NOISE LEVELS ON BALCONIES OF RESIDENTIAL DEVELOPMENTS IN URBAN AREAS

This design briefing note sets out Cass Allen Associates’ view on noise affecting balconies of residential developments in urban areas.

Our view is based on current relevant legislation, regulations and guidelines and our experience in the acoustic design of residential developments.

DESIGN BRIEFING NOTE

Appropriate design criteria for residential developments are given in BS8233:1999 ‘Sound Insulation and Noise Reduction for Buildings – Code of Practice’. These are summarised in Table 1.

<table>
<thead>
<tr>
<th>Typical Situations</th>
<th>Average Noise Levels</th>
<th>Maximum Noise Levels</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“Good” Level</td>
<td>“Reasonable” Level</td>
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<tr>
<td>Living rooms</td>
<td>30 dB LAeq,0700-2300hrs</td>
<td>40 dB LAeq,0700-2300hrs</td>
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<tr>
<td>Bedrooms</td>
<td>30 dB LAeq,2300-0700hrs</td>
<td>35 dB LAeq,2300-0700hrs</td>
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<tr>
<td>External Amenity Areas</td>
<td>50 dB LAeq,T</td>
<td>55 dB LAeq,T</td>
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</table>

Note 1 Should “not normally” be exceeded

As shown in Table 1, BS8233 recommends that noise levels in external amenity areas should ideally not exceed 50 dB LAeq,T and that 55 dB LAeq,T should be considered as an upper limit.
These criteria are generally applied to gardens and balconies when assessing the suitability of proposed developments in urban areas. In our view however, exceedance of these recommended levels on balconies does not normally mean that the balconies would be unacceptable to future residents. The reasons for this are as follows:

- Most developments in urban areas will be subject to noise levels above the BS8233 recommended levels for balconies\(^1\).

- It is common for noise levels on balconies near to main roads and other environmental noise sources to exceed BS8233 recommended levels.

- In most cases balconies cannot be repositioned due to the layout of the site and development. In these cases there is nothing that can be done to significantly reduce the noise levels on the balconies other than fully enclosing them (i.e. ‘winter gardens’), which completely changes the nature of the space.

- It is reasonable to assume that residents would prefer the option to have a noisier balcony as opposed to having no balcony at all.

- There is no evidence that noise levels slightly above BS8233 recommendations on balconies present a risk to resident’s health and well-being.

- Planners often consider it to be beneficial to the street-scape to have balconies facing roads as they help marry the development to the surrounding area.

In our view, where noise levels on balconies of new residential developments are predicted to exceed the BS8233 recommended levels, the following approach should be taken:

- Where practical, residents should be provided with an alternative amenity space (e.g. a ground floor level shared amenity space or rear garden etc) where noise levels are predicted to achieve the BS8233 recommended levels; and,

- The following noise control measures should be implemented to reduce the noise levels on the balconies as far as practicable:
  - Imperforate balustrades (other than small gaps for drainage) designed around the balconies (e.g. safety glass).

\(^1\) Table 2 from BS8233 notes that daytime noise levels will typically exceed 50-55 dB LAeq,16hr in areas close to busy main roads. It was also found in the UK National Noise Incidence Study 2000/2001 that 90% of UK homes were exposed to daytime noise levels >50dB LAeq,16hr and 54% of UK homes were exposed to noise >55dB LAeq,16hr.
If the balcony has a ceiling (e.g. the underside of a balcony above), this should have a Class C absorptive finish where possible.

With the above measures included in the design of the development, we believe that it is acceptable for noise levels on balconies of new residential development to exceed the BS8233 recommend levels. This approach agrees with other research on the matter\(^2\).

It should be noted that the above guidance is based on external noise levels only. The developer should also ensure that residents on balconies will not be exposed to unacceptable levels of air pollution.

**SUMMARY**

In summary of the above, based on current legislation, regulations and guidelines, it is our view that the BS8233 recommended noise levels for balconies should be viewed as idealised targets that should be achieved where practically feasible. It is easily demonstrable that they are not achievable in many urban developments and there is no evidence to indicate that there is any harm in exceeding the BS8233 levels.

In situations where the BS8233 recommendations are exceeded then we suggest that ‘best practice’ would be:

- provide alternative, quieter external amenity areas for residents where possible – i.e. so that the balcony is not the only amenity area available;
- Incorporate imperforate balustrades in the design of the balconies; and,
- Incorporate acoustically absorptive ceilings where applicable.

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\(^2\) In a review of health effects based noise assessment methods undertaken for the Department for Environment Transport and the Regions by Porter et al in 1998, when commenting on noise studies from the early 1990’s (Porter ND, Flindell IH and Berry BF. NPL Report CMAM 16, Health Effect-Based Noise Assessment Methods: A Review and Feasibility Study, 1998) it was noted that, ‘Perhaps the main weakness of both WHO-inspired documents [NB The WHO documents adopt the same acoustic criteria as BS8233] is that they fail to consider the practicality of actually being able to achieve any of the stated guideline values. The percentages exposed above the WHO guideline values could not be significantly reduced without drastic action to virtually eliminate road traffic noise and other forms of transportation noise (including public transport) from the vicinity of houses. The social and economic consequences of such action would be likely to be far greater than any environmental advantages of reducing the proportion of the population annoyed by noise. In addition, there is no evidence that anything other than a small minority of the population exposed at such noise levels find them to be particularly onerous in the context of their daily lives.’
ADDITIONAL INFORMATION

Cass Allen Associates is an independent acoustical engineering consultancy specialising in the planning and development, infrastructure and industrial sectors.

We are a full member of the Association of Noise Consultants and all consultants are either full Corporate or Associate members of the Institute of Acoustics (MIOA or AMIOA). Senior staff are Chartered Engineers (CEng).

We are experienced in the design and testing of large developments for major developers (e.g. Barratt Homes, Berkeley Homes, Bougues, Morgan Sindall, Bovis, Crest Nicholson, Durkan, Galliard, Gladedale, Hill Partnerships, Kier Group, Mulalley, Mace Group, Taylor Wimpey, Telford Homes, United House).

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