



CASE STUDY 1

FLANKING SOUND TRANSMISSION

NHBC Acoustic Services

NHBC ACOUSTIC SERVICES

RANGE OF SERVICES

- Pre-planning consultancy
- Design advice on layout and specification
- Traffic/plant noise surveys
- Pre-completion sound testing
- Noise at work surveys
- Post-occupancy investigations
- Sound insulation testing

PROJECTS

- Dwellings (new build and conversion)
- Hotels, student halls, care homes
- Schools, offices and other non-residential

ENGLAND AND WALES

- Part E
- PPG24
- Code for Sustainable Homes

SCOTLAND

- Section 5
- PAN 1/2011 (PAN 56)

NORTHERN IRELAND

- Part G
- Ecohomes
- BREEAM
- BB93

Sounds from neighbouring dwellings can transmit not only directly through a separating wall or a separating floor, but also along adjacent elements, such as external walls and internal floors. Sound which travels in any direction, other than directly through the separating element, is called flanking sound.

Designers should adequately ensure against flanking sound transmission so that it does not undermine the performance of a well-designed separating wall or floor. Here, NHBC's acousticians share some of their experience in helping clients meet the required acoustic performance by controlling flanking sound transmission.

METAL STUD SEPARATING WALL WITH FLANKING VIA A MASONRY SCREED

NHBC acousticians were asked to investigate a complaint about noise from the far side of one flat (bathroom) being clearly heard at the opposite end of the adjacent flat (bedroom).

Sound insulation tests were carried out by NHBC Acoustic Services between various rooms in the two flats, and the result of a test carried out on the separating wall between the two flats, in rooms immediately adjacent to each other, yielded a result of $44\text{dB } D_{nT,w} + C_{tr}$.

This is less than the minimum performance requirement of $45\text{dB } D_{nT,w} + C_{tr}$ for purpose-built dwellings stated in Approved Document E 2003.

The builder, therefore, appointed NHBC to undertake further investigations.

Additional plasterboard layers not remedying the situation

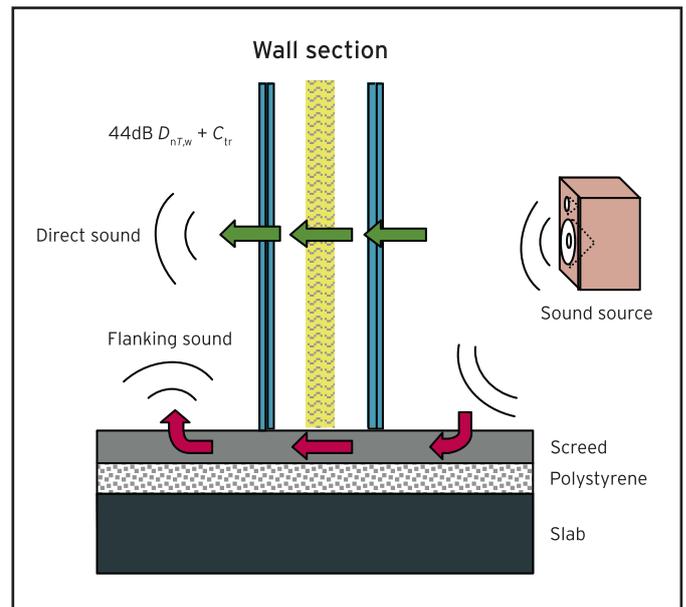
The separating wall comprised a lightweight plasterboard and stud construction and was expected to yield a good airborne sound insulation test result.

Attempts had already been made by the builder to remedy the problem (by adding extra layers of plasterboard to the

wall); however, this had not improved the situation.

The floor construction comprised a ~75mm screed poured on 100mm polystyrene, itself laid on a thick concrete slab (which separated the flat from the basement car park).

Investigations using a tapping machine (usually reserved for impact sound transmission testing on separating floors) revealed that the floating screed was continuous beneath the



separating wall. As a result, structural and airborne noise was being transferred easily between the two flats and was being re-radiated via the internal plasterboard stud walls.

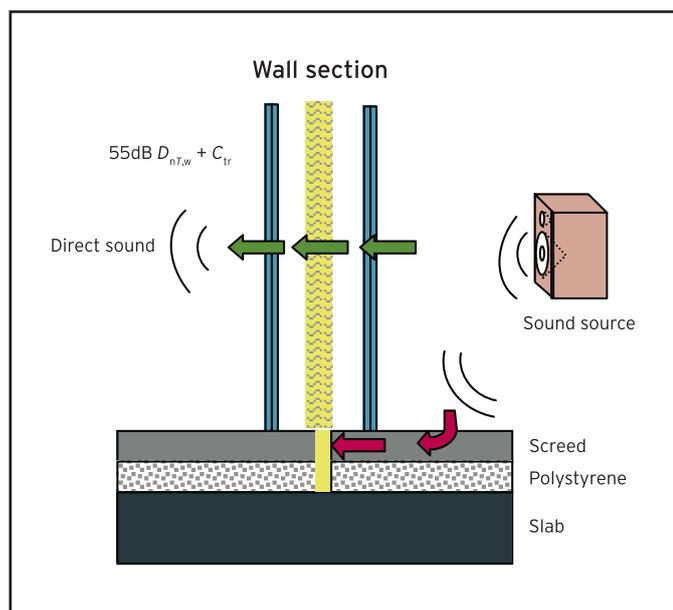
Practical solution found without decanting residents

Following discussions with the builder, the chosen remedial treatment involved removing the plasterboard from one side of the separating wall in order to introduce a saw-cut through the screed between the two wall leaves. Subsequent tests showed

a significant improvement in airborne sound insulation performance (+11dB).

The homeowners reported that they were very happy with the improvements, which helped to reduce tension between neighbours. The builder was equally satisfied with improved homeowner satisfaction as a result of the speed and quality of the advice provided by NHBC Acoustic Services.

Please note that each situation may require a specific solution; this is an example only.



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