

Appendix C: Noise Policy Implementation Guideline Review and Update: Report to Region of Waterloo Committee of the Whole, dated September 15, 2020

Report: TES-TRP-20-15

Region of Waterloo

Transportation & Environmental Services

Transportation

To: Chair Sean Strickland and Members of the Committee of the Whole

Date: September 15, 2020

File Code: T04-02(A)

Subject: Noise Policy Implementation Guideline Review and Update

Recommendation:

For Information.

Summary:

In the spring of 2018, in response to resident concerns about noise walls not being recommended on a particular road widening project, the Region's Planning and Works Committee requested that staff form an Ad Hoc Committee or Working Group and conduct a review of the current Regional Noise Policy Guideline. A Working Group was formed comprised of staff and members of Regional Council including Regional Chair Karen Redman, and Regional Councillors Geoff Lorentz and Sean Strickland.

The Working Group reviewed the history of how the current Guideline was developed, how traffic noise impacts property owners and evaluated the current Guideline's implementation practices. The goal of the review was to ensure that the Noise Policy Guideline developed in 1999 was still relevant and fair to all property owners. An additional purpose of the review was to ensure that Regional corridors were continuing to be assessed consistently with current provincial and municipal best practices.

The Working Group reviewed each of the three main components of the Guideline and reviewed how the Guideline is applied. The Working group concluded that, in general, the current Guideline is working well and being applied in a manner consistent with other similar municipalities and current provincial best practices. Therefore, the Working Group agreed that no significant changes to the Guideline were needed.

As a housekeeping action, the Guideline's name was changed from "Implementation Guideline for Noise Policies" to "Regional Noise Policy Implementation Guideline".

Report:**1.0 Background****1.1 Introduction**

In the spring of 2018, in response to resident concerns about noise walls not being recommended on a particular road widening project, the Region's Planning and Works Committee requested that staff form an Ad Hoc Committee or Working Group and conduct a review of the current Regional Noise Policy Guideline. The main objectives of this review were twofold:

- To review how the Implementation Guideline is being applied with respect to the main issues typically raised by residents; and
- To determine if noise impacts and mitigation on Regional road corridors are being assessed consistently with current provincial and municipal best practices.

The overall objective of the review was to determine if the current Implementation Guideline is both fair and reasonable for the residents of Waterloo Region.

A Working Group was formed comprised of staff and members of Regional Council including Regional Chair Karen Redman, and Regional Councillors Geoff Lorentz and Sean Strickland. Prior to any meetings with the entire Working group, staff conducted a thorough review of the current Implementation Guideline, reviewed issues raised by residents and researched current best practices used by the Province and other comparable Ontario municipalities. This report serves to document staff's findings, the Working Group's discussions of these findings and the Working Group's overall conclusions of the review.

1.2 Implementation Guideline Development History

The Region's current Noise Policy Implementation Guideline was developed over a period of several years in the late 1990's. The original working group that developed the first Implementation Guideline consisted of Regional and Area Municipal Councillors and staff. Following further input from public meetings, the Ministry of Environment, the development community and consultants, the Implementation Guideline was officially adopted in 1999 by Regional Council.

The Policy's development can be summarized as follows through the previous reports to Regional Council;

- July 1999 - Adoption of Noise Policy Implementation Guideline;
- March 2000 - Review of Part C of the Policy (Impact to Existing Development);

- March 2004 - Overview and Summary of Regional Noise Policy;
- June, 2004 - Addition of Visual Landscape Screening Component Update to Regional Noise Policy Implementation Guideline; and
- October, 2019 – Overall review of Noise Policy Implementation Guideline

1.3 Basic Parts of the Current Implementation Guideline

The Regional Implementation Guideline consists of three main focus areas, each with a different process proponent, as follows:

Part A - New Development Impacted by Noise from Roads and Railways;

This part of the Noise Policy addresses any new developments backing onto or fronting Regional roads. Under Part A of the Guideline the developer is the proponent. This portion of the guideline provides requirements to which the developer must adhere relating to noise mitigation for its proposed development.

