

Acoustic Design Statement for 97 Pavilion Road, Worthing, BN14 7EG

The proposed conversion development at 97 Pavilion Road has been designed in accordance with good acoustic practice, following "Stage 2: Element 1 – Good Acoustic Design Process" as outlined in *ProPG: Planning & Noise (2017)* and the guidance of *BS 8233: 2014 – Sound Insulation and Noise Reduction for Buildings*.

This integrated approach ensures the property will achieve appropriate internal noise levels given the railway noise exposure to the rear. The design incorporates proportionate mitigation measures that enhance the building's acoustic performance, providing a comfortable internal environment consistent with *BS 8233: 2014* and *ProPG* recommendations.

Site Context and Noise Source

The principal external noise source is railway noise from passing trains to the rear of the site. The railway line is set back by at least 20 metres from the rear façade and is partially screened by mature vegetation and a double garage at the end of the garden.

According to *BS 8233: 2014 Clauses 5.4.3 – 5.4.4* and *ISO 9613-2*, these features provide meaningful natural and structural attenuation, typically achieving reductions of up to 10 dB under favourable conditions by limiting direct line-of-sight to the source.

Railway noise at this distance is characterised by intermittent but short-duration events (train pass-bys) rather than continuous background noise. The design therefore considers both average ambient levels (L_{Aeq, 16 hr}) – typically 60–65 dB – and maximum noise events (L_{Amax,F}) – typically 70–75 dB – to ensure internal comfort, particularly at night.

Glazing

Rear-facing windows will comprise standard double-glazed units with 4 mm glass panes and a 20 mm air gap, achieving an overall R_w 33 dB performance rating.

This glazing specification provides suitable attenuation for intermittent railway noise, where façade exposure levels are approximately 70–75 dB L_{Amax,F} and 60–65 dB L_{Aeq}, 16 hr.

When combined with the wall construction and internal layout, internal levels are expected to comply with *BS 8233: 2014 Table 4* guideline values shown below.

Table 1: BS 8233: 2014 Internal Ambient Noise Level Guidelines

Room Type	Target Level (dB)	Time Period
Living rooms	≤ 35 L _{Aeq} , 16 hr	Daytime (07:00–23:00)
Bedrooms	≤ 30 L _{Aeq} , 8 hr	Night-time (23:00–07:00)
Maximum night-time events	≤ 45 L _{Amax,F}	Not normally exceeded > 10 times per night

These limits reflect the internal acoustic environments recommended for new residential development under *BS 8233: 2014* and *ProPG (2017)*.

Wall Sound Insulation (Existing and New Walls)

The existing external walls comprise two skins of brickwork with an injected cavity insulation layer, providing a robust base level of sound insulation.

Rear-facing walls will be further upgraded using acoustic plasterboard systems to enhance airborne sound insulation performance.

The existing dormer and loft walls contain acoustic mineral wool insulation, providing an approximate R_w 45 dB sound reduction and therefore do not require upgrading.

This combined construction achieves an overall R_w 49–52 dB sound reduction to the main façades and R_w 45 dB to dormer elements, providing effective control of intermittent railway noise when paired with the proposed glazing.

These measures ensure an appropriate internal acoustic environment without over-engineering or compromising other building performance aspects.

Internal Layout

Where possible, bathrooms, utility, and communal spaces have been used as internal buffers between the external façade and bedrooms, helping to reduce the transmission of railway noise into sensitive areas.

Ventilation Strategy

An appropriate mechanical ventilation system will be provided to maintain good indoor air quality without the need to open windows during periods of higher external noise.

This approach ensures compliance with *BS 8233: 2014 Note 5 to Table 4*, which requires that closed-window noise control be supported by an alternative means of ventilation.

Summary

This scheme provides a proportionate and effective solution to mitigate the effects of railway noise at 97 Pavilion Road.

Through the combination of:

- a two-skin brick external wall with injected cavity and acoustic plasterboard upgrade,
- existing dormer and loft walls already insulated with acoustic mineral wool to approximately R_w 45 dB,
- standard high-quality double glazing,

- an internal layout that buffers bedrooms from external façades, and
- an acoustically treated mechanical ventilation strategy in line with *BS 8233*,

the proposed development will achieve the good internal acoustic environment expected under *ProPG: Planning & Noise (2017)* and *BS 8233: 2014*.

These measures will ensure a healthy, compliant, and comfortable living environment for future occupants while maintaining design proportionality to the site's existing railway context.