

Acoustic Design Statement

97 Pavilion Road, Worthing, BN14 7EG

1. Introduction

This acoustic design statement has been prepared in support of the residential conversion at 97 Pavilion Road, Worthing.

The document demonstrates that the development achieves appropriate internal noise standards in accordance with:

- ProPG: Planning & Noise (2017)
- BS 8233:2014 – Guidance on Sound Insulation and Noise Reduction for Buildings

The principal external noise source affecting the site is railway activity to the rear boundary. The scheme has been designed using good acoustic design principles, and façade performance has been verified through on-site sound insulation testing.

2. Site Context and Railway Activity

The site backs onto the West Coastway Line operated by Southern (Govia Thameslink Railway).

The railway lies approximately 20 metres beyond the rear façade.

A review of weekday timetables indicates:

Daytime period (07:00–23:00):

Approximately 4–8 train movements per hour depending on peak/off-peak operation, equating to approximately 90–110 train pass-bys across the 16-hour daytime period.

Night-time period (23:00–07:00):

Reduced activity, typically 8–15 movements across the 8-hour night-time period.

Railway noise at this location is characterised by intermittent short-duration pass-by events rather than continuous noise.

3. Internal Noise Criteria

In accordance with BS 8233:2014 Table 4, the following internal guideline values apply:

Living rooms (07:00–23:00): ≤ 35 dB LAeq,16hr

Bedrooms (23:00–07:00): ≤ 30 dB LAeq,8hr

Maximum night-time events: ≤ 45 dB LAmax,F (not normally exceeded more than 10 times per night)

The façade design ensures these targets are achieved with windows closed.

4. Rear Façade Construction – As Built

Ground and First Floor:

- 102.5mm outer leaf brickwork (single skin)
- 75mm cavity fully filled with injected cavity wall insulation
- 102.5mm inner leaf brickwork (single skin)
- 25mm galvanised steel resilient bars fixed to inner leaf
- 12.5mm acoustic plasterboard (sound board)

Loft / Dormer Walls:

- Stud wall construction
- 100mm Knauf Acoustic Mineral Wool within cavity
- 12.5mm acoustic plasterboard lining

Resilient bars provide mechanical decoupling between masonry and plasterboard lining, reducing structure-borne sound transmission.

5. Verified Façade Performance – On-Site Testing

External-to-internal sound insulation testing was undertaken in Bedrooms 3, 4 and 5 (worst-case railway-facing rooms).

Measured in-situ sound reduction (R_w):

48 dB – 50 dB

These values reflect actual constructed performance including glazing, junctions and flanking transmission and confirm compliance with BS 8233:2014 internal noise criteria.

6. Glazing

Rear-facing windows comprise 4mm / 20mm cavity / 4mm double-glazed sealed units with nominal performance of approximately R_w 33 dB.

Supplier documentation and installation invoices can be provided if required by the Local Planning Authority.

7. Internal Layout and Buffering

The internal layout provides additional acoustic benefit:

- First floor bedrooms partially buffered by ensuite/circulation spaces
- Second floor rooms set further back from railway boundary
- Dormer construction upgraded with acoustic mineral wool

This stepped configuration reduces effective façade exposure to sensitive sleeping areas.

8. Ventilation Strategy

To ensure compliance with BS 8233:2014 closed-window internal noise criteria, background ventilation will be provided without reliance on opening windows.

Background fresh air supply to habitable rooms will be achieved via acoustically rated passive inlet ventilators, such as the Vent-Axia Freshvent 100dB (or equivalent approved product). These units incorporate internal acoustic baffles designed to attenuate external noise ingress while allowing continuous airflow.

Unlike standard passive vents, acoustic ventilators of this type are specifically engineered for use in noise-sensitive locations and help maintain façade acoustic integrity when in operation. This approach supports the verified rear façade sound reduction performance of R_w 48–50 dB and enables internal noise targets in accordance with BS 8233:2014 to be achieved with windows closed.

9. Conclusion

The development incorporates a proportionate and effective acoustic mitigation strategy including:

- Upgraded rear façade construction
- 100mm acoustic mineral wool in dormer walls
- Verified in-situ façade performance of R_w 48–50 dB
- Appropriate glazing specification
- Mechanical ventilation for closed-window compliance

On-site testing confirms compliance with BS 8233:2014 and ProPG guidance, ensuring a suitable internal living environment.