



Terms of Reference: Noise Study



Study Description

A Noise Study Report is the documentation of a technical study, which demonstrates the proximity and compatibility between noise sources and points of reception, including any mitigation measures necessary to achieve compatibility. Noise sources can include road traffic, Grand River Light Rail Transit (e.g., ION), other freight and passenger rail activity, and stationary sources such as industrial and commercial activity. Aircraft noise is not considered as there are no major airports in sufficient proximity to the City of Waterloo (the City).

Purpose

The purpose of this Terms of Reference (“TOR”) is to establish clear expectations and requirements for the preparation of Noise Studies submitted to the City of Waterloo. This document provides applicants and consultants with technical guidance for standardization of Noise Study triggers and methodologies along with expectations for results presentation and mitigation. Compliance with these guidelines will help to expedite review times and mitigate the need for further revisions and submissions. Failure to satisfy the requirements set out in this TOR may result in an application being deemed incomplete. If an application is deemed incomplete it will be returned to the applicant to satisfy the necessary submission requirements.

Definitions

The definitions contained in Regional Municipality of Waterloo Noise Policy Implementation Guideline, Environmental Noise Guideline Publication NPC-300, and Guidelines for New Development in Proximity to Railway Operations apply to this Terms of Reference, except as noted below. The following modification and clarification shall apply to a Noise Study Report prepared for the City of Waterloo.

Noise sensitive institutional purpose building – means a building used for an institutional purpose, including the instructional spaces of an educational facility, a day nursery, a hospital, a health care facility, a shelter for emergency housing, a community centre, a public library, 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.

Passive Mitigation Measures – means one or a combination of increased building setbacks, residential front lotting, neo-traditional street layout and design, and buffering with noise insensitive land uses.

Stationary Source – means the same as NPC-300 with the additional clarification that for the purposes of this Terms of Reference and a Noise Study Report regarding noise sensitive land uses stationary sources, regardless of jurisdictional responsibility, are to be addressed in the analyses, assessment, and mitigation design. Sources exempt from approval under Ontario Regulation 524/98 as well as those addressed under Residential Air Conditioning Devices Publication NPC-216 are to be included. Examples are automotive or truck repair facility, tire shop, car wash, Packaged Terminal Air Conditioner (PTAC) units and mechanical units of multi-unit residential buildings.

When is it Required?

A Noise Study Report may be required for the following Planning Act applications:

- Official Plan Amendment
- Secondary and Community Plan
- District Plan
- Block Plan
- Zoning By-law Amendment
- Plan of Subdivision
- Plan of Condominium
- Consent
- Minor Variance
- Other planning applications, as determined by the City.

The need for a Noise Study Report as part of a complete application will be identified as part of the pre-application consultation review. In the instance where a planning application being advanced does not have a mandatory pre-application consultation process (e.g., Committee of Adjustment applications) the applicant is encouraged to contact the City's Planning Division to discuss the nature of the proposal and to determine if a Noise Study Report is required.

The effort to achieve noise compatibility between sources and points of reception should begin as early as possible in the land use planning process. Early evaluation enables easier implementation of passive noise mitigation measures which the City prefers, rather than the use of noise barriers or Class 4 designation. It is the responsibility of the development proponent to address noise compatibility.

Qualified Persons

A Noise Study Report shall be prepared by a qualified and competent consultant currently listed on the Region of Waterloo's Prequalified Consultants for Noise Studies List. Procedures concerning the Prequalified Consultants for Noise Studies List are provided in the Regional Municipality of Waterloo Noise Policy Implementation Guideline. The report must identify and be signed by the author(s) and, where prepared under the direction of a qualified consultant, be co-signed by the reviewer of the report. The qualified professional that has signed the report shall take professional responsibility for its contents and the accuracy of the information contained therein.

Applicable Legislation

The authority to require or request information or material to evaluate and make a decision on proposed planning applications is provided by the Ontario *Planning Act*, the Provincial Policy Statement, and City of Waterloo Official Plan Section 12.2.14 ("Complete Applications").

This Terms of Reference document is to be applied in conjunction with all applicable regulations, by-laws, and guidelines, including the City of Waterloo's Urban Design Manual and Comprehensive Engineering and Landscape Manual.

