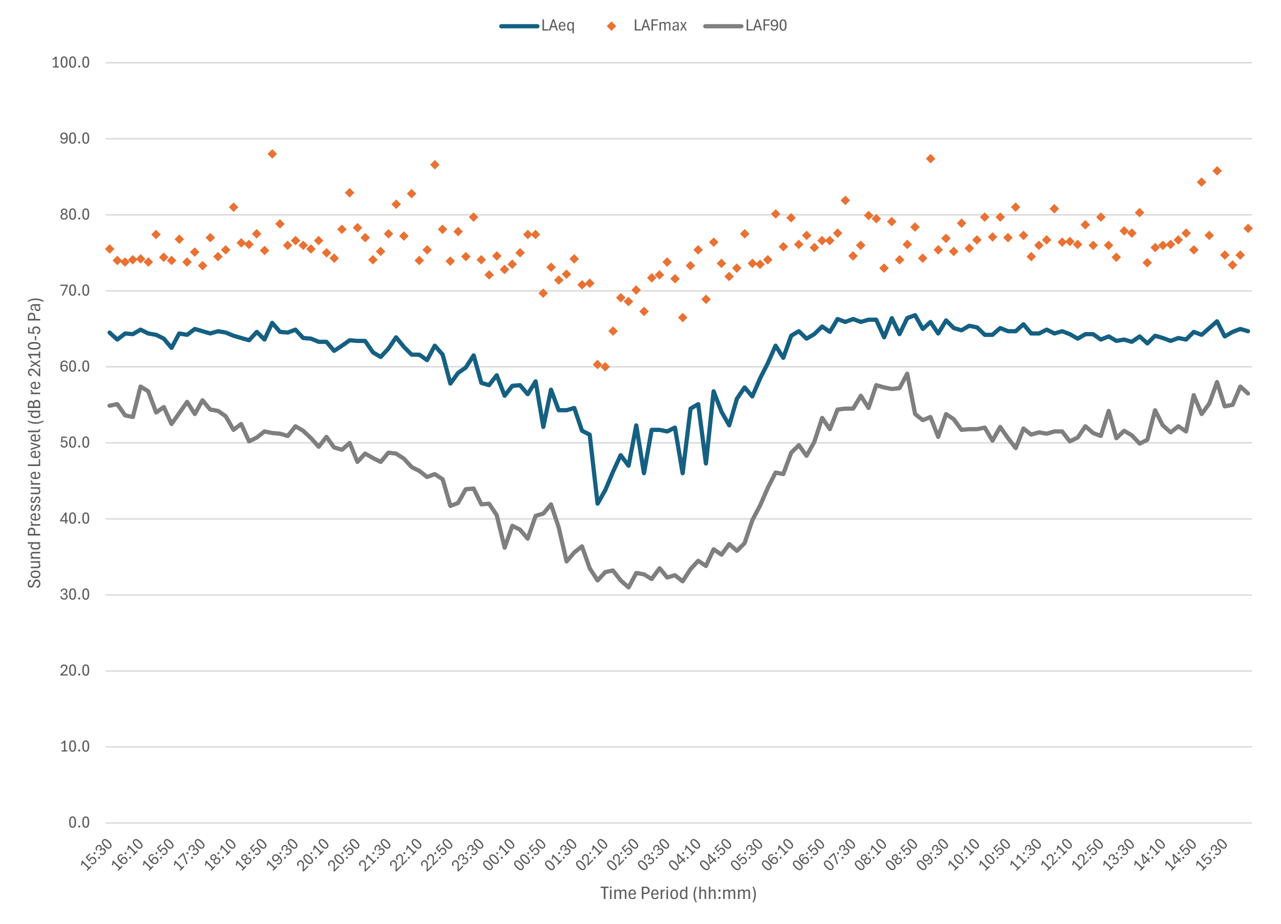

Figure 4.1 – Measured Noise Levels

The chart shows that overall noise levels followed a typical diurnal pattern for a roadside residential location. Daytime L_{Aeq} values remained relatively consistent, reflecting the influence of steady road traffic along Church Road, with noise levels reducing after 23:00 hours and reaching a minimum during the early morning period before increasing again during the morning peak.

Short-term maximum noise events (L_{AFmax}) occurred during both daytime and night-time periods and were associated with individual vehicle pass-bys and intermittent traffic movements. A summary of the representative 24-hour average noise levels is provided below.

Time Period	Average Noise Levels L_{Aeq}	Maximum Noise Level L_{AFmax}, dB
Daytime $L_{Aeq,16\,Hour}$ (07:00 – 23:00 hours)	64 dB	-
Night time $L_{Aeq,8\,Hour}$ (23:00 – 07:00 hours)	58 dB	80 dB

Table 4.1 – Summary of 24-Hour Measured Noise Levels

5.0 GUIDANCE DOCUMENTATION – NOISE CONTROL

The section above provides a summary of the noise levels on site. The purpose of this section is to provide a summary of guidance documentation relating to this development.

5.1 National Planning Policy Framework

The Government published the National Planning Policy Framework (NPPF) which sets out the Government's planning policies for England and how these are expected to be applied.

The Framework replaced many of the Planning Policy documents including Planning Policy Guidance 24: Planning and Noise that provided guidance on the control of noise to sensitive developments which may be affected by noise and vice versa. The NPPF provides a framework within which local people and their council can produce their own distinctive local and neighbourhood plans, which reflect the needs and priorities of their communities.

With regards to noise, the Framework states that 'Planning policies and decisions should aim to:

- avoid noise from giving rise to significant adverse impacts[27] on health and quality of life as a result of new development;
- mitigate and reduce to a minimum other adverse impacts[27] 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;[28] 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.

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[27] See Explanatory Note to the Noise Policy Statement for England (Department for the Environment, Food and Rural Affairs).

[28] Subject to the provisions of the Environmental Protection Act 1990 and other relevant law.

With regards to 'adverse impacts' and 'significant adverse impacts' the NPPF does make reference to The Noise Policy Statement for England, published by Defra in March 2010.

5.2 Noise Policy Statement for England

The aim of the Noise Policy Statement for England (NPSE) is to provide clarity regarding current policies and practices to enable noise management decisions to be made within the wider context, at the most appropriate level, in a cost-effective manner and in a timely fashion. The NPSE applies to all forms of noise including environmental noise, neighbour noise and neighbourhood noise.

Noise Policy Vision: Promote good health and a good quality of life through the effective management of noise within the context of Government policy on sustainable development.

