

**REVISED POLICY FOR
MITIGATING THE EFFECTS
OF TRAFFIC NOISE
FROM FREEWAYS AND
EXPRESSWAYS**

SUMMARY

NOVEMBER 1993



Province of
British Columbia
Ministry of Transportation
and Highways

HIGHWAY ENVIRONMENT BRANCH

3rd Floor, 940 Blanshard Street
Victoria, B.C. V8W 3E6

REVISED POLICY FOR
MITIGATING THE EFFECTS OF TRAFFIC NOISE
FROM FREEWAYS AND EXPRESSWAYS
SUMMARY

Prepared For:

**Environmental Management Section
Engineering Branch,
Ministry of Transportation & Highways
Victoria, B.C.**

Prepared By:

**Wakefield Acoustics Ltd.
Victoria, B.C.**

Ministry of Transportation & Highways of B.C.
POLICY FOR MITIGATING THE EFFECTS
OF TRAFFIC NOISE FROM FREEWAYS AND EXPRESSWAYS

1 Mitigating Noise Impacts of New and Upgraded Freeways and Expressways

In relation to its mandate to provide new and upgraded highway facilities to supply the province's needs for increased transportation capacity and safety, the B.C. Ministry of Transportation & Highways (MoTH) recognizes that without proper planning, design and control measures, such major improvements to the highway system may be accompanied by excessive noise impacts on adjacent communities. As a result **the potential community noise impacts of all MoTH projects involving the new construction or substantial upgrading (including alignment changes, new movements or increased numbers of through lanes) of controlled-access highways (freeways and expressways) will be evaluated and mitigation will be carried out where warranted, cost-effective and desired by the majority of the directly-affected community.**

Active mitigation measures will generally be carried out within the MoTH right-of-way and involve the construction of **roadside noise barrier walls, earth berms or combinations of these elements.**

2 Avoiding Highway Noise Impacts Through Land Use Controls

Any effective strategy for minimizing the negative effects of highway noise must include the avoidance of future impacts through the appropriate control of land use along existing and planned highway corridors. Towards this end, the MoTH will promote the adoption - by the appropriate municipal government(s) - of effective land-use controls and/or design requirements for noise sensitive land uses on properties adjacent to existing or planned highway corridors.

3 Noise Impact Mitigation Criteria and Objective for Residences

The MoTH noise policy utilizes the widely recognized, sound energy-based community noise descriptor known as the **24-hour equivalent sound level, or $L_{eq}(24)$** - with units of decibels (dB). It is acknowledged that noise from highway projects can impact on residential areas either by exceeding threshold $L_{eq}(24)$ levels for significant interference with essential activities like speech communication and sleep, or by substantially increasing community noise levels over pre-project ambient noise levels.

Mitigation will not be considered where predicted $L_{eq}(24)$'s, ten years after project completion, are less than 55 dB. Impact avoidance, however, will be considered in such situations where feasible. **Mitigation is warranted, and will be carried out where cost-effective, practical and broadly supported by the directly-affected residents, wherever the exterior $L_{eq}(24)$ at the ground floor level of adjacent residences, ten years after project completion, is predicted to be:**

1. from 55 to 65 dB inclusive and exceed pre-project, or ambient, noise levels by a minimum amount which progressively decreases from 10 dB at a pre-project level of 45 dB to 3 dB at a pre-project level of 62 dB (see accompanying graphical representation of policy), or
2. over 65 dB and exceed pre-project noise levels by 3 dB or more.

In order to justify the considerable cost of highway noise mitigation works, **they must be able to achieve a minimum reduction in project $L_{eq}(24)$ of 5 dB when averaged over the worst-impacted locations - typically the first abutting row of residences.** Where site topography and highway/noise receiver geometry are favourable, efforts should be made to achieve larger reductions.

