

Regional Municipality of York

Appendix 3C-2c

Noise

Prepared by:

RWDI

Project #

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1. Introduction

This report provides an overview of the existing noise conditions associated with the Western Vaughan Transportation Improvements Individual Environmental Assessment (IEA). The approved Terms of Reference (ToR) included a preliminary description of the existing study area environment with the commitment that the description would be expanded upon in the IEA. With this in mind, the following investigative studies are proposed for the purposes of generating a more detailed description and understanding of the environment for use in the screening, assessment, and evaluation of alternatives during the IEA:

- Natural Environment;
- Land Use;
- Built Heritage;
- Archaeological;
- Socio-Economic;
- Noise; and
- Air Quality.

The results from undertaking each of these overviews will be documented in separate stand-alone reports during the IEA. In each case, a draft will be prepared and circulated to the Review Agency and Community Stakeholder Advisory Committees and will be posted on the project website for comment. The final Existing Conditions Report will form a chapter of the EA Report with each of the stand-alone reports becoming supporting documents to the EA Report.

1.1 Noise Study Team

The Noise study team consisted of RWDI staff. The actual individuals and their specific roles are provided as follows:

- **Scott Shayko, Hon. B. Comm., B.Sc., Senior Project Manager/Associate**
Scott is the Project Manager for the air quality and environmental noise studies and is responsible for the day-to-day operation and management of the project. He also serves as the primary interface between the client and the project team.
- **Scott Penton, P.Eng., Technical Director/Associate**
Scott is the Technical Director for the air quality and environmental noise studies and is responsible for the technical quality of the studies. He is a Specialist in the fields of air quality, noise and vibration with more than 12 years of experience. Before joining RWDI, Scott completed his degree in System Design Engineering at the University of Waterloo, specializing in environmental systems modelling.

2. Western Vaughan Study Area

In accordance with the approved ToR, the present study area for the Western Vaughan Transportation Improvements IEA includes the western portion of the City of Vaughan from Highway 400 to the east, to Highway 50 in the west, Highway 407 to the south and Teston Road to the north (**Figure 1**).