Noise Policy Aims: Through the effective management and control of environmental, neighbour and neighbourhood noise within the context of Government policy on sustainable development:

- avoid significant adverse impacts on health and quality of life;
- mitigate and minimise adverse impacts on health and quality of life; and
- where possible, contribute to the improvement of health and quality of life

The NPSE explanatory note provides further guidance on 'adverse' and 'significant adverse' impacts as follows:

- NOEL - No Observed Effect Level: the level below which no effect can be detected. Below this level there is no detectable effect on health and quality of life due to noise;
- LOAEL - Lowest Observable Adverse Effect Level: the level above which adverse effects on health and quality of life can be detected;
- SOAEL - Significant Observed Adverse Effect Level: the level above which significant adverse effects on health and quality of life occur.

The NPSE states that: *it is not possible to have a single objective noise-based measure that defines SOAEL that is applicable to all sources of noise in all situations. Consequently, the SOAEL is likely to be different for different noise sources, for different receptors and at different times.*

It can be concluded that the NPPF and NPSE define the concepts for the various levels of effect from noise however do not provide specific values. It is seen that it is up to the discretion of the Local Planning Authority to decide on what is deemed acceptable taking into account the specific circumstances for the proposed development.

5.3 World Health Organisation Guidelines

The World Health Organisation (WHO) document 'Guidelines for Community Noise' 1999 provides guidance to local authorities and professionals trying to protect people from the harmful effects of noise in non-industrial environments. Section 4 of the document provides guideline values with regards to specific environments and effects. The WHO document states the following:

In dwellings, the critical effects of noise are on sleep, annoyance and speech interference. To avoid sleep disturbance, indoor guideline values for bedrooms are 30 dB L_{Aeq} for continuous noise and 45 dB L_{AFmax} for single sound events. Lower levels may be annoying, depending on the nature of the noise source.

WHO guidelines are typically adopted and applied to various noise sources with the criteria that indoor ambient noise levels in bedrooms at night does not exceed 30 dB L_{Aeq} and individual noise events should not normally exceed 45 dB $L_{AFmax.}$ For indoor areas during the daytime, noise levels should not generally exceed 35 dB L_{Aeq}.

5.4 British Standard 8233:2014

BS8233:2014 'Guidance for sound insulation and noise reduction for buildings' provides information on the design of buildings that have internal acoustic environments appropriate to their functions. It provides guidance on the control of noise from outside the building, noise from plant and services within it, and room acoustics for non-critical situations.

BS8233 provides a range of internal noise levels within unoccupied spaces depending on the buildings use. BS8233 states that for bedrooms at night, it is desirable that the indoor ambient noise level does not exceed 30 dB L_{Aeq}. For living rooms during the daytime, indoor ambient noise levels should not generally exceed 35 dB L_{Aeq}.

BS8233:2014 advises that: *Regular individual noise events can cause sleep disturbance. A guideline value may be set in terms of SEL or $L_{AFmax,F}$ depending on the character and number of events per night. Sporadic noise events could require separate values.*

5.5 Summary of Guidance Documentation and Conclusion

The Noise Policy Statement for England does not provide any specific guidance on noise levels for residential developments however there are a number of documents that provide guideline values.

It is proposed that the noise level criteria within the WHO Guidelines 1999 and BS8233:2014 are adopted. These noise level targets have been imposed upon similar developments and are seen as suitable design targets where disturbance to future habitants are unlikely. These target noise level values are tabulated within the table below.

Habitable Space	Time Period	Noise Level Target
Sleeping (night)	23:00 – 07:00 hours	30 dB $L_{Aeq\ 8hr}$ / 45 dB L_{AFmax}
Resting / Sleeping (day)	07:00 – 23:00 hours	35 dB $L_{Aeq\ 16hr}$

Table 5.1 - Proposed noise level targets

6.0 BS8233 FAÇADE ASSESSMENT

To assess the internal acoustic environment within the proposed flats, façade break-in calculations have been carried out in accordance with BS8233:2014. The aim is to ensure internal noise levels remain within recommended criteria for both daytime and nighttime periods. Window and room sizes are based on current layout drawings.

Sample calculations are provided in Appendix C and use worst-case external noise levels as presented in Table 4.1, along with appropriate corrections to the measured spectral data.

6.1 External Envelope Construction

It is assumed that the existing building will retain or replace solid masonry external walls with a minimum overall thickness of 300mm.

Calculations show that to achieve a reasonable internal acoustic environment in habitable rooms as specified within BS 8233, the building envelope constructions should be selected to meet the sound reduction values R_w, presented in Table 6.1. To assist in selecting suitable constructions, sample specifications are provided. Insul data sheets are provided in Appendix D.

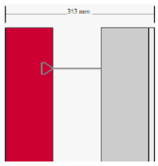
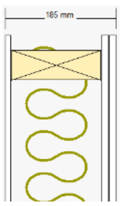
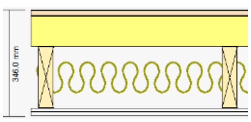
Type	Plan view	Construction Specification	Acoustic Rating
Masonry Wall		• 100mm Brick (density >1600 kg/m^3) • 100mm Cavity (minimum) • Thermal Insulation as required in cavity • 100mm Concrete Block (density >1250 kg/m^3)	**53 dB R_w**
Dormer Walls		• Wall Membrane • 10mm Cement Fibre Board • PIR Insulation as required • 150mm Timber Stud • 100mm Mineral Wool (density >10 kg/m^3) • 2 layers of 12.5mm WallBoard	**48 dB R_w**
Pitched Roof		• 14mm Roof Tiles on Battens • Roof Membrane • Minimum 150mm Joists • 100mm Mineral Wool (density >10 kg/m^3) • 1 layer of 12.5mm WallBoard	**51 dB R_w**
Flat Roof		• Roof Membrane • 18mm Plywood Deck • PIR Insulation as required • Minimum 150mm Joists • 100mm Mineral Wool (density >10 kg/m^3) • 2 layers of 12.5mm WallBoard	**46 dB R_w**

Table 6.1 - Building envelope sound insulation performance requirements

6.2 Glazing Specifications

Based on the results of the façade break-in calculations, each habitable room must be fitted with glazing systems that achieve the following minimum sound insulation ratings (R_w) to comply with internal noise criteria:

Room Location	Example Glazing Specification	Minimum R_w (dB)
All Habitable Rooms	4mm Glass / 12mm Air Cavity / 4mm Glass	**31**

Table 6.2 – Minimum SRI for double glazing to habitable room

The glazing specified above is considered standard double glazing. It is noted that double glazing has already been installed at the property. While laboratory-tested performance data can provide assurance of compliance, the actual acoustic performance in situ depends on proper installation, sealing, and the condition of the frames. As such, the existing windows and seals should be inspected to confirm they remain intact, are well-fitted within the frames, and that the glazing units are fully sealed. Provided the system is in good condition and installed to an appropriate standard, the sound insulation performance outlined in Table 6.2 is expected to be achieved.

