



Document reference: AC20207.02.00

30 West Street Horsham

Acoustic Construction Specification



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ii. Document History

Document Ref	Rev	Title	Date	Created By	Created By	Comments
AC20207.02.00	0	Acoustics specification report (Floor)	20/07/2026	DG	BG	Initial issue for discussion

This report presents the acoustic consultancy services undertaken for the client by Trace Surveys Ltd (Trace). This has been based on the defined program of works and relevant terms and conditions agreed upon with the Client. The report has been prepared with all reasonable skill, care, and diligence within the terms of the Contract and the agreed scope of work. Trace accepts no responsibility whatsoever, following the issue of the report, for any matters arising outside the agreed scope of the works.

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1. Introduction

Trace Surveys Ltd (Trace) has been appointed to provide acoustic consultancy services in relation to the proposed conversion of the existing commercial premises at 30 West Street, Horsham into eight residential dwellings.

Planning Permission (Ref. DC/26/0146) includes a condition requiring the submission of a scheme of sound insulation and construction to demonstrate that the separating floors achieve sound insulation performance exceeding the normal Building Regulations requirements by 5 dB. The condition also requires details of post-construction verification testing.

This report has therefore been prepared to satisfy Condition 1 by reviewing the proposed separating floor construction and assessing its expected acoustic performance using recognised acoustic prediction software.

2. Credentials

Acoustic assessments were undertaken by David Gnanaseharam BSc (Hons) MSc MIOA. David has been involved with acoustic consultancy (including sound insulation testing) for over fifteen years and has a Masters degree in Acoustics from the University of Surrey and is a corporate member of the Institute of Acoustics (MIOA).

In addition, David is fully accredited under the Sound Insulation Testing and Measurement Association (SITMA) scheme. SITMA is a professional association for the Acoustic Consultancy industry and operates a registered testers scheme providing 3rd party accreditation to testing companies, ensuring that all companies operate to a high standard.

SITMA also holds UKAS Accreditation to ISO 17024:2012.



3. Site description

The development comprises the conversion of the existing commercial building at 30 West Street, Horsham into eight residential apartments under Prior Approval.

The development includes the construction of new separating floors between residential dwellings.

The proposed separating floor construction, as confirmed by KJC Architects, comprises:

- Existing 150mm reinforced concrete slab;
- 65mm sand/cement screed;
- 9mm Karma Soundlay acoustic resilient layer;
- 12mm marine plywood;
- Final floor finish (laminated or ceramic tile depending upon apartment);
- Suspended ceiling comprising resilient bars supporting two layers of 12.5mm Gyproc FireLine plasterboard.

The same floor construction is proposed throughout the development.

4. Design Criteria

4.1. Approved Document E

Approved Document E (ADE), in support of the Building Regulations, primarily sets out the former Office of the Deputy Prime Minister's requirements for achieving requisite levels of sound insulation between and within residential dwellings. Minimum requirements are stipulated for new build and converted residential dwellings, as well as rooms for residential purposes (such as student accommodation, hostels, hotels, residential care homes, etc.).

Regarding separating walls and floors between new-build properties, ADE states the following performance standards to be achieved, as a minimum.



Table 1: Approved Document E requirements

Building / Room Type	Airborne Sound Insulation ($D_{nT,w} + C_{tr}$, dB) (Minimum values)	Impact Sound Insulation ($L'_{nT,w}$, dB) (Maximum values)
Dwelling-houses and flats (Purpose Built)	Walls: 45 Floors and stairs: 45	Floors and stairs: 62
Dwelling-houses and flats (Material change of use)	Walls: 43 Floors and stairs: 43	Floors and stairs: 64
Rooms for residential purposes (Purpose Built)	Walls: 43 Floors and stairs: 45	Floors and stairs: 62
Rooms for residential purposes (Material change of use)	Walls: 43 Floors and stairs: 43	Floors and stairs: 64

$D_{nT,w}$ -the weighted and normalised level difference. This value is the result of applying a known octave band weighting curve to the measured result.

C_{tr} - Is a correction factor applied to the $D_{nT,w}$ to account for the known effects of particular types of noise, such as loud stereo music or traffic noise.

$L'_{nT,w}$: Weighted, standardised impact sound pressure level.