Part B - Existing Development Impacted by Proposed Regional Road Improvements;

This part of the Guideline addresses construction improvement projects on Regional roads. Under Part B of the Guideline the Region is the proponent. This portion of the Guideline provides requirements to which the Region must adhere relating to noise mitigation for the adjacent residents and businesses.

Part C - Existing Development Impacted by Noise from Existing Regional Roads.

This part of the Guideline addresses resident enquiries and complaints associated with noise impacts from existing Regional roads on existing adjacent properties. Under Part C of the Guideline the resident or business owner initiates the process through an enquiry but both the resident/business owner and the Region have required actions. This portion of the Guideline provides requirements to which the resident or business owner and the Region must adhere relating to noise mitigation for the adjacent residents and businesses.

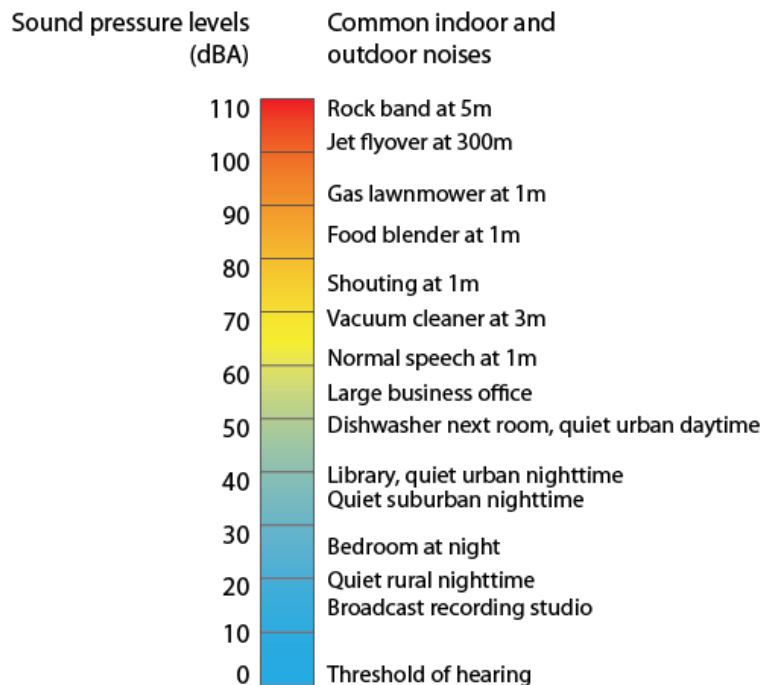
1.4 General Information About Traffic Noise

In general, the more distant a person is from the noise source the lower the noise level will be; similarly, the closer the person is to the noise source, the higher the average level will be and the more obvious the noise peaks become.

Sound levels are measured in terms of decibels (dBA), on a non-linear scale. The typical range of levels most frequently encountered in evaluating traffic generated noise is between 50 and 90 decibels. Since the dBA is measured on a non-linear scale an

increase of only 10 dBA actually doubles the noise level or (loudness) and a reduction of 10 dBA halves the noise level or (loudness).

See below for some examples of common everyday noise levels.



Some interesting facts related to typical traffic noise;

- Doubling traffic volumes at the source increases the noise levels by only 3 dBA;
- A tenfold increase in traffic volume would increase noise levels by about 10 dBA; twice the loudness of the original noise level;
- If distance from the source is doubled the noise level will decrease by 3 - 4 dBA;
- Traffic traveling 110 km/h will be twice as loud as traffic traveling 55 km/h;
- One truck traveling at 80 km/h will sound as loud as 28 cars traveling at 80km/h; and
- Improvements to older bumpy and cracked/potholed roads do reduce vehicle noise but are often offset by increasing traffic volumes and sometimes speeds

1.5 How Traffic Noise is Determined under the Guideline

Noise from Regional road traffic will fluctuate throughout the day but essentially there are three main elements of noise evaluation;

- Noise Source - (Regional Road Traffic - vehicles);
- Noise Mitigation - (distance, barriers); and
- Receiver environment (dwelling/business, outdoor living area).