6.3 Ventilation

It is generally accepted that a partially open window provides 10–15 dB attenuation from external noise sources. Where external noise levels exceed internal design targets by more than 15 dB, openable windows should generally be avoided as a primary means of background ventilation.

Based on the survey results, external noise levels at the façades of the proposed development exceed the thresholds where openable windows could be relied upon. Therefore, alternative means of ventilation should be provided.

Where a mechanical ventilation system is not proposed, a passive strategy may be adopted using acoustically treated background ventilators. These should be specified to meet or exceed the minimum sound reduction values summarised in the table below.

Room Description	Example Trickle Vent Specification	Minimum $D_{n,e,w}$ (dB)
Rear Elevation	Simon Acoustic FV	**32**
Front Elevation	Simon Acoustic EHAS	**38**

Table 6.3 - Minimum Sound reduction for acoustic trickle vents

These values assume one ventilator per window. Where additional vents are installed, a correction factor must be applied using the formula: **$10 \times \log(N_1 / N_2)$,** where N_1 is the reference number (typically 1 per window), and N_2 is the actual number of vents.

All ventilation systems should comply with Building Regulations Part F, while ensuring internal noise levels remain within BS8233 thresholds.

6.4 Maximum Internal Noise Levels

To achieve a reasonable standard in bedrooms during the night, the World Health Organisation *Guidelines for Community Noise* recommend that individual noise events should not regularly exceed 45 dB L_{AFmax}. The WHO references research by Vallet & Vernet, which defines "regularly" as occurring no more than 10 to 15 times per night.

Based on a glazing specification providing a minimum sound reduction of 31 dB R_w to front-facing bedrooms, the corresponding allowable external maximum noise level is 76 dB L_{AFmax} during the night-time period.

Review of the survey data indicates that external noise levels exceeded 76 dB L_{AFmax} on nine (9) occasions during the night. This is below the threshold for regular occurrence as defined by the WHO guidance and indicates that maximum noise events are unlikely to give rise to sleep disturbance. The majority of the recorded exceedances were limited to approximately 1–2 dB above the threshold, and therefore no additional mitigation is considered necessary at this stage.

6.5 Overheating Assessment

An assessment of potential overheating risk has been undertaken with reference to the ANC/IOA/CIBSE Acoustics, Ventilation and Overheating (AVO) Design Guide (2020). This guidance identifies indicative thresholds of 50 dB $L_{Aeq,8h}$ at night and 65 dB L_{AFmax} (10th highest), beyond which occupants may be reluctant to open windows for cooling, thereby increasing the risk of overheating.

At the most exposed façades facing Church Road, the night-time noise level is 58 dB $L_{Aeq,8h}$ and the 10th-highest L_{AFmax} is 76 dB. Both the continuous night-time level and the maximum noise threshold is exceeded, indicating that occupants may be discouraged from leaving windows open during warmer periods due to intermittent high-level traffic events.

To address this, background ventilation is provided via acoustic ventilators, allowing windows to remain closed while maintaining compliance with Approved Document F and BS 8233:2014 internal noise criteria. These ventilators provide continuous background ventilation but do not provide active cooling.

During periods of elevated internal temperatures, occupants may still choose to open windows to provide purge ventilation. Short-term increases in internal noise levels during such periods are considered acceptable and do not affect long-term compliance with BS 8233 design criteria.

On this basis, the potential risk of overheating is considered manageable through the specified acoustic ventilation strategy, with occupants retaining the option to open windows for additional cooling when required.

7.0 PLANT NOISE

It is understood that no new external mechanical plant is proposed as part of the development. Therefore, a detailed plant noise assessment in accordance with BS 4142:2014 is not required for the purposes of this application.

Where small domestic systems such as kitchen or bathroom extract fans, or Mechanical Ventilation with Heat Recovery (MVHR) units are specified, care should be taken to ensure that noise emissions from external duct terminations do not adversely affect either the proposed units or nearby residential receptors. Any extract or intake points associated with ventilation systems should be located away from primary noise-sensitive façades where practicable. Where this is not feasible, suitable attenuation measures, such as inline silencers or acoustic louvres, should be incorporated to limit noise breakout. Fan and duct noise should not exceed 46 dBA when measured at 1 metre from the outlet under normal operating conditions.

Installation of services should avoid direct structural connection to lightweight partitions or floors to minimise the potential for airborne or structure-borne vibration transmission within the dwellings.

8.0 SUMMARY

A BS 8233:2014 noise assessment has been carried out to support the proposed conversion of the existing dwelling at 21 Church Road, Northwood, to form an eight-bedroom House in Multiple Occupation (HMO). A 24-hour environmental noise survey was undertaken to establish representative external noise levels affecting the site.

The survey results indicate that the site is primarily influenced by road traffic noise associated with Church Road and surrounding local distributor routes. Daytime and night-time noise levels are typical of a roadside residential environment, with reduced noise levels during the early morning period and intermittent short-duration maximum noise events associated with individual vehicle pass-bys.

Façade break-in calculations demonstrate that, with the implementation of appropriate mitigation measures, suitable internal noise levels can be achieved within habitable rooms in accordance with the recommendations of BS 8233:2014. Standard double glazing providing a minimum sound reduction of 31 dB R_w is considered adequate for habitable rooms, subject to confirmation that the existing glazing is in good condition and properly sealed.