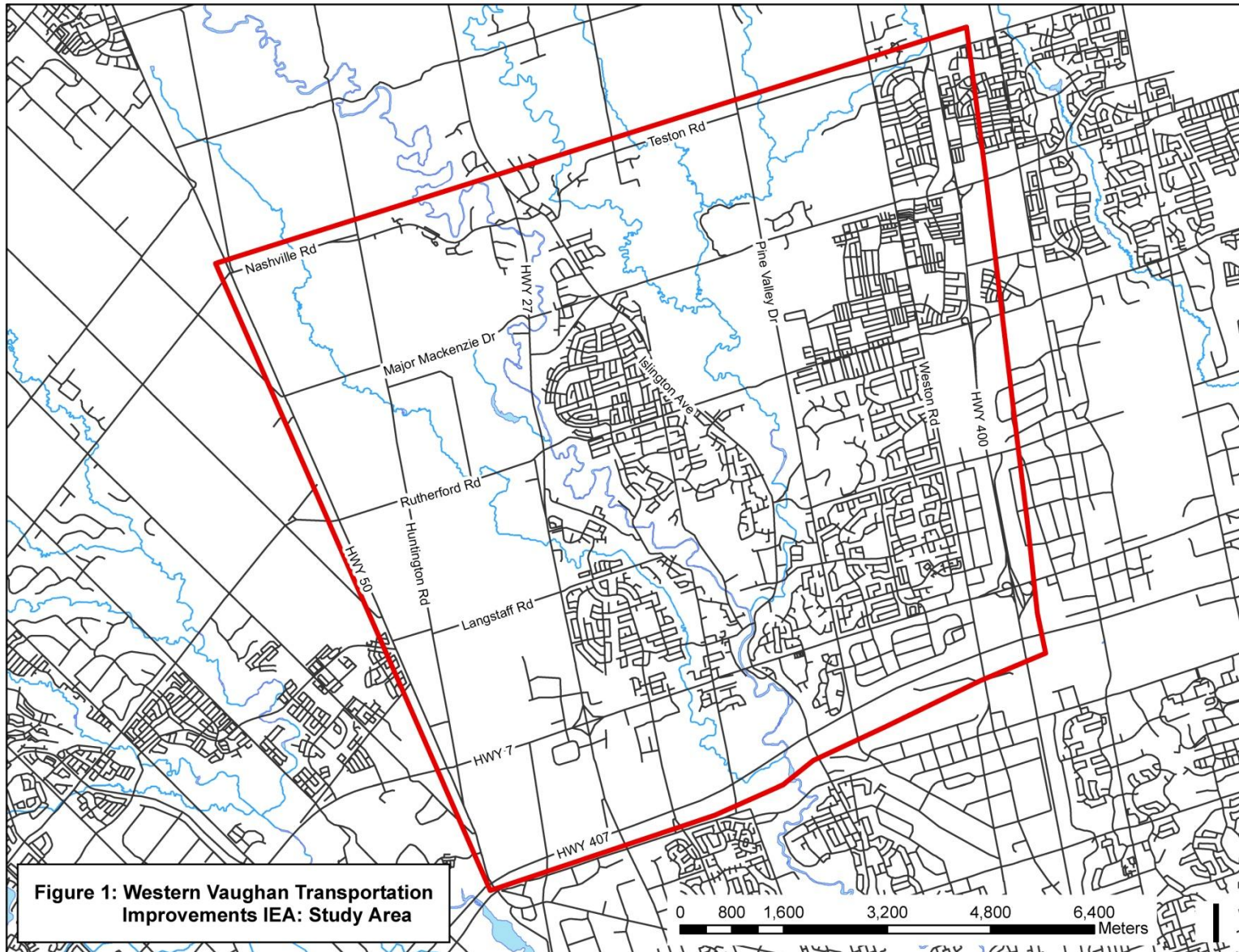


Figure 1. Western Vaughan Transportation Improvements IEA: Study Area

3. Methodology

3.1 Available Secondary Source Information Collection and Review

With this current study area in mind, available secondary sources of information were collected and reviewed by the Noise Study Team to determine existing noise conditions. The following sources of secondary information were collected and reviewed:

- Aerial photography of the study area;
- Ministry of Transportation (MTO) *Environmental Guide for Noise* (October 2007);
- Ministry of the Environment (MOE) Publication NPC-205 – *Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)*;
- MOE Publication NPC-232 – *Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)*;
- MOE *Ontario Road Noise Analysis Method for Environmental and Transportation* (ORNAMENT) road traffic noise model; and
- Personal communications with MTO noise staff.

3.2 Process Undertaken

The study area consists of three distinct types of acoustic environments:

- Urban areas, where the acoustic environment is dominated by man-made sounds during all periods of the 24-h day. Included in this category are areas with heavy population concentrations, industrial or heavy commercial land uses, and areas close to major highways (400 and 407) and major arterial roadways (e.g., Islington, Highway 27, Rutherford Road, etc.) Under MOE terminology, these are known as “Class 1” areas.
- Suburban / semi-rural areas, where the acoustic environment is dominated by man-made sounds during the day, but drop off in the early evening. Included in this category are areas immediately adjacent to minor arterial roadways (e.g., Huntington Road, portions of Pine Valley Drive, etc.), and areas at the edges of urban cores, and within the urban core backing onto green space. Under MOE terminology, these are known as “Class 2” areas.
- Rural areas, where the acoustic environment is dominated by the “sounds of nature”, such as vegetation rustling in the wind, etc. These areas are well removed from major roadways and urban / suburban areas, and are concentrated to the northwest of the study area. Under MOE terminology, these are known as “Class 3” areas.

The MTO *Environmental Guide for Noise* provides guidance on ambient sound levels within Class 1, 2 and 3 areas. In general, the following noise levels can be assumed (L_{eq} (Day) values):

- Class 1 Sound Levels: ≥ 55 dBA;
- Class 2 Sound Levels: ≥ 50 dBA < 55 dBA; and
- Class 3 Sound Levels: ≥ 45 dBA < 50 dBA.

Highways 400 and 407 carry significant traffic volumes, greater than 150,000 vehicles per day, with high percentages of commercial vehicles. The ORNAMENT road traffic noise prediction model was used to estimate a setback distance from these highways to meet 55 dBA and 50 dBA, not accounting for screening

effects. These setbacks were used to establish the initial boundaries of Class 1 and Class 2 areas near the highways (approximately 600 m and 1,200 m respectively).

Similarly, for major arterial roadways (4-lane roadways carrying significant traffic volumes) Class 1 sound levels ≥ 55 dBA would be expected to occur within 200 m of the roadway, and Class 2 sound levels within 400 m of the roadway. Minor arterial roadways would be expected to have Class 2 sound environments within approximately 200 m of the roadway.

The above setbacks were overlaid on mapping to initially identify the Class 1, 2, and 3 areas within the study area. Then the aerial photography for the study area was then reviewed to identify additional Class 1 urban and Class 2 suburban areas which would also have elevated sound levels.

4. Existing Noise Conditions

4.1 Results

The results of the assessment are shown in **Figure 2**. The areas closest to Highways 400 and 407, along with the City of Vaughan urban core, are expected to have Class 1 sound levels ≥ 55 dB. Sound levels increase at closer distances to the highways. Areas within the core which back onto the Humber watershed and the golf course may have class 2 characteristics. Class 3 rural areas are located to mainly to the north and west of the study area.