The Region of Waterloo's Guideline strives to attain a maximum 24-hour average noise level impact of 55 dBA or lower on residential areas adjacent to Regional roads. The Guideline directs the proponent to examine mitigation measures when the 24-hour average noise level of 60 dBA exists in the OLA (Outdoor Living Area). The Outdoor Living Area is generally defined as follows:

- The backyard or patio area at ground level within 3 metres of the rear wall of the residential unit, or the recreational area designated on the development application;
- The common outdoor area allocated for recreational purposes outside residential buildings such as apartments or condos; and
- Unenclosed balconies (depth greater than 4 metres) outside the exterior building façade.

The Region of Waterloo follows the Ministry of Environment, Conservation and Parks (MOECP) process for noise level assessment. This process utilizes a computer modelling software program called Stamson. This software model has inputs to simulate the actual physical site conditions of the impacted property in order to calculate an average noise level in the property's outdoor living area. Inputs to the model include the slope of the land, the speed of the road, and the distance from the road. This process is currently in line with other Ontario municipalities and is still considered best practice for establishing base line noise levels on impacted properties.

2.0 Overview of How the Guideline's Three Major Focus Areas are Applied**2.1 Part A New Development Impacted by Noise from Roads and Railways;
(Developer is proponent)**

Noise policy issues and direction to developers under Part A of the Region's Guideline are typically addressed during the Region's review of Planning Applications (e.g. Plans of Subdivision, Zoning By-law Amendments, Consents), and implemented at the Municipal Site Plan approval process. Regional staff currently perform reviews of all development-related noise impact assessments for all properties in the Region,

including all reviews on behalf of the area municipalities for properties not adjacent to Regional roads.

How is the noise impact assessed and how is the need for noise mitigation determined? Noise Levels in OLA of the development must be attenuated to 60 dBA or less (at time of development proposal and also considering projected noise level in 10 years). Indoor noise mitigation measures in Part A of the policy are facilitated by the proponent or the “developers” of the property. This step takes place during the Region’s review of Planning Applications , and implemented at the Municipal Site Plan approval process before a development is built. These measures may include site design and building layout, noise warning clauses, noise attenuation barriers, air conditioning, and/or structural design measures such as multiple glazing and brick wall construction.

Who pays? The Developer pays 100% for noise studies and the implementation of the noise attenuation which may include a berm or noise wall. If a proposed noise wall is to be located on Regional property an additional 55% of the estimated construction cost for the wall is also required from the Developer in order to fund the barrier’s maintenance or replacement in the future. This additional cost is estimated to be sufficient for a one-time replacement of the noise wall assuming a 30-year life span with a marginal 2% rate of return.

2.2 Part B Existing Development Impacted by Proposed Regional Road Improvements (Region is proponent)

Policy direction under Part B of the Region’s Guideline is “triggered” when the Region is proposing to widen an existing Regional road. The noise assessments and mitigation are addressed as part of the Regional transportation capital project’s Municipal Class Environmental Assessment. These noise assessments and attenuation costs are included in the project budgets as part of the Region’s Transportation Capital Program.

How is the noise impact assessed and how is the need for noise mitigation determined? Where non-barrier solution alternatives are not sufficient and a noise wall is being considered the following criteria is used to determine if a noise wall is warranted;

- If the projected noise level exceeds 65 dBA; or
- If the projected noise level exceeds 60 dBA and the difference between the existing and projected noise levels is 5 dBA or more.

Projected noise levels are calculated based on projected future traffic levels that are anticipated ten years after construction.

Who pays? The Region pays 100% for the wall as part of the proposed project improvements.

