Philip Dunbavin Acoustics Ltd
3 Bridgewater Court
Barsbank Lane
Lymm
WA13 0ER

ACOUSTIC CONSULTANTS

AVRO HOLLOWS RESIDENTIAL BUILDINGS

FAÇADE SOUND INSULATION ASSESSMENT

REPORT REFERENCE NO. J005156-8151-MDS-01

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Tel: 01925 759380

Email: enquiries@pdaltd.com

Registered Number 2302847 England
Registered Office: 3 Bridgewater Court, Barsbank Lane, Lymm WA13 0ER

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Client Address:	Company Address:
3 Brewery Yard, Deva City Office Park, Trinity Way, Manchester M3 7BB	Philip Dunbavin Acoustics Ltd 3 Bridgewater Court Barsbank Lane Lymm WA13 0ER

Issue	Date	Author	Remark	Status
01	6th October 2024	Max de Salis	Initial Issue	Initial

	Name	Position
Prepared By	Max de Salis PhD BEng Hons CEng MIOA	Director
Checked By	Liam Kavaney MIOA	Consultant

This document has been prepared for the client only and solely for the purposes expressly defined herein. We owe no duty of care to any third parties in respect of its content. Therefore, unless expressly agreed by us in signed writing, we hereby exclude all liability to third parties, including liability for negligence, save only for liabilities that cannot be so excluded by operation of applicable law.

This report has been prepared based upon a scope of works and associated resources agreed between the client and Philip Dunbavin Acoustics Ltd (PDA). This report has been prepared with all reasonable skill, care and diligence and has been based upon the interpretation of data collected. This has been accepted in good faith as being accurate and valid at the time of the collection. This report has been based solely on the specific design assumptions and criteria stated herein.

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1.0 SUMMARY

This report has been prepared by Philip Dunbavin Acoustics Ltd (PDA) on behalf of AEW Architects Limited to compare the predicted sound insulation performance of the proposed replacement façade and glazing systems at Avro Hollows Residential Buildings, Croydon Drive, Manchester with the predicted façade and glazing systems

Dobson, Lancaster, Lincoln and Shackleton High-Rise Residential Buildings

The predictions in Section 3.0 give the following sound insulation performance predictions for existing and proposed cladding systems for the High-Rise Residential Buildings:

Table 1: Sound insulation (SI) performance predictions for existing and proposed cladding and glazing systems – Dobson, Lancaster, Lincoln and Shackleton High-Rise Residential Buildings

SI Performance Indicator	**Render Cladding System**		**Spandrel Panel Cladding System**		
	Proposed (Section 3.1)	Existing (Section 3.2)	Proposed (Section 3.3)	Existing	
				Bedroom (Section 3.4.1)	Living Room (Section 3.4.2)
R_w dB	59	55	37	24	36
R_w+C_{tr} dB	57	50	28	19	27

As shown the existing cladding sound insulation performance is met or exceeded by the proposed systems in all cases.

Sections 3.5 and 3.6 indicate that existing glazing and trickle vents are standard units and do not include enhancements designed to increase sound insulation performance. As such recommendations are given to include equivalent standard specification systems or better to ensure that the existing sound insulation performance is maintained or improved.

Audax and Underhill Low-Rise Residential Buildings

The predictions in Section 3.0 give the following sound insulation performance predictions for existing and proposed cladding systems for the Low-Rise Residential Buildings:

Table 2: Sound insulation (SI) performance predictions for existing and proposed cladding and glazing systems – Audax and Underhill Low-Rise Residential Buildings

SI Performance Indicator	**Render Cladding System**		**Spandrel Panel Cladding System**		
	Proposed (Section 4.1)	Existing (Section 4.2)	Proposed (Section 4.3	Existing	
				Bedroom (Section 4.4)	Living Room (Section 4.4)
R_w dB	59	55	37	24	36
R_w+C_{tr} dB	57	50	28	19	27

As shown the existing cladding sound insulation performance is met or exceeded by the proposed systems in all cases.

Sections 4.5 and 4.6 indicate that it is assumed that existing glazing and trickle vents are standard units similar to those on the high-rise buildings and do not include enhancements designed to increase sound insulation performance. As such recommendations are given to include equivalent standard specification systems or better to ensure that the existing sound insulation performance is maintained or improved.

2.0 BACKGROUND

Avro Hollows residential buildings encompasses 312 properties across 4no. high rise blocks & 2no. low rise terraced blocks (1, 2 & 3 bedroom flats) along Croydon Drive.

The high rise towers are Lancaster, Lincoln, Dobson and Shackleton. These high-rise blocks appear to date back to the 1960's and are 15 storeys high and are very similar in appearance and layout.

The proposal is to refurbish the Croydon Drive Estate high-rise and low-rise blocks, as part of an extensive programme of works.

PDA Ltd have been engaged to compare the predicted sound insulation performance of the proposed replacement façade and glazing systems with the predicted façade sound insulation of the existing / former façade and glazing systems.

The assessment in the following sections is based on AEW Architects drawings as set out in Appendix B at the rear of this report.

3.0 DOBSON, LANCASTER, LINCOLN AND SHACKLETON HIGH-RISE RESIDENTIAL BUILDINGS

3.1 Render Cladding – Proposed

The proposed system is shown in Figure 1 below:

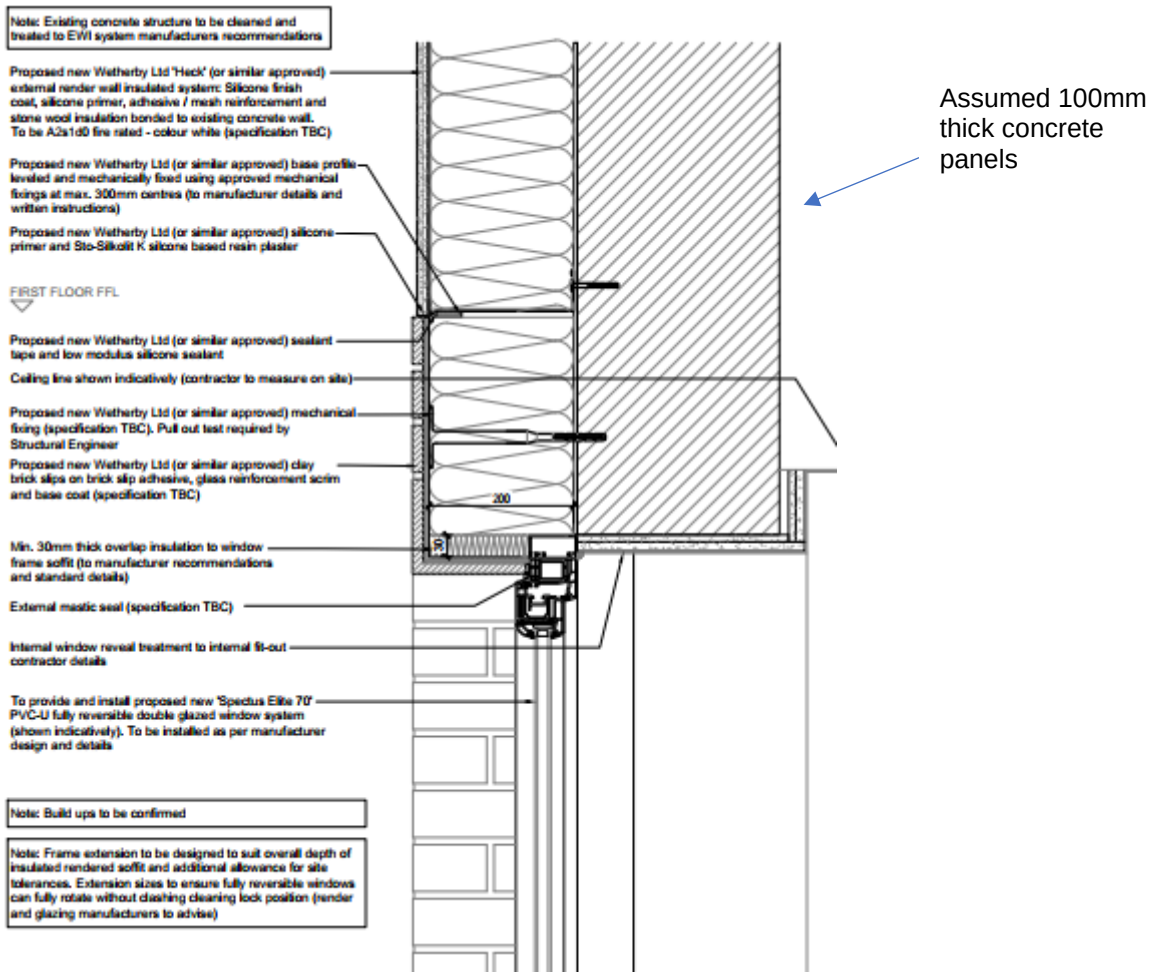


Figure 1: Proposed Cladding System

Insul ® proprietary sound insulation prediction software has been utilised to assess the sound insulation of the said system. The system as modelled in Insul ® would be equivalent to the following:

- Existing layer of 100mm thick concrete parapet panels estimated 1300 kg/m^3
- 1 layer 200mm Stonewool Insulation at 60 kg/m^3 in cavity formed by C studs (to model the connecting properties of the cavity insulation giving a conservative stiffness).
- 5mm Sand / Cement Render nominal density 1600 kg/m^3

The performance prediction sheet is given in Appendix C and the overall predicted sound insulation performance given is as follows:

R_w = 59 dB

R_w+C_{tr} = 57 dB

3.2 Render Cladding – Existing

The existing render cladding system for the flats is referenced in AEW drawings as set out in Figure 2 below:



Figure 2: Existing Cladding System

It is understood that the existing foam insulant will be of the same depth as the proposed system shown in Figure 1.

Insul ® proprietary sound insulation prediction software has been utilised to assess the sound insulation of the said system. The system as modelled in Insul ® would be equivalent to the following:

- Existing layer of 100mm thick concrete parapet panels
- 7 no. 30mm layers Koolthern PIR / phenolic foam insulation at circa 40 kg/m^3 to give conservative 210mm depth.
- 5mm Sand / Cement Render nominal density 1600 kg/m^3

The performance prediction sheet is given in Appendix C and the overall predicted sound insulation performance given is as follows:

R_w = 55 dB

R_w+C_{tr} = 50 dB

3.3 Spandrel Panel - Proposed

The proposed spandrel panel build up are understood to be of Metalline Ultima ULT2 panels with 3mm ppc aluminium outer skin, 2mm ppc galv. steel inner skin and 120 kg/m^3 density Fabrock insulated core with total width circa 37mm,

We have been provided with a sound insulation performance prediction from Rockwool®.

The performance prediction sheet is given in Appendix C and the overall predicted sound insulation performance given is as follows:

R_w = 37 dB

R_w+C_{tr} = 28 dB

3.4 Spandrel Panel Existing

3.4.1 Bedrooms

Within bedrooms the existing spandrel panels on site are of aluminium foil on 3mm MDF bonded to circa 27mm lightweight PIR foam with internal layer of circa 0.7mm plastic. A photographic section provided from site is shown below:



Insul ® proprietary sound insulation prediction software has been utilised to assess the sound insulation of the said system. The system as modelled in Insul ® would be equivalent to the following:

- 1 layer 3mm MDF board
- 30mm Kooltherm PIR insulation with foil facing either side

The performance prediction sheet is given in Appendix C and the overall predicted sound insulation performance given is as follows:

R_w = 24 dB

R_w+C_{tr} = 19 dB

3.4.2 Living Rooms

Within Living Rooms the existing spandrel panels are again of aluminium foil on 3mm MDF bonded to circa 27mm lightweight PIR foam with internal layer of circa 0.7mm plastic. However, they are boxed out internally with a further 15mm chipboard creating a circa 105mm cavity fully filled with mineral wool, A photographic section provided from site of the boxing out having been pulled away is shown below:



Insul ® proprietary sound insulation prediction software has been utilised to assess the sound insulation of the said system. The system as modelled in Insul ® would be equivalent to the following:

- 1 layer 3mm MDF board
- 30mm Kooltherm PIR insulation with foil facing either side
- 105mm deep timber studs of 15mm thickness at 600mm centres[1]
- Cavity filled with mineral wool density 10kg/m^3
- 15mm chipboard at 660 kg/m^3.

The performance prediction sheet is given in Appendix C and the overall predicted sound insulation performance given is as follows:

R_w = 36 dB

R_w+C_{tr} = 27 dB

[1] Spacing is up to 1000mm on site but the connection on 3 sides including the sill will increase the stiffness in line with closer centres as modelled.

3.5 Glazing and Trickle Vents – Existing

Due to no information being available regarding the existing glazing systems, PDA Ltd visited Avro Hollows on Friday 27/09/2024 to undertake a visual survey of the glazing and trickle vent systems system and to take measurements of the existing glazing thickness using a “Merlin Lazer” glazing thickness gauge.