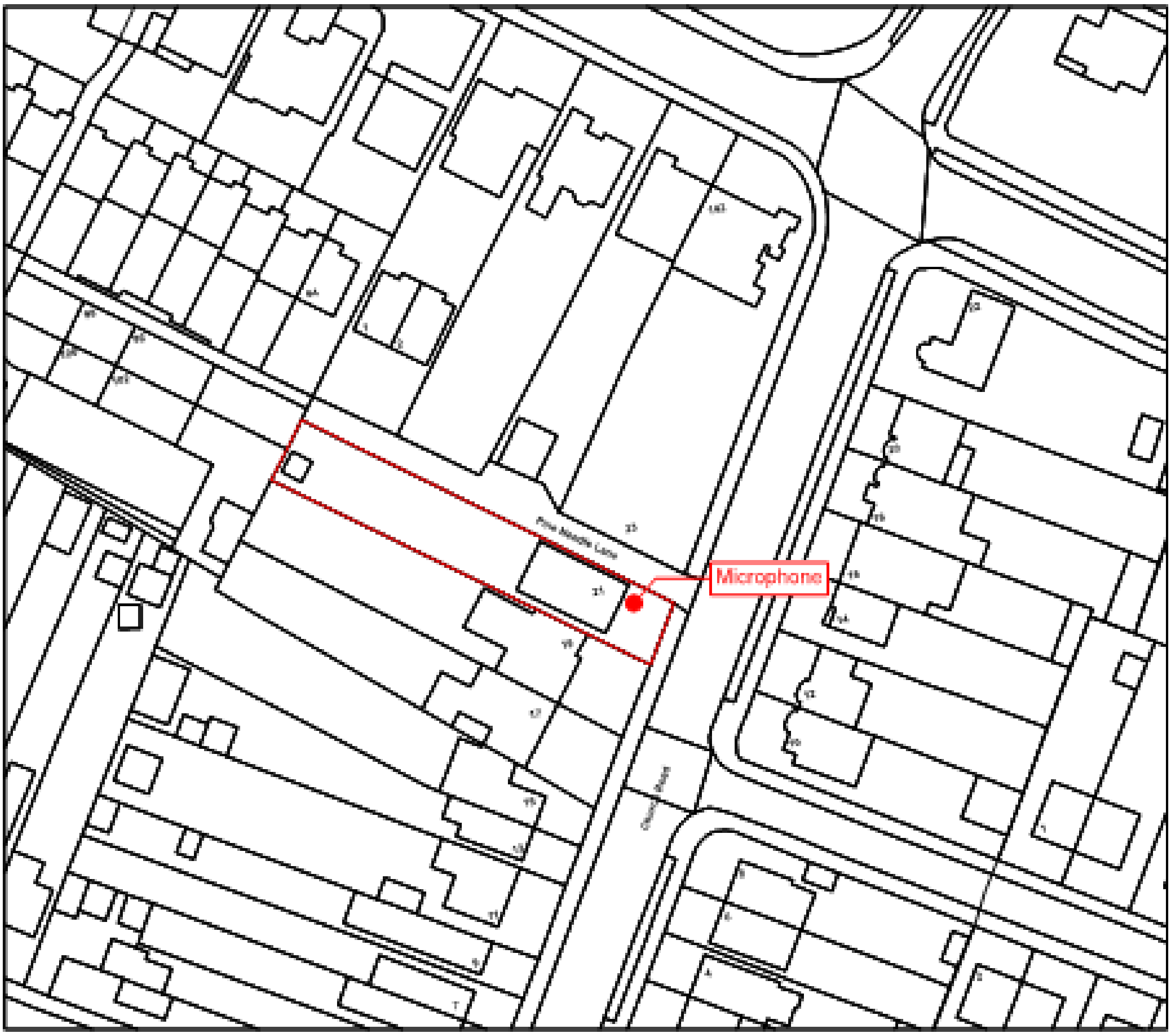
Due to the elevated external noise environment, openable windows are not considered suitable as a primary means of background ventilation. An acoustic ventilation strategy incorporating acoustically treated background ventilators is therefore required to ensure compliance with BS 8233:2014 and Approved Document F while allowing windows to remain closed.

An assessment of maximum internal noise levels indicates that night-time maximum noise events are unlikely to result in sleep disturbance, with the frequency of external L_{AFmax} exceedances remaining below thresholds defined within World Health Organisation guidance. An overheating review, undertaken with reference to the ANC/IOA/CIBSE Acoustics, Ventilation and Overheating Design Guide, identifies that occupants may be discouraged from opening windows at night; however, this risk is considered manageable through the provision of acoustic background ventilation.

No new external mechanical plant is proposed as part of the development, and therefore a detailed plant noise assessment in accordance with BS 4142 is not required. Guidance has been provided to ensure that any small domestic ventilation systems are designed and installed to avoid adverse noise impact.

Subject to the implementation of the mitigation measures identified within this report, the proposed development is considered capable of achieving appropriate internal acoustic conditions in accordance with BS 8233:2014 and is therefore suitable in acoustic terms to support the planning application.

APPENDIX A – SITE PLAN



APPENDIX B – SITE PHOTOS

APPENDIX C – CALCULATION SHEETS

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21 Church Road, Northwood G.F - Front Bed 2 (Day)

BS8233 Facade Noise Break In Calculation			125	250	500	1000	2000	4000	dBA
Average External Noise Level - L_{eq}			61.2	58.4	58.4	61.6	57.2	49.8	64.3
Maximum External Noise Level - L_{max}									
Safety Tolerance	3 dB		3.0	3.0	3.0	3.0	3.0	3.0	
Correction Factors									
Façade Correction	-1.5 dB		-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	
Distance Correction L2 = L1 - 20*log(D1/D2)	0.0 dB		0.0	0.0	0.0	0.0	0.0	0.0	
Distance Correction for Line Source - Façade 1									
Barrier Correction Ab = 10 log10 (D + d) dB	0.0 dB		0.0	0.0	0.0	0.0	0.0	0.0	
Angle of View Correction Av = 10 log(θ/180)	180		0.0	0.0	0.0	0.0	0.0	0.0	
Noise Level at Façade			62.7	59.9	59.9	63.1	58.7	51.3	65.8
Calculation of environmental noise break-in to residential rooms									
L2 = L1 - R + 10*log(S/A) + 3dB (Freefield version)				`					
Room Volume =	30.5 m3								
Reverberation Time =	0.5 s		0.5	0.5	0.5	0.5	0.5	0.5	
10*log(S/A)			3.1	3.1	3.1	3.1	3.1	3.1	
FAÇADE Elements									
Total Façade Area 1	20.4 m2								
Glazing Area, Sg - Façade 1	1.0 m2								
4mm Glass / 12mm Air Cavity / 4mm Glass		SRI	23	18	26	38	44	38	
		Sg/Sf	-36	-31	-39	-51	-57	-51	
Predicted noise level in building from glazing 1			32.7	34.9	26.9	18.1	7.7	6.3	29.0
Solid Area, Sw - Façade 1	19.4 m2								
300mm Masonry Cavity Wall		SRI	44	43	46	56	66	77	
		Sw/Sf	-44	-43	-46	-56	-66	-77	
Predicted noise level through solid façade 1			24.6	22.8	19.8	13.0	-1.4	-19.8	20.0
Roof/Floor Area, Sc - Façade 1	3.1 m2								
Pitched Tile Roof		SRI	34	43	48	53	53	62	
		Sc/Sf	-42	-51	-56	-61	-61	-70	
Predicted noise level through solid façade 3 / Roof			26.6	14.8	9.8	8.0	3.6	-12.8	14.7
Trickle Vent(s) - Façade 1	1 Vent								
Simon Acoustic EHAS		Dne	40	36	34	35	44	40	
		Ao/S	-43	-39	-37	-38	-47	-43	
Predicted noise level through trickle vents ` Lff-Dne+10log(A0/A)+K			25.6	26.8	29.0	30.8	17.8	13.9	32.5
Combined Internal Noise Level - L_{eq}			**34.8**	**35.8**	**31.5**	**31.2**	**18.7**	**15.2**	**34**
Target Internal Noise Level (dBA)									35
									Pass