2.3 Part C Existing Development Impacted by Noise from Existing Regional Roads (Resident/business owner is proponent)

Noise policy issues under Part C of the Region's Guideline are addressed through resident inquiries or complaints about existing noise levels impacting their property. Each case is tracked through the Region's Customer Service Tracking System, Lagan, to ensure timely responses to all enquiries. Although each Part of the Policy was reviewed by staff, Part C is primarily the portion of the Policy with which the public has the most concerns. Part C addresses the noise impacts from existing Regional roads on existing adjacent properties. Each year staff receive and respond to 30 to 40 noise concerns with approximately 80% being Part C inquiries.

How is the noise impact assessed and how is the need for noise mitigation determined?

Upon receiving a concern about noise or a request for a noise wall from a resident, staff undertake a noise assessment and advise the resident of the results of that noise assessment. If the existing noise level as assessed exceeds 60 dBA, the resident is advised of their individual options such as: a privacy fence, window improvements or air conditioning. No further action would be taken by the Region if this is acceptable to the resident.

If the resident or residents wish to pursue the noise wall option, Regional staff will determine the approximate required noise wall height, length and cost in order to attenuate the noise in the OLA by at least 5 dBA or greater, to less than 60 dBA.

Under Part C of the Guideline only existing traffic noise levels are considered and not future projected noise levels.

Who pays? The Region and the residents both pay 50% of the total cost for the noise wall. Typically, it is also not a single property that is impacted. As such, in cases where multiple properties are affected, two-thirds of the impacted residents must agree to have the wall constructed and share the cost for their backyard portion of the wall.

3.0 Comparison with Noise Policies in Other Ontario Municipalities

Municipality	What Noise Levels do you currently Assess?	How do you measure your noise levels?	Where are you measuring your noise levels to?	What are your noise thresholds	Who pays and how currently has your policy been reviewed?
County of Simcoe	MOE guideline practiced and followed Current and 10 year noise levels	Stamson computer model and noise meters for comparison of existing noise levels	MOE guideline for OLA	Lower than 65 dBA unless existing background is higher, +5 dBA increase is applied	Not a formal policy but has worked well in practice. Same pay structure as Region of Waterloo. Last revision of policy; March 2006
City of Windsor	MOE guidelines practiced and followed Current and 10-year noise levels applied to new developments only	Stamson computer model Noise Assessments mostly completed by consultants	MOE guideline for OLA Indoor noise not addressed	If projected 10 year noise is > 5 dBA over existing noise and also over 60 dBA then a noise barrier is warranted	Same pay structure as Region of Waterloo. Last revision of policy; March 2006
Region of Peel	Existing Noise levels -longer planning horizon range to 2041 for new development	Stamson computer model and noise meters for comparison of existing noise levels	MOE guideline for OLA Indoor noise not addressed	MOE's 60dBa with objective of 55dBA mitigation must be 5dBA minimum	Same pay structure as Region of Waterloo. Last revision of policy; October 2016

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Municipality	What Noise Levels do you currently Assess?	How do you measure your noise levels?	Where are you measuring your noise levels to?	What are your noise thresholds	Who pays and how currently has your policy been reviewed?	What Noise Levels do you currently Assess?
Region of York	MOE guideline practiced and followed Current and 10 year noise levels	Stamson computer model	OLA 4 metres and 1.5 metre height Indoor noise not addressed	Capital Projects- 60 dBA minimum and mitigation must include a 6 dBA reduction. Noise greater than 55dBA and projected to increase 5 dBA= Noise Study Retrofit - existing noise greater than 60 dBA at least 5 continuous dwellings impacted 2/3 of affected must support - cost shared 50%	Same pay structure as Region of Waterloo. Last revision of policy; March 2006	

4.0 Main Issues Typically Raised by Residents

The main issues typically raised by residents about the Region's Noise Policy Implementation Guideline and how it is applied are as follows:

4.1 How Noise Levels Are Determined: Measured VS Calculated

Resident Concern: Some residents disagree with the Region's methodology of assessing the noise levels using a computer program to generate average noise levels and would prefer that the Region consider direct on-site measurement of louder short-term peak noise from trucks or speeding motorcycles travelling on the adjacent Regional roads.