4 **Noise Impact Mitigation Criterion and Objective for Schools**

The primary function of schools and other educational facilities is communication, largely through the spoken word. Excessive levels of intrusive noise within classrooms can interfere with this function by masking or interrupting speech and by distracting the attention of students. **Highway noise mitigation will be considered - and implemented where cost-effective and practical - for educational facilities where it is projected that, ten years after project completion, daytime (typically 8:30 am to 3:30 pm) traffic noise levels inside classrooms will exceed $L_{eq}(1 \text{ hour})$ 47 dB and will have increased by 3 dB or more over pre-project levels.**

Mitigation measures will, where feasible, be carried out within the MoTH right-of-way. Where effective mitigation of classroom noise levels through measures taken within the right-of-way will not be feasible (e.g. for multi-storey schools), consideration will be given to the treatment of the school facade(s). **Mitigation works must be capable of achieving a minimum 5 dB reduction in $L_{eq}(1 \text{ hour})$ within impacted classrooms.**

5 **Policy Restrictions**

5.1 **Development Must Precede MoTH Project Announcement** - The **MOTH will not mitigate highway noise impacts at residences or schools for which planning approvals were not issued by the appropriate municipal authority prior to the first public announcement of the highway project** or the designation (through gazetting) of the affected lands as potential future highway right-of-way, whichever occurs first. For multi-phased highway projects, the first public announcement is considered to be that which accompanies the initial project phase.

5.2 **Height Limitations for Noise Barriers** - Earth berms, when used as roadside noise barriers, may be of any reasonable height, subject to soil conditions and the availability of adequate right-of-way and fill materials. However, to limit visual impacts and shading effects and to control costs, which tend to increase rapidly with height, **vertical or near-vertical barrier walls are limited to 3 m in height.**

5.3 **Mitigation Cost Guidelines** - Noise mitigation costs and benefits must be rationalized on a project by project basis. However, **a benchmark maximum cost has been established of \$15,000 (1993 dollars) per directly-fronting residential unit.**

5.4 **Restriction of Mitigation to Controlled-Access Highways** - Because of the importance of preserving local access, pedestrian security and utility services, roadside noise barriers are neither practical nor effective along uncontrolled-access roadways such as arterials or minor highways. **Mitigation will therefore not be considered for uncontrolled-access roadways**, with the possible exception of limited areas adjoining intersections/interchanges with controlled-access highways.

5.5 **Eligibility of Residences/Schools for Mitigation** - There are no restrictions on the eligibility of residences/schools for **mitigation consideration** provided policy criteria are met and the developments precede the highway project. More specifically:

- there is no minimum number of residences which must be impacted by project noise,
- there is no specific number of housing rows or highway setback distance within which impacted residences/schools must lie,
- residences/schools which have, as a result of a project, had their setback distances increased, may still be eligible for mitigation.