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21 Church Road, Northwood G.F - Front Bed 2 (Night)

BS8233 Facade Noise Break In Calculation			125	250	500	1000	2000	4000	dBA
Average External Noise Level - L_{eq}			55.2	51.5	51.3	54.9	51.7	47.4	58.3
Maximum External Noise Level - L_{max}									
Safety Tolerance	3 dB		3.0	3.0	3.0	3.0	3.0	3.0	
Correction Factors									
Façade Correction	-1.5 dB		-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	
Distance Correction L2 = L1 - 20*log(D1/D2)	0.0 dB		0.0	0.0	0.0	0.0	0.0	0.0	
Distance Correction for Line Source - Façade 1									
Barrier Correction Ab = 10 log10 (D + d) dB	0.0 dB		0.0	0.0	0.0	0.0	0.0	0.0	
Angle of View Correction Av = 10 log(θ/180)	180		0.0	0.0	0.0	0.0	0.0	0.0	
Noise Level at Façade			56.7	53.0	52.8	56.4	53.2	48.9	59.8
Calculation of environmental noise break-in to residential rooms									
L2 = L1 - R + 10*log(S/A) + 3dB (Freefield version)				`					
Room Volume =	30.5 m3								
Reverberation Time =	0.5 s		0.5	0.5	0.5	0.5	0.5	0.5	
10*log(S/A)			3.1	3.1	3.1	3.1	3.1	3.1	
FAÇADE Elements									
Total Façade Area 1	20.4 m2								
Glazing Area, Sg - Façade 1	1.0 m2								
4mm Glass / 12mm Air Cavity / 4mm Glass		SRI	23	18	26	38	44	38	
		Sg/Sf	-36	-31	-39	-51	-57	-51	
Predicted noise level in building from glazing 1			26.7	28.0	19.8	11.4	2.2	3.9	22.2
Solid Area, Sw - Façade 1	19.4 m2								
300mm Masonry Cavity Wall		SRI	44	43	46	56	66	77	
		Sw/Sf	-44	-43	-46	-56	-66	-77	
Predicted noise level through solid façade 1			18.6	15.9	12.7	6.3	-6.9	-22.2	13.1
Roof/Floor Area, Sc - Façade 1	3.1 m2								
Pitched Tile Roof		SRI	34	43	48	53	53	62	
		Sc/Sf	-42	-51	-56	-61	-61	-70	
Predicted noise level through solid façade 3 / Roof			20.6	7.9	2.7	1.3	-1.9	-15.2	8.4
Trickle Vent(s) - Façade 1	1 Vent								
Simon Acoustic EHAS		Dne	40	36	34	35	44	40	
		Ao/S	-43	-39	-37	-38	-47	-43	
Predicted noise level through trickle vents `	Lff-Dne+10log(A0/A)+K		19.6	19.9	21.9	24.1	12.3	11.5	25.9
Combined Internal Noise Level - L_{eq}			**28.8**	**28.9**	**24.4**	**24.5**	**13.7**	**13.2**	**28**
Target Internal Noise Level (dBA)									30
									Pass

C:\Projects\BS8233 Assessments\260209 - 21 Church Road Northwood\Noise Data\[Overview140_260209_173706.xlsx]Data

21 Church Road, Northwood G.F - Common Area (Day)

BS8233 Facade Noise Break In Calculation			125	250	500	1000	2000	4000	dBA
Average External Noise Level - L_{eq}			61.2	58.4	58.4	61.6	57.2	49.8	64.3
Maximum External Noise Level - L_{max}									
Safety Tolerance	3 dB		3.0	3.0	3.0	3.0	3.0	3.0	
Correction Factors									
Façade Correction	0.0 dB		0.0	0.0	0.0	0.0	0.0	0.0	
Distance Correction L2 = L1 - 20*log(D1/D2)	0.0 dB		0.0	0.0	0.0	0.0	0.0	0.0	
Distance Correction for Line Source - Façade 1									
Barrier Correction Ab = 10 log10 (D + d) dB	-10.0 dB		-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	
Angle of View Correction Av = 10 log(θ/180)	180		0.0	0.0	0.0	0.0	0.0	0.0	
Noise Level at Façade			54.2	51.4	51.4	54.6	50.2	42.8	57.3
Calculation of environmental noise break-in to residential rooms									
L2 = L1 - R + 10*log(S/A) + 3dB (Freefield version)				`					
Room Volume =	62.2 m3								
Reverberation Time =	0.5 s		0.5	0.5	0.5	0.5	0.5	0.5	
10*log(S/A)			1.8	1.8	1.8	1.8	1.8	1.8	
FAÇADE Elements									
Total Façade Area 1	31.0 m2								
Glazing Area, Sg - Façade 1	3.2 m2								
4mm Glass / 12mm Air Cavity / 4mm Glass		SRI	23	18	26	38	44	38	
		Sg/Sf	-33	-28	-36	-48	-54	-48	
Predicted noise level in building from glazing 1			26.2	28.4	20.4	11.6	1.2	-0.2	22.4
Solid Area, Sw - Façade 1	27.8 m2								
300mm Masonry Cavity Wall		SRI	44	43	46	56	66	77	
		Sw/Sf	-44	-43	-46	-56	-66	-77	
Predicted noise level through solid façade 1			14.6	12.8	9.8	3.0	-11.4	-29.8	10.0
Roof/Floor Area, Sc - Façade 1	10.2 m2								
Flat Roof		SRI	19	37	45	49	54	58	
		Sc/Sf	-24	-42	-50	-54	-59	-63	
Predicted noise level through solid façade 3 / Roof			35.2	14.4	6.4	5.6	-3.8	-15.2	19.6
Trickle Vent(s) - Façade 1	1 Vent								
Simon Acoustic FV		Dne	40	35	35	31	33	35	
		Ao/S	-45	-40	-40	-36	-38	-40	
Predicted noise level through trickle vents ` Lff-Dne+10log(A0/A)+K			14.5	16.6	16.1	23.6	17.2	7.8	25.3
Combined Internal Noise Level - L_{eq}			**35.8**	**29.0**	**22.3**	**24.1**	**17.7**	**10.4**	**28**
Target Internal Noise Level (dBA)									**35**
									Pass

