

SOUND INSULATION ASSESSMENT

On behalf of

Excel Planning

For the site at:

21 Watery Lane, Northolt, UB5 6QL

REPORT DATE: 26th October 2023

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CLIENT: Excel Planning

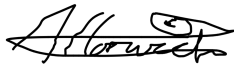
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1. EXECUTIVE SUMMARY

A sound insulation assessment has been carried out in relation to the party floor constructions between the residential properties at an approved residential development at 21 Watery Lane, Northolt, UB5 6QL. The approved development is for the Conversion of existing single family dwellinghouse into 2 self-contained residential units and provision of associated refuse and cycle storage; single storey rear extension; rear roof extension, and installation of two roof lights to front roof slope.

The application was granted by Ealing Council (application ref: 233458FUL) on 19th October 2023 and Planning Condition 4 was set in respect of sound insulation between the two flats.

The assessment has shown that the development should achieve the requirements of ADE and Planning Condition 4, subject to a high quality of workmanship.

It is important to note that, as with any construction project, the ability to meet the specification will rely upon the quality of the built structure. As such the works should be carried out to a high standard of workmanship to ensure that any sound insulation measures are not breached, for example by installing a rigid connection across an isolated connection (such as resilient bars or a resilient mat). Additionally, any joints between different walls and the party wall and the ceiling/floor should be carefully filled with non-hardening acoustic mastic.



2. ASSESSMENT CRITERIA

2.1. Local Authority Requirements

The application was granted by Ealing Council (application ref: 233458FUL) on 19th October 2023 and Planning Condition 4 was set in respect of sound insulation between the two flats, which is reproduced below:

“Prior to commencement of the development, details shall be submitted to the Council for approval in writing, of an enhanced sound insulation value of at least 5dB above the maximum Building Regulations value, for the floor/ceiling/wall structures separating different types of rooms/uses in adjoining dwellings/areas, namely, bedrooms below/above kitchen/living/dining/bathroom and adjoining the main entrance and staircase of separate dwelling. The assessment and mitigation measures shall have regard to standards of the Council's SPG10 and noise limits specified in BS8233:2014. Approved details shall be implemented prior to occupation of the development and thereafter be permanently retained.

Reason: To ensure that the amenity of occupiers of the development site is not adversely affected by noise, in accordance with Policies 1.1 and 1.2 of the Ealing Development (Core) Strategy (2012), policies 7A & 7B of the Ealing Development Management Development Plan Document (2013), policy D14 of The London Plan Page 3 of 5 DEC_NOT (2021), Ealing SPG10, Standard 30 London Housing SPG 2016 and the National Planning Policy Framework (2023).”

2.2. The Building Regulations Approved Document E (ADE)

The requirements under Part E of Schedule 1 to the Building Regulations 2000 are from 1st July 2003 as follows:

‘E1. Dwelling-houses, flats and rooms for residential purposes shall be designed and constructed in such a way that they provide reasonable resistance to sound from other parts of the same building and from adjoining buildings.’

The minimum values for airborne and impact sound insulation for walls and floors between ‘dwelling- houses and flats’ that are ‘formed by material change of use’ are provided in Table 0.1a of ADE and are reproduced in Table 2.1 below.



	Partition 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 formed by material change of use	Walls	43	-
	Floors and stairs	43	64

Table 2.1: Approved Document E Performance Standards

2.3. Assessment Criteria

The assessment criteria adopted for this scheme, to achieve the requirements of Planning Condition 6 are set out in Table 2.2.

Partition Type	Airborne sound insulation $D_{nT,w} + C_{tr}$ dB (Minimum values)	Impact sound insulation $L'_{nT,w}$ dB (Maximum values)
Walls	48	-
Floors	48	59

Table 2.2: Assessment Sound Insulation Criteria



2.4. Wall and Floor Specifications

The proposed internal wall and floor constructions are shown in Figures 2.1 and 2.2 below.

The sound insulation properties of the proposed walls have been determined utilising the INSUL software programme.

INSUL implements a number international standards (including BS EN 12354- 3:2000 "Building acoustics – Estimation of acoustic performance of buildings from the performance of elements – Part 3: Airborne sound insulation against outdoor sound", BS EN ISO 140-3:1995 "Acoustics Measurement of sound insulation in buildings and of building elements - Part 3: Laboratory measurement of airborne sound insulation of building elements" and BS EN ISO 140-6:1998 "Acoustics Measurement of sound insulation in buildings and of building elements - Part 6: Laboratory measurements of impact sound insulation of floors") to predict the sound insulation performance of a given partition.

2.5. Workmanship

It is important to note that, as with any construction project, the ability to meet the specification will rely upon the quality of the final built structure. As such the works should be carried out to a high standard to ensure that any sound insulation measures are not breached, for example by installing a rigid connection across an isolated connection (such as resilient bars or a resilient mat). Additionally, any joints between different walls and the party wall and the ceiling/floor should be carefully filled with non-hardening- acoustic mastic.



