

**APPENDIX D**  
**NOISE ANALYSIS**



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**MEMO**

**DRAFT**

**TO:** Adam Bell, Town of Oakville  
**PREPARED BY:** Katherine Jim, MRC  
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**COPIES:** Martin Scott, Greg Moore, MRC  
**OUR FILE:** 7227  
**SUBJECT:** Noise Analysis

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**1. INTRODUCTION**

The Town of Oakville retained McCormick Rankin Corporation (MRC) to carry out the Class Environmental Assessment (Class EA) for the Kerr Street at CNR grade separation and the widening of Kerr Street from 2 to 4 lanes between Speers Road and north of the QEW (see Study Area in Exhibit 1). As part of the Class EA study, a noise assessment was conducted, and findings from the analysis are summarized in this memorandum.

**2. METHODOLOGY**

Noise levels are predicted in decibels in the A-weighted dBA scale, which best approximates the human perception of sound over a specified time period. An increase of 2 – 3 decibels (dBA) in noise levels is considered to be just perceivable to the average person. It should be noted that a 3 dBA increase in noise equates to a doubling of traffic volumes.

**2.1 Ministry of the Environment Requirements**

Since roadway sound levels vary over time, the noise descriptor used in Ontario to assess noise is the equivalent sound level,  $L_{eq}$ .  $L_{eq}$  is identified as the continuous sound level, which has the same energy as a time varying sound level over a specified time period. For the purposes of assessing municipal roadway noise,  $L_{eq}$  is calculated on the basis of the 16 hour daytime period, 7:00 a.m. to 11:00 p.m. For new houses adjacent to existing roads, the provincial objective is 55 dBA in the Outdoor Living Area (OLA) for the daytime period.

Based on the Ontario Ministry of Transportation (MTO)/Ministry of the Environment (MOE) Noise Protocol, where an existing roadway is proposed to be modified / widened adjacent to a Noise Sensitive Area (NSA), MOE requires that the future noise levels without the proposed improvements be compared to the future noise level with the proposed improvements. The assessment is done at the outdoor living area (typically backyards) of each NSA. The provision of noise mitigation is to be investigated should the future noise level with the proposed improvements result in a greater than 5 dBA increase over the future noise level without the proposed improvements. If noise mitigation is provided, the objective is a minimum 5 dBA

reduction. Mitigation will attempt to achieve levels as close to, or lower than, the objective level as is technically, economically and administratively feasible.

STAMSON 5.0 computer modelling program, which is approved for use in Ontario by the MOE, was used to assess potential noise impacts as a result of the Kerr Street / CNR grade separation and the widening of Kerr Street from 2 to 4 lanes between Speers Road and north of the QEW. This program is used to predict noise levels generated from the road at the OLA (typically backyards) of NSAs.

A NSA is defined as a noise sensitive land use (urban or rural) with an outdoor living area associated with the residential unit, which includes:

- private homes such as single family residences;
- townhouses;
- multiple unit buildings such as apartments with outdoor living areas for use by all occupants; and
- hospitals, nursing homes, where there are outdoor living areas for the patients.

The assessment is done at the outdoor living area (typically backyards) of the NSA. The provision of noise mitigation is to be investigated should the future noise level with the proposed improvements result in a greater than 5 dBA increase over the future noise level without the proposed improvements. If noise mitigation is provided, the objective is a minimum 5 dBA reduction. Mitigation will attempt to achieve levels as close to, or lower than, the objective level as is technically, economically and administratively feasible. If noise mitigation is provided, the objective is a minimum 5 dBA reduction.

<b>Change in Noise Level Above Ambient</b>	<b>Mitigation Effort Required</b>
< 5 dBA change	- None
≥ 5 dBA change	- Investigate noise control measures on right-of-way (ROW) - Introduce noise control measures within ROW and mitigate to ambient if technically, economically and administratively feasible - Noise control measures, where introduced, should achieve a minimum of 5 dBA attenuation, over first row receivers

## **2.2 Town of Oakville Noise Attenuation Wall Retrofit Policy**

The Town of Oakville Noise Attenuation Wall Retrofit Policy “addresses the installation of noise attenuation barriers on a retrofit basis in existing residential areas with reverse frontage lots”. Furthermore, the policy “does not apply to noise generated from highways under the jurisdiction of the Province of Ontario, any private operator or the Region(s) nor other sound sources such as rail and air traffic, or industrial and commercial operations”. The noise sensitive areas identified in this study are not reverse frontage lots onto Kerr Street; therefore, the Town of Oakville Noise Attenuation Wall Retrofit Policy does not apply.

## **3. Analysis**

### **3.1 Noise Sensitive Areas**

Noise Sensitive Areas (NSA) within the study area were identified in accordance with the criteria outlined in the MTO/MOE Noise Protocol.