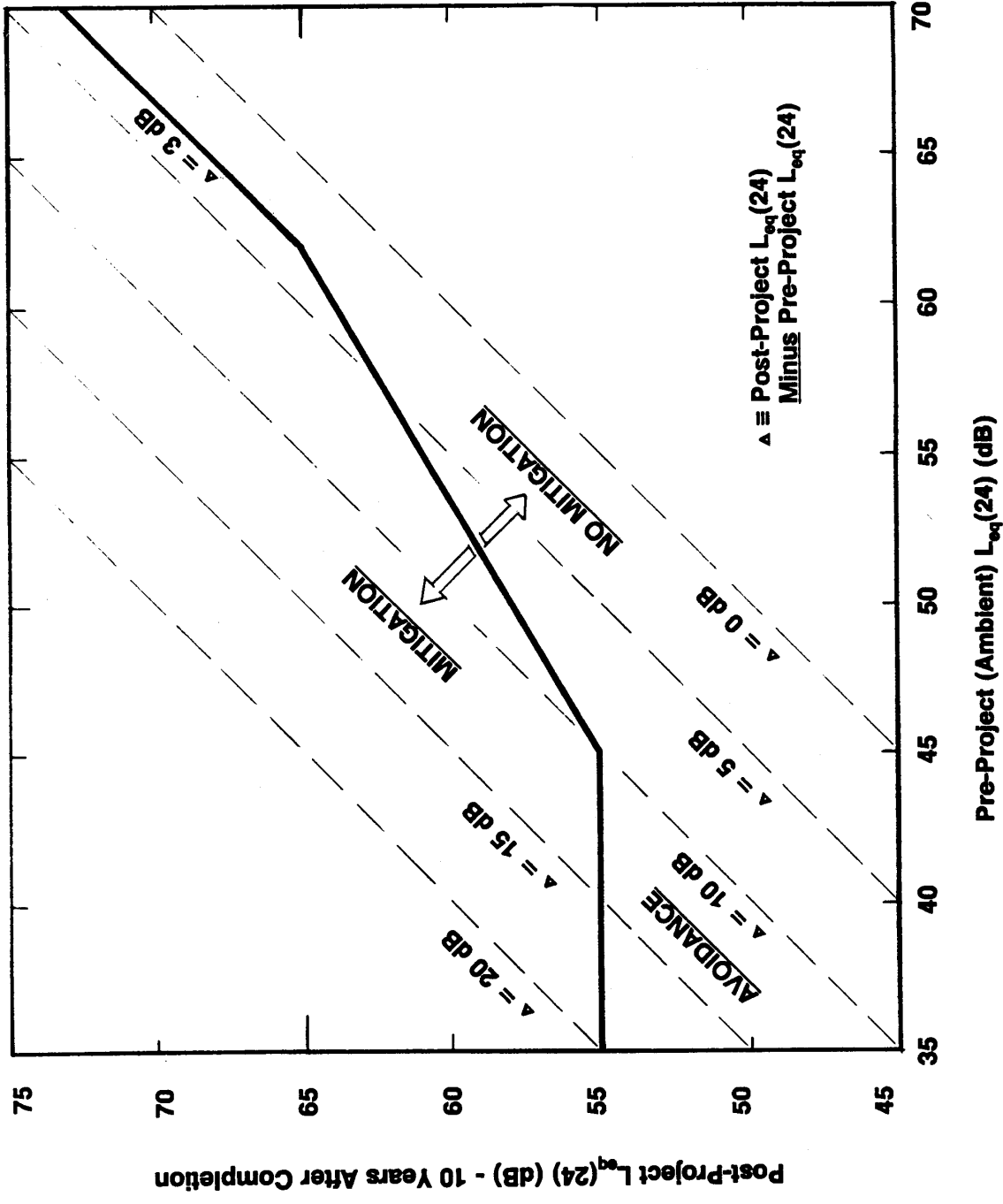


Figure 2.1: Graphical Representation of MoTH Noise Policy Criteria for Residences

Pre-Project	Post-Project	Increase
≤ 45	55.0	≥10.0
46	55.6	9.6
47	56.2	9.2
48	56.8	8.8
49	57.4	8.4
50	58.0	8.0
51	58.5	7.5
52	59.1	7.1
53	59.7	6.7
54	60.3	6.3
55	60.9	5.9
56	61.5	5.5
57	62.0	5.0
58	62.6	4.6
59	63.2	4.2
60	63.8	3.8
61	64.4	3.4
62	65.0	3.0
63	66.0	3.0
64	67.0	3.0
65	68.0	3.0
etc...		

For additional information please contact:

Ministry of Transportation and Highways
Engineering Branch
[Environmental Management Section](#)
PO Box 9850 Stn Prov Gov't
Victoria, British Columbia
V8W 9T5

Phone: (250) 387-1264
Fax: (250) 387-3736

or email us: Chris.Zacharias@gems4.gov.bc.ca.

Copies of the manual can be ordered from the Ministry Librarian by:

Phone Queries: (250) 387-5512
Fax: (250) 356-5310

This manual and a listing of more publications can be found under the [Ministry Publications Listing](#).

[Back to Environment Home](#)