Technical Note

To:	Ian Harding
From:	Jordan Mayes
Subject:	Discharge of Condition 5 attached to planning application ref WRR P/2022/105718 (Conversion of upper floors to 2 apartments at 18 Regent Street, Wrexham, LL11 1SA)
Reference:	2025206_TN01
Date:	23/06/2026

1. Introduction

1.1. This technical note sets out the acoustic design strategy for the conversion of the upper floors of 18 Regent Street, Wrexham to form two residential apartments. The scheme has been designed to comply with Planning Condition 5, which requires approval of a detailed scheme of noise insulation and attenuation measures between floors and walls shared with neighbouring commercial units, in compliance with Building Regulations Guidance Part E: Resistance to the Passage of Sound.

1.2. Condition 5 is reproduced in full below for ease of reference:

> *"No part of the development shall commence until a scheme of noise insulation and attenuation measures between the floors and also the walls shared with neighbouring commercial units, in compliance with Building Regulations Guidance: Part E - Resistance to the Passage of Sound, has been submitted to, and approved in writing by, the Local Planning Authority. The measures as are approved shall be fully implemented in strict accordance with the scheme prior to first occupation / use of the development and shall thereafter be permanently retained."*

2. Design Criteria

APPROVED DOCUMENT E (ADE)

2.1. ADE sets out minimum sound insulation performance requirements for separating walls and floors between dwellings, and internal walls within dwellings. The following requirements apply to apartments formed by material change of use of an existing building:

- Separating walls (airborne sound insulation): ≥ 43 dB $D_{nTw} + C_{tr}$
- Separating floors (airborne sound insulation): ≥ 43 dB $D_{nTw} + C_{tr}$
- Separating floors (impact sound insulation): ≤ 64 dB $L_{nT,w}$
- Internal walls (i.e. walls between bedrooms and habitable spaces without a door): 40 dB R_w

2.2. ADE does not prescribe minimum airborne sound insulation requirements between residential and non-residential uses such as retail. Specialist acoustic advice is recommended to determine appropriate performance based on adjoining uses. Appropriate advice is provided below.

3. Acoustic Design Strategy

3.1. The proposed sound insulation strategy for the proposed development is set out in Appendix A and summarised below:

- Separating floors between dwellings (residential-to-residential): ADE minimum airborne sound insulation performance of 43 dB D_{nTw} + C_{tr} adopted, and ADE maximum impact sound insulation performance of 64 dB $L'_{nT,w}$ adopted.
- Separating floor between retail and residential (ground-to-first floor): ADE minimum + 5 dB uplift applied (target 48 dB D_{nTw} + C_{tr} minimum), reflecting the higher noise potential of retail use compared to residential
- Separating walls between apartments and circulation spaces: ADE minimum airborne sound insulation performance of 43 dB D_{nTw} + C_{tr} adopted
- Separating walls between apartments and horizontally adjacent spaces in neighboring properties: Minimum 5 dB above ADE requirement adopted, to account for uncertainty regarding adjacent uses (dwellings or commercial); 48 dB D_{nTw} + C_{tr}.
- Internal walls: ADE minimum requirement of 40 dB R_w adopted.

4. Proposed Floor Constructions

GROUND FLOOR (RETAIL) TO FIRST FLOOR (RESIDENTIAL)

4.1. Proposed build-up (top to bottom)

- 18 mm T&G flooring particle board
- 15 mm dense plasterboard (FireLine or similar)
- 70 mm timber battens with 10mm resilient backing
- 50 mm mineral wool insulation in the batten zone
- 18 mm T&G flooring particle board
- 200 mm timber joists
- 150 mm mineral wool insulation in the joist voids
- 2 x 15 mm dense plasterboard layer (FireLine or similar)
- Suspended ceiling system (mineral fibre grid).
- **Predicted Sound Insulation Performance:** 55 dB R_w + C_{tr} (lab) / 48 dB D_{nTw} + C_{tr} (on-site)

FIRST FLOOR (RESIDENTAL) TO FIRST FLOOR (RESIDENTIAL)