#### **3.1.1 Existing Land Uses**

In general, land uses adjacent to Kerr Street between Speers Road and north of the QEW are mainly established commercial / industrial developments. The Sixteen Mile Creek valley is located on the east side of Kerr Street north of the CNR tracks. There is one existing residential detached house located (i.e. NSA) on the east side of Kerr Street north of the CNR tracks (623 Kerr Street), and there are a few residential houses between the Sixteen Mile Creek and Sixth Line, north of the QEW; these houses are not directly adjacent to Kerr Street. These residential units are considered to be NSAs in proximity to the study area.

For the purposes of this analysis, two receiver locations were identified to represent the NSAs (see Exhibit 1):

- R1 – 623 Kerr Street (frontage to Kerr Street)
- R2 – 1024 Sixth Line (not directly adjacent to Kerr Street)

### **3.2 Assumptions**

Two scenarios were reviewed:

- i) Future (Year 2021) noise levels without the proposed Kerr Street / CNR grade separation and the widening of Kerr Street (i.e. 2 lanes)
- ii) Future (Year 2021) noise levels with the proposed Kerr Street / CNR grade separation and the widening of Kerr Street (i.e. 4 lanes)

Given that existing Kerr Street is operating at or near capacity, it is assumed that the future (Year 2021) AADT without the proposed widening of Kerr Street is the same as the existing AADT.

**Table 1: Factors Used in Analysis**

Factor	Assumptions
Noise Descriptor	$L_{eq}$ (16 hr)
Posted Speed	50 km/h – Kerr Street 100 km/h – QEW
Future 2021 Traffic Volumes (AADT) – Kerr Street	15,000 – without improvements 20,000 – with improvements
Truck Percentage – Kerr Street (Medium / Heavy)	3% / 1%
Future 2021 Traffic Volumes (AADT) – QEW*	104,800 – eastbound GPL 17,770 – eastbound HOV 81,970 – westbound GPL 14,140 – westbound HOV
Truck Percentage – QEW (Medium / Heavy)	2.5% / 7.5% (GPL) 1% / 0% (HOV)
Receptor Height	1.5 m above the ground

Notes: \* Future 2021 traffic data on QEW is based on the QEW from Guelph Line to Trafalgar Road – Needs and Justification for HOV Lane Study and previous noise analysis (QEW Widening Third Line to Burloak Drive Preliminary and Detail Design) traffic assumptions.

#### 4. RESULTS

Findings from the analysis are summarized in the table below and the receiver locations are shown in Exhibit 2. Copies of the STAMSON output sheets are on file with MRC.

Receiver Locations	Without Proposed Widening		With Proposed Grade Separation and Widening to 4 Lanes		Projected Noise Levels (dBA) $L_{eq}$ (16 hr)	Projected Change in Noise Levels (dBA) $L_{eq}$ (16 hr)
	Distance from Receiver Location to Centreline (Kerr Street 2 lanes)	Projected Noise Levels (dBA) $L_{eq}$ (16 hr)	Alternatives	Distance from Receiver Location to Centreline (Kerr Street 4 lanes)		
R1 #623 Kerr Street	Kerr Street – 57 m QEW EB – 465 m QEW WB – 490 m	66.6 dBA	Alt. 1	Kerr Street NB – 37 m Kerr Street SB – 47 m QEW EB – 465 m QEW WB – 490 m	66.6 dBA	0 dBA
			Alt. 2	Kerr Street NB – 48.5 m Kerr Street SB – 60 m QEW EB – 465 m QEW WB – 490 m		
			Alt. 3	Kerr Street NB – 225 m Kerr Street SB – 237 m QEW EB – 465 m QEW WB – 490 m		
R2 #1024 Sixth Line	Kerr Street – 135 m QEW EB – 100 m QEW WB – 75 m	72.2 dBA	Kerr Street north of Wycroft Road follow existing alignment	Kerr Street NB – 137 m Kerr Street SB – 145 m QEW EB – 105 m QEW WB – 48 m	72.2 dBA	0 dBA



## **5. CONCLUSION**

The findings of the noise assessment are as follows:

- The projected change in noise levels (Year 2021) at Receivers 1 to 2 as result of the proposed Kerr Street / CNR grade separation and the widening of Kerr Street from 2 to 4 lanes between Speers Road and north of the QEW are calculated to range from -0.2 dBA (where the proposed alignment would be moved further away to the receiver location) to 0 dBA (i.e. no change).
- The change in noise level as a result of the grade separation and widening of Kerr Street was calculated to be less than 5 dBA, and therefore, the consideration of noise mitigation is not warranted per the Ministry of Transportation (MTO)/ Ministry of the Environment (MOE) Noise Protocol.
- It should be noted that the traffic volume on QEW is approximately 10 times that of Kerr Street. Given the proximity of the receiver locations to the QEW, noise generated from the traffic on QEW is considered to be the dominant noise source in the area.