2.6. Party Wall Specification

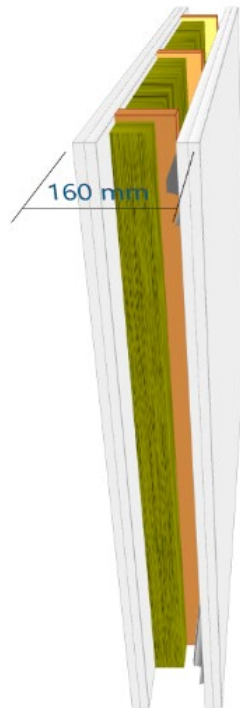


Figure 2.1 -Party Wall Build up

- Nominal 100mm timber frame with 60mm mineral wool type sound insulation (minimum density 10 kg/m³).
- 2 x 15mm “Soundblock”
- plasterboard either side, onside attached on resilient bars.
- R_w [C_{tr}](dB) 59(-9)



2.7. Party Floor Specification

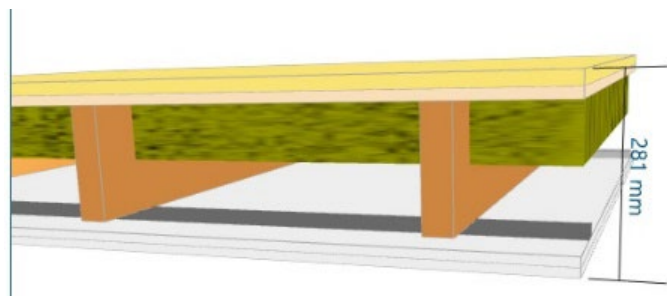


Figure 2.2 -Party Floor Build up

- 1 layer of 22mm chipboard and one layer of 17mm plywood with a resilient layer in between (a product with a high mass should be used, e.g. 5 – 15 kg/m²).
- Nominal 200mm timber frame with 100mm mineral wool type sound insulation (minimum density 10 kg/m³).
- 2 x 15mm “soundblock” plasterboard ceiling mounted on resilient bars
- $R_w [C_{tr}]$ (dB) 58 (-6)
- $L'_{n,w}$ (dB) 54



3. SOUND INSULATION ASSESSMENT

The predicted sound insulation values have been calculated example rooms across the proposed development are presented in Table 3.1. The predicted sound insulation values are also compared against the assessment criteria provided in Section 3.

Source Room	Receiving Room	Element	Predicted $D_{nT,w} + C_{tr}$ (dB)	Achievement of Identified Criteria (Minimum 48 dB)	Predicted $L_{nT,w}$ (dB)	Achievement of Identified Criteria (Maximum 59 dB)
Flat 2 – Kitchen/Dining	Flat 1 – Bed 3/KLR	Floor	52	✓	54	✓
Flat 2 - Bedroom 1	Flat 1 – Bedroom 2	Floor	52	✓	54	✓
Flat 2 – Living Room	Flat 1 – Bedroom 1	Floor	52	✓	54	✓

Table 3.1: Sound Insulation Assessment

It can be identified from Table 3.1 that the proposed constructions should achieve the requirements of ADE and the Local Authority.



4. CONCLUSION

A sound insulation assessment has been carried out in relation to the party floor constructions between the residential properties at an approved residential development at 21 Watery Lane, Northolt, UB5 6QL.

The approved development is for the Conversion of existing single family dwellinghouse into 2 self-contained residential units and provision of associated refuse and cycle storage; single storey rear extension; rear roof extension, and installation of two roof lights to front roof slope.

The application was granted by Ealing Council (application ref: 233458FUL) on 19th October 2023 and Planning Condition 4 was set in respect of sound insulation between the two flats.

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5. APPENDIX 1: GLOSSARY OF ACOUSTIC TERMINOLOGY

Term	Description
'A'-Weighting	This is the main way of adjusting measured sound pressure levels to take into account human hearing, and our uneven frequency response.
Decibel (dB)	This is a tenth (deci) of a bel. The decibel can be a measure of the magnitude of sound, changes in sound level and a measure of sound insulation. Decibels are not an absolute unit of measurement but are an expression of ratio between two quantities expressed in logarithmic form.
Frequency	Frequency is related to sound pitch; frequency equals the ratio between velocity of sound and wavelength.
$L_{Aeq,T}$	The equivalent steady sound level in dB containing the same acoustic energy as the actual fluctuating sound level over the given period, T. T may be as short as 1 second when used to describe a single event, or as long as 24 hours when used to describe the noise climate at a specified location. $L_{Aeq,T}$ can be measured directly with an integrating sound level meter.
L_{Amax}	The 'A'-weighted maximum sound pressure level measured over a measurement period.
R_w	Weighted sound reduction index, a single number quantity for the airborne sound insulation in buildings and of building elements such as wall, doors and windows. The quantity is intended for rating the airborne sound insulation and for simplifying the formulation of acoustical requirements in building codes, when measured in the presence of flanking sound transmission, denoted R'_w .
D	Arithmetic difference of the SPL between two spaces, for example room (a) and room (b)
$D_{nT,w}$	Weighted value of D, standardised to a constant reverberation time.
C_{tr}	The correction to a sound insulation quantity (such as $D_{nT,w}$) to take account of a specific sound spectra.
$D_{nT,w} + C_{tr}$	A single number quantity which characterises the airborne sound insulation between rooms using noise spectra No.2 as defined in BS EN ISO 717-1:1997
L	Average SPL measured in the receiver room when the floor under test is subject to a standardised impact sound source.
$L'_{nT,w}$	Weighted value of L, standardised to a constant reverberation time.