This Terms of Reference is based on the following supporting documents:

- Regional Municipality of Waterloo Noise Policy Implementation Guideline,
- Environmental Noise Guideline, Publication NPC-300,
- Guidelines for New Development in Proximity to Railway Operations, and
- D-6 Guideline Compatibility Between Industrial Facilities and Sensitive Land Uses.

Where the Regional Municipality of Waterloo Noise Policy Implementation Guideline references LU-131, it shall be understood to refer to the superseding document, Publication NPC-300.

In a case where this document provides direction that differs from other guidance or bylaws of the City of Waterloo and the Region of Waterloo, the more restrictive guidance shall apply.

Study Requirements

A Noise Study Report for a new development shall consider the following three areas:

- Influence of the surroundings on the proposed development;
- Influence of the development on its surroundings; and
- Influence of the development on itself.

A Noise Study Report for an existing development impacted by proposed regional road improvements shall not be subject to this requirement.

Zone of Influence

A Noise Study Report for a new development shall include a survey of all noise sources with potential to influence the development. Sources demonstrated to have insignificant impact are not required to be considered in a detailed study is only needed for those sources that have the potential for real impact on the development.

The potential zone of influence for stationary sources shall be determined using the potential influence areas described in the D-series guidelines from the Ministry of Environment, Conservation and Parks (MECP). Stationary source sites that are known to have air or noise approval under the Environmental Protection Act shall be indicated. Such approvals would include Environmental Compliance Approval, Certificate of Approval or Environmental Activity and Sector Registry or their successors. A map shall be provided labelling the stationary sources, their Industry Class and potential influence areas.

The potential zones of influence that need to be considered for rail-bound vehicles travelling in rail corridors in the City of Waterloo are shown in the table below.

| Rail Description | Zone of Influence |
|--|-------------------|
| Grand River Transit Light Rail Transit | 75 metres |
| Freight and Other Passenger Rail | 300 metres |
| Freight Rail Yard | 1000 metres |

Potential zones of influence that need to be considered for roads are shown in the table below.

| Road Description | Zone of Influence |
|---|-------------------|
| 2-lane urban collector | 50 metres |
| 2-lane urban arterial, ≤ 60 km/h | 150 metres |
| 4-lane urban arterial, ≤ 60 km/h | 200 metres |
| 4-lane divided urban arterial, ≤ 80 km/h | 250 metres |
| Provincial Highways (Hwy 85), ≤ 90 km/h | 500 metres* |

*An alternate zone of influence may be agreed to by the Regional Municipality of Waterloo and the City of Waterloo on a case by case basis.

Noise Study Criteria

The following guidelines form the basis for evaluation of noise sources in the City of Waterloo:

- Road traffic shall be evaluated under the Regional Municipality of Waterloo Noise Policy Implementation Guideline;
- Rail traffic and LRT shall be evaluated under the Regional Municipality of Waterloo Noise Policy Implementation Guideline and the Guidelines for New Development in Proximity to Railway Operations;
- Information to be Submitted for Approval of Stationary Sources of Sound, Publication NPC-233; and
- Stationary Source noise shall be evaluated under the Environmental Noise Guideline, Publication NPC-300.

This Terms of Reference adds clarification or small modification. Where there is a conflict between these guidelines and this Terms of Reference, the Terms of Reference prevails.

Road Data

Future road traffic volumes shall be obtained from the Regional Municipality of Waterloo’s Transportation department, or other appropriate study acceptable to the City of Waterloo (e.g., transportation impact study completed for a Road EA).

Grand River Light Rail Transit/ION Data

Traffic volume for the Grand River Transit ION Light Rail shall be predicted 10 years from the Noise Study Report submission date based on the current schedule and a 2.5% annual growth rate, or other traffic forecast acceptable to Grand River Transit ION Light Rail.



Freight and Other Passenger Rail Data

Future freight and other passenger rail traffic volume through the City of Waterloo shall be predicted from current conditions to 10 years into the future from the Noise Study Report submission date using a 2.5% annual growth rate. Current rail activity information should be obtained from the rail operator (currently CN Rail and Waterloo Central Railway), or where unavailable, other rail activity information acceptable to the City of Waterloo. Note that where the tracks are shared with Grand River Transit ION Light Rail, daytime heavy rail activity may be restricted or precluded.