Working Group Response: The Region follows the MOECP process for noise level assessment. This process utilizes a computer modelling software program called Stamson. This software model has inputs to simulate the actual physical site conditions of the impacted property in order to calculate an average noise level in the property's outdoor living area. In the early 2000's some concerns were raised by the public about the need to measure noise rather than calculate it, as the measurements would be more accurate. To address this concern at that time, staff and a local consultant completed a study at various locations along Regional roads that compared the Stamson program's calculated average traffic noise levels to averages of measured traffic noise using a sound meter. The consultant's report concluded the difference between the average noise levels generated by the two different methods was negligible. The Working Group compared the Region's calculation methodology to the methodologies used by several other municipalities in Ontario. All other surveyed Ontario municipalities still considered Stamson noise modelling the best practice for establishing base line noise levels on impacted properties.

4.2 Noise Level Thresholds for Justifying a Noise Wall

Resident Concern: Some residents disagree with the established noise level thresholds which trigger noise wall construction and the rear yard locations defined in the policy as the "outdoor living area".

Working Group Response: In general terms the Guideline provides for noise wall consideration when existing sound levels are above 60 dBA and the proposed noise wall will produce a minimum of a 5 dBA decrease of noise in the outdoor living area. The reason a 5 dBA reduction is required is that 3-5 dBA is considered the minimum noise difference that is noticeable to the average human ear. The Region has followed best practices established and defined by MOECP (Ministry of the Environment Conservation and Parks). These noise guidelines regarding acceptable noise levels are based on years of research by the Province. This approach is also consistent with other

municipalities who follow the provincial guidelines approach for what are acceptable noise levels. This level of noise 60 dBA is equivalent to an operating dishwasher noise. The MOECP equates “loud noise” between 70 dBA and 80 dBA which is equal to intense city car traffic at 70 dBA or a busy restaurant at 80 dBA.

The impacts of traffic noise are experienced differently by each person and can vary from resident to resident along the same street. Similar levels of noise are definitely perceived differently by individuals. In many cases, construction of a tightly built fence in lieu of a noise wall of similar height can also have a positive impact on reducing sound in the outdoor living area effectively enough to please the resident. It should also be acknowledged that building noise walls along regional corridors does present significant challenges with blocking off rear yard access. This can present difficulties and cost for residents building sheds and pools in the future. Once a noise wall is installed drainage from adjacent properties onto regional right-of-ways can be significantly impacted or blocked off from their outlet. Fixing this drainage problem can add potentially significant costs to the project and the adjacent property owners by constructing a noise wall in a retrofit situation. In conclusion, the Working group believed that the Guideline’s threshold of 60 dBA does not need to be revised because:

- the 60 dBA threshold is consistent with Provincial guidelines and what is currently being used by many municipalities in Ontario; and
- the 60 dBA threshold is an appropriate level to provide a balance between the financial impact on the municipality of constructing and maintaining a noise wall and people’s overall ability to enjoy their outdoor living area.

4.3 Under Part C: Cost Apportionment and Process to Gain Approvals

Under Part C of the Noise Policy where construction of a noise wall is identified as the preferred option by a resident, the Area Municipality and Regional Council, the full cost of designing and constructing the noise wall would be shared among the residents and Region in the following way:

- 50% affected residents;
- 50% Region.

Therefore, residents are required to pay 50% of the total cost of the wall. An "affected resident" is defined as the owner of a lot, or a condominium corporation, abutting directly on the wall. In many cases, more than one property is affected. Sometimes, 50 or more properties are affected. In accordance with the Local Improvement Act, construction of the wall must be supported by at least two-thirds of the affected residents representing at least 50% of the property value. The cost of wall design, construction and financing would be apportioned to the affected residents and charged

over a period of 10 years by the Area Municipality, on behalf of the Regional Municipality.