Visual inspections were taken in the Shackleton Court High-Rise block of all windows in Flat 17 (shielded from the rail line) on the third floor and Flat 51 on the 10th Floor (facing the rail line). Glazing and trickle ventilators were as follows:

- Glazing was recorded as 4mm glass / 14-16mm cavity / 4mm glass.

Trickle Ventilators appeared to be standard “slot” type ventilators without acoustic treatments to full window widths. As shown in Figures 3 and 4 below:

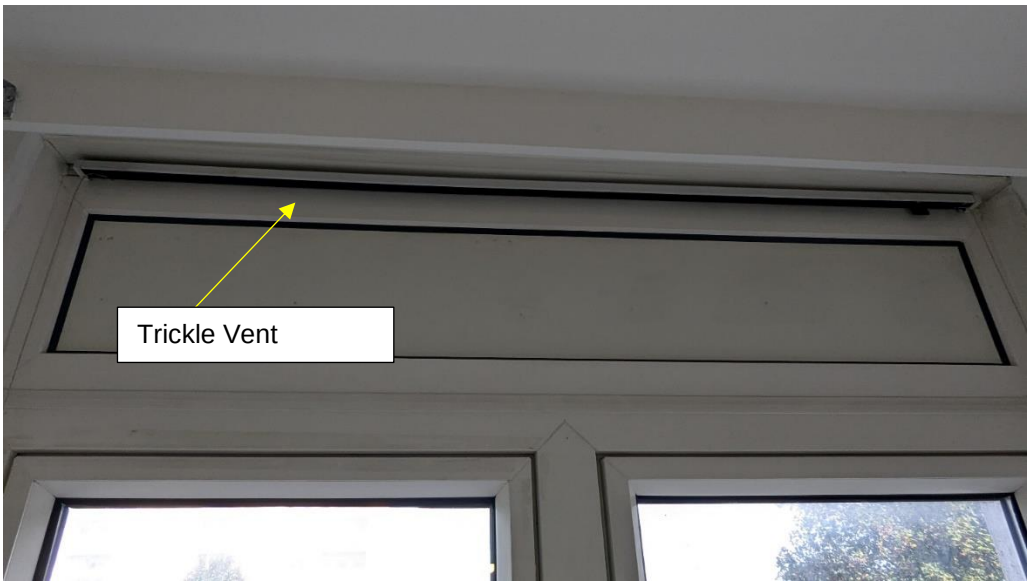


Figure 3: Window with Slot Ventilator above in Flat 17 Shackleton Court from Interior



Figure 4: Window / Spandrel Panel with Slot Ventilator above Flat 51 Shackleton Court from Exterior

Visual inspections were also taken in the Lincoln Court High-Rise on the ground floor for windows facing the rail line. The Lincoln Court building is the closest to the adjacent rail line. Glazing and trickle ventilators were as follows:

- Glazing was recorded as 6.4mm [2] Laminated Safety glass / 14-16mm cavity / 4mm glass.
- Trickle ventilators could only be viewed from the outside but appeared of the same type as viewed on Shackleton Court as per Figures 3 and 4.

3.6 Glazing and Trickle Vents – Proposed

3.6.1 Glazing

It is understood that there is no current specification in place for glazing thicknesses.

On this basis we would recommend the following to achieve equal to or greater sound insulation to the existing glazing systems viewed on site:

Ground Floor

- minimum 6.4mm thick laminated safety glass
- minimum 14mm depth cavity
- minimum 4mm thick float glass

[2] Estimated thickness as appeared to be between 6 and 7mm thick.

Other Floors

- minimum 4mm thick float glass
- minimum 16mm depth cavity
- minimum 4mm thick float glass

Maintaining the thickness and depth dimensions as above would be expected to retain equivalent sound insulation and increasing any of the same would be expected to give a relative improvement in sound insulation.

The above recommendations are based on visual assessment and laser measurements using a handheld device. For confirmation a physical measurement of existing glass and cavities would be recommended when the existing glazing is removed.

3.6.2 Trickle Vents

Including for a standard non-acoustic 10mm or 13mm gauge slot vent such as Simon TTF Slimline Ventilator equal to or to less than the width of the current systems within the window framing would be expected to maintain the sound insulation of the currently installed systems.[3]

The above recommendations are based on visual assessment of current systems. For confirmation a comparison of the existing system with proposed system is recommended when existing trickle vents are removed.

[3] Based on visual assessment of current systems. For confirmation a comparison of the existing system with proposed system is recommended when existing trickle vents are removed.

4.0 AUDAX AND UNDERHILL - LOW-RISE RESIDENTIAL BUILDINGS

4.1 Render Cladding – Proposed

The proposed cladding system is shown in Figure 5 below:

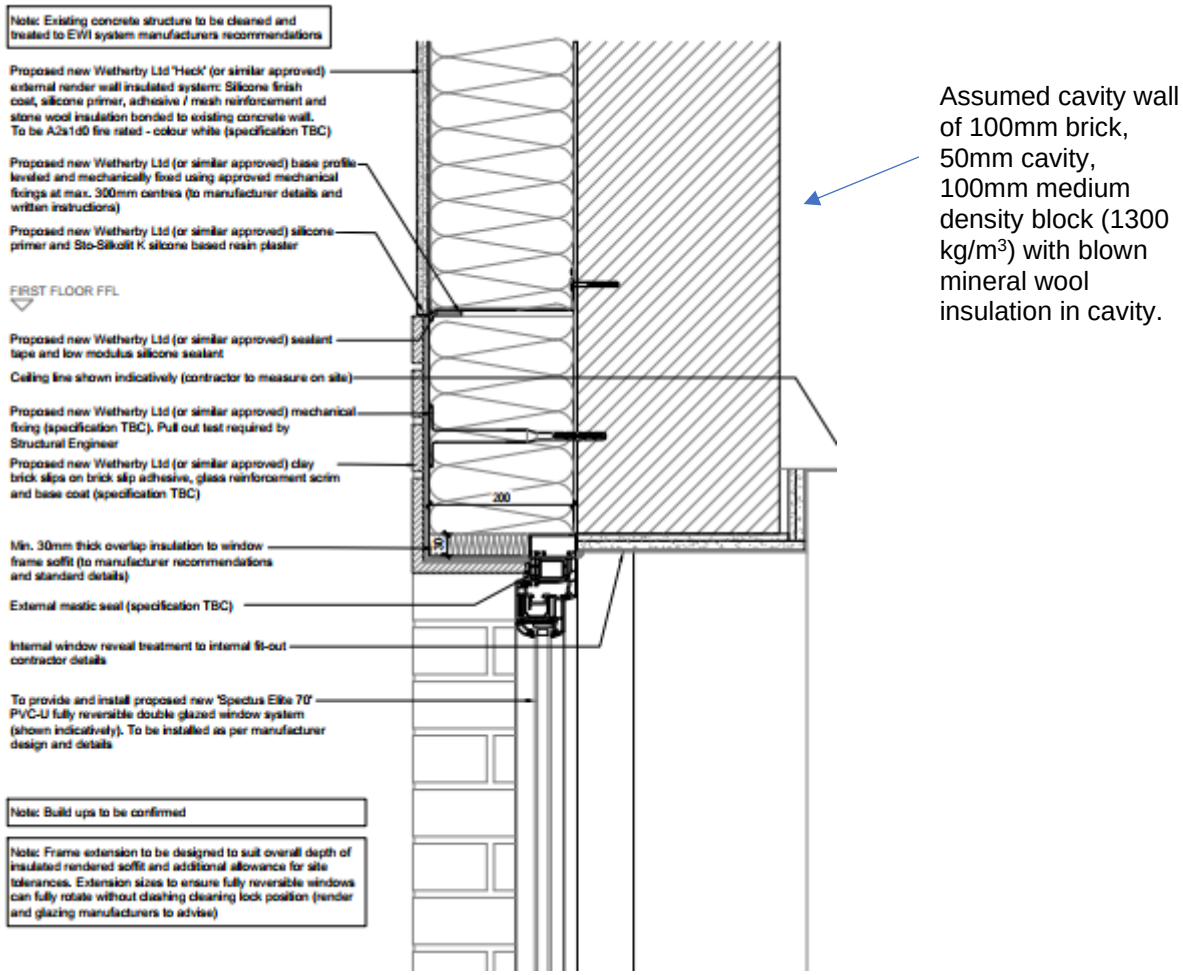


Figure 5: Proposed Cladding System

Insul ® proprietary sound insulation prediction software has been utilised to assess the sound insulation of the said system. The system as modelled in Insul ® would be equivalent to the following:

- Existing cavity wall of 100mm brick, 50mm cavity, 100mm medium density block (1300 kg/m^3) with cavity fill of blown mineral wool insulation.
- 1 layer 200mm Stonewool Insulation at 60 kg/m^3 in cavity formed by C studs (to model the connecting properties of the cavity insulation giving a conservative stiffness).
- 5mm Sand / Cement Render nominal density 1600 kg/m^3

The performance prediction sheet is given in Appendix C and the overall predicted sound insulation performance given is as follows:

R_w = 72 dB

R_w+C_{tr} = 67 dB

4.2 Render Cladding – Existing

The existing system is understood to be of existing cavity wall of 100mm brick, 50mm cavity, 100mm medium density block (1300 kg/m^3) with cavity fill of blown mineral wool insulation.

Insul ® proprietary sound insulation prediction software has been utilised to assess the sound insulation of the said system. The system as modelled in Insul ® would be equivalent to the following:

- Existing cavity wall of 100mm brick, 50mm cavity, 100mm medium density block (1300 kg/m^3) with cavity fill of blown mineral wool insulation.
- 1 layer 200mm phenolic foam insulation at circa 40 kg/m^3
- 5mm Sand / Cement Render nominal density 1600 kg/m^3

The performance prediction sheet is given in Appendix C and the overall predicted sound insulation performance given is as follows:

R_w = 62 dB

R_w+C_{tr} = 56 dB

4.3 Spandrel Panel – Proposed

The proposed spandrel panels are recommended to be as per the high rise buildings previously assessed in Section 3.3 (assuming assumptions in Section 3.4 below are correct).

4.4 Spandrel Panel – Existing

The existing spandrel panels are assumed to be as per the high rise buildings previously assessed in Section 3.4.

4.5 Glazing and Trickle Vents – Proposed

The proposed glazing and trickle ventilation specifications would be recommended to be as per those specified for the high rise buildings previously assessed in section 3.6 (assuming assumptions in Section 4.6 below are correct).

4.6 Glazing – Existing

The existing glazing specifications are assumed to be as per the high rise buildings previously assessed in section 3.5.

APPENDIX A – DEFINITION OF ACOUSTIC TERMS (ARCHITECTURAL)

The decibel

This is the basic unit of noise, denoted dB.

A Weighting

This is a weighting process which simulates the human ear's different sensitivity at different frequencies. A weighting can be shown two typical ways, 50 dB(A) Leq or 50 dB L_{Aeq}. Both mean the same thing. (See below for a definition of L_{eq}). The dB(A) level can be regarded as the overall level perceived by human beings.

L_{eq} and L_{eq}(s)

This is the equivalent continuous noise level which contains the same acoustic energy as the actual time-varying sound. In other words it is a kind of average noise level. It is denoted dB L_{eq}, or for A-weighted figures dB(A) L_{eq} or dB L_{Aeq}. It can also be expressed in terms of frequency analysis (see later). L_{eq}(s) is the sample L_{eq} level.

L_n

This is the level exceeded for n% of the time. It is denoted dB L_n, or for A-weighted figures dB(A) L_n or dB L_{An}. It can be expressed in terms of frequency analysis (see later). L_{90} is the level exceeded for 90% of the time and is a measure of the lowest level typically reached. L_{10} is the level exceeded for 10% of the time and is the highest level typically reached. L_{50} is the level exceeded for 50% of the time and, mathematically it is the median.

L_{max}

This is the maximum level reached during a measurement period. The "time constant", or the ability of the equipment to respond to impulses is usually expressed along with it, e.g. "Fast", "Slow", etc. It is denoted dB L_{max} or, for A-weighted figures dB(A) L_{max}, dB L_{Amax}, etc. It can also be expressed in terms of frequency analysis.

Reverberation Time

This is the most common way of expressing a room's basic acoustic character. It is defined as the duration required for the space-averaged sound energy density in an enclosure to decrease by 60 dB after the source emission has stopped, denoted as RT_{60}. It is usually impractical to measure a full 60 dB dynamic range in the field; a smaller dynamic range may be used extrapolated to a decay time of 60 dB. Common derivations include a range between 5 dB and 25 dB below the initial level, which is labelled T_{20}, or the range between 5 dB and 35 dB below the initial level, labelled as T_{30}.

Frequency Analysis

Whereas dB(A) gives a very useful overall figure, it has its limitations in that it cannot be used to model or predict the effect of noise control and mitigation as this nearly always has radically different performance at different frequencies.