4.2. Planning Condition

As the development comprises a material change of use, the corresponding performance standards within Approved Document E would ordinarily apply. However, in response to the planning condition requiring a 5 dB enhancement above normal Building Regulations, enhanced performance criteria have been adopted within this report. Planning Condition 1 states:

The scheme shall ensure that the sound insulation of the party floors is 5 dBA or better than normal Building Regulations and shall also include details of post construction verification."

4.3. Project requirements

Based on the above and the required acoustic uplift with regards the sound insulation performance of separating party floors, the following performance standards have been adopted for this project.

Table 2: Project requirements in accordance with Approved Document E

Building / Room Type	Airborne Sound Insulation ($D_{nT,w} + C_{tr}$, dB) (Minimum values)	Impact Sound Insulation ($L'_{nT,w}$, dB) (Maximum values)
Dwelling-houses and flats (Material change of use)	Walls: 43 Floors: 48	N/A Floors and stairs: 59



These criteria apply to all separating walls and floors. All constructions shall therefore be designed and detailed to achieve at least the above performance levels when tested in accordance with BS EN ISO 140-4:1998 and BS EN ISO 717-1:2013, and BS EN ISO 140-7:1998 and BS EN ISO 717-2:2013 for airborne and impact sound insulation respectively.

5. Acoustic Assessment

Based on the above sections the following remedial works are recommended:

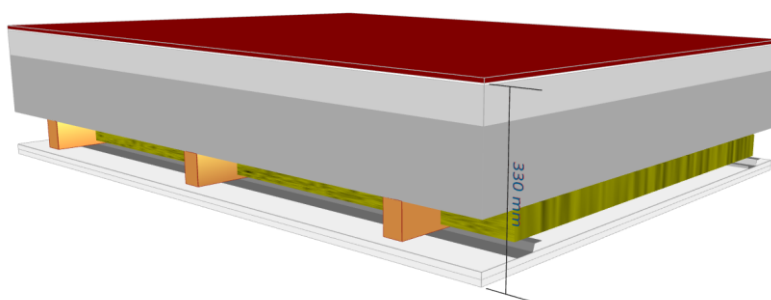
5.1. Separating floor (residential and residential space)

The proposed floor construction has been assessed using proprietary acoustic prediction software (Insul) developed specifically for predicting airborne and impact sound insulation performance of separating constructions.

The model comprised:

- 150mm concrete slab;
- 65mm sand/cement screed;
- 9mm Karma Soundlay resilient layer;
- 12mm marine plywood;
- Finished floor covering;
- Resiliently suspended ceiling;
- Two layers of 12.5mm Gyproc FireLine plasterboard.

The construction was assessed in accordance with recognised acoustic modelling methodology.



Predicted Performance

Table 3: Summary of assessments

Parameter	Target	Predicted	Results
Airborne $D_{nT,w} + C_{tr}$	≥ 48 dB	58 dB	PASS
Impact $L'_{nT,w}$	≤ 59 dB	44 dB	PASS



The assessment indicates that the proposed construction is commensurate with achieving the enhanced sound insulation performance required by Planning Condition 1.

It should be noted that prediction software provides an indication of likely field performance. Final compliance remains dependent upon workmanship, junction detailing, avoidance of acoustic bridging and overall construction quality.

5.2. Separating walls (between residential spaces)

For completeness, whilst this report has been prepared primarily to discharge Planning Condition 1 relating to the separating floor construction, a recommended separating wall specification has also been included within Appendix B. Although not specifically required by the planning condition, the proposed wall construction is considered commensurate with achieving the sound insulation requirements of Approved Document E and provides a coordinated acoustic construction strategy for the development.

6. Construction Recommendations (Separating Floors)

In order to achieve the predicted acoustic performance the following recommendations should be incorporated during construction.

6.1. Floating Floor Construction

The resilient acoustic layer shall be installed continuously across the floor area in accordance with the manufacturer's installation guidance.

The marine plywood shall remain isolated from surrounding walls through the use of perimeter isolation strips.

The resilient layer shall not be bridged by mechanical fixings or rigid connections.

6.2. Suspended Ceiling

The suspended ceiling shall comprise resilient bars supporting two layers of 12.5mm Gyproc FireLine plasterboard.