Example; A typical 1.8-metre-high noise wall cost approximately \$1000/metre. If one assumes the average rear lot width is 10 metres the total individual property owner share would be $\$10,000 \times 50\% = \$5,000.00$.

In this scenario each resident “affected” would be required to pay \$5000. Over a ten-year period in this situation \$500/annually would be added to their local municipal tax bill administered by the local Area Municipality.

Resident Concern: Noise walls never get built under Part C because the residents always fail to achieve a two-thirds majority vote in favour of constructing a wall. The primary reason for this lack of a positive “vote” is that cost of the wall is prohibitive. Many residents believe that, under Part C, the Region should pay a higher share of the cost of the wall, perhaps even the full amount.

Working Group Response: This historical pattern of zero noise walls being built under Part C of the Noise Policy was discussed by the Working Group. It was determined that a policy shift under Part C was not required. Most commonly, residents are concerned with having to cost share for building a noise wall. Having the residents continue to cost share in the wall’s construction provides for a truly considered approach to the noise sensitivity issues being experienced by the affected properties. The methodology for payment of the wall through municipal taxes spread out over 10 years was also felt to be a fair compromise to offset a typical property owner’s apportioned cost. Additionally, the existing public consultation process included in Part C ensures that a minimum consensus is reached and that the sound issues are clearly understood by all of the affected residents. The threshold of 60 dBA in the “outdoor living area” outlined in Part C is consistent with both the provincial and municipal approaches elsewhere. Many of the Part C noise enquiries actually fall under upcoming projects identified within the Transportation 10-year Capital Plan. As such, many of these locations will undergo noise assessments as part of the Environmental Assessment process that is followed for every road widening project. This future process would provide the resident or group of residents an opportunity for a detailed noise assessment to be completed. In some cases, if widening is occurring and a noise wall is deemed as warranted under Part B then the new wall would be 100% funded by the Region as part of the capital project. Many complaints that are received also end up revealing an existing noise warning clause on title with the affected property or that the residents understanding of the defined outdoor living area is not correct. Many new condominium and townhouse developments which have noise warning clauses for example build small porches facing the regional right-of-ways and through the development application process build a common “outdoor living area” behind the buildings away from the road noise. This has been a common issue in the last 5 years. Overall, it was decided by the Working Group

that because noise perception is so subjective that this approach provides a responsible reaction to resident's concerns by informing the property owners of all the facts and empowering the affected residents where warranted to make an educated decision about whether or not a noise wall would provide them with enough benefit to proceed with construction of noise wall.

5.0 Conclusions

In August of 2019 the Working Group met to discuss staff's findings and review how the Noise Policy Guideline is currently being administered. This review included a review of the Guideline's original development process, a review of how traffic noise is generated and attenuated and how the Guideline has been historically applied for the community at large. It was agreed, that in general, the current Guideline is working well and being applied in a manner consistent with other similar municipalities and current provincial best practices.

In addition to reviewing the fundamental principles of Guideline with the Working Group, staff also undertook a review of the Guideline's 1999 document format and the departmental references being cited. The goal of this administrative review was to ensure the Guideline document is available online and has current departmental references. This "housekeeping" task has been completed along with a name change from "Implementation Guideline for Noise Policies" to "Noise Policy Implementation Guideline". The updated newly named Guideline is now available on the Region's website. It was further agreed that the 1999 version of the Guideline document required a general update in order to keep all references current and improve the documents AODA readability requirements. This task has been completed and updated on the Region of Waterloo's website. (See Appendix 'A') Noise Policy Implementation Guideline)

Corporate Strategic Plan:

Strategic Focus Area:

Healthy, Safe and Inclusive Communities

4.3 Promote and enhance equity in policies, planning, services, and decision-making in order to positively impact community wellbeing.

Financial Implications:

Nil

Other Department Consultations/Concurrence:

Corridor Planning

Appendix C

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Attachments:

Appendix A - Noise Policy Implementation Guideline, Updated 2019.

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Approved by: **Thomas Schmidt**, Commissioner, Transportation and
Environmental Services