Frequency analysis expresses an overall noise level at each frequency or band of frequencies in the audible range. Octave band analysis divides the audible range into 10 bands from 31.5 Hz to 16 kHz and the noise level in each band can be expressed in any form e.g. L_{eq}, L_{90}, L_{max} etc. One third octave band analysis uses 30 bands.

Narrow band analysis takes the process to resolutions of less than 1 Hz. This is useful for identifying the existence of tones (whines, hums, etc.) and in pin-pointing the sources.

Sound reduction index (R)

This is a measure in decibels (dB) of the sound insulation of a particular construction. It is a laboratory measured parameter independent of area, and of receiving room conditions. The sound reduction index is the value produced from laboratory tests on a construction. When tested in a laboratory, results of R are obtained over a range frequencies in 1/3rd and/or full octave bands. These may then be weighted in accordance with BS EN ISO 717: 1997: Part 1 to give the overall *Weighted Sound Reduction Index* R_w. Where sound reduction with respect to road traffic noise is required the frequency weighting may be adapted using the C_{tr} spectrum adaptation term. In this case the single figure value is given in terms of $R_w + C_{tr}$.

Standardised level difference (D_{nT})

This is the level difference adjusted to assume a standard reverberation time of 0.5 seconds in the receiving room so that partitions can be compared independent of the furnishing and surface finishes of the rooms. The measure is generally used in residential testing as 0.5 seconds is taken as the approximate reverberation time of a furnished living room or bedroom. The D_{nT} is usually quoted for 1/3rd octave bands between 100 Hz and 3150 Hz.

Weighted standardised level difference ($D_{nT,w}$)

The $D_{nT,w}$ is a single figure expression used to describe the sound insulation of a partition. The weighting system used to obtain the single figure $D_{nT,w}$ from the 1/3rd octave D_{nT} values is given in BS EN ISO 717: Part 1. The $D_{nT,w}$ is used for expressing sound insulation measured “in the field”, and is part of the term used in Approved Document E 2003, guidance to the Building Regulations for the assessment of performance of separating elements between residences.

Spectrum adaptation terms (C, C_{tr})

These terms are single figure values which are added to a single figure R_w or D_w term to adapt the frequency weighting for different source noise spectra. Adding the C_{tr} term to a weighted parameter approximates to the human perceived sound insulation of an element when subjected to road traffic noise. The C_{tr} term may be used to determine a single figure approximation of sound insulation against road traffic noise. The C_{tr} term is part of the term used in Approved Document E: 2003 of the Building Regulations for the assessment of performance of separating elements between residences.

Flanking

Flanking is the term used to describe how sound gets from one room to another by routes other than via the wall or floor directly separating them. Such flanking paths around a party wall would be the internal leaf of the external wall or the roof void, plus any air gaps at junctions. The sound insulation of flanking paths is very important. If the insulation is poor it can result in a poor built performance in terms of sound insulation, even if the party walls or floors themselves are adequate. When a measurement of sound insulation is made in a building as opposed to an acoustic laboratory, it will include flanking sound transmission. Standards for sound insulation in residential properties now require testing of $D_{nT,w} + C_{tr}$ values which include sound transmission via flanking paths.

APPENDIX B – AEW ARCHITECTS DRAWINGS

General Drawings

12732-AEW-XX-XX-DR-A-0501-S2-P02-Site - Location Plan

12732-AEW-XX-XX-DR-A-6000-S2-P2_Typical Window Concept Details

12732-AEW-XX-XX-RP-A-P01-0400_Design Statement

Dobson, Lancaster, Lincoln and Shackleton High-Rise Residential Buildings

12732-AEW-B1-XX-DR-A-0544-S2-P02-Lancaster Court - Existing East and West Elevations

12732-AEW-B1-XX-DR-A-0545-S2-P02-Lancaster Court - Existing North and South Elevations

12732-AEW-B1-XX-DR-A-0546-S2-P02-Lancaster Court - Proposed East and West Elevations

12732-AEW-B1-XX-DR-A-0547-S2-P02-Lancaster Court - Proposed North and South Elevations

12732-AEW-B1-ZZ-DR-A-0540-S2-P02-Lancaster Court - Existing_00-03_GA Plans

12732-AEW-B1-ZZ-DR-A-0541-S2-P02-Lancaster Court - Existing_04-07_GA Plans

12732-AEW-B1-ZZ-DR-A-0542-S2-P02-Lancaster Court - Existing_08-11_GA Plans

12732-AEW-B1-ZZ-DR-A-0543-S2-P02-Lancaster Court - Existing_12-RF_GA Plans

12732-AEW-B1-ZZ-DR-A-0548-S2-P02-Lancaster Court - Proposed GA Plans

12732-AEW-B2-XX-DR-A-0584-S2-P02-Dobson Court - Existing East and West Elevations

12732-AEW-B2-XX-DR-A-0585-S2-P02-Dobson Court - Existing North and South Elevations

12732-AEW-B2-XX-DR-A-0586-S2-P02-Dobson Court - Proposed East and West Elevations

12732-AEW-B2-XX-DR-A-0587-S2-P02-Dobson Court - Proposed North and South Elevations

12732-AEW-B2-ZZ-DR-A-0580-S2-P02-Dobson Court - Existing_00-03_GA Plans

12732-AEW-B2-ZZ-DR-A-0581-S2-P02-Dobson Court - Existing_04-07_GA Plans

12732-AEW-B2-ZZ-DR-A-0582-S2-P02-Dobson Court - Existing_08-11_GA Plans

12732-AEW-B2-ZZ-DR-A-0583-S2-P02-Dobson Court - Existing_12-RF_GA Plans

12732-AEW-B2-ZZ-DR-A-0588-S2-P02-Dobson Court - Proposed GA Plans

12732-AEW-B4-XX-DR-A-0644-S2-P02-Lincoln Court - Existing East and West Elevations

12732-AEW-B4-XX-DR-A-0645-S2-P02-Lincoln Court - Existing North and South Elevations

12732-AEW-B4-XX-DR-A-0646-S2-P02-Lincoln Court - Proposed East and West Elevations

12732-AEW-B4-XX-DR-A-0647-S2-P02-Lincoln Court - Proposed North and South Elevations

12732-AEW-B4-ZZ-DR-A-0640-S2-P02-Lincoln Court - Existing_00-03_GA Plans

12732-AEW-B4-ZZ-DR-A-0641-S2-P02-Lincoln Court - Existing_04-07_GA Plans

12732-AEW-B4-ZZ-DR-A-0642-S2-P02-Lincoln Court - Existing_08-11_GA Plans

12732-AEW-B4-ZZ-DR-A-0643-S2-P02-Lincoln Court - Existing_12-RF_GA Plans

12732-AEW-B4-ZZ-DR-A-6048-S2-P02-Lincoln Court - Proposed GA Plans

12732-AEW-B3-XX-DR-A-0604-S2-P03-Shackleton Court - Existing East and West Elevations