4.2. Proposed build-up (top to bottom):

- 18 mm T&G flooring particle board
- 15 mm dense plasterboard (FireLine or similar)
- 70 mm timber battens with 10mm resilient backing
- 50 mm mineral wool insulation in the batten zone
- 18 mm T&G flooring particle board
- 200 mm timber joists
- 150 mm mineral wool insulation in the joist voids
- 2 x 15 mm dense plasterboard layer (FireLine or similar)
- **Predicted Sound Insulation Performance:** 53 dB $R_w + C_{tr}$ (lab) / 45 dB $D_{nTw} + C_{tr}$ (on-site)
- **Predicted Impact Sound Performance:** $\leq$ 64 dB $L_{nT,w}$ requirement

4.3. External masonry walls to apartments, and to the ground floor retail space, are to be lined with an independent lining system comprising:

- Timber stud frame, set off masonry by minimum 10 mm
- Foil-faced PIR insulation in cavity
- 2 x 12.5 mm plasterboard layers
- Flanking strip around floating floor perimeter to isolate from external wall lining

4.4. This will control flanking sound transfer between vertically adjacent spaces via external walls.

5. Proposed Wall Constructions

SEPARATING WALLS

5.1. The layout of the development results in there being only true separating wall between the two newly formed dwellings, as indicated in Appendix A. The proposed separating wall construction comprises:

- Twin stud timber frame wall
- 2 x 12.5 mm SoundBloc plasterboard to each side
- 100 mm rockwool mineral wool insulation in the cavity
- Constructed off the sub-floor and isolated from the floating floor and wall lining system by a perimeter flanking strip
- **Predicted Sound Insulation Performance:** 53 dB $R_w + C_{tr}$ (lab) / 45 dB $D_{nTw} + C_{tr}$ (on-site).

INTERNAL WALLS

5.2. As noted in Appendix A there is only a single applicable internal wall where an acoustic performance rating is applicable. The proposed wall is to be constructed from a single 70 mm timber stud with 1x 12.5 mm standard density plasterboard fixed to each side, with 25 mm mineral wool insulation in the cavity. The proposed wall is predicted to achieve a sound insulation performance of 43 dB R_w, thus exceeding the minimum requirement from ADE.

WALLS BETWEEN APARTMENTS IN 18 REGENT STREET AND ADJACENT PREMESIS

5.3. The existing separating wall between 18 Regent Street and adjacent commercial units comprises a triple brick system. Together with the newly formed insulated independent wall lining described above (applied to the internal face), this combined structure is predicted to achieve sound insulation performance well in excess of the requirements set out in Appendix A.

5.4. It should be noted that sound insulation testing has not been carried out across the separating walls to the adjacent spaces, as those spaces remain under separate control outside the scope of this development. However, the predicted performance has been modelled using industry standard modelling software Insul®.

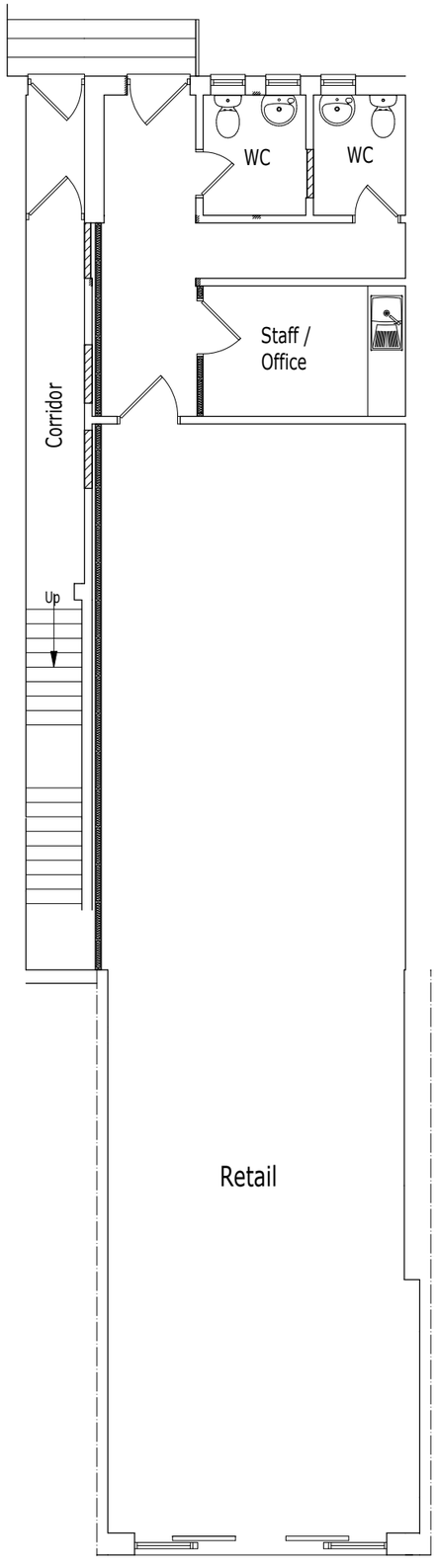
6. Conclusion

6.1. The proposed acoustic design strategy for 18 Regent Street exceeds the minimum performance requirements set out in Approved Document E (Change of Use) across all separating elements. Key points of compliance:

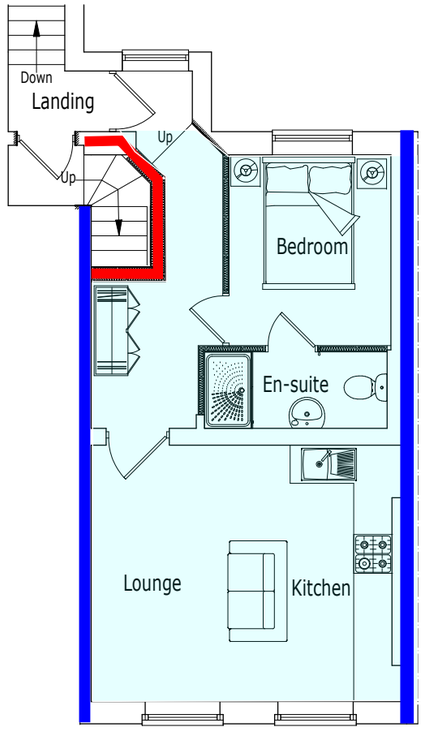
- Separating floors (residential-residential): Predicted performance 45 dB $D_{nTw} + C_{tr}$, exceeds ADE minimum by 2 dB
- Separating floor (retail-residential): Predicted 48 dB $D_{nTw} + C_{tr}$, exceeds ADE minimum by 5 dB (designed to account for retail to residential use adjacency)
- Separating walls (between apartments): Predicted 45 dB $D_{nTw} + C_{tr}$, exceeds ADE minimum by 2 dB
- Internal walls: Predicted 43 dB R_w, exceeds 40 dB minimum by 3 dB
- Separating walls (to adjacent properties): Triple-brick existing wall combined with new independent lining achieves performance significantly exceeding requirements
- Flanking paths: Controlled through independent external wall lining and floating floor isolation

6.2. All proposed constructions are standard in the industry, use readily available materials, and are predicted to achieve the stated performance when installed in accordance with this technical note and good workmanship practice. The scheme fully complies with Planning Condition 5 and Building Regulations Part E requirements.

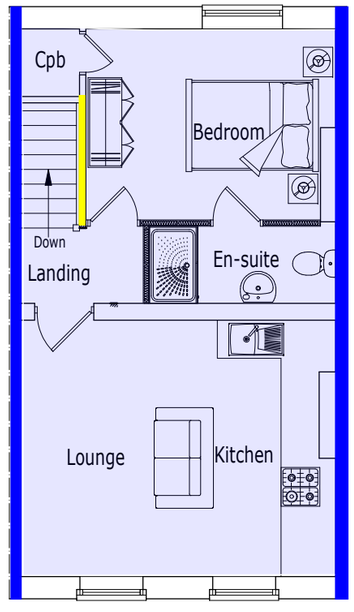
Appendix A: Acoustic Design Strategy



PROPOSED GROUND FLOOR PLAN.



PROPOSED FIRST FLOOR PLAN - APARTMENT 1.



PROPOSED SECOND FLOOR PLAN - APARTMENT 2.

Min. on-site performance	Wall Type	Lab Performance Rating
43 dB $D_{nT,w} + C_{tr}$		> 50 dB $R_w + C_{tr}$
48 dB $D_{nT,w} + C_{tr}$		> 55 dB $R_w + C_{tr}$
n/a		> 40 dB R_w

Min. on-site performance	Floor Type	Lab Performance Rating
48 dB $D_{nT,w} + C_{tr}$		55 dB $R_w + C_{tr}$
43 dB $D_{nT,w} + C_{tr}$		50 dB $R_w + C_{tr}$

Date	Rev	Description	By
26/06/26	A	Report Version	JM

JPM Drawing Number:

2025_206_SI_01

Title:

18 Regent Street, Wrexham
Sound Insulation Performance Requirements