Appendix A: Agenda

Billy Bishop Toronto City Airport

Noise Sub Committee Meeting 5

March 27, 2019
7pm to 9pm

Billy Bishop Airport Boardroom
(Mainland Passenger Transfer Facility, above Aroma Café)

AGENDA

7:00 Welcome and Agenda Review (All)

7:05 Input on presentation of Annual Noise Report (Mike Karsseboom)

7:10 Provincial Noise Guidelines Presentation (Angela Homewood)

7:40 Develop Questions for Future Ministry Visit (All)

8:50 Review Noise Study Scope of Work Feedback (Angela Homewood)

9:00 Adjourn

Appendix B: Provincial Noise Guidelines

Environmental Noise Guideline

Stationary and Transportation Sources – Approval and Planning

Publication NPC-300

Ontario

Prepared by:

Ontario Ministry of the Environment
Environmental Approvals Access and Service Integration Branch and
Environmental Approvals Branch

August 2013

This guideline is not, and should not be construed as legal advice. A lawyer should be consulted on questions about the application or interpretation of the laws of Ontario as they relate to the matters covered by this guideline.

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Part A BACKGROUND

This guideline replaces the following four publications:

- Publication LU-131 - Noise Assessment Criteria in Land Use Planning. October 1997;
- Noise Assessment Criteria in Land Use Planning: Requirements, Procedures and Implementation. October 1997;
- Publication NPC-205 - Sound Level Limits for Stationary Sources in Class 1 and 2 Areas (Urban). October 1995; and
- Publication NPC-232 - Sound Level Limits for Stationary Sources in Class 3 Areas (Rural). October 1995.

A1 Purpose

The Ministry of the Environment (MOE) is responsible for protecting clean and safe air, land and water to ensure healthy communities, ecological protection and sustainable development for present and future generations. The MOE fulfils these responsibilities, in part, by ensuring the sources of emissions to the environment are adequately controlled to prevent the potential for adverse effects. The objective of this guideline is to address the proper control of sources of noise emissions to the environment.

This guideline serves four purposes:

(1) To provide sound level limits that are applied by the MOE to stationary sources, such as industrial and commercial establishments and auxiliary transportation facilities. Compliance with the sound level limits is required for existing, planned, new, expanded, or modified stationary sources of sound through an Environmental Compliance Approval issued under PART II.1 of the Environmental Protection Act, or a Renewable Energy Approval issued under section 47.3 of the Environmental Protection Act, Reference [7]. These sound level limits are also applied under the provisions of the Environmental Assessment Act, Reference [5]. In addition, these sound level limits apply to noise-related incidents reported to MOE, which are investigated to determine the potential for an adverse effect, which may contravene section 14 of the Environmental Protection Act.

(2) To provide advice, sound level limits and guidance that may be used when land use planning decisions are made under the Planning Act, Reference [25], and the Niagara Escarpment Planning and Development Act, Reference [20]. The MOE has no authority under the Planning Act and has no direct role in the land use planning process. This guidance is for land use planning authorities (such as

municipalities, planning boards and other ministries), developers and consultants. It is intended to minimize the potential conflict between proposed noise sensitive land uses and sources of noise emissions and is intended to be supportive of the Provincial Policy Statement, Reference [26]. Specifically, it may be applied in planning decisions concerning noise sensitive land uses that are proposed adjacent to facilities such as, but not limited to, airports, road and rail transportation corridors, industrial facilities, railway yards, aggregate facilities, major commercial facilities, water and sewage treatment facilities and waste sites. In order to achieve effective and economical planning, the principles described should be implemented in a proactive manner in the earliest stages of the land use planning process.

(3) To provide sound level limits that may be incorporated into noise control by-laws, which may be developed by municipalities in accordance with the Municipal Act, Reference [19], and/or other enabling legislation.

(4) To provide sound level limits that may be applied under the provisions of the Aggregate Resources Act, Reference [1], primarily by the Ministry of Natural Resources in licensing and permitting activities for aggregate resource extraction activities.

This guideline does not provide sound level limits for blasting operations, wind turbine facilities, landfills or new or expanded transit corridors, which are addressed in other publications. Reference [31] covers blasting in quarries and surface mines. Reference [22] covers wind farms (wind turbine facilities). Reference [21] covers landfills. Reference [14] covers the approval of new or expanded transit corridors. Additionally, this guideline needs to be used in conjunction with the MOE D-Series Guidelines, References [12] and [13]. Consult the MOE website for the latest versions of the reference documents and other applicable guidelines.

Other agencies, such as other provincial ministries, the federal government and municipalities, may have requirements over and above those included in this MOE guideline. Other requirements, defined by another jurisdiction or agency, may apply.

A2 Implementation by MOE

After its publication date, this guideline will be implemented in approvals issued by the MOE. All new applications for MOE approvals submitted after this guideline is published will be assessed in accordance with this guideline. Applications which were submitted to the MOE before this guideline has been published will be assessed under the previously applicable guidelines: Publication NPC-205 - Sound Level Limits for Stationary Sources in Class 1 and 2 Areas (Urban) and/or Publication NPC-232 - Sound Level Limits for Stationary Sources in Class 3 Areas (Rural). Alternatively, upon receipt of a written request from an applicant, an application for an approval submitted to the MOE prior to the publication date of this new guideline may be assessed under this new guideline. In such circumstances, the MOE may require

additional supporting documentation from the applicant in order to complete an assessment under this new guideline.

A3 Organization of This Guideline

This guideline is organized into three main parts:

Part A: provides material that is common and applicable to the whole document, such as purpose, definitions, common principles and references.

Part B: specifically addresses the approval and compliance of stationary sources of noise.

Part C: deals with the planning of new noise sensitive land uses.

Part A is integral to both Part B and Part C. All three parts are interrelated and need to be considered together.

A4 References

The current version of each referenced publication is listed below. All the referenced publications may be replaced with updated or amended versions from time to time. Consult the MOE website for the latest versions of the reference documents and other applicable guidelines issued by the MOE.

[1] Aggregate Resources Act, R.S.O. 1990, c. A.8.

[2] Basic Comprehensive Certificates of Approval (Air) - User Guide. March 2011. Ontario Ministry of the Environment. PIBS 4391e01.

[3] Bulletin No. 91003, Environmental Warnings/Restrictions. July 25, 1991. Ontario Ministry of Consumer and Commercial Relations.

[4] CAN/CSA-Z107.9-00 (R2004) - Standard for Certification of Noise Barriers (Reaffirmed 2004), Canadian Standards Association.

[5] Environmental Assessment Act, R.S.O. 1990, c. E.18.

[6] Environmental Noise Guidelines for Installation of Residential Air Conditioning Devices. September 1994. Ontario Ministry of Environment and Energy. ISBN 0-7778-1616-4. PIBS 2721e01.

[7] Environmental Protection Act, R.S.O. 1990, c. E.19.

[8] Fact Sheet: Basic Comprehensive Certificates of Approval (Air). April 2002. Ontario Ministry of the Environment. PIBS 4392e.

[9] Farming and Food Production Protection Act, 1998, S.O. 1998, c. 1.

[10] Guide to Applying for an Environmental Compliance Approval. 2012. Ontario Ministry of the Environment. PIBS 8527e.

[11] Guide to Completing the Written Summary Required by the Basic Comprehensive Certificate of Approval (Air & Noise) and the Environmental Compliance Approval (Air & Noise). December 2011. Ontario Ministry of the Environment. PIBS 8200.

[12] Guideline D-1 - Land Use Compatibility. July 1995. Ontario Ministry of the Environment. PIBS 3166e.

[13] Guideline D-6 - Compatibility Between Industrial Facilities and Sensitive Land Uses. July 1995. Ontario Ministry of the Environment. PIBS 3272e.

[14] Guideline for Noise and Vibration Assessment of Transit Projects (Draft). April 2011. Ontario Ministry of the Environment. PIBS 4000.

[15] Highway Traffic Act, R.S.O. 1990, c. H.8.

[16] Information to Be Submitted for Approval of Stationary Sources of Sound - Publication NPC-233. October 1995. Ontario Ministry of the Environment. ISBN 0-7778-4918-6. PIBS 3404e.

[17] ISO 9613-2:1996 - Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation.

[18] Model Municipal Noise Control By-Law - Final Report. August 1978. Ontario Ministry of the Environment.

[19] Municipal Act, 2001, S.O. 2001, c. 25.

[20] Niagara Escarpment Planning and Development Act, R.S.O. 1990, c. N.2.

[21] Noise Guidelines for Landfill Sites (Draft). October 1998. Ontario Ministry of the Environment.

[22] Noise Guidelines for Wind Farms - Interpretation for Applying MOE NPC Publications to Wind Power Generation Facilities. October 2008. Ontario Ministry of the Environment. PIBS 4709e.

[23] Noise Screening Process for s.9 Applications: Supplement to Application for Approval. February 18, 2005. Ontario Ministry of the Environment. PIBS 4871e.

[24] ORNAMENT Ontario Road Noise Analysis Method for Environment and Transportation - Technical Document. October 1989. Ontario Ministry of the Environment. ISBN 0-7729-6376. PIBS 1527e.

[25] Planning Act, R.S.O. 1990, c. P.13.

[26] Provincial Policy Statement, 2005. Ontario Ministry of Municipal Affairs and Housing. ISBN 0-7794-7484-8.

[27] Publication NPC-101 - Technical Definitions (part of Reference [18]).

[28] Publication NPC-102 - Instrumentation (part of Reference [18]).

[29] Publication NPC-103 - Procedures (part of Reference [18]).

[30] Publication NPC-104 - Sound Level Adjustments (part of Reference [18]).

[31] Publication NPC-119 - Blasting (part of Reference [18]).

[32] Residential Air Conditioning Devices - Publication NPC-216. 1993. Ontario Ministry of Environment and Energy.

[33] Sound Levels Due to Road Traffic - Publication NPC-206. October 1995. Ontario Ministry of Environment and Energy. ISBN 0-7778-4923-2. PIBS 3407e.

[34] STEAM, Sound from Trains Environmental Analysis Method. July 1990. Ontario Ministry of the Environment. ISBN 0-7729-6376-2. PIBS 1053e.

A5 Definitions

The following definitions apply to this guideline:

"Acoustic barrier"

means a wall, berm, wall/berm combination or similar structure, used as a noise control measure, and high enough to break the line-of-sight between the source and the receptor.

The minimum surface density (face weight) is 20 kg/m^2. Subject to technical justification, the surface density can be reduced to no lower than 10 kg/m^2 for:

- rooftop barriers; and
- temporary barriers for noise sources operating for a short duration, such as portable equipment.

The barrier should be structurally sound, appropriately designed to withstand wind and snow load, and constructed without cracks or surface gaps. Any gaps under the barrier that are necessary for drainage purposes should be minimized and localized, so that the acoustical performance of the barrier is maintained.

Alternatively to the above description and specification, noise barriers complying with the requirements and certification of CAN/CSA-Z107.9-00 (R2004) - Standard for Certification of Noise Barriers (Reaffirmed 2004), by the Canadian Standards Association, Reference [4], are acceptable.

The term acoustic barrier is used interchangeably with the term noise barrier or simply a barrier.

"Agreement for noise mitigation"

means one, or multiple, legally binding agreements involving parties such as land use planning authorities, proponents of a noise sensitive land use and owners of a stationary source.

Agreement(s) may be associated with decisions made by the land use planning authority under the Planning Act or established as collateral agreements.

These agreements should outline the framework for cooperation among the land use planning authority, the stationary source and the noise sensitive land use. Agreements are intended to provide protection for both the stationary source and the noise sensitive land use.

The need for the agreement(s) is triggered by the use of receptor based noise control measures to ensure compliance with the applicable sound level limits. The finalized agreement(s) are to be submitted by the stationary source with any application for an MOE approval.

The agreement(s) should:

- ensure that the stationary source is able to comply with the applicable sound level limits at the new noise sensitive land use;
- provide assurance that receptor based noise control measures are implemented and maintained;
- provide consistency for planning noise sensitive land use(s) in the proximity of stationary source(s);
- address the long-term responsibilities of all the parties to the agreement; and
- describe the noise control measures and provide information about how these measures will result in compliance with the applicable sound level limits. Note that source based noise control measures may require an MOE approval.

"Ambient sound level"

means background sound level.

"Auxiliary transportation facility"

means locations where support operations and activities associated with the operation or housing of the transportation equipment (or personnel) take place. Examples of auxiliary transportation facilities include, but are not limited to vehicle storage and maintenance facilities. Typical sources of noise associated with auxiliary transportation facilities include, but are not limited to substations, transformers, emergency power generators, mechanical equipment plants, emergency services buildings, fans, and fan/vent shafts. Layover sites are not considered auxiliary transportation facilities.