12732-AEW-B3-XX-DR-A-0605-S2-P03-Shackleton Court - Existing North and South Elevations

12732-AEW-B3-XX-DR-A-0606-S2-P03-Shackleton Court - Proposed East and West Elevations

12732-AEW-B3-XX-DR-A-0607-S2-P03-Shackleton Court - Proposed North and South Elevations - Copy

12732-AEW-B3-ZZ-DR-A-0600-S2-P03-Shackleton Court - Existing_00-03_GA Plans

12732-AEW-B3-ZZ-DR-A-0601-S2-P03-Shackleton Court - Existing_04-07_GA Plans

12732-AEW-B3-ZZ-DR-A-0602-S2-P03-Shackleton Court - Existing_08-11_GA Plans

12732-AEW-B3-ZZ-DR-A-0603-S2-P03-Shackleton Court - Existing_12-RF_GA Plans

12732-AEW-B3-ZZ-DR-A-0608-S2-P03-Shackleton Court - Proposed GA Plans

Audax and Underhill Low Rise Residential Buildings

12732-AEW-B5-XX-DR-A-0681-S2-P03-Audax Walk - Existing Elevations

12732-AEW-B5-XX-DR-A-0683-S2-P03-Audax Walk - Proposed Elevations

12732-AEW-B5-ZZ-DR-A-0680-S2-P03-Audax Walk - Existing_00-RF_ GA Plans

12732-AEW-B5-ZZ-DR-A-0682-S2-P03-Audax Walk - Proposed_00-RF_GA Plans

12732-AEW-B6-XX-DR-A-0701-S2-P02-Underhill Walk - Existing Elevations

12732-AEW-B6-XX-DR-A-0703-S2-P02-Underhill Walk - Proposed Elevations

12732-AEW-B6-ZZ-DR-A-0700-S2-P02-Underhill Walk - Existing_00-RF_GA Plans

12732-AEW-B6-ZZ-DR-A-0702-S2-P02-Underhill Walk - Proposed_00-RF_GA Plans

APPENDIX C – INSUL ® SOUND INSULATION PERFORMANCE PREDICTIONS

Insul ® Mode of Proposed Brick Cladding System – High Rise

Sound Insulation Prediction (v9.0.24)

Program copyright Marshall Day Acoustics 2017
Margin of error is generally within Rw ±3 dB
Key No: 5527
Job Name:
Job No.: Initials:Naomi Bolton
Date:31/10/2024
File Name:propTBclad.ixl

INSUL

Notes:



Rw 59 dB
C 0 dB
Ctr -2 dB

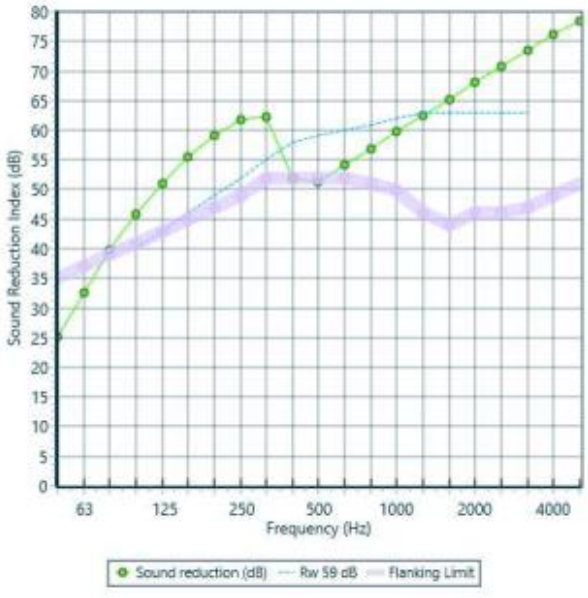
Mass-air-mass resonant frequency = =42 Hz
Panel Size = 2.7 m x 4.0 m
Partition surface mass = 140 kg/m²

System description

Panel 1 : 1 x 100 mm Lightweight concrete

Frame: Steel Stud (0.55mm) (2E2 mm x 38 mm), Stud spacing 600 mm ; Cavity Width 200 mm , 1 x Fibreglass (10kg/m3) 60mm Thickness 200 mm ...
Panel 2 : 1 x 5 mm Sand/Cement render (plaster)

freq.(Hz)	R(dB)	R(dB)
50	25	
63	33	29
80	40	
100	46	
125	51	49
160	55	
200	59	
250	62	61
315	62	
400	52	
500	51	52
630	54	
800	57	
1000	60	59
1250	62	
1600	65	
2000	68	67
2500	71	
3150	74	
4000	76	76
5000	79	



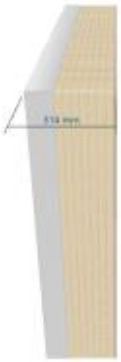
Insul ® Mode of Existing Brick Cladding System – High Rise

Sound Insulation Prediction (v9.0.24)

Program copyright Marshall Day Acoustics 2017
Margin of error is generally within Rw ±3 dB
Key No. 5527
Job Name:
Job No.: Initials:Naomi Bolton
Date:31/10/2024
File Name:exTBclad.ixl

INSUL

Notes:



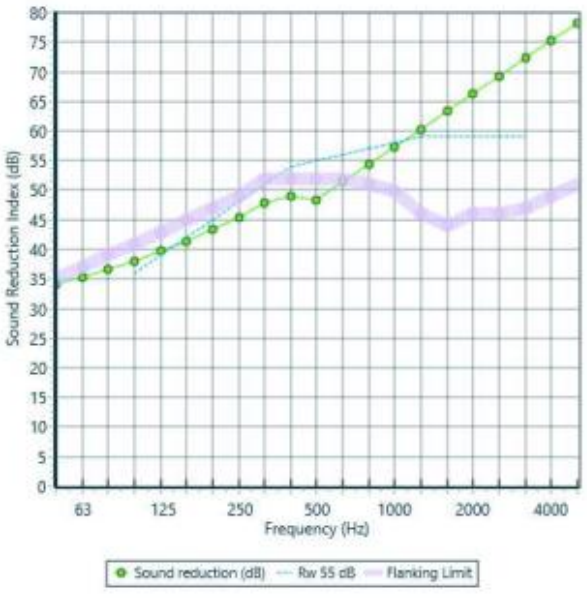
Rw 55 dB
C -1 dB
Ctr -5 dB

Panel Size = 2.7 m x 4.0 m
Partition surface mass = 150 kg/m²

System description

Panel 1 : 1 x 100 mm Lightweight concrete
+ 1 x 5 mm Sand/Cement render (plaster)
+ 7 x 29.9 mm Kool Duct

freq.(Hz)	R(dB)	R(dB)
50	34	
63	35	35
80	37	
100	38	
125	40	40
160	41	
200	43	
250	45	45
315	48	
400	49	
500	48	49
630	51	
800	54	
1000	57	57
1250	60	
1600	63	
2000	66	66
2500	69	
3150	72	
4000	75	75
5000	78	



