
INFORMATION NOTE

Supplementary Information on Mitigation Measures against Road Traffic Noise in Selected Places

1. Background

1.1 The Panel on Environmental Affairs, at its working meeting held on 2 June 2006, discussed the draft research report entitled *Mitigation Measures against Road Traffic Noise in Selected Places*¹ prepared by the Research and Library Services Division (RLSD). At the meeting, some Members requested RLSD to provide supplementary information on the following three aspects:

- (a) The statutory road traffic noise limit for residential developments
 - (i) whether the Government has any plan to lower the statutory road traffic noise limit for residential developments, which is 70 dB(A)L₁₀(1 hour)² (70 dB(A)); and
 - (ii) whether the Government has conducted any study evaluating the feasibility and possible effects of lowering the statutory road traffic noise limit, in particular, the number of roads being affected and the number of residents benefiting from such arrangement.
- (b) The concern of noise levels in the flats of newly-built residential developments along existing roads
 - (iii) whether there are any ordinances/guidelines/practice notes available in Hong Kong which ensure that the noise levels in the flats of newly-built residential developments along existing roads will not exceed 70 dB(A);
 - (iv) whether the responsibility falls on the Government or the residential property developer(s) when ensuring that the noise levels in the flats of newly-built residential developments along existing roads will not exceed 70 dB(A); and

¹ This research report (RP04/05-06) was published on 6 June 2006.

² L₁₀(1 hour) means that the noise level is exceeded for 10% of a one-hour period, generally used for the measurement of road noise at peak traffic flow. The limit is adopted in the Environmental Impact Assessment Ordinance and the Hong Kong Planning Standards and Guidelines for assessing road traffic noise affecting residential buildings.

- (v) whether the Government has set out any requirements demanding the residential property developer(s) to inform prospective property purchasers that the noise levels in the flats of newly-built residential developments may exceed 70 dB(A).
- (c) The effects on people's health when exposed to excessive road traffic noise
 - (vi) whether the World Health Organization (WHO) has specifically determined any excessive road traffic noise thresholds; and
 - (vii) whether WHO, the Hong Kong Institute of Acoustics (HKIA) and the Government has conducted any studies in evaluating the effects on people's health when exposed to excessive road traffic noise.

2. The statutory road traffic noise limit for residential developments

Prescribed road traffic noise limit

2.1 In responding to RLSD's enquiry, the Government states that there is no uniform international noise standard for traffic noise. There are different noise standards in different places, taking into account local circumstances and community response to noise. In considering what is appropriate for Hong Kong, it should be noted that most of the overseas places are less densely populated, with less space constraints for development, clearer separation of residential and commercial/industrial districts and predominantly low-rise residential houses. These factors make it practicable for some of these places to adopt and achieve a more stringent traffic noise standard. The Government emphasizes that the current traffic noise standard for residential developments adopted in Hong Kong is comparable to those in the United Kingdom and the United States.

2.2 According to the Government, different places may adopt different noise unit in formulating their own noise standards. For instance, Japan uses dB(A) $L_{eq}(16\text{ hrs})^3$ while Hong Kong uses dB(A) $L_{10}(1\text{ hr})$. For peak hours during day time, the traffic noise limit of 65 dB(A) $L_{eq}(16\text{ hrs})$ adopted in Japan roughly corresponds to 68 – 70 dB(A) $L_{10}(1\text{ hr})$, the upper end of which is the limit adopted in Hong Kong. Therefore, it is advisable to take into account the different noise units adopted in comparing the noise standards used in different places.

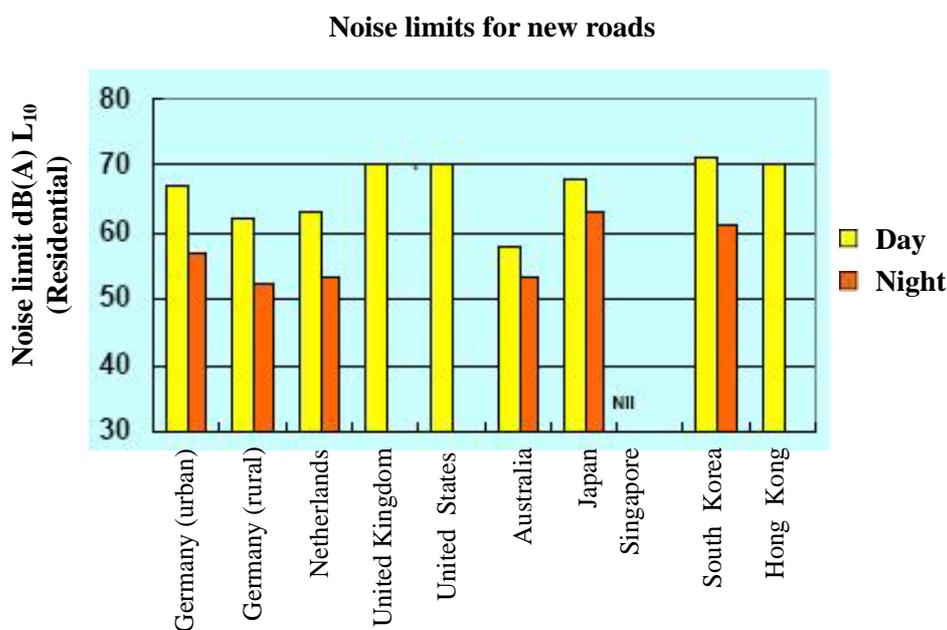
³ L_{eq} is the energy average of the noise during the period of 16 hours.