"Background sound level"

means the sound level that is present in the environment, produced by noise sources other than the source under impact assessment.

For the purposes of noise assessments related to stationary sources, the background sound level is expressed in terms of the One-Hour Equivalent Sound Level (L_{eq}). The background sound level is determined by means of measurement according to References [16], [28], [29] and [30] and/or prediction according to References [17], [24], [33] and [34] or by other methods/models that are acceptable to the MOE, unless the exclusion limit values are adopted.

The background sound level is typically caused by road traffic, except in areas well removed from the activities of people. Sound from existing adjacent stationary sources may be included in the determination of the background One-Hour Equivalent Sound Level (L_{eq}) if such stationary sources have the appropriate approvals and are not under consideration for noise abatement by the municipality or the MOE.

Highly intrusive short duration noise caused by a source such as an aircraft fly-over or a train pass-by (including light rail transit, subways and streetcars) is normally excluded from the determination of the background sound level. However, under unique/special circumstances, train pass-by noise may be included in the determination of the background sound level in accordance with the following conditions and procedures:

- the contribution of train pass-by sound levels to the background sound level only applies to noise sensitive land uses in Class 1, 2 and 4 areas (not in a Class 3 area);
- the noise sensitive land uses are located within 300 metres from the nearest track of railway lines carrying a minimum of 40 trains during daytime or 20 trains during nighttime;
- the equivalent sound level during the daytime [L_{eq} (16)] and nighttime [L_{eq} (8)] due to train pass-bys is determined by means of prediction according to Reference [34] or by other methods/models that are acceptable to MOE;
- a 10 dBA adjustment is subtracted from the train pass-by day and night equivalent sound levels; and
- the adjusted train pass-by day and night equivalent sound levels are then logarithmically (on an energy basis) added to the higher of either the background One-Hour Equivalent Sound Level (L_{eq}) or the exclusion limit.

"Campsite or campground"

means a portion of property used for camping at which overnight accommodation is provided by, or on behalf of a public agency, or as part of a commercial operation.

"Class 1 area"

means an area with an acoustical environment typical of a major population centre, where the background sound level is dominated by the activities of people, usually road traffic, often referred to as "urban hum."

"Class 2 area"

means an area with an acoustical environment that has qualities representative of both Class 1 and Class 3 areas:

- sound levels characteristic of Class 1 during daytime (07:00 to 19:00 or to 23:00 hours); and

- low evening and night background sound level defined by natural environment and infrequent human activity starting as early as 19:00 hours (19:00 or 23:00 to 07:00 hours).

"Class 3 area"

means a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic, such as:

- a small community;
- agricultural area;
- a rural recreational area such as a cottage or a resort area; or
- a wilderness area.

"Class 4 area"

means an area or specific site that would otherwise be defined as Class 1 or 2 and which:

- is an area intended for development with new noise sensitive land use(s) that are not yet built;
- is in proximity to existing, lawfully established stationary source(s); and
- has formal confirmation from the land use planning authority with the Class 4 area classification which is determined during the land use planning process.

Additionally, areas with existing noise sensitive land use(s) cannot be classified as Class 4 areas.

"Construction"

means a temporary activity which includes erection, alteration, repair, dismantling, demolition, structural maintenance, painting, moving, land clearing, earth moving, grading, excavating, the laying of pipe and conduit whether above or below ground level, street and highway building, concreting, equipment installation and alteration and the structural installation of construction components and materials in any form or for any purpose, and includes any work in connection therewith.

"dBA"

means the A-weighted sound pressure level.

"dBAI"

means the A-weighted sound pressure level of an impulsive sound measured with a sound level meter set to "impulse" response.

"Dwelling"

means one or more habitable rooms used or capable of being used as a permanent or seasonal residence by one or more persons and usually containing cooking, eating, living, sleeping and sanitary facilities.

"Emergency equipment – stationary sources"

means stationary sources designed to operate in emergency situations. These sources include, but are not limited to, emergency power generators, emergency ventilation fans or flares designed for emergency situations, etc.

"Enclosed noise buffer"

means an enclosed area outside the exterior wall of a building such as an enclosed balcony specifically intended to buffer one or more windows of noise sensitive spaces. In order for the concept of enclosed noise buffer to be acceptable within the context of an MOE approval of stationary sources, it can only apply to high-rise multi-unit buildings in a Class 4 area. The characteristics of an enclosed noise buffer are listed below:

- not less than one metre and not more than two metres deep;
- fully enclosed with floor to ceiling glazing or a combination of solid parapet plus glazing above – glazing can potentially be operable to the maximum permitted by the Ontario Building Code;
- separated from interior space with a weatherproof boundary of exterior grade wall, exterior grade window, exterior grade door, or any combination, in compliance with exterior envelope requirements of the Ontario Building Code;
- of sufficient horizontal extent to protect windows of noise sensitive spaces; and
- the architectural design is not amenable to converting the enclosed space to being noise sensitive.

"Exclusion limit"

means the lowest value of the sound level limit at a specific point of reception for the stationary source, i.e., the sound level limit when the background sound level is below this exclusion limit. Exclusion limits are listed in Table B-1, Table B-2, Table B-3, Table B-4, Table C-5, Table C-6, Table C-7 and Table C-8.

"High-rise multi-unit building"

means a residential building with four or more floors (storeys) and with more than one dwelling per floor (storey).

"Highway"

includes a common and public highway, street, avenue, parkway, driveway, square, place, bridge, viaduct or trestle designed and intended for, or used by, the general public for the passage of vehicles.

"Inaccessible vacant lot"

means a vacant lot on a private land that:

- cannot be accessed, or in respect of which the owner of the land does not have a legal right to access in the future, through the use of a road by a motor vehicle, as defined in the Highway Traffic Act, Reference [15]; or
- cannot be accessed through the use of a navigable waterway by a watercraft.

"Indoor sound level"

is the sound level calculated or measured in the central part of a room.

"Inoperable (fixed or sealed) window"

means an exterior window that is acoustically designed to provide a suitable indoor acoustical environment for occupants of new noise sensitive land uses. The inoperable window is a receptor based "on building" noise control measure, defined in the noise control measure definition in Part A of this guideline.

When the noise sensitive land use is affected by noise from stationary sources, compliance with the sound level limits is typically established at points of reception in the plane of windows.

In some cases, the MOE may consider inoperable windows as an acceptable option to control noise in applications for MOE approvals from stationary sources. In these cases, the inoperable windows would not be considered as points of reception and would not be subject to sound level limits.

The cases where inoperable windows may be acceptable for use as receptor based "on building" noise control measures to control noise from stationary sources are:

- windows that are not associated with noise sensitive spaces and where the architectural design is not amenable to converting the associated space to being noise sensitive, for example, inoperable windows in a single loaded corridor serving a high-rise multi-unit building; and
- windows that are associated with noise sensitive spaces in a noise sensitive commercial purpose building or in a noise sensitive institutional purpose building.

Additionally, the use of inoperable windows generally requires acoustical assessment and enhanced window design to ensure the indoor acoustical environment will be suitable. Furthermore, assurance will need to be provided to the stationary source that the inoperable windows will be permanent for as long as the stationary source continues to operate. The ability of the stationary source to maintain compliance with MOE requirements and obtain MOE approvals is not to be compromised by the use of inoperable windows.

"Land use planning authority"

means a municipality, a planning board, a municipal planning authority, the Minister of Municipal Affairs and Housing, a joint board, a local appeal body, the

Ontario Municipal Board or other person or public body that makes decisions under the Planning Act, Reference [25], and the Niagara Escarpment Commission that makes decisions under the Niagara Escarpment Planning and Development Act, Reference [20], with respect to proposed developments or changes in land use.

"Layover site"

means a Metrolinx/GO Transit facility, a TTC facility or other facilities dedicated to overnight storage and idling to prepare for departure of commuter trains, streetcars, subways and light rail transit (LRT) vehicles. Layover sites do not include maintenance, repairs and/or shunting operations.

"L_{eq} (T): L_{eq} (16), L_{eq} (8), L_{eq} (1)"

means the A-weighted sound level of a steady sound carrying the same total energy in the time period T as the observed fluctuating sound. The time period T is given in hours. L_{eq} without a specific time period means L_{eq} (1).

"MOE"

means Ministry of the Environment.

"MOE approval"

means a Certificate of Approval issued under section 9 of the Environmental Protection Act, a Renewable Energy Approval issued under section 47.3 of the Environmental Protection Act, an Environmental Compliance Approval issued under Part II.1 of the Environmental Protection Act, or an approval or decision made under the Environmental Assessment Act.

"Motor vehicle"

includes an automobile, motorcycle, and any other vehicle propelled or driven otherwise than by muscular power, but does not include the cars of diesel, electric or steam railways, or other motor vehicles running only upon rails, or a motorized snow vehicle, traction engine, farm tractor, self-propelled implement of animal husbandry or road-building machine within the meaning of the Highway Traffic Act, Reference [15].

"NEF/NEP"

means Noise Exposure Forecast/Noise Exposure Projection contours for airports.

"Noise"

means unwanted sound.

"Noise barrier"

see acoustic barrier.

"Noise control measure"

means a physical measure which can be used to achieve compatibility for the specific land use or activity with respect to noise from transportation sources and/or stationary sources. The noise control measure for a stationary source should be permanent in the context of the operation of the stationary source and not be readily removable or alterable by the future occupants. Temporary noise control measures are only acceptable when the noise from the source is temporary, for example, a portable concrete crusher or portable tub grinder. Noise control measures may include, but are not limited to, the following:

- Source based noise control measures
  - noise control measures applied directly to the noise source, or within the property of the noise source, for example, a silencer, muffler, acoustical louvre, acoustic barrier, acoustical absorption, etc.
- Receptor based outdoor noise control measures
  - noise control measures implemented on the property of the receptor but not directly on a building, for example, ground (or berm) mounted acoustic barriers suitable for transportation noise sources or for stationary sources.
- Receptor based "on building" noise control measures
  - noise control measures implemented on the property of the receptor, directly on the building, for example, inoperable windows, enclosed noise buffers, parapets, acoustic barriers, etc. attached to the receptor building.
- Receptor based site configuration noise control measures
  - orientation of buildings and outdoor living areas (OLAs) with respect to noise sources and spatial separation, for example, the insertion of noise insensitive land uses between source and receptor, appropriate setback distances, the use of intervening service roads.
- Receptor based site construction and architectural noise control measures
  - building construction, for example, enhanced window glazing, cavity walls, resiliently suspended sound isolation channels, special acoustical materials, other sound isolation details; and
  - architectural design, for example, room and corridor arrangement, blank walls, windows, balconies, courtyards, building height.

Additional guidance concerning noise control measures is included in Part B and Part C of this guideline.

"Noise sensitive commercial purpose building"

means a building used for a commercial purpose that includes one or more habitable rooms used as sleeping facilities such as a hotel and a motel.

"Noise sensitive institutional purpose building"

means a building used for an institutional purpose, including an educational facility, a day nursery, a hospital, a health care facility, a shelter for emergency

housing, a community centre, a place of worship and a detention centre. A place of worship located in commercially or industrially zoned lands is not considered a noise sensitive institutional purpose building.

"Noise sensitive land use"

means:

- a property of a person that accommodates a dwelling and includes a legal non-conforming residential use; or
- a property of a person that accommodates a building used for a noise sensitive commercial purpose; or
- a property of a person that accommodates a building used for a noise sensitive institutional purpose.

From a land use planning perspective, a noise sensitive land use may be comprised of spaces that are noise sensitive and spaces that are not noise sensitive. The outdoor living area (OLA) associated with a noise sensitive land use is considered a noise sensitive space.

A land use that would normally be considered noise sensitive, such as a dwelling, but is located within the property boundaries of the stationary source is not considered a noise sensitive land use.

"Noise sensitive space"

means the living and sleeping quarters of dwellings, and sleeping quarters of noise sensitive commercial or institutional land uses. Examples include, but are not limited to: bedrooms, sleeping quarters such as patient rooms, living/dining rooms, eat-in kitchens, dens, lounges, classrooms, therapy or treatment rooms, assembly spaces for worship, sleeping quarters of detention centres.

"Noise sensitive zoned lot"

means a lot or a property of a person that has been zoned to permit a noise sensitive land use and that is either:

- currently vacant; or
- has an existing land use that is not a noise sensitive land use.

"Outdoor living area (OLA)" (applies to impact assessments of transportation sources)

means that part of a noise sensitive land use that is:

- intended and designed for the quiet enjoyment of the outdoor environment; and
- readily accessible from the building.

