

**For discussion on
7 February 2001**

**LEGISLATIVE COUNCIL
PANELS ON ENVIRONMENTAL AFFAIRS AND TRANSPORT**

Measures to Address Noise Impact of Existing Roads

Introduction

At the joint meeting of the Panels on Environmental Affairs and Transport held on 15 December 2000, Members requested further information on the following -

- (a) assessment on the effectiveness of installed noise barriers against the mitigated predicted noise levels as set out in various environmental impact assessment studies;
- (b) assessment on the effectiveness of the various engineering and non-engineering solutions to reduce noise impact, and the forecast improvement to traffic noise problems in five to ten years' time;
- (c) programme for banning certain types of vehicles from entering certain districts at certain times of the day, and the outcome of consultation with the transport trade and local bodies;
- (d) assessment on the effect of traffic noise on people and their health; and
- (e) outcome of consultation with the district councils on measures to address noise impact of existing roads.

Effectiveness of Noise Barrier

2. The use of noise barriers to screen off traffic noise is an established international practice. The Environmental Protection

Department (EPD) and the relevant works department have conducted assessment on a number of completed noise barriers to verify their noise reduction performance against the prediction in the relevant environmental impact assessment studies. Results of the assessment indicate that noise reduction performance of noise barriers are generally in line with the predictions. Further details of the assessment are at Annex A.

Effectiveness of Engineering and Non-engineering Solutions

3. The noise reduction effects of various engineering and non-engineering solutions are illustrated as follows -

Measures	Noise reduction	Remarks
Engineering Measures		
Straight barrier	up to 5 dB(A)	Effect depends on relative position of residents to the barrier/enclosure
Canti-lever barrier / Semi- enclosure	up to 15 dB(A)	
Enclosure	up to 25 dB(A)	
Change road alignment	eliminate traffic noise that would otherwise be generated by the original road	
Tunnelling	eliminate impact on residents locating along its alignment	
Low noise surface material	up to 5 dB(A) on high speed road up to 3 dB(A) on low speed road	
Non-engineering Measures		
Banning heavy vehicles	up to 3 dB(A)	Effect depends on % of heavy vehicles in the flow and the total volume of traffic
Speed reduction	up to 1 dB(A)	If speed limit reduced from 70 kph to 50 kph
Pedestrianization	up to 3 to 7 dB(A)	Effect depends on actual arrangements

4. We have currently identified 29 existing roads which are technically feasible for retrofitting of noise barriers or enclosures. We estimate that 24,000 residential units will benefit from the programme

tentatively scheduled for completion over a ten year period. We will also study the technical feasibility of resurfacing 72 local roads with low noise material. Subject to satisfactory results of the feasibility study, we plan to complete the resurfacing work in about 3 to 4 years time. We estimate that the resurfacing programme will benefit about 40,000 residential units.

5. The general effectiveness of non-engineering solutions are set out in the table in paragraph 3 above. The effectiveness of non-engineering solutions, such as traffic management measures, would depend on the availability of alternative routes, the shift in traffic pattern and the total traffic volume of the areas, etc. It is not possible to estimate the benefit at this stage.

Non-engineering Solutions

6. The Transport Department and EPD are in the process of identifying roads which could be considered as possible candidates for a trial of traffic management measures for the reduction of traffic noise. The departments will consult the transport trades and the District Councils concerned in formulating the proposal.

Health Impact of Traffic Noise

7. Available study data in Hong Kong are mostly related to occupational noise and its effect on hearing impairment. We have not come across any study results establishing causal correlation between community noise (including traffic noise) and health. It is however well recognized that high traffic noise levels may affect people's sleep and other daily activities at home. They are a source of annoyance or disturbance affecting residents' living condition.

District Council Consultation

8. We are making arrangement to brief all eighteen District Councils on the measures to address noise from existing roads. We aim to complete these briefings in three to four months and will report to Members on the views collected after completion of this exercise.

Barrier/Enclosure	Noise Level if Unmitigated	Predicted Noise Level with Barriers	Corrected Assessment from Measured Noise Level
Enclosure at Kwun Tong Bypass in front of Richland Garden	69-79dB(A)	75dB(A)	74dB(A)
Enclosure at Kwun Tong Bypass in front of Choi Hung Estate	73-82dB(A)	75dB(A)	76dB(A)
Barrier at Yuen Long Highway	76-78dB(A)	70dB(A)	68dB(A)
Barrier at Shing Mun Tunnel Road	65-79dB(A)	68dB(A)	69dB(A)
Barrier at West Kowloon Expressway in front of Mei Foo Sun Chuen	73dB(A)	70dB(A)	69dB(A)
Barrier at North Lantau Expressway in front of Yu Tung Court	72dB(A)	70dB(A)	68dB(A)
Barrier at North Lantau Expressway near the schools at Cheung Tung Road	74dB(A)	64dB(A)	64dB(A)
Barrier at Ching Cheung Road near Caritas Medical Centre	75dB(A)	67dB(A)	69dB(A)
Barrier at Lung Cheung Road near Nam Wah Middle School	68-73dB(A)	69dB(A)	71dB(A)
Partial Enclosure at Tsing Yi South Bridge near Ching Pak House	72-74dB(A)	71dB(A)	72dB(A)
Barrier at Tsing Yi Road Near Cheung Ching Estate Ching Tao House	73-78dB(A)	72dB(A)	70dB(A)
Barrier at Sham Mong Road near Nam Cheong Estate	70-78dB(A)	70dB(A)	70dB(A)
Barrier at Tseung Kwan O Tunnel Road near Hong Sing Garden	74-77dB(A)	71dB(A)	71dB(A)
Barrier at Tate's Carin Highway near Shatin Fishmen's New Village	75-79dB(A)	68dB(A)	66dB(A)
Barrier at Route 3 near Ko Po San Tsuen	70dB(A)	66dB(A)	64dB(A)
Barrier at Route 3 near Small Traders New Village	76dB(A)	67dB(A)	64dB(A)

Remarks : When a noise barrier is proposed, it is based on the predicted performance at certain receivers to be protected. The

prediction methodology is dependent on a host of factors which, quite apart from the physical properties of the barriers and its topographical relationship with the receivers, are traffic related parameters: number of vehicles, percentage of heavy vehicles, speed, and whether there are other contributing noise from traffic on existing road network nearby. Therefore, it is necessary that any noise measurement taken would need to be suitably corrected to reflect the results arising from variations in these parameters. For example, a lower measured noise level than that which was predicted may be attributed to the road traffic not having built up to the predicted capacity. Alternatively, a higher measured noise levels may be due to increased contribution from existing road network rather than from the new highway of concern.