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21 Church Road, Northwood G.F - Rear Bed 3 (Night)

BS8233 Facade Noise Break In Calculation			125	250	500	1000	2000	4000	dBA
Average External Noise Level - L_{eq}			55.2	51.5	51.3	54.9	51.7	47.4	58.3
Maximum External Noise Level - L_{max}									
Safety Tolerance	3 dB		3.0	3.0	3.0	3.0	3.0	3.0	
Correction Factors									
Façade Correction	0.0 dB		0.0	0.0	0.0	0.0	0.0	0.0	
Distance Correction L2 = L1 - 20*log(D1/D2)	0.0 dB		0.0	0.0	0.0	0.0	0.0	0.0	
Distance Correction for Line Source - Façade 1									
Barrier Correction Ab = 10 log10 (D + d) dB	-10.0 dB		-10.0	-10.0	-10.0	-10.0	-10.0	-10.0	
Angle of View Correction Av = 10 log(θ/180)	180		0.0	0.0	0.0	0.0	0.0	0.0	
Noise Level at Façade			48.2	44.5	44.3	47.9	44.7	40.4	51.3
Calculation of environmental noise break-in to residential rooms									
L2 = L1 - R + 10*log(S/A) + 3dB (Freefield version)				`					
Room Volume =	33.8 m3								
Reverberation Time =	0.5 s		0.5	0.5	0.5	0.5	0.5	0.5	
10*log(S/A)			1.9	1.9	1.9	1.9	1.9	1.9	
FAÇADE Elements									
Total Façade Area 1	17.3 m2								
Glazing Area, Sg - Façade 1	3.2 m2								
4mm Glass / 12mm Air Cavity / 4mm Glass		SRI	23	18	26	38	44	38	
		Sg/Sf	-30	-25	-33	-45	-51	-45	
Predicted noise level in building from glazing 1			22.8	24.1	15.9	7.5	-1.7	0.0	18.3
Solid Area, Sw - Façade 1	14.1 m2								
300mm Masonry Cavity Wall		SRI	44	43	46	56	66	77	
		Sw/Sf	-45	-44	-47	-57	-67	-78	
Predicted noise level through solid façade 1			8.3	5.6	2.4	-4.0	-17.2	-32.5	2.8
Roof/Floor Area, Sc - Façade 1	10.2 m2								
Flat Roof		SRI	19	37	45	49	54	58	
		Sc/Sf	-21	-39	-47	-51	-56	-60	
Predicted noise level through solid façade 3 / Roof			31.9	10.2	2.0	1.6	-6.6	-14.9	16.2
Trickle Vent(s) - Façade 1	1 Vent								
Simon Acoustic FV		Dne	40	35	35	31	33	35	
		Ao/S	-42	-37	-38	-33	-35	-37	
Predicted noise level through trickle vents ` Lff-Dne+10log(A0/A)+K			11.2	12.4	11.7	19.6	14.4	8.1	21.6
Combined Internal Noise Level - L_{eq}			**32.4**	**24.7**	**17.9**	**20.1**	**15.1**	**10.6**	**24**
Target Internal Noise Level (dBA)									**30**
									Pass

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21 Church Road, Northwood 1.F - Front Bed 4 (Night)

BS8233 Facade Noise Break In Calculation			125	250	500	1000	2000	4000	dBA
Average External Noise Level - L_{eq}			55.2	51.5	51.3	54.9	51.7	47.4	58.3
Maximum External Noise Level - L_{max}									
Safety Tolerance	3 dB		3.0	3.0	3.0	3.0	3.0	3.0	
Correction Factors									
Façade Correction	-1.5 dB		-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	
Distance Correction L2 = L1 - 20*log(D1/D2)	0.0 dB		0.0	0.0	0.0	0.0	0.0	0.0	
Distance Correction for Line Source - Façade 1									
Barrier Correction Ab = 10 log10 (D + d) dB	0.0 dB		0.0	0.0	0.0	0.0	0.0	0.0	
Angle of View Correction Av = 10 log(θ/180)	180		0.0	0.0	0.0	0.0	0.0	0.0	
Noise Level at Façade			56.7	53.0	52.8	56.4	53.2	48.9	59.8
Calculation of environmental noise break-in to residential rooms									
L2 = L1 - R + 10*log(S/A) + 3dB (Freefield version)									
Room Volume =	26.9 m3								
Reverberation Time =	0.5 s		0.5	0.5	0.5	0.5	0.5	0.5	
10*log(S/A)			3.1	3.1	3.1	3.1	3.1	3.1	
FAÇADE Elements									
Total Façade Area 1	18.0 m2								
Glazing Area, Sg - Façade 1	2.2 m2								
4mm Glass / 12mm Air Cavity / 4mm Glass		SRI	23	18	26	38	44	38	
		Sg/Sf	-32	-27	-35	-47	-53	-47	
Predicted noise level in building from glazing 1			30.7	32.0	23.8	15.4	6.2	7.9	26.1
Solid Area, Sw - Façade 1	15.8 m2								
300mm Masonry Cavity Wall		SRI	44	43	46	56	66	77	
		Sw/Sf	-45	-44	-47	-57	-67	-78	
Predicted noise level through solid façade 1			18.3	15.6	12.4	6.0	-7.2	-22.5	12.8
Roof/Floor Area, Sc - Façade 1	5.4 m2								
Pitched Tile Roof		SRI	34	43	48	53	53	62	
		Sc/Sf	-39	-48	-53	-58	-58	-67	
Predicted noise level through solid façade 3 / Roof			23.6	10.9	5.7	4.3	1.1	-12.2	11.3
Trickle Vent(s) - Façade 1	1 Vent								
Simon Acoustic EHAS		Dne	40	36	34	35	44	40	
		Ao/S	-43	-39	-36	-38	-46	-43	
Predicted noise level through trickle vents	Lff-Dne+10log(A0/A)+K		20.2	20.5	22.5	24.7	12.9	12.1	26.5
Combined Internal Noise Level - L_{eq}			**32.0**	**32.4**	**26.4**	**25.3**	**14.6**	**14.2**	**30**
Target Internal Noise Level (dBA)									30
									Pass

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21 Church Road, Northwood 2.F - Bed 6 (Night)