The OLA includes:

- backyards, front yards, gardens, terraces or patios;

- balconies and elevated terraces (e.g., rooftops), with a minimum depth of 4 metres, that are not enclosed, provided they are the only outdoor living area (OLA) for the occupant; or
- common outdoor living areas (OLAs) associated with high-rise multi-unit buildings.

The following considerations apply to OLAs:

1. For the purposes of noise impact assessment in an OLA at grade, the point of assessment is typically:
   a. 3 metres from the building façade;
   b. 1.5 metres above grade or floor level; and
   c. aligned with the midpoint of the subject façade.
2. For elevated OLAs or those at grade that are less than 6 metres in depth, the point of assessment is in the middle of the OLA at 1.5 metres above grade or floor level.
3. For the purposes of the noise impact assessment in an OLA at grade, the minimum areas that require protection/consideration are 56 m^2 for single family dwellings, 46 m^2 for semi-detached dwellings and 37 m^2 per unit for row housing (dwellings). If the total area of the OLA is smaller than the areas noted above, then the entire OLA, excluding the footprint of the dwelling needs to be protected.
4. The noise impact assessment at an OLA excludes the effect of sound reflection from the façade. In general, the point of assessment in the OLA is a point used for prediction (including extrapolation), rather than measurement, of sound levels.

"Plane of window"

means a point in space corresponding with the location of the centre of a window of a noise sensitive space. The noise impact assessment excludes the effect of sound reflection from the plane of the window on which it is located. In general the plane of a window is a point used for prediction (including extrapolation), rather than measurement, of sound levels. The plane of door has the same meaning as the plane of window for the purposes of this guideline.

"Point of reception" (applies to impact assessments of stationary sources)

means any location on a noise sensitive land use where noise from a stationary source is received. Noise sensitive land uses may have one or more points of reception.

The following locations are points of reception:

1. Location outdoors within 30 metres of a façade of a dwelling, at a height of 1.5 metres above ground, typically in backyards, front yards, terraces or

patios. If the dwelling is a high-rise multi-unit building, the location should be confined to a common outdoor amenity area.

2. Location on balconies and elevated terraces (e.g., rooftops) provided they are the only outdoor living area for the occupant, have a minimum depth of 4 metres, and are not enclosed.

3. Location within 30 metres of a portion of property that is used as a campsite or campground, at a height of 1.5 metres above ground.

4. Location in the centre of any window on a noise sensitive space of a dwelling or a building used for a noise sensitive institutional purpose or a noise sensitive commercial purpose; the location should be a minimum of 1.5 metres above ground for a first storey window, a minimum of 4.5 metres above ground for a second storey window, a minimum of 7.5 metres above ground for a third storey window, and the height of the vertical midpoint of the nearest and most exposed storey for a high-rise multi-unit building.

5. If the construction of a building or structure on the property of a noise sensitive land use has not commenced but an approval under section 41 of the Planning Act or a building permit under section 8 of the Building Code Act, 1992 has been issued in respect of the building or structure, the locations described in paragraph 1, 2 or 4 above apply.

6. Location on a noise sensitive zoned lot, other than an inaccessible vacant lot, in respect of which no approval or building permit for a building or structure mentioned in paragraph 5 above has been issued, described by the following:

    a. If the area of the vacant lot is smaller than 1 hectare (10,000 m^2), the location of the point of reception should be approximately in the centre of the vacant lot, having regard for the existing zoning by-law, the typical building pattern in the area and an appropriate or likely future use of the vacant lot, at a height of 4.5 metres above ground.
    b. If the area of the vacant lot is greater than 1 hectare (10,000 m^2), the area of the vacant lot for noise assessment purposes should be considered limited to 1 hectare (10,000 m^2). This 1 hectare portion of the vacant lot should be consistent with the existing zoning by-law, the typical building pattern in the area and an appropriate or likely future use of the vacant lot. The location of the point of reception is the centre of this 1 hectare portion of the vacant lot, at a height of 4.5 metres above ground.

The following are examples of locations that are not considered to be points of reception:

1) Outdoor locations associated with a noise sensitive institutional purpose or a noise sensitive commercial purpose;

2) Inoperable (fixed or sealed) window as defined in Part A of this guideline; and

3) Plane of a window of an enclosed noise buffer. Note that the planes of a window on the façade of a dwelling in the enclosed noise buffer are considered to be points of reception in accordance with paragraph 4 above.

"Predictable worst case noise impact"

means the noise impact associated with a planned and predictable mode of operation for stationary source(s), during the hour when the noise emissions from the stationary source(s) have the greatest impact at a point of reception, relative to the applicable limit. The acoustic assessment of stationary source noise impacts at a point of reception must address the predictable worst case noise impact.

The greatest noise impact at a point of reception may not occur when the noise emissions from the stationary source(s) are highest, since the applicable limit (the higher of either background sound level or exclusion limit) may vary throughout the operating time.

The predictable worst case noise impact addresses the following activities:

1. Regular, routine operation of equipment
   Operations of equipment are included in the predictable worst case scenario.
2. Infrequent operation of equipment
   Operations of equipment (stationary sources) that occur at least twice a month and emit noise for at least one half hour on each occasion are considered planned and predictable even if they are not occurring at precisely the same time on each occurrence, and are included in the predictable worst case scenario.
3. Operation of emergency equipment
   Activities related to the operation or testing of equipment used for emergency purposes, but in non-emergency situations, are addressed using separate sound level limits, described in Section B7.3 and Section C4.5.3.

"Stationary source"

means a source of sound or combination of sources of sound that are included and normally operated within the property lines of a facility, and includes the premises of a person as one stationary source, unless the dominant source of sound on those premises is construction.

The above is a broad, general definition of a stationary source. The following refines the stationary source definition so that it is consistent with the requirements of the MOE.

Stationary sources are divided into several categories based on MOE approval requirements for stationary sources and the related sound level limits in Part B of this guideline.

Additionally, the definition and categorization of stationary sources are provided as appropriate guidance to land use planning authorities, to be used at the

discretion of the land use planning authority. Consequently, all the noise sources described as stationary sources in the following categories are assumed to be subject to the recommended Part C sound level limits for stationary sources, unless specifically stated otherwise.

Category (1) provides the core list of stationary sources. These stationary sources are subject to Part B of this guideline for:

- MOE approval requirements, or
- Potential MOE investigations of noise related incidents, or
- Approval/investigation requirements by other agencies and ministries such as the Ministry of Natural Resources.

The other five categories, (2) to (6), describe exceptions to category (1), i.e., sources that are not considered stationary sources, sources that may not require an MOE approval or that sources may not be subject to Part B and/or Part C of this guideline.

(1) Stationary sources

The following sources are examples of stationary sources that are subject to Part B of this guideline:

- aggregate extraction facilities (except blasting);
- auxiliary transportation facilities;
- commercial facilities;
- industrial facilities;
- natural gas facilities;
- repair or storage garages for public vehicles;
- routine loading and unloading facilities (truck terminals, assembly plants commercial facilities, etc.);
- solar farms / solar panel systems;
- storage, maintenance and repair facilities;
- warehousing and truck terminal facilities; and
- works yards.

Below are examples of specific activities and equipment associated with stationary sources that are governed by the limits of Part B of this guideline. Stationary sources are usually comprised of many sources of sound from various activities and equipment. The stationary source is understood to encompass all the activities taking place within the property boundary of the facility, including regular on-site truck traffic and material handling, and may include the following equipment and activities:

- aggregate processing equipment such as crushers, screeners and associated equipment;
- boilers, burners, dryers, furnaces and incinerators, including grain dryers except for grain dryers used for the on-farm processing by a farmer of the products produced primarily from the farmer’s agricultural operation;

- dust collectors;
- heating, ventilation and air conditioning (HVAC) equipment, including cooling towers, compressors, chillers;
- impacting mechanical sources such as presses and forges;
- mobile equipment for crushing and grinding;
- rotating machinery including fans and blowers;
- routine loading and unloading activity;
- transformers, inverters, generators and turbines;
- wood processing equipment such as grinders, chippers, debarkers, mills; and
- on-site movement of trucks and trailers, as well as all mobile equipment.

(2) Stationary sources described in the exempting regulation, Ontario Regulation 524/98

Ontario Regulation 524/98 exempts certain sources from the Environmental Compliance Approval requirement under Part II.1 of the Environmental Protection Act. The following sources are examples of such stationary sources; the regulation should be consulted for the full list of exempted sources:

- car washes;
- mobile equipment for crushing or screening of aggregate, if the mobile equipment is located below grade in a pit or quarry that is operated in accordance with a licence or permit issued under the Aggregate Resources Act, Reference [1];
- outdoor firearm ranges / gun clubs;
- race tracks; and
- snow disposal sites.

The definition refers to exemptions provided by Ontario Regulation 524/98 rather than exemptions from all MOE approvals. Ontario Regulation 524/98 describes exemptions from Environmental Compliance Approval requirements under Part II.1 of the Environmental Protection Act but does not exempt the sources from the Environmental Assessment Act requirements. Furthermore, Ontario Regulation 524/98 does not exempt sources from approval requirements elsewhere in the Environmental Protection Act such as Renewable Energy Approval requirements under Part V.0.1 or Waste Management Approval requirements under Part V. Also, the exemption does not address the adverse effects defined in section 14 of the Environmental Protection Act.

Sources in this category are also subject to the sound level limits in Part C of this guideline.

In the context of applications for MOE approvals, all stationary sources, including those in the exempting regulation, should be included in a noise impact assessment of facilities that comprise multiple stationary sources.

(3) Stationary sources addressed under the jurisdiction of the Ontario Ministry of Agriculture, Food and Rural Affairs

Part B and Part C of this guideline do not apply to the noise impact of stationary sources associated with agricultural operations during the course of normal farm practice which are addressed through the Farming and Food Production Protection Act, 1998, Reference [9]. These sources do not require an MOE approval. Examples of such sources include, but are not limited to:

- pest-scaring devices, such as propane-fired cannons, more often referred to as 'bird bangers' or 'electronic scarers' or 'deer scarers' used to protect harvestable agricultural crops such as grapes, sweet cherries, blueberries, apples or other crops;
- wind machines used to protect agricultural crops, such as grapes, apples, or other crops against cold injury;
- irrigation pumps used for horticultural, field or nursery crops;
- any equipment, apparatus or device used in agriculture for food crop seeding, chemical spraying or harvesting;
- building heating, ventilation and air conditioning (HVAC) equipment used in livestock, greenhouse, horticultural and other facilities;
- equipment associated with on-farm anaerobic digesters used to generate clean energy that are exempt under Ontario Regulation 359/09;
- any equipment, apparatus or device used for the on-farm processing by a farmer of the products produced primarily from the farmer's agricultural operation such as grain dryers, grain aeration fans and hay dryers; and
- other noises from other stationary sources on agricultural operations during normal farm practice.

(4) Stationary sources that may not require MOE approval

The following sources are examples of stationary sources that usually do not require an MOE approval because most aspects of the facility are solely regulated by the federal government:

- federally-regulated railway yards;
- airport facilities;
- port facilities and marine shipping activities; and
- nuclear facilities.

Ancillary facilities to these sources may require MOE approval.

Regardless of whether provincial approvals are required, these sources are subject to the sound level limits in Part C of this guideline.

(5) Sources not considered as stationary sources

The following are examples of sources, activities, equipment or facilities that are not considered as stationary sources in the context of Part B and Part C of this guideline:

- temporary construction activities;
- transportation corridors, i.e., railways and roadways (including off-site haul routes);
- residential air conditioning devices including air conditioners and heat pumps;
- gas stations;
- auditory warning devices required or authorized by law or in accordance with good safety practices;
- 'back up beepers' on construction equipment or other vehicles;
- occasional movement of vehicles on the property such as delivery of goods to and the removal of goods/refuse from convenience stores, fast food restaurants and similar commercial facilities, etc.; and
- parking lots for private passenger vehicles at offices or commercial facilities such as retail stores, plazas or shopping malls, or employee parking lots at industries and commuter parking lots.

The following are examples of sources, activities, equipment or facilities that are not considered as stationary sources in the context of Part B and Part C of this guideline and that are normally addressed in a qualitative manner in municipal noise by-laws:

- the operation of auditory signalling devices, including but not limited to the ringing of bells or gongs and the blowing of horns or sirens or whistles, or the production, reproduction or amplification of any similar sounds by electronic means;
- noise produced by animals kept as domestic pets such as dogs barking;
- tools and devices used by occupants for domestic purposes such as domestic power tools, radios and televisions, etc., or activities associated with domestic situations such as domestic quarrels, noisy parties, etc.;
- noise resulting from gathering of people at facilities such as restaurants, fairs and parks; and
- activities related to essential services and maintenance of public facilities such as, but not limited to, roadways, parks and sewers, snow removal, road cleaning, road repair and maintenance, lawn mowing and maintenance, sewage removal, garbage collection.

