ENVIRONMENTAL PROTECTION DEPARTMENT
PRACTICE NOTE FOR PROFESSIONAL PERSONS

Planning and Designing Noise Sensitive Developments

This Practice Note (PN) is written to :

(i) draw to the attention of practising professionals, requirements that have been introduced to reduce the adverse effects of existing noise sources on new noise sensitive developments.

(ii) suggest practical measures that can be taken at the early planning and design stages to achieve an acceptable noise environment in new noise sensitive developments.

Noise Sensitive Developments

2. A complete list of noise sensitive developments is contained in Appendix 4.1 of the Environment Chapter of the Hong Kong Planning Standards and Guidelines (HKPSG). The most common of these are residential premises and schools.

Environmental Noise Standards

3. A comprehensive table of maximum permissible noise levels for planning purposes can be found in Table 4.1 of the Environment Chapter of the HKPSG. For aircraft noise affecting residential premises, these levels are NEF 30*, for Kai Tak, and NEF 25, for Chek Lap Kok, and for traffic noise 70 dB(A) L_{10}(1h)**.

Note :

* NEF means "Noise Exposure Forecast" and is normally presented in an equal loudness contour known as NEF contour, within which new sensitive developments would not be allowed.

** L_{10}(1h) means the noise level exceeded for 10% of the one-hour period at peak traffic flow.

4. For the design of noise sensitive developments near noise sources such as railways and industrial premises, which are controlled under the Noise Control Ordinance, reference should be made to the "Technical Memorandum for the Assessment of Noise from Places Other Than Domestic Premises, Public Places or Construction Sites", issued under that Ordinance.

Noise Impact Assessment

5. In order to ensure that noise standards will be met, requirements for the project proponent to carry out a Noise Impact Assessment (NIA) are often stated in lease conditions of a lot or in the relevant conditions of Housing Authority projects. Where the developments are large or involve other types of pollution, the requirement is often a part of a larger Environmental Impact Assessment (EIA).

6. It is essential that the NIA not only predicts the noise impact but, in the process, interacts with the design of the development concerned, so that mitigation measures are incorporated into the design to help minimize the noise impact. For cases where the lease, or other conditions, state that measures must be taken to the satisfaction of the Director of Environmental Protection, the Noise Policy Group of the Environmental Protection Department will ensure that all practicable mitigation measures have been incorporated. These mitigation measures must be implemented by the project proponent and may form the basis for the issue of any compliance certificates.

Practical Noise Mitigation Measures

7. A range of measures are available to mitigate impact of noise from industrial sources and road and rail traffic. Local experience indicates that the following measures can be effective :

(i) **Screening by Noise Tolerant Buildings**

Multi-storey carparks and commercial centres can serve effectively as a noise barrier if placed in between the noise source and the noise sensitive components of a development, such as residential towers or schools.

(ii) **Setback of Buildings**

Depending on the nature of the noise source, a setback which doubles the distance between the noise source and receptor can provide a 3 to 6 dB(A) reduction. It is often not practicable to use setbacks alone to achieve the required attenuation because there is insufficient space in Hong Kong to

achieve the necessary effect. Setbacks can, however, be usefully combined with other noise mitigation measures listed here.

(iii) **Decking Over**

For a high density development involving high-rise buildings contiguous to or sandwiching a road or rail corridor, placing a deck over the road or railway, with development located on top of the deck, will provide noise reductions up to 15dB(A). If this technique is pursued, it will be necessary to consult the Director of Highways or the railway operator at an early stage to ensure that the design is acceptable to them.

(iv) **Extended Podium**

Where the development flanks a major noise source and a full deck cannot be provided, useful noise reductions can still be achieved through an extended podium which effectively covers part of the source.

(v) **Building Orientation**

This technique calls for special building designs where noise tolerant portions of a building such as kitchens, toilets, stairwells, lift cores and storage rooms face the noise source. In some situations, advantages can be obtained by orienting windows away from the noise source.

(vi) **Treatment of Source**

It is possible that direct remedies, such as noise barriers alongside roads or railway tracks or acoustic treatment of an existing factory, may yield cost-effective results. Past experience indicates that if such measures are considered at an early stage, with the involvement of the Director of Highways or of rail or factory operators as appropriate, highly satisfactory results can be achieved.

(vii) **Provision of Acoustic Insulation to Affected Noise Receivers**

The provision of window or whole facade noise insulation is a mitigation measure of last resort and is applicable only for units which cannot be protected satisfactorily through any other means.

For aircraft noise there are fewer options available and normally only para (vii) above is applicable.

Advice from Environmental Protection Department

8. Further details of mitigation measures can be found in the following EPD publications :

(a) Environmental Guidelines For Planning in Hong Kong, Chapter 4;

(b) The "Environment Hong Kong" series, Noise Chapter; and,

(c) Application of Screening Structures to abate Noise from Surface Transportation.

Professionals are welcome to contact the Principal Environmental Protection Officer (Noise Policy) [Tel : 594-6565, Fax : 802-4511] at 46/F., Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong.

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Issued September 1993
Ref. : EP 81/C2/28 Annex I

Addendum to the ProPECC Practice Notes PN 4/93

Original	Amendments
Para 8, last sentence "Professional are welcome to contact the Principal Environmental Protection Officer (Noise Policy) [Tel : 594-6565, Fax : 802-4511] at 46/F., Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong."	 "Professionals are welcome to contact the Principal Environmental Protection Officer (Noise Management and Policy) [Tel : 2594-6565, Fax : 2802-4511] at 46/F., Revenue Tower, 5 Gloucester Road, Wan Chai, Hong Kong."