BS8233 Facade Noise Break In Calculation			125	250	500	1000	2000	4000	dBA
Average External Noise Level - L_{eq}			55.2	51.5	51.3	54.9	51.7	47.4	58.3
Maximum External Noise Level - L_{max}									
Safety Tolerance	3 dB		3.0	3.0	3.0	3.0	3.0	3.0	
Correction Factors									
Façade Correction	-1.5 dB		-1.5	-1.5	-1.5	-1.5	-1.5	-1.5	
Distance Correction L2 = L1 - 20*log(D1/D2)	0.0 dB		0.0	0.0	0.0	0.0	0.0	0.0	
Distance Correction for Line Source - Façade 1									
Barrier Correction Ab = 10 log10 (D + d) dB	0.0 dB		0.0	0.0	0.0	0.0	0.0	0.0	
Angle of View Correction Av = 10 log(θ/180)	180		0.0	0.0	0.0	0.0	0.0	0.0	
Noise Level at Façade			56.7	53.0	52.8	56.4	53.2	48.9	59.8
Calculation of environmental noise break-in to residential rooms									
L2 = L1 - R + 10*log(S/A) + 3dB (Freefield version)				`					
Room Volume =	44.4 m3								
Reverberation Time =	0.5 s		0.5	0.5	0.5	0.5	0.5	0.5	
10*log(S/A)			-2.5	-2.5	-2.5	-2.5	-2.5	-2.5	
FAÇADE Elements									
Total Façade Area 1	8.2 m2								
Glazing Area, Sg - Façade 1	2.2 m2								
4mm Glass / 12mm Air Cavity / 4mm Glass		SRI	23	18	26	38	44	38	
		Sg/Sf	-29	-24	-32	-44	-50	-44	
Predicted noise level in building from glazing 1			28.5	29.8	21.6	13.2	4.0	5.7	24.0
Solid Area, Sw - Façade 1	6.0 m2								
Dormer Walls		SRI	24	39	47	52	54	51	
		Sw/Sf	-25	-40	-48	-53	-55	-52	
Predicted noise level through solid façade 1			31.9	13.2	5.0	3.6	-1.6	-2.9	16.6
Roof/Floor Area, Sc - Façade 1	18.5 m2								
Pitched Tile Roof		SRI	34	43	48	53	53	62	
		Sc/Sf	-30	-39	-44	-49	-49	-58	
Predicted noise level through solid façade 3 / Roof			26.8	14.1	8.9	7.5	4.3	-9.0	14.5
Trickle Vent(s) - Façade 1	1 Vent								
Simon Acoustic EHAS		Dne	40	36	34	35	44	40	
		Ao/S	-39	-35	-33	-34	-43	-40	
Predicted noise level through trickle vents ` Lff-Dne+10log(A0/A)+K			18.0	18.3	20.3	22.5	10.7	9.9	24.3
Combined Internal Noise Level - L_{eq}			**34.5**	**30.3**	**24.3**	**23.2**	**13.3**	**12.6**	**28**
Target Internal Noise Level (dBA)									30
									Pass

APPENDIX D – INSUL DATA SHEETS

Sound Insulation Prediction (v8.0.7)

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- Key No. 1548

Margin of error is generally within Rw +/- 3 dB

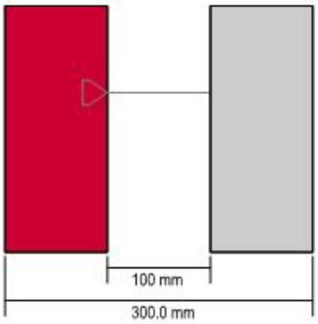
Job Name:

Job No.: Page No.:

Date: 10 Feb 26 Initials:

File Name: insul

Notes:



Rw	53 dB
C	-1 dB
C_{tr}	-4 dB
D_{nTw}	55 dB [V:50m3] [A:11m2]

System description

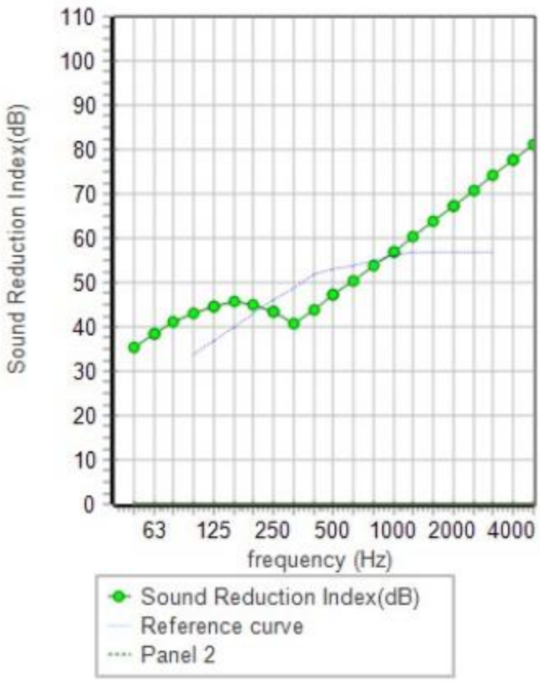
Panel 1 : 1 x 100.0 mm mm Brick (?:1600 kg/m3,E:8.9GPa,?:0.02)

Cavity: Butterfly Tie: Stud spacing 600 mm
Panel 2 + 1 x 100.0 mm mm Concrete Block (?:1250 kg/m3,E:8.3GPa,?:0.02)

Mass-air-mass resonant frequency =22 Hz

frequency (Hz)	R(dB)	R(dB)
50	35	
63	38	38
80	41	
100	43	
125	45	44
160	46	
200	45	
250	44	43
315	41	
400	44	
500	47	46
630	50	
800	54	
1000	57	56
1250	60	
1600	64	
2000	67	66
2500	71	
3150	74	
4000	78	77
5000	81	

Panel Size 2.7x4 m; Mass 285.0 kg/m2



Sound Insulation Prediction (v8.0.7)

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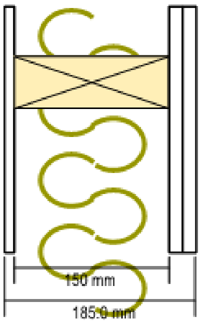
Margin of error is generally within Rw +/- 3 dB

Job Name:

Job No.: Page No.: Notes:

Date: 10 Feb 26 Initials:dhesn

File Name: insul



Rw	48 dB
C	-3 dB
C_{tr}	-9 dB
D_{nTw}	50 dB [V:50m3] [A:11m2]