2.3 The Government also states that the traffic noise standard of 70 dB(A) L_{eq} (16 hrs) is applied to areas adjacent to a road carrying arterial traffic in daytime in Japan. The same standard is equivalent to 73 – 75 dB(A) L_{10} (1hr) in units adopted in Hong Kong. For areas (mainly for residential uses) adjacent to roads of more than two lanes in Japan, the traffic noise standard in day time is 65 dB(A) L_{eq} (16 hrs) or about 68 – 70 dB(A) L_{10} (1hr). Accordingly, the Government does not agree that the Japanese standards are more stringent than those adopted in Hong Kong.

2.4 In order to respond to the Government's comment and seek professional advice from experts, RLSD has tried to contact HKIA and Professor Tang Shiu-keung of the Department of Building Services Engineering of the Hong Kong Polytechnic University. However, as at the publication of this information note, they have not responded to RLSD's enquiry. Nevertheless, HKIA published a press release regarding the design of roadside barriers on 12 February 2003, in which it was stated that:

The traffic noise problem in Hong Kong is very serious. According to the Environmental Protection Department (EPD), some 1 million people in Hong Kong are exposed to high traffic noise level [i.e. higher than 70 dB(A) L_{10} (1h)]. It should be noted that this traffic noise standard is very lax as compared with other countries like Japan, Australia, Germany and the Netherlands (see chart 1 which is extracted from the website of the Advisory Council on the Environment, the Hong Kong SAR Government).⁴

Chart 1 — Comparison of traffic noise criteria



⁴ Hong Kong Institute of Acoustics. (2003) *Press Release: Design of Roadside Barriers*. Hong Kong.

Lowering the road traffic noise limit

2.5 As regards the issue of lowering the road traffic noise limit, the Government explains that due to the compactness of Hong Kong and the existing large number of high-rise residential developments, many of the developments are experiencing excessive traffic noise for which there are no practicable engineering solutions. There is also limited scope for the Government to adopt traffic management solutions such as banning goods vehicles from residential areas at night time as there is a lack of clear separation between the residential and commercial/industrial areas. It might therefore provide no relief to the residents affected even if the Government were to tighten the existing traffic noise standard.

2.6 Despite the constraints, the Government states that it will keep an open mind in reviewing the traffic noise standard in view of any relevant developments in overseas places. The Government's priority is to ensure that the current traffic noise standard for residential developments is complied with for new road projects, and for existing roads, engineering and non-engineering measures will be implemented, as far as practicable, to reduce the traffic noise to levels below the standard in order to bring relief to the residents affected.

Study evaluating the feasibility and possible effects of lowering the statutory road traffic limit

2.7 The Government has recently developed a draft comprehensive plan to tackle road traffic noise in Hong Kong. The Government consulted the Advisory Council on the Environment (ACE) with regard to the draft comprehensive plan on 15 May 2006 and ACE supported the enhanced measures proposed in the draft comprehensive plan, which included:

- (a) extending the trial of low noise road surfacing materials;
- (b) exploring an optimum noise barrier design;
- (c) promoting the disclosure of noise information in the sales brochure;
and
- (d) reviewing the practice note on road traffic noise, i.e. the Professional Practice Note PN1/97.

2.8 As one of the proposed enhanced measures under the draft plan, the Government would commission a study to investigate the feasibility of introducing a night time traffic noise standard to protect residents from excessive traffic noise disturbing their sleep. The Government would study the pros and cons of introducing such standard in the context of Hong Kong and benchmark with overseas practices. The study is expected to commence in early 2007.

3. The concern of noise levels in the flats of newly-built residential developments along existing roads

Ordinances/guidelines/practice notes which ensure that the noise levels in the flats of newly-built residential developments along existing roads will not exceed 70 dB(A)

3.1 According to the Government, under the Environmental Impact Assessment Ordinance (EIAO), residential developments are not classified as Designated Projects, with the exception of developments in Deep Bay and unsewered areas. Hence, the provisions of EIAO are not applicable to residential developments.