- Plasterboard joints shall be staggered between layers.
- All perimeter junctions shall be sealed using non-hardening acoustic sealant.
- No rigid fixings shall connect the plasterboard directly to the concrete slab.

6.3. Flanking through internal lining of the external wall

Where lightweight internal linings are proposed to external masonry walls, care should be taken to minimise flanking transmission. This may be achieved through the use of a continuous parge coat, independent lining systems or resilient bar systems, together with mineral wool within the cavity and appropriate acoustic sealing at all junctions.

6.4. Junction and penetration details

Junctions should be acoustically treated to ensure the acoustic performance of the relevant separating partition is not undermined. Seal all joints between plasterboard layers with tape or caulk with sealant. Typically non-hardening acoustic mastic should be used.

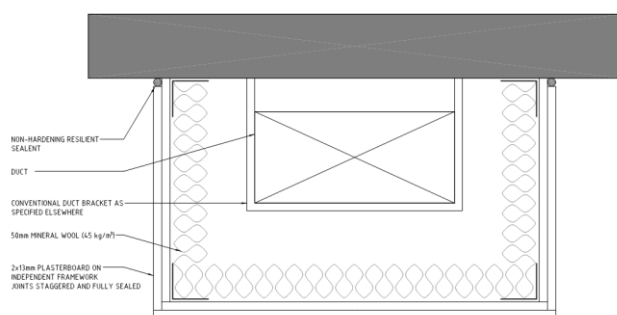
Penetrations through acoustic elements should be avoided. Where unavoidable, all penetrations should be acoustically sealed in order that the overall acoustic performance of the partition is maintained.

Care should be taken to ensure services do not bridge any acoustic layer.

6.5. Rain water, Soil Vent Pipe & Ductwork

ADE provides guidance with regard to pipes and ducts that penetrate through separating partitions. The respective guidance is shown below.

Table 4: Pipework enclosure detail



- Pipes should be enclosed for their full height.
- Enclosure should be constructed of material having a mass per unit area of at least 15kg/m² (e.g. two layers of 8kg/m² plasterboard board).
- In addition either line the enclosure or wrap the duct or pipe within the enclosure with 25mm unfaced mineral fibre.

Where applicable, any services installed within the cavity shall be fitted with suitable anti-vibration mounts.

All services shall be enclosed such that noise breakout from the relevant plant or duct achieves the relevant internal noise criteria.

It should be noted that a proprietary specialist pipe lagging system may also be used to achieve the above. Further details can be provided upon request.



6.6. Doors to flats

ADE advises that, where corridor walls and doors are concerned:

“Ensure any door has good perimeter sealing (including the thresholds, where practical) and a minimum mass per unit area of 25 kg/m². Alternatively, use a door set with a minimum sound reduction index of 29 dB Rw (measured in the laboratory according to BS EN ISO 140-3:1995 and rated according to BS EN ISO 717-1:1997). The door should also satisfy the Requirements of Building Regulation Part B – Fire safety.”

Typically, this acoustic performance can be achieved by a well fitted solid core doorset where the door is sealed effectively around its perimeter in a substantial frame with an effective stop. Timber FD30 doors often have particle cores or laminated softwood cores with a mass per unit area $\approx$ 27 kg/m² and a thickness of $\approx$ 44 mm. Frames for FD30 doors often have a 90 mm x 40 mm section with a stop of at least 15 mm.

Compression or wipe seals should be used around the door's perimeter along with a threshold seal beneath. A drop-down or wipe-type threshold seal is suitable.

7. Post Construction Verification

Following completion of the separating floors, airborne and impact sound insulation testing shall be undertaken by a suitably qualified acoustic consultant.

Testing shall be carried out in accordance with:

- Approved Document E (ADE), in support of the Building Regulations

The testing shall demonstrate compliance with the following criteria:

Parameter	Requirement
Airborne	$D_{nT,w} + C_{tr} \geq 48$ dB
Impact	$L'_{nT,w} \leq 59$ dB

Should any construction fail to satisfy these criteria, appropriate remedial works shall be undertaken prior to occupation of the affected dwelling.

A Post Construction Verification Report shall subsequently be submitted to Horsham District Council in accordance with Planning Condition 3.



8. Limitations

This report considers only the internal separating floor sound insulation requirements of Planning Condition 1.