5. Conclusions

The majority of Western Vaughan would be classified as a Class 1 area, with sound levels of 55 dBA or greater. The population of Western Vaughn will increase by nearly 25% and the number of jobs created in this area will double. As the population increases, the rural lands located to the north and west of the area will see the most growth, and the greatest potential for increases in noise levels.

6. Recommendations / Further Work

There are no recommendations at this time in relationship to the existing conditions.

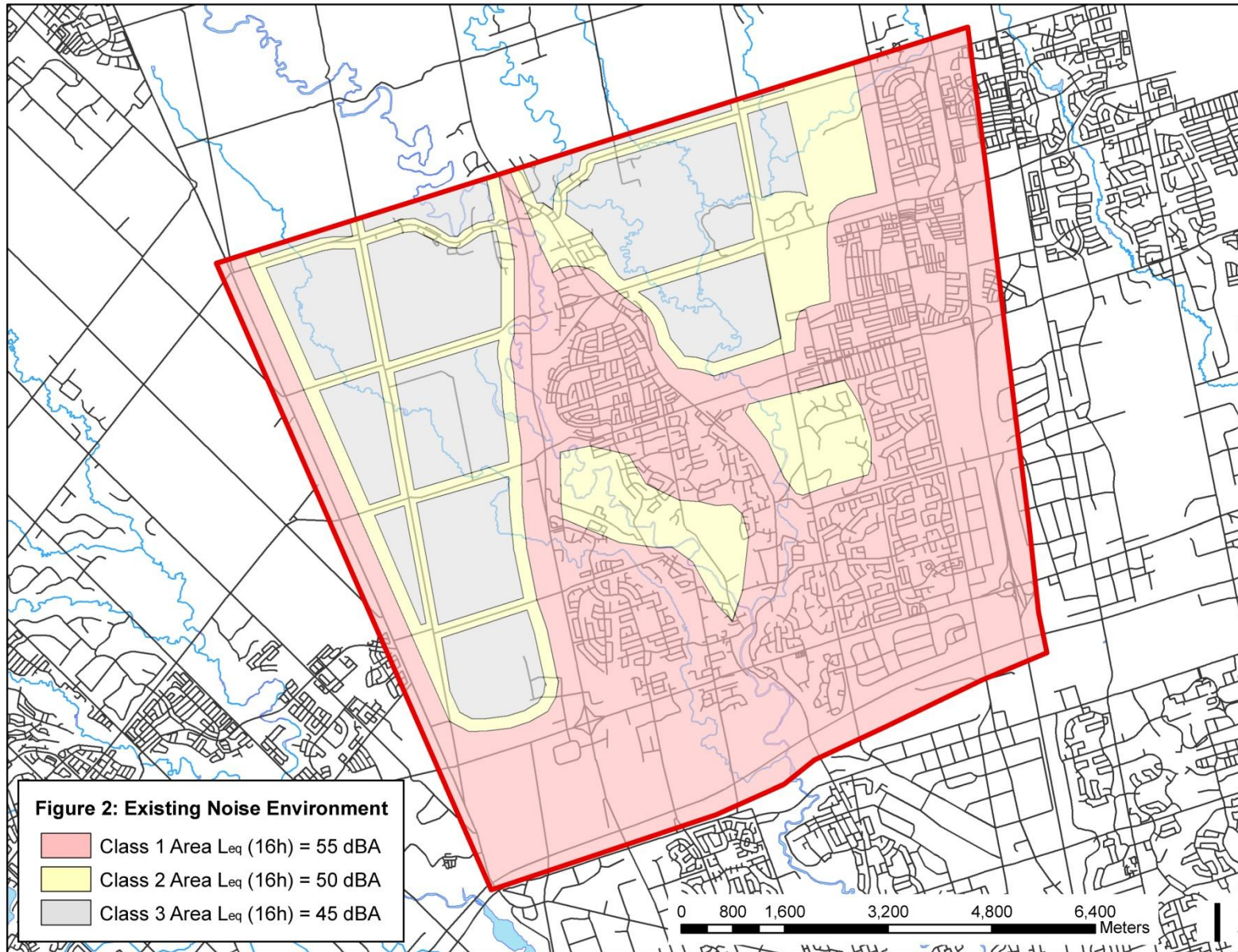


Figure 2. Existing Noise Environment

7. References

- Ontario Ministry of the Environment (MOE), 1989:
Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT), Queen's Printer for Ontario.
- Ontario Ministry of the Environment (MOE), 1995:
Publication NPC-205, Sound Level Limits for Stationary Sources in Class 1&2 Areas (Urban), Queen's Printer for Ontario.
- Ontario Ministry of the Environment (MOE), 1995:
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- Ontario Ministry of Transportation (MTO), 2007:
Environmental Guide For Noise, Queen's Printer for Ontario.