3.2 As regards guidelines, the Hong Kong Planning Standards and Guidelines (HKPSG) is the manual used to guide the preparation of statutory and non-statutory land use plans, and the planning of major development project. This manual is used principally by town planners, architects, landscape architects, engineers and other professionals involved in planning and development activities.

3.3 Chapter 9 of HKPSG provides guidance for including environmental considerations in the planning of both public and private developments. Specifically for road traffic noise, in the identification of sites for residential development, adequate buffer should be provided to ensure that the road traffic noise standard of 70 dB(A) is met. In situations where adequate separation cannot be provided, special design measures such as noise barriers, noise-tolerant buildings as screening structures and self-protecting building design and arrangement should be adopted.

3.4 The Government states that from the environmental planning perspective, its role is to ensure the compliance of a project with the noise level requirement stipulated in HKPSG through various means including proper land use planning for areas along existing roads. In the planning application, a developer usually carries out environmental or noise impact assessments to demonstrate that his scheme complies with the noise level requirement to the satisfaction of the Government. If the developer is unable to demonstrate that the project complies with the noise level requirement or the noise nuisance can be alleviated, approval may not be granted. The Government as well as the Town Planning Board (TPB) may also require the developer to implement mitigation measures to alleviate the noise nuisance of existing roads for the future residents of a proposed development or redevelopment project through imposition of approval conditions.

3.5 Due to practical limitations (especially in urban areas) and the great demand for residential flats in the past decade, EPD has promulgated the Professional Practice Note PN1/97 providing a streamlined approach for processing planning applications for residential developments under Section 16 of the Town Planning Ordinance. Noise assessment reports should be provided to TPB. EPD provides advice to TPB on the technical aspects of noise assessment and other environmental issues but whether the proposal should be approved is for TPB to decide.

3.6 As one of the proposed enhanced measures under the Government's draft comprehensive plan, the Professional Practice Note PN1/97 would be reviewed and revised with a view to improving the environmental performance of new residential developments, protecting more dwellings from excessive road traffic noise and providing more noise performance information to the public in a transparent manner. It is expected that the revision would be available for consultation in the first half of 2007.

The responsibility between the Government and the residential property developer(s) when ensuring that the noise levels in the flats of newly-built residential developments along existing roads will not exceed 70 dB(A)

3.7 According to the Government, its role is to ensure the compliance of a project with the noise level requirement stipulated in HKPSG. The responsibility of providing noise mitigation would rest with the developer(s) who should implement the types of noise mitigation measures recommended in the assessment reports submitted by the developer(s) to fulfill TPB requirements.

Requirements demanding the residential property developer(s) to inform prospective property purchasers that the noise level in the flats of newly-built residential developments along existing roads may exceed 70 dB(A)

3.8 For residential developments requiring planning permission, the developer(s)/applicant(s) may need to provide traffic noise assessment to demonstrate to TPB the traffic noise performance of the proposed development. In accordance with the requirements of the Town Planning (Amendment) Ordinance, the noise assessment reports are available for public inspection during the application stage.

3.9 As one of the proposed enhanced measures under the draft plan, the Government would explore, in consultation with the concerned bureaux and departments and other stakeholders, the feasibility of disclosing noise information to prospective property purchasers in sales brochures.

4. The effects on people's health when exposed to excessive road traffic noise

Specified excessive road traffic noise thresholds determined by WHO

4.1 Based on the information available in the public domain, WHO⁵ has not specifically determined any excessive road traffic noise thresholds. This finding is confirmed by the Government and HKIA.

⁵ As at the publication of this information note, WHO has not responded to RLSD's enquiry.

Studies conducted by WHO, HKIA and the Government in evaluating the effects on people's health when exposed to excessive road traffic noise

4.2 RLSD has not been able to find any published WHO reports in evaluating the effects on people's health when exposed to excessive noise. HKIA also states that it has not conducted any studies in evaluating the effects on people's health when exposed to excessive noise.

4.3 The Government states that it has initiated a study in 2003 to evaluate the adverse impact of environmental noise on the public in Hong Kong. In view of the complexity of the subject, the study adopts a step-by-step approach. Phase one of the study focuses on an appraisal of the noise environment of Hong Kong, which involves measuring noise at specified locations in both urban and rural areas, the recipient's points on both day and night activities and locations with or without the protection of noise barriers, as well as measuring noise created from common social activities, such as dining at restaurants, listening to Discman, watching television and playing mahjong.

4.4 Phase one of the study covers a pilot study on people's perception of environmental noise, which is intended to provide a general picture of the noise exposure pattern in Hong Kong. Together with a review of the worldwide studies on the effects of environmental noise on people's health, the study is intended to assist the Government in deciding the next step forward.

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