System description

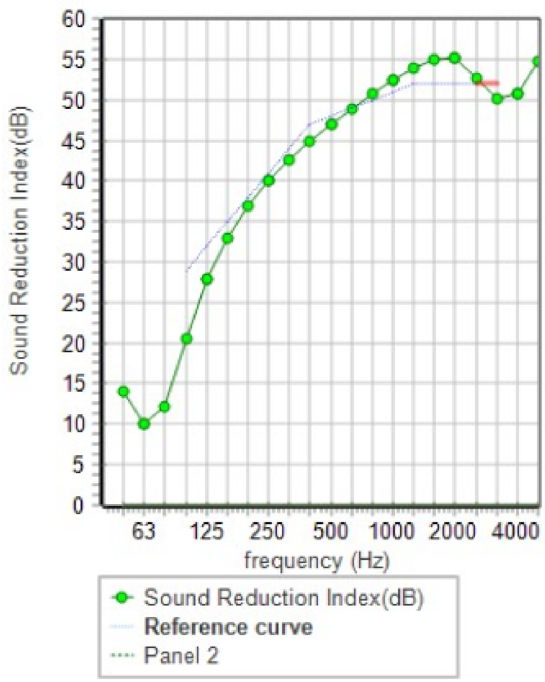
Panel 1 : 1 x 10.0 mm Eterboard (fibre cement) (?:1444 kg/m3,E:5.8GPa,?:0.01)

Cavity: Timber stud: Stud spacing 600 mm , Infill Fibreglass (10kg/m3) Thickness 100 mm (?:10 kg/m3, Rf:4000 Pa.s/m2)
Panel 2 + 2 x 12.5 mm mm Plasterboard (?:640 kg/m3,E:2GPa,?:0.01)

Mass-air-mass resonant frequency =49 Hz

frequency (Hz)	R(dB)	R(dB)
50	14	
63	10	12
80	12	
100	21	
125	28	24
160	33	
200	37	
250	40	39
315	43	
400	45	
500	47	47
630	49	
800	51	
1000	52	52
1250	54	
1600	55	
2000	55	54
2500	53	
3150	50	
4000	51	51
5000	55	

Panel Size 2.7x4 m; Mass 31.4 kg/m2



Sound Insulation Prediction (v8.0.7)

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Margin of error is generally within Rw +/- 3 dB

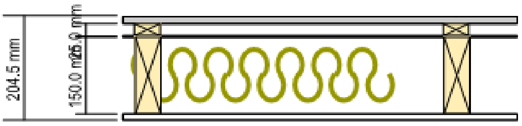
Job Name:

Job No.: Page No.:

Date: 10 Feb 26 Initials:

File Name: insul

Notes:



Rw	51 dB
C	-1 dB
C_{tr}	-5 dB
D_{nTw}	53 dB [V:50m3] [A:11m2]

System description

Panel 1 : 1 x 14.0 mm Roofing tiles (?:2392 kg/m3,E:12GPa,?:0.01)

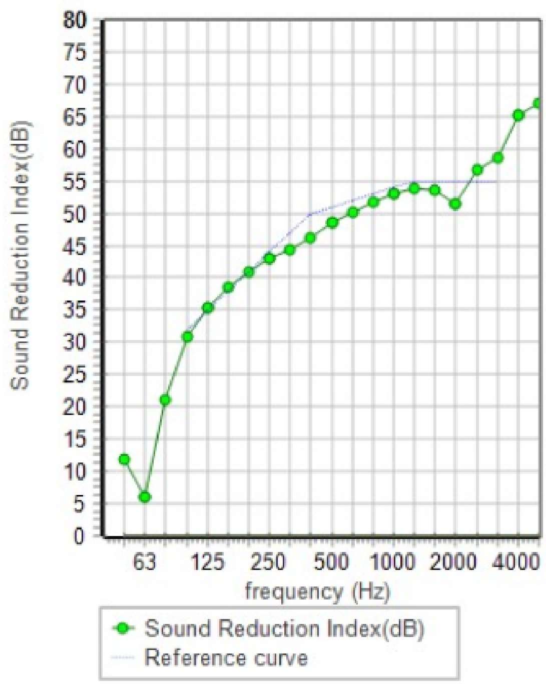
Cavity: Solid joist(timber or Twinaplate): Stud spacing 600 mm
Panel 2 + 1 x 3.0 mm Roof Felt (?:920 kg/m3,E:0.03GPa,?:0.20)

Cavity: Solid joist(timber or Twinaplate): Stud spacing 600 mm , Infill Fibreglass (10kg/m3) Thickness 100 mm (?:10 kg/m3, Rf:4000 Pa.s/m2)
Panel 3 + 1 x 12.5 mm mm Plasterboard (?:640 kg/m3,E:2GPa,?:0.01)

Mass-air-mass resonant frequency =57 Hz , 296 Hz

Panel Size 2.7x4 m; Mass 45.2 kg/m2

frequency (Hz)	R(dB)	R(dB)
50	12	
63	6	10
80	21	
100	31	
125	35	34
160	39	
200	41	
250	43	43
315	44	
400	46	
500	48	48
630	50	
800	52	
1000	53	53
1250	54	
1600	54	
2000	52	53
2500	57	
3150	59	
4000	65	62
5000	67	



Sound Insulation Prediction (v8.0.7)

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Margin of error is generally within Rw +/- 3 dB

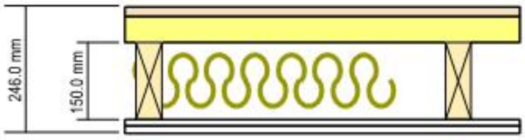
Job Name:

Job No.: Page No.:

Date: 10 Feb 26 Initials:dhesn

File Name: insul

Notes:



Rw	46 dB
C	-5 dB
C_{tr}	-12 dB
D_{nTw}	48 dB [V:50m3] [A:11m2]

System description

Panel 1 : 1 x 3.0 mm Roof Felt (?:920 kg/m3,E:0.03GPa,?:0.20) + 1 x 18.0 mm Plywood (?:560 kg/m3,E:4.4GPa,?:0.01)
+ 1 x 50.0 mm PIR Insulation (?:50 kg/m3,E:0.04GPa,?:0.03)

Cavity: Solid joist(timber or Twinaplate): Stud spacing 600 mm , Infill Fibreglass (10kg/m3) Thickness 100 mm (?:10 kg/m3, Rf:4000 Pa.s/m2)
Panel 2 + 2 x 12.5 mm mm Plasterboard (?:640 kg/m3,E:2GPa,?:0.01)

Mass-air-mass resonant frequency =48 Hz

frequency (Hz)	R(dB)	R(dB)
50	15	
63	13	12
80	10	
100	15	
125	24	19
160	31	
200	35	
250	38	37
315	41	
400	43	
500	45	45
630	47	
800	49	
1000	50	49
1250	50	
1600	52	
2000	56	54
2500	55	
3150	55	
4000	59	58
5000	63	

Panel Size 2.7x4 m; Mass 32.3 kg/m2