The report does not assess:

- external environmental noise;
- plant or mechanical services noise;
- overheating;
- ventilation performance.

These elements should be considered separately where required by the project design team.

9. Conclusion

Trace Surveys Ltd has undertaken an acoustic assessment of the proposed separating floor construction for the development at 30 West Street, Horsham.

The assessment has been prepared in response to Planning Condition 1, which requires the party floors to achieve sound insulation performance 5 dB better than the minimum requirements of Approved Document E.

Based on the acoustic modelling undertaken using proprietary prediction software, the proposed floor construction is considered robustly commensurate with achieving the enhanced airborne and impact sound insulation performance required by Planning Condition 1, subject to construction in accordance with the recommendations contained within this report.

Post-construction sound insulation testing should be undertaken following completion of the development to verify compliance with the planning condition prior to first occupation.



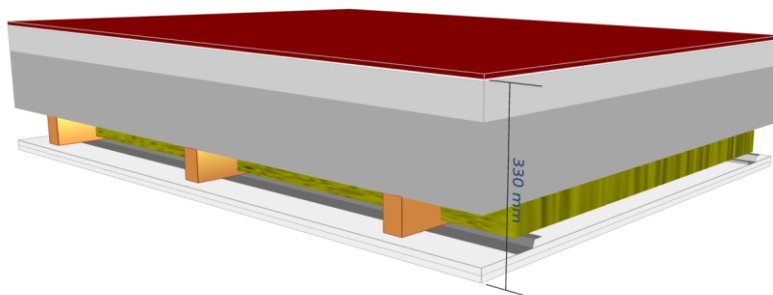
Appendix A Proposed Layout

Refer to the relevant architectural drawings.



Appendix B Proposed construction details

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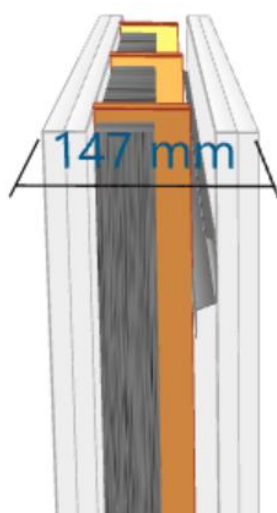
- 150mm concrete slab;
- 65mm sand/cement screed;
- 9mm Karma Soundlay resilient layer;
- 12mm marine plywood;
- Finished floor covering;
- Resiliently suspended ceiling;
- Two layers of 12.5mm Gyproc FireLine plasterboard.

SECTION ELEVATION

Airborne: $D_{nTw} + C_{tr}$ dB ≥ 48 dB

Impact $L_{nTw} \leq 59$ dB

Date:	Drawn:	Description:	Result :
20/07/2026	DG	Project Ref. AC20207.02.00 30 West Street Horsham Acoustic Specification Ref. Floor Spec. 01	PASS
Issue:	Scale:		
01	NTS		



- 2x15mm Soundbloc;
- 75mm x 50mm timberstuds
- Cavity filled with acoustic insulation 23 kg/m³ Rockwool;
- 2x15mm Soundbloc resiliently connected to studs with 16mm Resilient bar;

Airborne: $D_{nTw} + C_{tr} \geq 43$ dB

Date:	Drawn:	Description:	Result :
20/07/2026	DG	Project Ref. AC20207.02.00 30 West Street Horsham Acoustic Specification	PASS
Issue:	Scale:	Ref. Wall Spec. 01	
01	NTS		



Appendix C Modelled Data

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Sound Insulation Prediction (v9.0.24)

Program copyright Marshall Day Acoustics 2017

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

- Key No. 6562

Job Name:

Job No.:

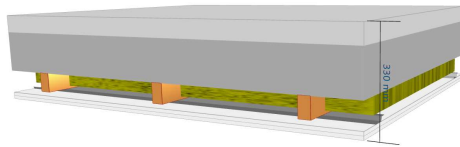
Initials:44776

Date:20/07/2026

File Name:insul



Notes:



R_w 67 dB

C -1 dB

Ctr -4 dB

Mass-air-mass resonant frequency = 40 Hz

Panel Size = 2.7 m x 4.0 m

Partition surface mass = 456 kg/m²

System description

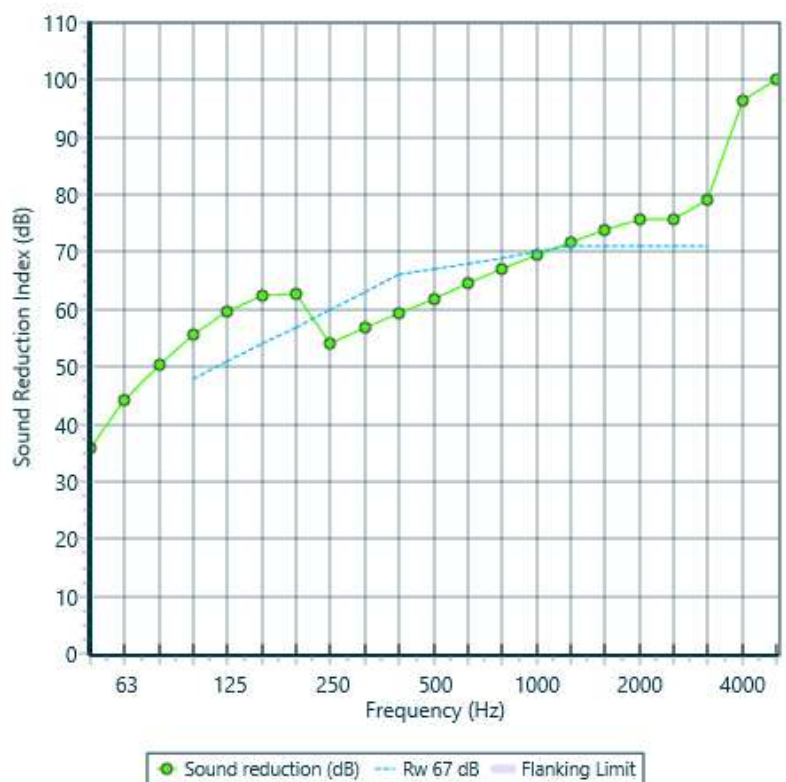
Panel 1 : 1 x 65 mm Lightweight concrete

+ 1 x 150 mm Concrete

Frame: Solid Joist with resilient rail (72 mm x 45 mm), Stud spacing 600 mm; Cavity Width 90 mm, 1 x Fibreglass (10kg/m³) Thickness 60 mm

Panel 2 : 2 x 12.5 mm Gyproc Fireline 12.5mm

freq.(Hz)	R(dB)	R(dB)
50	36	
63	44	40
80	50	
100	56	
125	60	58
160	62	
200	63	
250	54	57
315	57	
400	59	
500	62	61
630	64	
800	67	
1000	69	69
1250	72	
1600	74	
2000	76	75
2500	76	
3150	79	
4000	96	84
5000	100	

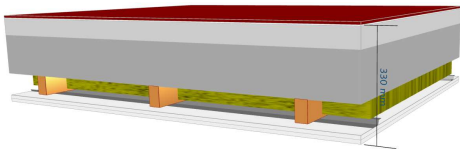


Sound Insulation Prediction (v9.0.24)

Program copyright Marshall Day Acoustics 2017
Margin of error is generally within Ln,w ±5 dB
- Key No. 6562
Job Name:
Job No.: Initials:44776
Date:20/07/2026
File Name:insul



Notes:



Ln,w 44 dB

Mass-air-mass resonant frequency = 46 Hz
Panel Size = 2.4 m x 2.4 m
Partition surface mass = 456 kg/m²

System description

Panel 1 : 1 x 65 mm Lightweight concrete + 1 x 150 mm Concrete

Frame: Solid Joist with resilient rail (72 mm x 45 mm), Stud spacing 600 mm ; Cavity Width 90 mm , 1 x Fibreglass (10kg/m3) Thickness 60 mm
Panel 2 : 2 x 12.5 mm Gyproc Fireline 12.5mm

Floor Cover: .Acoustibond (3mm) under Ceramic Tiles Thickness 8 mm

freq.(Hz)	Ln(dB)	Ln(dB)
50	59	
63	53	60
80	50	
100	55	
125	51	57
160	47	
200	44	
250	43	48
315	44	
400	42	
500	41	47
630	43	
800	42	
1000	41	46
1250	40	
1600	37	
2000	36	40
2500	28	
3150	26	
4000	22	28
5000	18	