(6) Sources not requiring noise impact assessment

Noise sources, equipment, activities or facilities connected with emergency measures undertaken for:

- the immediate health, safety or welfare of inhabitants; and
- the preservation or restoration of property; unless such noise is clearly of a longer duration or nature more disturbing than is reasonably necessary for the accomplishment of such emergency purpose;

are exempt from the application of the limits in Part B and Part C of this guideline.

"Time periods" (applicable to stationary sources)

- "Daytime": is the 12-hour period between 07:00 and 19:00 hours;
- "Evening": is the 4-hour period between 19:00 and 23:00 hours; and
- "Nighttime": is the 8-hour period between 23:00 and 07:00 hours.

"Time periods" (applicable to transportation sources)

- "Daytime": is the 16-hour period between 07:00 and 23:00 hours; and
- "Nighttime": is the 8-hour period between 23:00 and 07:00 hours.

"Urban hum"

means aggregate sound of many unidentifiable noise sources due to the activities of people and primarily composed of road traffic related sound sources.

"Warning clause"

means a notification of or obligation to notify a potential purchaser or tenant of a potential annoyance due to an existing source of environmental noise. When circumstances warrant, agreements that are registered on title to the lands in question should incorporate provisions for using warning clauses. Warning clauses would be included in agreements of Offers of Purchase and Sale, lease/rental agreements and condominium declarations. Alternatively, easements in respect of noise may also be appropriate in some circumstances.

"Window on a noise sensitive space"

means windows on an exterior façade of a noise sensitive space.

Other technical terms are defined in Publication NPC-101, Reference [27].

A6 Legislative Background

This guideline is used to support the legislation noted below, in the context of environmental noise.

A6.1 Environmental Protection Act

The Environmental Protection Act, Reference [7], is the key legislation for environmental protection. The Environmental Protection Act grants the MOE broad powers to deal with the discharge of contaminants which cause negative effects. The definition of "contaminant" includes sound. The Environmental Protection Act specifically: prohibits the discharge of any contaminants into the environment which cause or are likely to cause negative effects - and in the case of some approved contaminants requires that they must not exceed MOE approved and regulated limits. The issuance of approvals is one of the means by which the MOE achieves its environmental protection objectives. MOE approvals are required for facilities that

release emissions to the atmosphere, discharge contaminants to ground and surface water, or provide potable water supplies or for a renewable energy project.

A6.2 Environmental Assessment Act

The Environmental Assessment Act, Reference [5], requires an environmental assessment of any major public sector undertaking that has the potential for significant environmental effects. This includes public roads, transit, wastewater and stormwater installations. Environmental assessments determine the ecological, cultural, economic and social impact of the project. Noise impacts are also considered in the environmental assessment process. Environmental assessment is a key part of the planning process and must be completed before decisions are made to proceed on a project. The requirement for environmental assessments does not apply to major private sector projects unless so designated by regulation.

The purpose of the Environmental Assessment Act is to "provide for the protection, conservation, and wise management of Ontario's environment." It mandates clear terms of reference, focused assessment hearings, ongoing consultation with all parties involved — including public consultation — and, if necessary, referral to mediation for decision. Environmental assessment is a key part of the land use planning process and must be completed before decisions are made to proceed with a project.

A6.3 Planning Act

The Planning Act, Reference [25], establishes the rules for land use planning in Ontario. It sets out, among other matters, the process for local planning administration, the preparation of municipal Official Plans to guide future development, the regulation of land use and development through zoning, site plan control and development permit system by-laws, plans of condominium, the division of land by severances and plan of subdivision and the role of Ontario citizens and landowners in land use planning.

Planning policies in Official Plans; zoning, site plan control and development permit system by-laws; and other instruments issued under the Planning Act may require the provision of information in order to assess the effects of noise emissions from potential sources and the impacts on noise sensitive land uses. The NPC guidelines may be used to assess the land use compatibility of sources or facilities and sensitive land uses and implement the objectives of the Planning Act and provincial plans and policies.

The Planning Act provides for the issuance of formal policy statements that provide policy direction on matters of provincial interest related to land use planning and development. The Provincial Policy Statement, 2005, Reference [26], issued under the Planning Act directs, among other things, that major facilities (such as airports, transportation/transit/rail infrastructure systems and corridors, intermodal facilities, sewage treatment facilities, waste management systems, oil and gas pipelines, industries and resource extraction activities) and sensitive uses are appropriately

designed, buffered and/or separated from each other to prevent adverse effects. The Provincial Policy Statement further directs that healthy, liveable, and safe communities are sustained by, among other things, avoiding development and land use patterns that may cause environmental or public health and safety concerns. The Provincial Policy Statement also includes other policies which may need to be considered, for example, the employment lands policies, policies protecting infrastructure corridors and protecting transportation systems, and policies for the wise use and management of resources.

A6.4 Municipal Act

The Municipal Act, Reference [19], empowers municipalities to enact noise by-laws to control sound (noise). The NPC guidelines are included by municipalities in many municipal noise by-laws enacted under the Municipal Act.

A6.5 Aggregate Resources Act

The NPC guidelines are utilized by the Ministry of Natural Resources in the licensing and permitting process for quarries and pits issued under the Aggregate Resources Act, Reference [1].

A6.6 Farming and Food Production Protection Act

The Farming and Food Production Protection Act, 1998, Reference [9], addresses, among other things, noise sources for agricultural operations. The NPC guidelines do not apply to noise sources from agricultural operations during the course of normal farm practice, which are subject to the Farming and Food Production Protection Act, 1998.

A6.7 Niagara Escarpment Planning and Development Act

The purpose of the Niagara Escarpment Planning and Development Act, Reference [20], is to provide for the maintenance of the Niagara Escarpment and land in its vicinity substantially as a continuous natural environment, and to ensure only such development is compatible with that natural environment.

The Niagara Escarpment Commission makes decisions on applications to amend the Niagara Escarpment Plan regarding land use planning matters and on the issuance of Development Permits within the Niagara Escarpment Planning Area.

A7 Noise Pollution Control Guidelines

The Noise Pollution Control (NPC) guidelines can be divided into two fundamental categories. The first category contains procedural guidelines that provide measurement and calculation procedures, instrumentation specifications and applicable definitions.

References [2], [8], [10], [16], [10], [23], [27], [28], [29] and [33] are the procedural guidelines. The second category contains criteria guidelines that provide the applicable noise level limits and/or vibration limits or emission standards. References [14], [21], [22], [31] and [32], as well as this guideline, are the criteria guidelines.

A8 Sound Level Limits

The limits in Part B and Part C of this guideline have been designed based on the principle that sound levels complying with the limits minimize the potential for adverse effects from noise. They are intended to provide guidance for the planning of land uses where noise may have a potential impact.

Part B STATIONARY SOURCES

B1 General

Part A needs to be read in conjunction with this Part.

B1.1 Scope

Part B provides sound level limits for stationary sources affecting points of reception in noise sensitive land uses. The limits apply to the assessment of existing, planned, new, expanded or modified stationary sources of sound in compliance with section 9 and section 47.3 of the Environmental Protection Act. The limits would also be applied when Environmental Compliance Approvals are issued under Part II.1 of the Environmental Protection Act. Part B provides the operational requirements applied to MOE approvals for noise emissions from stationary sources. The sound level limits may also apply to noise-related incidents reported to the MOE, which are investigated to determine the potential for an adverse effect, in contravention of section 14 of the Environmental Protection Act. The sound level limits will also be applied in decisions made under the provisions of the Environmental Assessment Act.

In addition, this guideline is intended for other agencies and ministries that exercise a similar decision-making authority under other legislation, such as licensing and permitting by the Ministry of Natural Resources under the Aggregate Resources Act.

B1.2 Responsibility

In the context of applying for MOE approval, it is the responsibility of the owner of a stationary source to comply with the applicable sound level limits.

B2 Noise Impact Studies

Noise impact studies are to be prepared by qualified individuals with experience in environmental acoustics, preferably Professional Engineers. Noise impact studies are required by the MOE in the context of an application for an MOE approval. The MOE guidance for applying for approvals includes the requirements for noise impact studies. Other approval authorities may have similar requirements.

B3 Noise Impact Assessment

The impact assessment of noise produced by stationary sources is done by either prediction or measurement, or a combination of both. The noise impact assessment descriptor is the One-Hour Equivalent Sound Level (L_{eq}), and the noise impact is evaluated at representative points of reception.

B3.1 Procedures

All sound level measurements and calculations need to be made in accordance with References [16], [17], [24], [28], [29], [30], [33] and [34] or other methods/models that are acceptable to the MOE.

For purposes of establishing compliance with the stationary source plane of window sound level limits, the assumption will be made that one or more windows, associated with noise sensitive spaces, are located on each floor level of any façade of a noise sensitive land use with a full or partial view (exposure) to a stationary source.

Exceptions to the above can be made when it can be demonstrated that specific windows are not associated with noise sensitive spaces and that the architectural design is not amenable to converting the associated space to being noise sensitive. For example:

a) inoperable windows to a single loaded corridor serving a high-rise multi-unit building need not comply with plane of window sound level limits.

b) plane of window limits do not apply to the glazing of enclosed noise buffer where it can be shown that the plane of window sound level limits will be met at the windows of noise sensitive spaces protected by the enclosed noise buffer.

B4 Establishment of Sound Level Limits – Objective

The sound level limit at a point of reception is set as the higher of either the applicable exclusion limit, or the minimum background sound level that occurs or is likely to occur during the time period corresponding to the operation of the stationary source under impact assessment.

B5 Background Sound Levels

Background sound levels, defined in Part A, are typically caused by road traffic, except in areas well removed from the activities of people. Sound from existing adjacent stationary sources may be included in the determination of the background One-Hour Equivalent Sound Level (L_{eq}) if such stationary sources of sound have the appropriate approvals and are not under consideration for noise abatement by the municipality or the MOE.

Highly intrusive short duration noise caused by a source such as an aircraft fly-over or a train (including light rail transit, subways and streetcars) pass-by is normally excluded from the determination of the background sound level, subject to exceptions identified in the definition of background sound level in Part A.

If the background sound level is to be established by means of monitoring, the monitoring should be performed over a minimum period of 48 hours and should be conducted during times when the background sound level is at its lowest level. The lowest hourly L_{eq} value should be selected to represent the background sound level.

In general, the sound level data included in an impact assessment needs to be representative of the background conditions and the predictable worst case noise impact from the stationary source.

B6 Sound Levels Due to Stationary Sources

(1) Approval of Stationary Sources

The One-Hour Equivalent Sound Level (L_{eq}) and/or the Logarithmic Mean Impulse Sound Level (L_{LM}) produced by the stationary sources are to be obtained by measurement and/or prediction. The estimation of the L_{eq} and/or L_{LM} of the stationary source under impact assessment needs to reflect the principle of predictable worst case noise impact. The predictable worst case noise impact at a point of reception is defined in Part A of this guideline as the greatest noise impact relative to the limit in any hour.

(2) Complaint Investigation of Stationary Sources

The One-Hour Equivalent Sound Level (L_{eq}) and/or the Logarithmic Mean Impulse Sound Level (L_{LM}) produced by the existing stationary sources are to be obtained by measurements taken in accordance with the procedures described in Section B3.1.

B7 Sound Level Limits – General

Note that the sound level limits in this Part B are the same as those presented in Part C for the planning of new noise sensitive land uses.

In principle, the objective of complying with the plane of window limits in Table B-1 and Table B-2 is to be protective of noise sensitive spaces, i.e., indoor areas. This objective of protecting indoor areas should be considered in the noise impact assessment when the building façade includes ventilation devices or openings that may reduce the transmission loss and compromise the indoor noise environment.

B7.1 Steady and Varying Sound – Outdoors and Plane of Window

For sound from a stationary source including Quasi-Steady Impulsive Sound but not including other impulsive sound, the sound level limit at a point of reception, expressed in terms of the One-Hour Equivalent Sound Level (L_{eq}) is the higher of the applicable exclusion limit value given in Table B-1 or Table B-2, or the background sound level

for that point of reception. The outdoor sound level limits for stationary sources apply only to daytime and evening (07:00 – 23:00 hours). Sound level limits apply during the nighttime period (23:00 – 07:00) for the plane of the window of a noise sensitive space. In general, the outdoor points of reception will be protected during the nighttime as a consequence of meeting the sound level limits at the adjacent plane of window of noise sensitive spaces.