Predicted Sound Insulation Performance of Proposed Spandrel Panel System (Provided by Rockwool ®)

Sound Insulation Prediction (v8.0.1)

Program copyright Marshall Day Acoustics 2014

Rockwool International A/S - Key No. 2589

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

Job Name: ACHE

Job No.: 1852 Page No.:

Date: 13 Nov 23 Initials:heva

File Name: insul

Notes:

Metaline

Panel Option 2

Airborne

Indicative



Rw 37 dB
C -3 dB
C_{tr} -9 dB
D_{nTw} 39 dB

System description

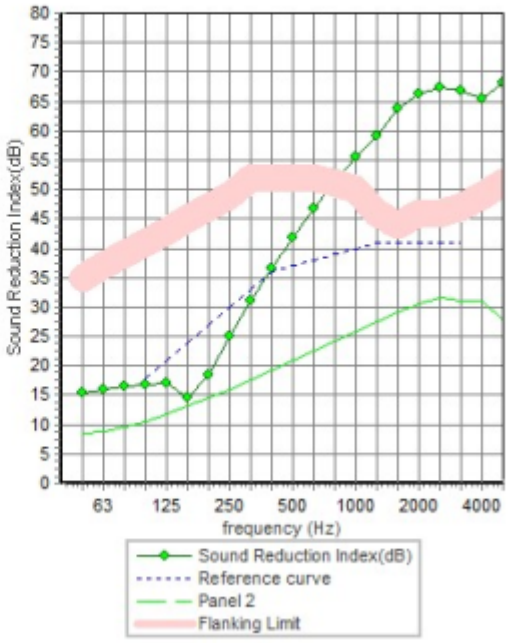
Panel 1 : 1 x 3.0 mm Aluminium (ρ:2900 kg/m3,E:85GPa,η:0.01)

Cavity: Point connections ,Stud spacing 600 mm , Infill FABROCK CWP 410 Thickness 32 mm (ρ:120 kg/m3, Rf:47669 Pa.s/m2)
Panel 2 + 1 x 2.0 mm Aluminium (ρ:2900 kg/m3,E:85GPa,η:0.01)

Mass-air-mass resonant frequency =152 Hz

frequency (Hz)	R(dB)	R(dB)
50	15	
63	16	16
80	17	
100	17	
125	17	16
160	15	
200	19	
250	25	22
315	31	
400	37	
500	42	40
630	47	
800	51	
1000	55	54
1250	59	
1600	64	
2000	66	66
2500	67	
3150	67	
4000	65	67
5000	68	

Panel Size 2.7x4 m

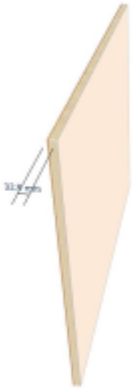


Insul ® Model of Existing Spandrel Panel System (Bedroom)

Sound Insulation Prediction (v9.0.24)

Program copyright Marshall Day Acoustics 2017
Margin of error is generally within Rw ±3 dB
- Key No. 5527
Job Name:
Job No.: Initials:Naomi Bolton
Date:31/10/2024
File Name:exspan.ixl

Notes:



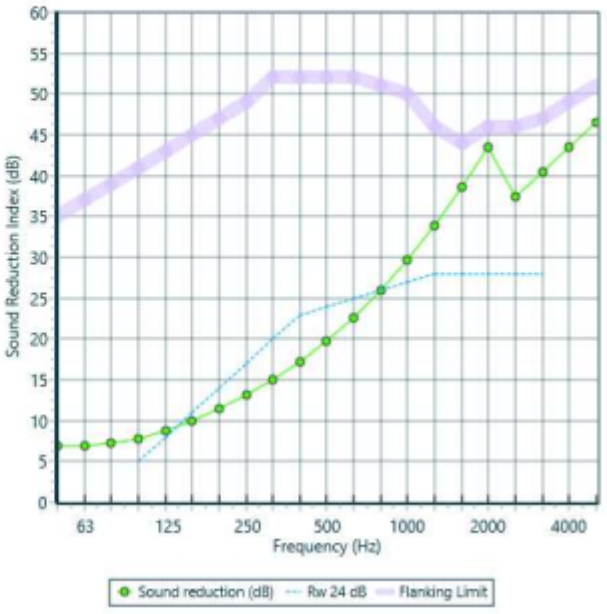
Rw 24 dB
C -1 dB
Ctr -5 dB

Panel Size = 2.7 m x 4.0 m
Partition surface mass = 3.83 kg/m²

System description

Panel 1 : 1 x 3 mm Medium Density FibreBd + 1 x 29.9 mm Kool Duct

freq.(Hz)	R(dB)	R(dB)
50	7	
63	7	7
80	7	
100	8	
125	9	9
160	10	
200	11	
250	13	13
315	15	
400	17	
500	20	19
630	23	
800	26	
1000	30	29
1250	34	
1600	39	
2000	44	39
2500	37	
3150	40	
4000	43	43
5000	46	



Insul ® Model of Existing Spandrel Panel System (Living Room)

Sound Insulation Prediction (v9.0.24)

Program copyright Marshall Day Acoustics 2017
Margin of error is generally within Rw ±3 dB
Key No. 5527
Job Name:
Job No.: Initials:Naomi Bolton
Date:31/10/2024
File Name:exspanwithbox.ixl

Notes:



Rw 36 dB
C -3 dB
Ctr -9 dB

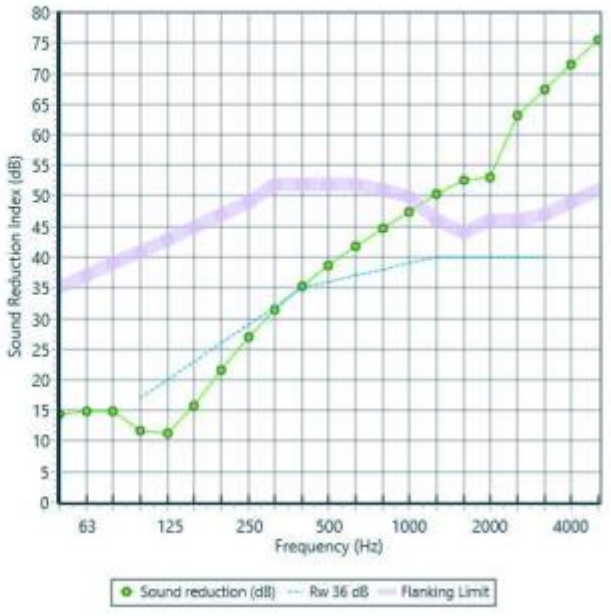
Mass-air-mass resonant frequency = =100 Hz
Panel Size = 2.7 m x 4.0 m
Partition surface mass = 14.8 kg/m²

System description

Panel 1 : 1 x 3 mm Medium Density FibreBd + 1 x 29.9 mm Kool Duct

Frame: Timber stud (1E2 mm x 15 mm), Stud spacing 600 mm , Cavity Width 105 mm , 1 x Fibreglass (10kg/m3) 60mm Thickness 105 mm
Panel 2 : 1 x 16 mm Particle Board

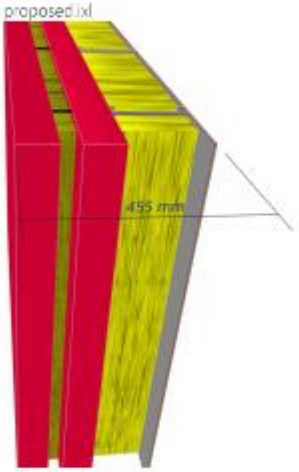
freq.(Hz)	R(dB)	R(dB)
50	14	
63	15	15
80	15	
100	12	
125	11	12
160	16	
200	22	
250	27	25
315	31	
400	35	
500	39	38
630	42	
800	45	
1000	48	47
1250	50	
1600	53	
2000	53	54
2500	63	
3150	67	
4000	71	70
5000	76	



Insul ® Mode of Proposed Render Cladding System – Low-Rise

Sound Insulation Prediction (v9.0.24)

Program copyright Marshall Day Acoustics 2017
Margin of error is generally within Rw ±3 dB
Key No. 5527
Job Name:
Job No.: Initials Naomi Bolton
Date:06/11/2024
File Name:Low rise cladding proposed.ixl



Notes:

Rw 72 dB
C -1 dB
Ctr -5 dB

Mass-air-mass resonant frequency = =29 Hz ; 49 Hz
Panel Size = 2.7 m x 4.0 m
Partition surface mass = 341 kg/m²

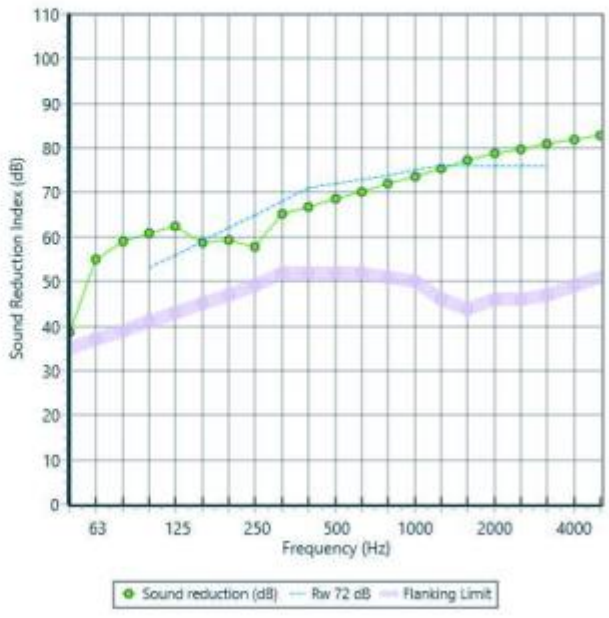
System description

Panel 1 : 1 x 100 mm Brick

Frame: Point Connection (50 mm x 45 mm), Stud spacing 600 mm ; Cavity Width 50 mm , 1 x Fibreglass (10kg/m3) 60mm Thickness 50 mm
Panel 2 : 1 x 100 mm Brick

Frame: Steel Stud (0.55mm) (262 mm x 38 mm), Stud spacing 600 mm ; Cavity Width 200 mm , 1 x Rockwool (60kg/m3) Thickness 200 mm
Panel 3 : 1 x 5 mm Sand/Cement render (plaster)

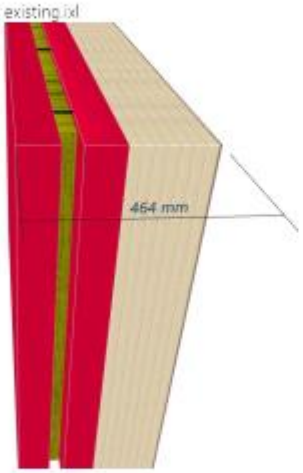
freq.(Hz)	R(dB)	R(dB)
50	38	
63	55	43
80	59	
100	61	
125	62	60
160	59	
200	59	
250	58	60
315	65	
400	67	
500	68	68
630	70	
800	72	
1000	74	73
1250	75	
1600	77	
2000	79	78
2500	80	
3150	81	
4000	82	82
5000	83	



Insul ® Mode of Existing Render Cladding System – Low-Rise

Sound Insulation Prediction (v9.0.24)

Program copyright Marshall Day Acoustics 2017
Margin of error is generally within Rw ±3 dB
Key No: 5527
Job Name:
Job No.: Initials:Naomi Bolton
Date:06/11/2024
File Name:Low rise cladding existing.ixl



Notes:

Rw 62 dB
C -2 dB
Ctr -6 dB

Mass-air-mass resonant frequency = =25 Hz
Panel Size = 2.7 m x 4.0 m
Partition surface mass = 341 kg/m²

System description

Panel 1 : 1 x 100 mm Brick

Frame: Point Connection (50 mm x 45 mm), Stud spacing 600 mm ; Cavity Width 50 mm , 1 x Fibreglass (10kg/m3) 60mm Thickness 50 mm
Panel 2 : 1 x 100 mm Brick + 7 x 29.9 mm Kool Duct
+ 1 x 5 mm Sand\Cement render (plaster)

freq.(Hz)	R(dB)	R(dB)
50	37	
63	40	39
80	42	
100	44	
125	46	46
160	48	
200	49	
250	48	49
315	52	
400	54	
500	58	57
630	61	
800	65	
1000	69	68
1250	72	
1600	76	
2000	79	78
2500	83	
3150	87	
4000	90	89
5000	94	