Stationary Source, Industry, Institutional Data

The sources of sound level data for stationary sources shall be documented in the Noise Study Report and any assumptions made during the assessment must be clearly stated.

Sound level data and operating information of stationary sources is to be provided by the owner of the stationary source site. If data cannot be obtained from the owner, the efforts to obtain the data or participation from the owner shall be documented within the Noise Study Report, including dates, times and the communication methods used. Where the source-specific data cannot be obtained from the owner, proxy information and off-site measurements can be used. The proxy information should include source details. Off-site measurements must include a documentation of dates, times, durations, type of measurement, locations, aural observations of the source and background.

Modelling and Assessment

The Noise Study Report shall explain the modelling that was conducted, including model inputs, outputs and complete sample calculations. The Regional Municipality of Waterloo Noise Policy Implementation Guideline is required to be followed for noise from road, LRT and rail corridors. Where a model other than ORNAMENT or STAMSON is used for road traffic, a site-specific comparison of the model used versus ORNAMENT or STAMSON is required. When MECF publishes a guideline permitting TNM for modelling road traffic, it may be used without a site-specific comparison. For LRT modelling, the FTA (US Federal Transit Administration) model is preferred. For freight and other passenger rail transportation, the FRA (US Federal Railway Authority) or STEAM shall be used. Rail shunting and yard activities which are not covered by the FTA or FRA models shall be modelled in the same manner as stationary sources. Stationary sources shall be modelled using the ISO 9613-1 and 9613-2 sound



propagation algorithms. Use of a common software package is mandatory in cases of obstacles, mitigation or more than 10 sources. To ensure that sensitive points of reception are protected to the limits provided in NPC-300, continuous (e.g., non-impulsive) stationary source noise from all sites is to be assessed together cumulatively.

Where a sound level limit above the NPC-300 exclusion limits is determined for stationary source noise assessment, it must be established by a method approved by the Municipality. The quietest one-hour period occurring at the same time as the stationary source is to be used.

Noise Control Measures

Noise control measures that are necessary to achieve and maintain compatibility between sources and points of reception must be documented within the Noise Study Report. The Regional Municipality of Waterloo Noise Policy Implementation Guideline provides the requirements for mitigation measures regarding surface transportation noise and specifies that passive mitigation measures are to be used in preference to noise barriers. All references to LU-131 in the Noise Policy Implementation Guideline shall be understood to refer to NPC-300.

The use of these passive mitigation measures is also preferred for stationary source noise. As an alternative, noise can often be effectively mitigated at the stationary source, with the agreement and cooperation of the owner, if applicable. The use of on-receiver mitigation for stationary source noise is strongly discouraged.

The City of Waterloo may consider on-receiver mitigation for infill or redevelopment areas where the City has demonstrated the intent to develop new residential uses. Where on-receiver mitigation is proposed, a detailed study is required including detailed technical and economic justification why Class 1 or Class 2 limits cannot be met. Details of the mitigation methods will be required. Further requirements concerning on-receiver mitigation are provided under the Class 4 requirements of NPC-300. Requests for Class 4 designation are considered on a case-by-case basis, and are entirely at the discretion of City Council. In cases where there is a stationary source that is subject to an Environmental Compliance Approval (ECA), Environmental Activity and Sector Registry (EASR) or similar approval requirements of the Environmental Protection Act, on-receiver mitigation will only be permitted by City Council designation of the land as “Class 4”. A legal agreement between the parties

detailing the mitigation requirements, their installation and maintenance will also be required.

Proposals for noise-sensitive institutional-purpose or noise-sensitive commercial-purpose uses that include on-receiver mitigation will require permission of the City. A demonstration of elevated stationary source noise and details of the mitigation methods proposed will be required. Further requirements concerning on-receiver mitigation are provided under the Class 4 requirements of NPC-300. Requests for Class 4 designation are considered on a case-by-case basis and are entirely at the discretion of City Council or its designate. In cases where there is a stationary source that is subject to an Environmental Compliance Approval (ECA), Environmental Activity and Sector Registry (EASR) or similar approval requirements of the Environmental Protection Act, on-receiver mitigation will only be permitted by designation of the land as “Class 4”. If the only mitigation measure is the use of sealed windows, a designate of City Council may grant the “Class 4”. For all other forms of mitigation, the permission of City Council will be required. A legal agreement between the parties detailing the mitigation requirements, their installation and maintenance will also be required.