Note that for Class 1, 2 and 3 areas, the plane of window limits apply to a window that is assumed to be open. For Class 4 areas, the plane of window limits apply to a window which is assumed to be closed. This distinction does not affect the prediction of plane of window sound levels.

Table B-1
Exclusion Limit Values of One-Hour Equivalent Sound Level (L_{eq}, dBA)
Outdoor Points of Reception

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	55
19:00 – 23:00	50	45	40	55

Table B-2
Exclusion Limit Values of One-Hour Equivalent Sound Level (L_{eq}, dBA)
Plane of Window of Noise Sensitive Spaces

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	60
19:00 – 23:00	50	50	40	60
23:00 – 07:00	45	45	40	55

B7.2 Impulsive Sound – Outdoors and Plane of Window

For impulsive sound, other than Quasi-Steady Impulsive Sound, from a stationary source, the sound level limit at a point of reception expressed in terms of the Logarithmic Mean Impulse Sound Level (L_{LM}) is the higher of the applicable exclusion limit value given in Table B-3 or Table B-4, or the background sound level for that point of reception. The outdoor sound level limits for stationary sources apply only to daytime and evening (07:00 – 23:00 hours). Sound level limits apply during the nighttime period (23:00 – 07:00) for the plane of the window of a noise sensitive space. In general, the outdoor points of reception will be protected during the nighttime as a consequence of meeting the sound level limits at the adjacent plane of window of noise sensitive spaces.

Notwithstanding Publication NPC-103, Reference [29], the following sound level limits in Table B-3 and Table B-4 below apply to impulsive sound:

Table B-3
Exclusion Limit Values for Impulsive Sound Level (L_{LM}, dBAI)
Outdoor Points of Reception

Time of Day	Actual Number of Impulses in Period of One-Hour	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 23:00	9 or more	50	50	45	55
	7 to 8	55	55	50	60
	5 to 6	60	60	55	65
	4	65	65	60	70
	3	70	70	65	75
	2	75	75	70	80
	1	80	80	75	85

Table B-4
Exclusion Limit Values for Impulsive Sound Level (L_{LM}, dBAI)
Plane of Window – Noise Sensitive Spaces (Day/Night)

Actual Number of Impulses in Period of One-Hour	Class 1 Area (07:00–23:00)/ (23:00–07:00)	Class 2 Area (07:00–23:00)/ (23:00–07:00)	Class 3 Area (07:00–19:00)/ (19:00–07:00)	Class 4 Area (07:00–23:00)/ (23:00–07:00)
9 or more	50/45	50/45	45/40	60/55
7 to 8	55/50	55/50	50/45	65/60
5 to 6	60/55	60/55	55/50	70/65
4	65/60	65/60	60/55	75/70
3	70/65	70/65	65/60	80/75
2	75/70	75/70	70/65	85/80
1	80/75	80/75	75/70	90/85

B7.3 Sound Level Limits for Emergency Equipment

The sound level limits for noise produced by emergency equipment operating in non-emergency situations, such as testing or maintenance of such equipment, are 5 dB greater than the sound level limits otherwise applicable to stationary sources, described in Sections B7.1 and B7.2.

The noise produced by emergency equipment operating in non-emergency situations should be assessed independently of all other stationary sources of noise. Specifically, the emissions are not required to be included with the overall noise assessment of a stationary source facility.

In addition, sound level limits do not apply to emergency equipment operating in emergency situations.

B7.4 Sound Level Limits for Layover Sites

The sound level limit for noise from a layover site in any hour, expressed in terms of the One-Hour Equivalent Sound Level (L_{eq}) is the higher of either 55 dBA or the background sound level.

B8 Noise Impact Assessment – Multiple Sources

Impulse sources, non-impulse sources and emergency equipment are to be analyzed separately. Where there are multiple, non-impulse sources at a stationary source, the noise assessment needs to be based on the combined effect of all sources comprising the stationary source, added together on an energy basis.

B9 Determination of Area Class

Area classification refers to the receptor location.

B9.1 Class 1, 2 and 3 Areas

Determination of whether an area is Class 1, 2 or 3 can usually be done by determining the proximity of the point of reception to roads, the volumes of road traffic (and associated sound levels), and the nature of land uses and activities (or lack thereof) in the area, as a function of time.

B9.2 Class 4 Area

Class 4 area classification is based on the principle of formal confirmation of the classification by the land use planning authority. Such confirmation would be issued at the discretion of the land use planning authority and under the procedures developed by the land use planning authority, in the exercise of its responsibility and authority under the Planning Act.

The following considerations apply to new noise sensitive land uses proposed in a Class 4 area:

- an appropriate noise impact assessment should be conducted for the land use planning authority as early as possible in the land use planning process that verifies that the applicable sound level limits will be met;
- noise control measures may be required to ensure the stationary source complies with the applicable sound level limits at the new noise sensitive land use;

- noise control measures may include receptor based noise control measures and/or source based noise control measures;
- source based noise control measures may require an MOE approval;
- receptor based noise control measures may require agreements for noise mitigation, as described in Part A of this guideline;
- prospective purchasers should be informed that this dwelling is located in a Class 4 area through appropriate means and informed of the agreements for noise mitigation. Registration on title of the agreements for noise mitigation is recommended. Additionally, registration on title of an appropriate warning clause to notify purchasers that the applicable Class 4 area sound level limits for this dwelling are protective of indoor areas and are based on the assumption of closed windows, such as warning clause F in Section C8.3 is also recommended; and
- any final agreements for noise mitigation as described in Part A of this guideline and all other relevant documentation are to be submitted to the MOE by the stationary source owner(s) when applying for an MOE approval. These agreements will be assessed during the review of the application for MOE approvals. Additionally, the stationary source owner(s) are to include a copy of the formal confirmation of the Class 4 area classification from the land use planning authority in the application for an MOE approval.

B9.3 Area Classification Issues

Once an area is classified, the same classification and the related sound level limits apply to the land use planning approval of the noise sensitive land use as well as to the MOE approval of the stationary source.

Where a noise sensitive land use in a Class 4 area has been approved in proximity to a stationary source, the proponent or the land use planning authority should provide a copy of the approved noise impact study for the noise sensitive land use to the owners of the stationary source(s). The formal confirmation of the area classification from the land use planning authority should also be provided. This will allow the owners of the stationary source(s) to use the appropriate classification and sound level limits in applications for MOE approvals.

Once a site or area is classified as Class 4 it would remain Class 4, subject to the continuing presence of the stationary source(s). Adjacent or other nearby existing noise sensitive land uses which may be classified as a Class 1 or Class 2 area would not be reclassified until these existing noise sensitive land uses are replaced, redeveloped or rebuilt. When an existing noise sensitive land use that is classified as a Class 1 or Class 2 area is replaced, redeveloped or rebuilt, the proposed new noise sensitive land uses may be classified as a Class 4 area.

B10 Noise Control Measures

The preferred and normally the most economical and practical noise control option is the use of source based noise control measures implemented on the property of the stationary source, as described in the definition of noise control measures in Part A of this guideline.

In addition, subject to an agreement described below, the following receptor based noise control measures are acceptable for implementation at the noise sensitive land use:

1. Receptor based outdoor noise control measures.
2. Receptor based site configuration noise control measures.
3. Receptor based "on building" noise control measures, under the condition that the noise sensitive land use is classified as a Class 4 area.

Should the receptor based noise control measures be used, their implementation and maintenance should be included in an agreement for noise mitigation as described in Part A of this guideline.

B11 Development of Adjacent Lands

Where a site in proximity to a stationary source is in the process of being developed or redeveloped for noise sensitive land uses (such as residential), it is considered the responsibility of the proponent/developer of the noise sensitive land use to ensure compliance with the applicable sound level limits and for this responsibility to be reflected in the land use planning decisions.

The land use planning and approval process for the new noise sensitive land use may involve several authorities and levels of approval. Involvement by the owner of the stationary source in the land use planning process is highly recommended when an adjacent new noise sensitive land use is proposed.

A cooperative effort on the part of the proponent of a new noise sensitive land use and the stationary source owner is desirable for both parties. For the proponent of the new noise sensitive land use, cooperation may result in more economical noise control measures. For the owner of the stationary source, cooperation may facilitate input into the design of the proposed new noise sensitive land use and the noise mitigation that may be appropriate for land use compatibility.

Part C LAND USE PLANNING

C1 General

Part A needs to be read in conjunction with this Part.

C1.1 Scope

Part C of this guideline is guidance provided by MOE for land use planning purposes. The guidance relates to the transportation sources of noise and stationary sources of noise in the land use planning process. When this guidance relates to the noise impact of stationary sources that are subject to the Environmental Protection Act, the guidance is provided in the context of a potential application for an MOE approval.

The primary role of the MOE is to issue approvals required by the Environmental Protection Act. The MOE has no authority under the Planning Act regarding the land use planning approval process. The guidance is intended to provide a common framework for land use planning authorities, developers and consultants to address environmental noise in the land use planning process. The guidance also provides assistance in creating compatibility between noise sensitive land uses and stationary sources with respect to noise. Guidance on supplementary sound level limits for new developments that are not formally considered noise sensitive land uses in the land use planning approval process is also presented.

Part C includes sound level limits for assessment of the noise impact on proposed noise sensitive land uses and specifies procedures to determine sound levels on the site of proposed noise sensitive land uses due to transportation sources and stationary sources. Suitable noise control measures are described.

Responsibilities are described for ensuring sound level limits are met. Guidance in the form of appropriate land use planning criteria and procedures is provided for development of noise sensitive land uses in proximity to industrial or commercial activities.

The objectives of noise assessments conducted as part of the land use planning approval process for the development or introduction of noise sensitive land uses, are as follows:

(1) to create a suitable acoustical environment for the protection of users/occupants/residents of the proposed noise sensitive land uses;

(2) to protect the lawful operations of any stationary source(s) located close to a proposed noise sensitive land use (stationary sources need to be able to maintain compliance with the legal requirements of their MOE approval, when the development of new noise sensitive land uses are introduced in their proximity);

(3) to protect existing and/or formally approved transportation corridors and transportation sources of noise when the development of new noise sensitive land uses are introduced in their proximity; and

(4) to create compatible land uses and avoid potential adverse effects due to noise.

C1.2 Implementation

C1.2.1 Implementation by the Land Use Planning Authority

This guideline is intended for use by land use planning authorities that exercise decision-making authority under the Planning Act in the preparation of local noise policies/guidelines, Official Plans, Official Plan Amendments, comprehensive zoning by-laws, zoning by-law amendments, plans of subdivisions, plans of condominiums, and other applications under the Planning Act, as well as other legislation which involves elements of land use planning (e.g., Aggregate Resources Act and Niagara Escarpment and Development Act).

C1.2.2 Technical Procedures

Specific information on the technical implementation procedures are found in other publications, listed in References in Part A. Reference [3] provides information regarding the use of warning clauses.

C1.3 Responsibility

C1.3.1 General

It is considered the responsibility of the proponent of a new noise sensitive land use to ensure compliance with the applicable sound level limits and for these responsibilities to be reflected in land use planning decisions. The proponent's responsibilities include, but are not limited to:

(1) determining the feasibility of the project;

(2) assessing outdoor and indoor acoustical environments, as appropriate;

(3) investigation of feasible means of noise impact mitigation;

(4) ensuring that the required noise control measures are incorporated in the development; and

(5) describing the technical details, and clarifying the responsibility for the implementation and maintenance, of the required noise control measures.

C1.3.2 Noise Impact of Stationary Sources

Stationary sources will be required to demonstrate compliance with the applicable sound level limits at the surrounding points of reception when an application is submitted for an MOE approval. Changes to the surrounding points of reception can occur when land use planning decisions are made to establish a new noise sensitive land use. These land use planning decisions can affect the ability of a stationary source to comply with the applicable limits. The land use planning approval authority should ensure that the stationary source will be able to continue to comply with the applicable sound level limits when making new land use planning decisions.

Where practicable, the preferred mitigation option is a reduction of noise emissions at the stationary source by modifying the design or the operation of the source, or by implementing noise control measures directly at the source. A cooperative effort on the part of the proponent and the stationary source owner is desirable.

The implementation of noise control measures for the mitigation of the noise impact of the stationary sources should be specified in agreements, involving the proponent of the new noise sensitive land use, the owner of the stationary source and the land use planning authority, see Section C7.6.

C2 Noise Impact Studies

Feasibility and/or detailed noise impact studies are recommended and may be required by the land use planning authority to support the development application for a noise sensitive land use proposal. These studies are submitted to the land use planning authority.

