CASE STUDY 3
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 such 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 CAVITY WALL

NHBC Acoustic Services carried out pre-completion sound insulation tests in a new build block of flats, where three credits under the Code for Sustainable Homes scheme were required. The minimum airborne sound insulation performance necessary was, therefore, 50dB $D_{nT,w} + C_{tr}$.

The separating wall was a lightweight plasterboard and stud construction, which had been designed to yield a good result.

Minimum Building Regulations requirements not enough

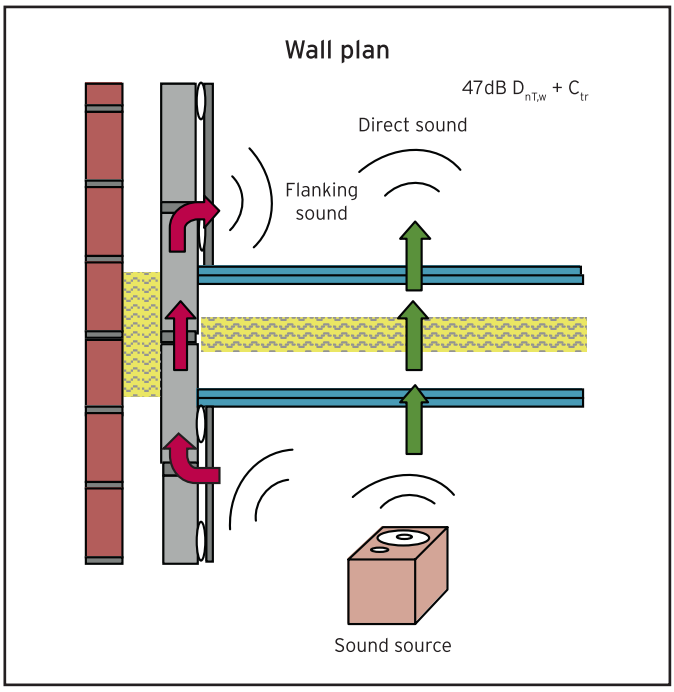
Despite meeting Building Regulations minimum performance requirements, many of the walls fell significantly short of the 50dB $D_{nT,w} + C_{tr}$ needed to achieve Code credits.

The builder needed three credits, but there were some instances where results were less than 48dB $D_{nT,w} + C_{tr}$, and, therefore, not even two credits could be achieved.

However, one party wall – of identical construction to other walls tested – achieved a much better result of 55dB $D_{nT,w} + C_{tr}$.

Discontinuity meant improved performance

NHBC's investigations established that the primary difference between the 'acceptable' and 'unacceptable' walls concerned the external (flanking) wall. The better-performing separating wall was located at a position where the inner leaf of the external (flanking) wall contained a movement joint (i.e. a

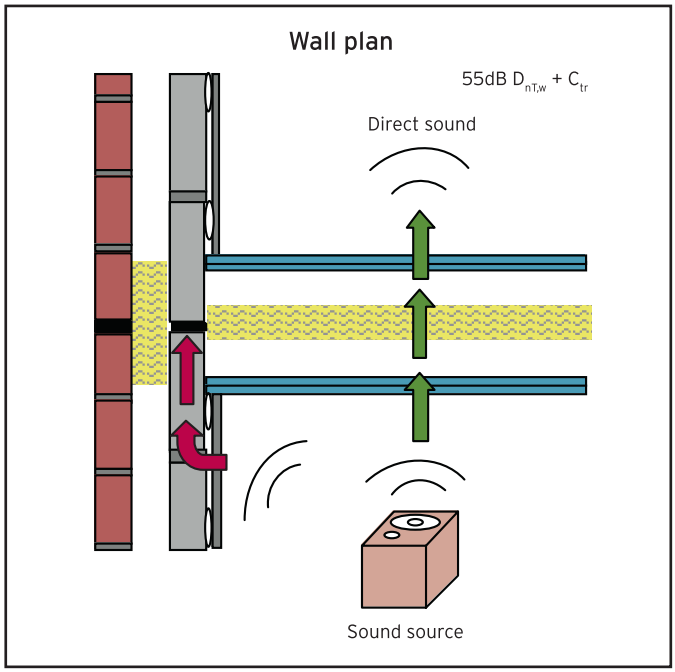


Acoustics and noise control are important factors requiring careful consideration. NHBC can help – for more information, call **0844 633 1000** and ask for **'Acoustics'**, email **acoustics@nhbc.co.uk** or visit **www.nhbc.co.uk**.

discontinuity in the wall construction). Therefore, the primary reason for the shortfall in desired performance for many of the walls tested was attributed to the presence of a continuous masonry leaf adjacent to (i.e. flanking) the separating wall.

The builder was very pleased that the reason for the variation in performance had been identified, as this could be taken into consideration for future projects.

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



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