The stationary source sites will be expected to update their noise assessment and update their approval to address new noise sensitive land uses and to use the Class 4 land use designation.

Before any window, architectural feature or structure is proposed or used as an on-receiver mitigation measure, the acoustical performance must be demonstrated by type testing that has been conducted in accordance with international standards such as ASTM E90, ASTM E1332, or ISO 10140. Test reports are to be provided in an appendix to the report.

The City may require financial security to address cases where mitigation measures are required for either surface transportation or stationary source noise. Release of this financial security will be connected with a letter (certificate of compliance) signing off the satisfactory implementation of the mitigation from a Prequalified Consultant.

Reporting Requirements

A Noise Study Report is expected to include information as described in previous sections at a minimum. The information can be summarized as follows:

- An introduction describing the proposed development, the subject site and a site plan.
- An introduction to the surroundings, describing the noise sources, and in the case of stationary source noise whose potential zone of influence overlaps the site – their relative locations.
- Description and locations of the points of reception.
- A summary of the guidelines and criteria that apply.
- Data used in the assessment, its sources and associated calculations.
- Description of the models, modelling inputs, assumptions and sample calculations.
- The results and an assessment of compliance
- Requirements for noise mitigation and recommended warning clauses. This is to include sound reduction measures used, drawings showing their locations, mitigation specifications and applicable test results, and cross-sections where necessary to show the line of sight.
- Conclusion, including a summary of how the noise criteria will or will not be met.
- Supporting information and details should be attached in appendices.

Additional Information

Note 1:

If City staff consider the submitted Noise Study Report to be incomplete, unsatisfactory, inconsistent, insufficient, authored by an unqualified individual, or if it fails to satisfy the requirements set out in this TOR in any other manner, the associated development application may be deemed incomplete and returned to the applicant.

Note 2:

Deeming an application complete does not guarantee that the contents of the study are acceptable to City staff and/or that the application will be approved.

Note 3:

If a request for a Noise Study Report is not made at an earlier stage in the development process, this does not preclude the City from requesting a Noise Study Report at a later stage. Once an application has been deemed “complete”, the City may require additional information, reports, and/or studies following a more detailed review to assess the implications of an application for approval.

Note 4:

The City of Waterloo is committed to complying with the Accessibility for Ontarians with Disabilities Act (AODA). In our everyday work with businesses institutions, and community partners we anticipate the same commitment to AODA compliance. Therefore, the Noise Study Report must be AODA compliant and must meet the current provincial standard for compliance.

Note 5:

The City reserves the right to request an updated study, or an addendum thereto, should staff determine that changes in the development proposal or changes to legislation warrant further/modified planning analysis.

Note 6:

City staff reserve the right to require a peer review of submitted materials by an appropriate agency or qualified professional, the cost of which will be borne by the applicant.

Note 7:

Documents and all related information submitted to the City as part of a complete development application are considered public documents once submitted.

Note 8:

The Noise Study Report shall be submitted in conjunction with the applicable development application(s), unless otherwise agreed to by the City.

Note 9:

This Terms of Reference document is intended to be used for guideline purposes only, and will be used to provide technical direction throughout the planning and development process. Completion of a report in alignment with the requirements of this



Terms of Reference will not guarantee approval of the development application in question.

Note 10:

This TOR is relevant at the time of publishing and will be updated as necessary to reflect current policy, best practices, and accepted standards. It is the applicant's responsibility to ensure the report is prepared in accordance with the most recent version of the TOR issued by the City.

Note 11:

This Noise Study Terms of Reference is applicable to Noise Study requirements for development or land use changes as it relates to Planning Act applications. Any noise assessment deemed to be required through a Class Environmental Assessment (EA) or any other related process through the Environmental Assessment Act may differ, at the discretion of the City and Region.

This Terms of Reference was prepared by a qualified external consulting firm. For clarification for any information contained within this document, please contact the City of Waterloo staff assigned to the pre-consultation process.