The objective of the feasibility study is to establish the feasibility of the proposal in the context of site design and the extent/cost of noise control measures such as barriers, ventilation requirements and building components. Feasibility studies should be undertaken early in the land use planning process and, subject to the policies of the land use planning authority, submitted with the initial proposal and reviewed for acceptance as early as possible in the land use planning approval process for the proposed development. For example, feasibility studies should be reviewed for acceptance prior to adoption of Official Plan Amendments, zoning by-law amendments or subdivision or condominium Draft Plan approval.

The feasibility study should assess the site layout including the roadways and orientation of the buildings, and consider the zoning of land uses including industrial, commercial, high, low and medium density residential use. The study should alert the proponent and the land use planning authority of the potential for conflicting land uses and determine the practicality and economic feasibility of physical noise control measures, in conjunction with the selected site design. Furthermore, the study should include direction on the need for additional detailed studies and provide direction on

when the required noise control measures are to be implemented. In situations where the feasibility study demonstrates that the proposal is feasible, detailed studies may be requested by the land use planning authority. For example, the land use planning authority may request detailed studies as a condition of development approval.

The purpose of the detailed study is to assess the impact of all noise sources affecting the development proposal and determine the appropriate layout, design and required noise control measures. It is the responsibility of the land use planning authority to determine the appropriate procedures to be used in the land use planning process. The land use planning authority may, for example, address the need for detailed noise studies through draft approval, site plan and/or other mechanisms. The detailed study should include details of assessment methods, summarize the results and recommend noise control measures and maintenance procedures, where required.

Noise impact studies should be prepared by qualified individuals with experience in environmental acoustics; preferably Professional Engineers.

C2.1 Noise from Aircraft

The requirements for noise impact studies are generally identified in the policies of the land use planning authorities. Detailed noise studies may be required for new noise sensitive land use proposals that are located at or above Noise Exposure Forecast/Noise Exposure Projection 25 (NEF/NEP 25) contours. It should be noted that certain airport facilities and activities such as mechanical systems serving terminals are considered as stationary sources of noise.

C2.2 Noise from Surface Transportation

The requirements for feasibility and/or detailed noise impact studies are generally identified in the policies of the land use planning authorities.

Noise impact studies are recommended to specify the applicable noise control measures to ensure compliance with the sound level limits.

C2.3 Noise from Stationary Sources

Feasibility noise impact studies and detailed noise impact studies are recommended and are generally required by the land use planning authority whenever a proposed new noise sensitive land use is within the influence area of a stationary source of noise. The extent of the influence area is case-specific, depending on factors such as the type and scale of the stationary source, surrounding topography and intervening land uses. In general, it is in the interest of the proponent of a proposed new noise sensitive land use to conduct a feasibility study early in the land use planning process.

C3 Noise Impact Assessment – Transportation Sources

This Section deals with noise impact from transportation sources; road, rail and air traffic sources.

C3.1 Introduction

In the case of multiple transportation noise sources:

(1) the outdoor noise impact due to aircraft should be established separately from the impact due to road and/or rail traffic;

(2) the outdoor noise impact due to road and rail traffic should be combined; and

(3) the indoor noise impact should be assessed separately for road, rail and aircraft noise. The indoor noise control measures that are suitable for the multiple source impact should then be defined by a combined acoustical insulation parameter that is evaluated by combining the acoustical insulation parameters determined for each of the sources, on a logarithmic (energy) basis.

In all cases, consideration should be given to future sound levels. For road and rail noise, a minimum 10-year prediction is generally considered appropriate. Specific guidance on the requirements for predicting future sound levels for road and rail should be sought from the land use planning authority. For aircraft noise, the current NEF/NEP contours should be applied unless the airport authority has prepared NEF/NEP contours for a future date, in which case the future predicted contours should be used.

When a type of indoor space is not specifically identified in the sound level limit tables, the sound level limits for an analogous space should be applied.

Noise warning clauses may be used to warn of excesses above the sound level limits. Additional guidance on the use of noise warning clauses is provided in Section C7.1.1, Section C7.1.2.1, Section C7.1.2.2, Section C7.3 and Section C7.4.

C3.2 Road Traffic Noise

C3.2.1 Method

The assessment of road traffic noise impact, if required by the land use planning authority, is evaluated by prediction using statistically averaged road traffic information, based on the higher of the AADT (Annual Average Daily Traffic) or SADT (Summer Average Daily Traffic). The commonly used prediction method for road traffic noise, as recommended by MOE, is a method entitled ORNAMENT, Ontario Road Noise Analysis Method for Environment and Transportation, published in 1989 by MOE, as amended from time to time, Reference [24]. The descriptors are the 16-hour daytime and the 8-hour nighttime equivalent sound levels, L_{eq} (16) and

L_{eq} (8). For complete description on assessing road traffic impacts, refer to ORNAMENT. Other traffic noise prediction models have been and are being developed by various authorities and may be adopted from time to time for use in Ontario by the MOE.

In order to be consistent with MOE guidelines, the sound level should be assessed in an OLA, such as a rear yard or a patio, and in indoor living areas, such as bedrooms and living rooms. Where the noise impact exceeds the applicable sound level limits, mitigation measures such as site planning, architectural design, noise barriers, building envelope elements (windows, exterior walls, doors) with upgraded sound isolation performance and/or central air conditioning may be required. Noise control measures are not required if the sound level estimated in the OLA is 55 dBA or less during the daytime and 50 dBA or less in the plane of bedroom windows during either daytime or nighttime.

C3.2.2 Daytime Outdoor Sound Level Limit

Table C-1 gives the equivalent sound level (L_{eq}) limit for designated OLAs. The limit applies to the entire daytime period from 07:00 to 23:00.

Table C-1
Sound Level Limit for Outdoor Living Areas
Road and Rail

Time Period	L_{eq} (16) (dBA)
16-hour, 07:00 – 23:00	55

C3.2.3 Indoor Sound Level Limits

Table C-2 gives the equivalent sound level (L_{eq}) limits and the applicable time periods for the indicated types of indoor spaces. The specified indoor sound level limits are maxima and apply to the indicated indoor spaces with windows and doors closed.

Table C-2
Indoor Sound Level Limits
Road and Rail

Type of Space	Time Period	L_{eq} (dBA)	
		Road	Rail
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	07:00 – 23:00	45	40
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	23:00 – 07:00	45	40
Sleeping quarters	07:00 – 23:00	45	40

Type of Space	Time Period	L_{eq} (dBA)	
	23:00 – 07:00	40	35

C3.3 Rail Traffic Noise

C3.3.1 Method

The assessment of rail traffic noise impact should be conducted using a prediction method entitled STEAM, Sound from Trains Environmental Analysis Method, published in 1990 by MOE, Reference [34]. The descriptors used in the assessment are the 16-hour daytime and the 8-hour nighttime equivalent sound levels, L_{eq} (16) and L_{eq} (8). Other traffic noise prediction models have been and are being developed by various authorities and may be adopted from time to time for use in Ontario by the MOE.

The impact of railway traffic noise and the requirement for noise control measures should be assessed similarly to road traffic noise. The sound level should be assessed in an OLA, such as a rear yard or a patio, and in indoor living areas, such as bedrooms and living rooms, and compared with MOE guidelines. Noise control measures are not required if the sound level estimated in the OLA is 55 dBA or less during the daytime and 50 dBA or less in the plane of bedroom windows during daytime or nighttime.

C3.3.2 Daytime Outdoor Sound Level Limit

The outdoor noise impact should be assessed in the OLA during daytime hours, 07:00 to 23:00, considering a combination of only two sources of rail traffic noise, namely the locomotive and the wheel-rail interaction. Whistle noise is not included in the outdoor noise impact assessment. Table C-1 gives the equivalent sound level (L_{eq}) limit for OLAs.

C3.3.3 Indoor Sound Level Limits

The indoor assessment should consider the combination of all three railway noise sources, i.e., locomotive, wheel-rail and whistle. Table C-2 gives the equivalent sound level (L_{eq}) limits for the indicated types of indoor space. The specified indoor sound level limits are maxima and apply to the indicated indoor spaces with windows and doors closed.

A major characteristic of railway noise is its high pass-by sound level for short periods and a major low frequency component produced by the operation of the diesel locomotive. This special character of the sound should be taken into account, particularly when assessing the indoor sound levels. Consequently, in order to account for the special character of railway sound, the indoor sound level limits for rail noise, Table C-2, are 5 dBA lower than the indoor sound level limits for road traffic noise.

This difference results in a requirement for acoustically superior architectural components such as windows and walls, for railway noise.

C3.4 Air Traffic Noise

C3.4.1 Method

Aircraft noise impact assessment is based on Noise Exposure Forecast/Noise Exposure Projection (NEF/NEP) contours determined by methods approved by Transport Canada.

Where the noise impact exceeds the applicable limits, warning clauses and mitigation measures for indoor spaces such as architectural design, special building components and/or central air conditioning may be required. The indoor NEF/NEP values, specified in Table C-4 and Table C-10, are related to the outdoor values and the acoustical insulation provided by the building. The indoor NEF values can be calculated by converting the indoor sound levels, expressed as L_{eq} (24) (dBA), using the expression NEF = L_{eq} (24) - 31 dBA.

Section 1.6.7.2 of the 2005 Provincial Policy Statement, Reference [26], establishes the applicable development criterion. With the exception of redevelopment or infilling, Section 1.6.7.2 of the 2005 Provincial Policy Statement, Reference [26], prohibits new residential development and other sensitive land uses in aircraft noise zones above the NEF/NEP 30 contour. The noise impact on the proposed noise sensitive land use is determined based on the location of the noise sensitive land use with respect to the official NEF/NEP contours. NEF/NEP contours are usually available for major civil aviation airports from the airport authority. The more restrictive of the NEF and NEP contours would apply.

C3.4.2 Outdoor Limit

Table C-3 gives the aircraft noise limit in terms of an NEF/NEP value in any outdoor area, including the OLA. The limit applies to the entire 24-hour period. The distance separation from the airport and, consequently, the location of the noise sensitive land use with respect to the NEF/NEP contours, is the only measure that controls the outdoor noise impact.

Table C-3
Outdoor Aircraft Noise Limit

Time Period	NEF/NEP
24-hour	30

C3.4.3 Indoor Limits

Indoor aircraft noise limits in terms of NEF/NEP values for the indicated type of indoor space are provided in Table C-4. These limits apply to the indoor spaces with the windows and doors closed for the entire 24-hour period.

Table C-4
Indoor Aircraft Noise Limits
(Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
Living/dining/den areas of residences, hospitals, schools, nursing/retirement homes, daycare centres, etc.	5
Sleeping quarters	0

* The indoor NEF/NEP values in Table C-4 are used to determine acoustical insulation requirements based on the NEF/NEP contour maps.

C4 Noise Impact Assessment – Stationary Sources

This Section applies to the introduction of new noise sensitive land uses or the redevelopment of existing noise sensitive land uses within the potential influence area of existing or planned new stationary sources.

C4.1 General

The information and the sound level limits are the same for Part B and Part C of this guideline.

In comparison to noise from transportation sources, in many circumstances, noise from stationary sources may be controlled more effectively at the source. If noise control measures are recommended to reduce the noise impact, these measures should be designed in accordance with the following principles:

(1) communication and cooperation between the proponent of the noise sensitive land use and the stationary source owner are desirable and highly encouraged;

(2) where practicable, source mitigation is the preferred option;

(3) implementation of noise control measures at the source will typically require an MOE approval;

(4) the goal of implementing receptor based noise control measures at the noise sensitive land use is to ensure compliance with the sound level limits in this guideline;

(5) measures aimed at the indoor environment, such as air conditioning, which would allow windows to remain closed, are not considered relevant in a Class 1, 2 or 3

area because the sound level limits for stationary source sound levels apply to the outdoor planes of windows and windows are assumed to be open;

(6) the use of central air conditioning may be acceptable under special circumstances, or in a Class 4 area where central air conditioning forms an essential part of the overall building design; and

(7) the assessment of noise impact produced by stationary sources typically involves calculation of sound emissions from the sources, transmission and propagation of sound and the effect of intervening obstacles such as barriers. The calculations should account for the frequency characteristics of the noise source.

It should be noted that in addition to the sound level limits contained in Part C, the feasibility of a proposed noise sensitive land use development is also subject to the MOE D-Series Guidelines, References [12] and [13], particularly if emissions other than noise are involved.

Although some stationary sources listed in Part A are exempt from the requirements of Part B of this guideline, these stationary sources need to be included in noise impact assessments for land use planning purposes. Regardless of jurisdictional responsibility, all stationary sources of noise should be included in the environmental noise analyses, assessment and mitigation design for new sensitive land uses in accordance with Part C of this guideline.

C4.2 Procedures

The impact assessment of noise produced by stationary sources is done by either prediction or measurement, or a combination of both. The noise impact assessment descriptor is the One-Hour Equivalent Sound Level (L_{eq}), and the noise impact is evaluated at representative points of reception.

The sound levels anticipated at the site of a proposed noise sensitive land use should be established in accordance with References [16], [17], [24], [28], [29], [30], [33] and [34] including all the appropriate adjustments. The assessment of noise impact should reflect the predictable worst case noise impact, i.e., the greatest noise impact relative to the limit.

For purposes of establishing compliance with the stationary source plane of window sound level limits, the assumption should be made that one or more windows on each floor level of any façade are on a noise sensitive space with a full or partial view (exposure) to stationary sources.

Exceptions to the above may be made where it can be demonstrated that specific windows are not on noise sensitive spaces and that the architectural design is not amenable to converting the associated space to being noise sensitive. For example:

a) inoperable windows to a single loaded corridor serving a high-rise multi-unit building need not comply with plane of window sound level limits.

b) plane of window limits do not apply to the glazing of enclosed noise buffer where it can be shown that the plane of window sound level limits will be met at the windows of noise sensitive spaces protected by the enclosed noise buffer.

C4.3 Feasibility Assessment

Initial assessment of the new noise sensitive land use is advisable as early as possible in the land use planning process. The purpose of this initial assessment is to determine the feasibility of the new noise sensitive land use, particularly where it is in proximity to a stationary source. An assessment of the hourly equivalent sound level, L_{eq} (1), produced by the stationary source should be made at all relevant points of reception of the new noise sensitive land use anticipated to experience the greatest potential noise impacts from the stationary source. In most cases, this will be the points of reception closest to the stationary source. The proponent of the development should demonstrate the feasibility of meeting the sound level limits contained in Sections C4.5.1 and C4.5.2 of this guideline, and when appropriate, indicate the types of noise control measures that are needed. The proponent's commitment to implement the noise control measures should be included in the feasibility study. Feasibility should be determined early in the land use planning approval process to ensure that noise impact can be successfully (i.e., technically and economically) mitigated. References [13] and [26] provide further information regarding feasibility studies.

C4.4 Determination of Area Class

Area classification refers to the receptor location.

C4.4.1 Class 1, 2 and 3 Areas

Determination of whether an area is Class 1, 2 or 3 can usually be done by determining the proximity of the point of reception to roads, the volumes of road traffic (and associated sound levels), and the nature of land uses and activities (or lack thereof) in the area, as a function of time.

C4.4.2 Class 4 Area

Class 4 area classification is based on the principle of formal confirmation of the classification by the land use planning authority. Such confirmation would be issued at the discretion of the land use planning authority and under the procedures developed by the land use planning authority, in the exercise of its responsibility and authority under the Planning Act.

The following considerations apply to new noise sensitive land uses proposed in a Class 4 area:

- an appropriate noise impact assessment should be conducted for the land use planning authority as early as possible in the land use planning process that verifies that the applicable sound level limits will be met;
- noise control measures may be required to ensure the stationary source complies with the applicable sound level limits at the new noise sensitive land use;
- noise control measures may include receptor based noise control measures and/or source based noise control measures;
- source based noise control measures may require an MOE approval;
- receptor based noise control measures may require agreements for noise mitigation, as described in Part A of this guideline;
- prospective purchasers should be informed that this dwelling is located in a Class 4 area through appropriate means and informed of the agreements for noise mitigation. Registration on title of the agreements for noise mitigation is recommended. Additionally, registration on title of an appropriate warning clause to notify purchasers that the applicable Class 4 area sound level limits for this dwelling are protective of indoor areas and are based on the assumption of closed windows, such as warning clause F in Section C8.3 is also recommended; and
- any final agreements for noise mitigation as described in Part A of this guideline and all other relevant documentation are to be submitted to the MOE by the stationary source owner(s) when applying for an MOE approval. These agreements will be assessed during the review of the application for MOE approvals. Additionally, the stationary source owner(s) are to include a copy of the formal confirmation of the Class 4 area classification from the land use planning authority in the application for an MOE approval.

C4.4.3 Area Classification Issues

Once an area is classified, the same classification and the related sound level limits apply to the land use planning approval of the noise sensitive land use as well as to the MOE approval of the stationary source.

Where a noise sensitive land use in a Class 4 area has been approved in proximity to a stationary source, the proponent or the land use planning authority should provide a copy of the approved noise impact study for the noise sensitive land use to the owners of the stationary source(s). The formal confirmation of the area classification from the land use planning authority should also be provided. This will allow the owners of the stationary source(s) to use the appropriate classification and sound level limits in applications for MOE approvals.

Once a site or area is classified as Class 4 it would remain Class 4, subject to the continuing presence of the stationary source(s). Adjacent or other nearby existing noise sensitive land uses which may be classified as a Class 1 or Class 2 area would not be

reclassified until these existing noise sensitive land uses are replaced, redeveloped or rebuilt. When an existing noise sensitive land use that is classified as a Class 1 or Class 2 area is replaced, redeveloped or rebuilt, the proposed new noise sensitive land uses may be classified as a Class 4 area.

C4.5 Sound Level Limits – General

Note that the sound level limits in this Part C are the same as those presented in Part B for the MOE approval requirements for stationary sources of noise.

The outdoor sound level limits described in Section C4.5 apply to points of reception at outdoor locations defined in the point of reception definition in Part A. The selection of the location is based primarily on the principle of predictable worst case noise impact. A further criterion that may be applied to the selection of a point of reception is that the location be in a usable area. Where it can be clearly demonstrated that a particular area is unusable or unsuitable for use, locations within that area may be excluded from the application of potential points of reception. Examples of potentially unusable areas are driveways leading to parking garages or parking lots for high-rise multi-unit buildings.

The above usability criterion should be generally considered early in the planning process of a new development and should relate to specific design configurations proposed in land use planning stages, rather than during a later stage when the noise impact assessment considers points of reception.

The plane of a window sound level limits, Sections C4.5.1 and C4.5.2, apply to a location in the plane of any window on a noise sensitive space. The limits are not required to be applied to windows in noise insensitive areas such as staircases, corridors, bathrooms, closets, utility rooms, etc., that are fully partitioned from noise sensitive spaces.

In principle, the objective of complying with the plane of window limits in Table C-5 and Table C-6 is to be protective of noise sensitive spaces, i.e. indoor areas. This objective of protecting indoor areas should be considered in the noise impact assessment when the building façade includes ventilation devices or openings that may reduce the transmission loss and compromise the indoor noise environment.

C4.5.1 Steady and Varying Sound – Outdoors and Plane of Window

For sound from a stationary source, including Quasi-Steady Impulsive Sound but not including other impulsive sound, the sound level limit at a point of reception, expressed in terms of the One-Hour Equivalent Sound Level (L_{eq}) is the higher of the applicable exclusion limit value given in Table C-5 or Table C-6, or the background sound level for that point of reception. The outdoor sound level limits for stationary sources apply only to daytime and evening (07:00 – 23:00 hours). Sound level limits apply during the nighttime period (23:00 – 07:00) for the plane of the window of a noise sensitive space. In general, the outdoor points of reception will be protected during the nighttime as a

consequence of meeting the sound level limits at the adjacent plane of window of noise sensitive spaces.

Note that for Class 1, 2 and 3 areas, the plane of window limits apply to a window that is assumed to be open. For Class 4 areas, the plane of window limits apply to a window which is assumed to be closed. This distinction does not affect the prediction of plane of window sound levels.

Table C-5
Exclusion Limit Values of One-Hour Equivalent Sound Level (L_{eq}, dBA)
Outdoor Points of Reception

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	55
19:00 – 23:00	50	45	40	55

Table C-6
Exclusion Limit Values of One-Hour Equivalent Sound Level (L_{eq}, dBA)
Plane of Window of Noise Sensitive Spaces

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	60
19:00 – 23:00	50	50	40	60
23:00 – 07:00	45	45	40	55

C4.5.2 Impulsive Sound – Outdoors and Plane of Window

For impulsive sound, other than Quasi-Steady Impulsive Sound, from a stationary source, the sound level limit at a point of reception expressed in terms of the Logarithmic Mean Impulse Sound Level (L_{LM}) is the higher of the applicable exclusion limit value given in Table C-7 or Table C-8, or the background sound level for that point of reception. The outdoor sound level limits for stationary sources apply only to daytime and evening (07:00 – 23:00 hours). Sound level limits apply during the nighttime period (23:00 – 07:00) for the plane of the window of a noise sensitive space. In general, the outdoor points of reception will be protected during the nighttime as a consequence of meeting the sound level limits at the adjacent plane of window of noise sensitive spaces.

Notwithstanding Publication NPC-103, Reference [29], the following sound level limits in Table C-7 and Table C-8 below apply to impulsive sounds:

Table C-7
Exclusion Limit Values for Impulsive Sound Level (L_{LM}, dBAI)
Outdoor Points of Reception

Time of Day	Actual Number of Impulses in Period of One-Hour	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 23:00	9 or more	50	50	45	55
	7 to 8	55	55	50	60
	5 to 6	60	60	55	65
	4	65	65	60	70
	3	70	70	65	75
	2	75	75	70	80
	1	80	80	75	85

Table C-8
Exclusion Limit Values for Impulsive Sound Level (L_{LM}, dBAI)
Plane of Window – Noise Sensitive Spaces (Day/Night)

Actual Number of Impulses in Period of One-Hour	Class 1 Area (07:00–23:00)/ (23:00–07:00)	Class 2 Area (07:00–23:00)/ (23:00–07:00)	Class 3 Area (07:00–19:00)/ (19:00–07:00)	Class 4 Area (07:00–23:00)/ (23:00–07:00)
9 or more	50/45	50/45	45/40	60/55
7 to 8	55/50	55/50	50/45	65/60
5 to 6	60/55	60/55	55/50	70/65
4	65/60	65/60	60/55	75/70
3	70/65	70/65	65/60	80/75
2	75/70	75/70	70/65	85/80
1	80/75	80/75	75/70	90/85

C4.5.3 Sound Level Limits for Emergency Equipment

The sound level limits for noise produced by emergency equipment operating in non-emergency situations, such as testing or maintenance of such equipment, are 5 dB greater than the sound level limits otherwise applicable to stationary sources, described in Sections C4.5.1 and C4.5.2.

The noise produced by emergency equipment operating in non-emergency situations should be assessed independently of all other stationary sources of noise. Specifically,

the emissions are not required to be included with the overall noise assessment of a stationary source facility.

In addition, sound level limits do not apply to emergency equipment operating in emergency situations.

C4.5.4 Sound Level Limits for Layover Sites

The sound level limit for noise from a layover site in any hour, expressed in terms of the One-Hour Equivalent Sound Level (L_{eq}) is the higher of either 55 dBA or the background sound level.

C5 Noise Impact Assessment – Multiple Sources

Impulse sources, non-impulse sources and emergency equipment are to be analyzed separately. Where there are multiple, non-impulse sources at a stationary source, the noise assessment should be based on the combined effect of all sources comprising the stationary source, added together on an energy basis.

C6 Noise Impact Assessment – Supplementary Noise Limits

Indoor limits for transportation sources applicable to noise sensitive land uses are specified in Table C-2 and Table C-4. Table C-9 and Table C-10 are expanded versions of Table C-2 and Table C-4, and present guidelines for acceptable indoor sound levels that are extended to land uses and developments which are not normally considered noise sensitive. The specified values are maximum sound levels and apply to the indicated indoor spaces with the windows and doors closed. The sound level limits in Table C-9 and Table C-10 are presented as information, for good-practice design objectives.

Table C-9
Supplementary Indoor Sound Level Limits
Road and Rail

Type of Space	Time Period	L_{eq} (Time Period) (dBA)	
		Road	Rail
General offices, reception areas, retail stores, etc.	16 hours between 07:00 – 23:00	50	45
Living/dining areas of residences, hospitals, schools, nursing/retirement homes, daycare centres, theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms, etc.	16 hours between 07:00 – 23:00	45	40
Sleeping quarters of hotels/motels	8 hours between 23:00 – 07:00	45	40
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	8 hours between 23:00 – 07:00	40	35

Table C-10
Supplementary Indoor Aircraft Noise Limits
(Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
General offices, reception areas, retail stores, etc.	15
Individual or semi-private offices, conference rooms, etc.	10
Living/dining areas of residences, sleeping quarters of hotels/motels, theatres, libraries, schools, daycare centres, places of worship, etc.	5
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	0

* The indoor NEF/NEP values listed in Table C-10 are not obtained from NEF/NEP contour maps. The values are representative of the indoor sound levels and are used as assessment criteria for the evaluation of acoustical insulation requirements.

C7 Noise Control Measures

The following sections provide MOE guidance for appropriate noise control measures. These sections constitute requirements that are applied to MOE approvals for stationary sources. This information is also provided as guidance which land use planning authorities may consider adopting.

The definition in Part A describes the various types and application of noise control measures. All the noise control measures described in the definition are appropriate to address the impact of noise of transportation sources (road, rail and aircraft) on planned sensitive land uses. Only some of the noise control measures described in the definition are appropriate to address the noise impact of stationary sources on planned sensitive land uses.

C7.1 Road Noise Control Measures

C7.1.1 Outdoor Living Areas

If the 16-Hour Equivalent Sound Level, L_{eq} (16) in the OLA is greater than 55 dBA and less than or equal to 60 dBA, noise control measures may be applied to reduce the sound level to 55 dBA. If measures are not provided, prospective purchasers or tenants should be informed of potential noise problems by a warning clause Type A.

If the 16-Hour Equivalent Sound Level, L_{eq} (16) in the OLA is greater than 60 dBA, noise control measures should be implemented to reduce the level to 55 dBA. Only in cases where the required noise control measures are not feasible for technical, economic or administrative reasons would an excess above the limit (55 dBA) be acceptable with a warning clause Type B. In the above situations, any excess above the limit will not be acceptable if it exceeds 5 dBA.

C7.1.2 Plane of a Window – Ventilation Requirements

C7.1.2.1 Daytime Period, 07:00 – 23:00 Hours

Noise control measures may not be required if the L_{eq} (16) daytime sound level in the plane of a bedroom or living/dining room window is less than or equal to 55 dBA. If the sound level in the plane of a bedroom or living/dining room window is greater than 55 dBA and less than or equal to 65 dBA, the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Type C is also recommended.

If the daytime sound level in the plane of a bedroom or living/dining room window is greater than 65 dBA, installation of central air conditioning should be implemented with a warning clause Type D. In addition, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the sound level limits in Table C-2. The location and installation of the outdoor air conditioning device should comply with sound level limits of Publication NPC-216, Reference [32], and guidelines contained in Environmental Noise Guidelines for Installation of Residential Air Conditioning Devices, Reference [6], or should comply with other criteria specified by the municipality.

C7.1.2.2 Nighttime Period, 23:00 – 07:00 Hours

Noise control measures may not be required if the L_{eq} (8) nighttime sound level in the plane of a bedroom or living/dining room window is less than or equal to 50 dBA. If the sound level in the plane of a bedroom or living/dining room window is greater than 50 dBA and less than or equal to 60 dBA, the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Type C is also recommended.

If the nighttime sound level in the plane of a bedroom or living/dining room window is greater than 60 dBA, installation of central air conditioning should be implemented, with a warning clause Type D. In addition, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the sound level limits in Table C-2. The location and installation of the outdoor air conditioning device should comply with sound level limits of Publication NPC-216, Reference [32], and guidelines contained in Environmental Noise Guidelines for Installation of Residential Air Conditioning Devices, Reference [6], or should comply with other criteria specified by the municipality.

C7.1.3 Indoor Living Areas – Building Components

If the nighttime sound level outside the bedroom or living/dining room windows exceeds 60 dBA or the daytime sound level outside the bedroom or living/dining area windows exceeds 65 dBA, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the

sound level limits in Table C-2. The acoustical performance of the building components (windows, doors and walls) should be specified.

C7.2 Rail Noise Control Measures

C7.2.1 Outdoor Living Areas

Whistle noise is not included in the determination of the outdoor daytime sound level due to railway trains. All the provisions of Section C7.1.1 apply also to noise control requirements for rail noise.

C7.2.2 Plane of a Window – Ventilation Requirements

Whistle noise is not included in the determination of the sound level in the plane of a window. All the provisions of Section C7.1.2 apply also to noise control requirements for rail noise.

C7.2.3 Indoor Living Areas – Building Components

The sound level, L_{eq}, during the daytime (16-hour) and nighttime (8-hour) periods is determined using the prediction method STEAM, Reference [34], immediately outside the dwelling envelope. Whistle noise is included in the determination of the sound level.

If the nighttime sound level outside the bedroom or living/dining room windows exceeds 55 dBA or the daytime sound level outside the bedroom or living/dining area windows exceeds 60 dBA, building components including windows, walls and doors, where applicable, need to be designed so that the indoor sound levels comply with the sound level limits in Table C-2. The acoustical performance of the building components (windows, doors and walls) needs to be specified.

In addition, the exterior walls of the first row of dwellings next to railway tracks are to be built to a minimum of brick veneer or masonry equivalent construction, from the foundation to the rafters when the rail traffic L_{eq} (24-hour), estimated at a location of a nighttime receptor, is greater than 60 dBA, and when the first row of dwellings is within 100 metres of the tracks.

C7.3 Combination of Road and Rail Noise

The noise impact in the OLA and in the plane of a window, and the requirements for outdoor measures, ventilation measures and warning clauses, should be determined by combining road and rail traffic sound levels.

The assessment of the indoor sound levels and the resultant requirement for the acoustical descriptors of the building components should be done separately for road

and rail noise. The resultant acoustical descriptors should be subsequently combined to determine the required components.

C7.4 Aircraft Noise Control Measures

If the outdoor NEF/NEP value is less than 25, further assessment is not required.

If the receptor location is within the NEF/NEP contours of 25 and 30, the dwelling should be designed with a provision for central air conditioning. In addition, building components including windows, doors, walls and ceiling/roof should be designed to achieve the indoor sound level limits of Table C-4. Warning clause Type C is also recommended.

If the municipality, in accordance with Reference [26], approves residential development above NEF/NEP 30, central air conditioning should be implemented with warning clauses Type B and D. In addition, building components including windows, doors, walls and ceiling/roof should be designed to achieve the indoor sound level limits of Table C-4.

C7.5 Combination of Road, Rail and Aircraft Noise

The noise impact in the OLA and in the plane of a window, and the requirements for outdoor measures, ventilation measures and warning clauses, should be calculated separately for surface transportation and aircraft noise. The surface transportation noise impact should be determined by combining road and rail traffic sound levels.

The assessment of the indoor sound levels, and the requirements for the acoustical performance of building components should be done separately for road noise, rail noise and aircraft noise. The resultant sound isolation parameters should be subsequently combined logarithmically (on an energy basis) to determine the overall acoustical parameter. Selection of the required components should be based on the overall combined acoustical parameter.

C7.6 Stationary Source Noise Control Measures

Where the noise impact exceeds the applicable sound level limits, mitigation is required in order to meet MOE approval requirements.

The noise control measures may be implemented on the site of the noise sensitive land use or at the source. For noise impacts from stationary sources, the preferred and normally the most economical and practical option is to implement noise control measures at the source.

Although the MOE in not involved in the approval of the noise sensitive land use, the MOE is involved with the stationary sources in the context of MOE approvals. The

following noise control measures, described in the definition in Part A, are acceptable for the purposes of an application for an MOE approval of a stationary source:

1. Source based noise control measures.
2. Receptor based outdoor noise control measures.
3. Receptor based "on building" noise control measures, under the condition that the noise sensitive land use is classified as Class 4 area.
4. Receptor based site configuration noise control measures.

The general design principles that facilitate the juxtaposition of sensitive land uses and stationary sources are:

- the building(s) closest to the stationary source will provide shielding for the remainder of the development;
- the building(s) closest to the stationary source will "face away" from the stationary source;
- the "exposed" side of the building(s) should not contain sensitive indoor spaces such as bedrooms and living rooms, and should only include insensitive spaces such as corridors, washrooms, etc.; and
- no outdoor areas amenable for use on the "exposed" side of the building(s).

In the case of residential developments, single loaded high-rise multi-unit buildings where the units are located on the side of the building facing away from the stationary source may present a solution.

Should the receptor based noise control measures be used, their implementation and maintenance should be included in an agreement as defined in Part A of this guideline or other agreement between the developer/owner of the noise sensitive land use, the land use planning authority (e.g., municipality) and the owner(s) of the stationary source(s). Such agreements should be documented in an appropriate and legally binding manner and registered on title with the appropriate warning clause. The agreement and all other relevant documentation should be submitted to MOE by the stationary source owner when applying for an MOE approval.

C7.7 Combination of Transportation and Stationary Sources of Noise

The noise control measures required for transportation and stationary sources of noise need to be evaluated separately for daytime and nighttime periods. The final selection of noise control measures needs to ensure compliance with the applicable sound level limits of this guideline, for each category of noise source.

C7.8 Air Conditioning

Air conditioning in itself is not a noise control measure. The use of air conditioning allows windows and doors to remain closed, and thereby reduce the indoor sound levels. Consequently, the requirement for air conditioning is a requirement for closed windows to achieve an acceptable indoor acoustic environment.

Furthermore, caution must be exercised in the implementation of air conditioning devices because their use may increase the outdoor sound levels.

C7.8.1 Air Conditioning and Transportation Sources

Ventilation provisions are required where windows are to remain closed in order to meet the applicable indoor sound level limits. The ventilation system needs to provide proper temperature and humidity control.

In the majority of situations, particularly for single family dwellings, central air conditioning is the only practicable ventilation system that satisfies the above conditions. However, in high and medium density residential developments, other forms of mechanical ventilation may be available. Ventilation methods other than central air conditioning are acceptable for high and medium density residential developments, subject to the following conditions:

a) the noise produced by the proposed ventilation system in the space served does not exceed 40 dBA. In practice, this condition usually implies that window air conditioning units are not acceptable;

b) the ventilation system complies with all national, provincial and municipal standards and codes;

c) the ventilation system is designed by a heating and ventilation professional; and

d) the ventilation system enables the windows and exterior doors to remain closed.

However, it is common practice for high-rise multi-unit buildings to incorporate some form of central air conditioning either for the building as a whole or for individual suites.

Air conditioning systems also need to comply with Publication NPC-216, Reference [32], and/or any local municipal noise by-law that has provisions relating to air conditioning equipment.

C7.8.2 Air Conditioning and Stationary Sources

Air conditioning is not considered appropriate or relevant in a Class 1, 2 or 3 area because the sound level limits for stationary sources apply to the outdoor planes of windows and windows are assumed to be open.

In Class 4 areas, where windows for noise sensitive spaces are assumed to be closed, the use of central air conditioning may be acceptable if it forms an essential part of the overall building designs.

C7.9 Verification of Noise Control Measures

It is recommended that the implementation of noise control measures be verified by qualified individuals with experience in environmental acoustics.

C8 Warning Clauses

The use of warning clauses or easements in respect of noise are recommended when circumstances warrant. Noise warning clauses may be used to warn of potential annoyance due to an existing source of noise and/or to warn of excesses above the sound level limits. Direction on the use of warning clauses should be included in agreements that are registered on title to the lands in question. The warning clauses would be included in agreements of Offers of Purchase and Sale, lease/rental agreements and condominium declarations. Alternatively, the use of easements in respect of noise may be appropriate in some circumstances. Additional guidance on the use of noise warning clauses is provided in Section C7.1.1, Section C7.1.2.1, Section C7.1.2.2, Section C7.3 and Section C7.4.

C8.1 Transportation Sources

The following warning clauses may be used individually or in combination:

TYPE A: (see Section C7.1.1)

> "Purchasers/tenants are advised that sound levels due to increasing road traffic (rail traffic) (air traffic) may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

TYPE B: (see Section C7.1.1 and Section C7.4)

> "Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic (rail traffic) (air traffic) may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

TYPE C: (see Section C7.1.2.1, Section C7.1.2.2 and Section C7.4)

> "This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of

central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."

TYPE D: (see Section C7.1.2.1, Section C7.1.2.2 and Section C7.4)

"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."

C8.2 Stationary Sources

It is not acceptable to use warning clauses in place of physical noise control measures to identify an excess over the MOE sound level limits. Warning clause (Type E) for stationary sources may identify a potential concern due to the proximity of the facility but it is not acceptable to justify exceeding the sound level limits.

TYPE E: (see Section C7.6)

"Purchasers/tenants are advised that due to the proximity of the adjacent industry (facility) (utility), noise from the industry (facility) (utility) may at times be audible."

C8.3 Class 4 Area Notification

TYPE F: (see Section B9.2 and Section C4.4.2)

"Purchasers/tenants are advised that sound levels due to the adjacent industry (facility) (utility) are required to comply with sound level limits that are protective of indoor areas and are based on the assumption that windows and exterior doors are closed. This dwelling unit has been supplied with a ventilation/air conditioning system which will allow windows and exterior doors to remain closed."




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