Norval West Bypass Municipal Class Environmental Assessment - Noise Impact Assessment Report

July 18, 2024

Prepared for:
Halton Region
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Oakville, Ontario L6M 3L1

Prepared by:
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Project Number:
165010598

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Executive Summary

Stantec Consulting Ltd. (Stantec) was retained by Halton Region to undertake a Municipal Class Environmental Assessment (MCEA) for the Norval West Bypass Transportation Corridor Improvements, Highway 7 to 10 Side Road (Regional Road 10). The study is assessing the need for a new Norval West Bypass between Highway 7 and 10 Side Road, as well as improvements to 10 Side Road between Tenth Line and Adamson Street/Winston Churchill Boulevard (the Project). These improvements present an opportunity to streamline and facilitate a dominant travel route by re-orienting the roadway to support growth in Halton Hills and Halton Region. There are opportunities to provide better links to regional transit and active transportation connections, as well as between the communities and hamlets within the area.

The purpose of this assessment is to assess the future Project noise impact at nearby noise sensitive areas (NSAs) and investigate noise mitigation where needed as per the applicable guidelines.

This assessment considers thirty-four (34) receptors representing NSAs identified for the Project, and they include existing dwellings, daycares and places of worship. The receptors were identified from a review of aerial imagery, and they are consistent with the Air Quality assessment for the Project. No approved subdivisions are identified in the area. It is understood that there will be residential developments under the Southeast Secondary Plan, for which noise impact will be assessed and any mitigation (if needed) will be proposed by the developers.

The Halton Region Noise Abatement Guidelines (Halton Region, 2009) and Ontario Ministry of the Environment Conservation and Parks (MECP), formerly known as Ministry of Energy and Environment (MOEE), / Ministry of Transportation (MTO) “Joint Protocol,” A Protocol for Dealing with Noise Concerns During the Preparation, Review and Evaluation of Provincial Highway’s Environmental Assessments are considered for this assessment (MOEE/MTO 1986). Although not specifically intended for this purpose, the Joint Protocol is typically adopted within Ontario to assess regional and municipal road improvement projects. The Halton Region Noise Abatement Guidelines require an increase of more than 5 dB at the assessed NSA based on future noise from traffic to investigate noise control measures within the right-of-way. The Project is assessed for daytime (07:00-23:00) noise levels as required by the guidelines.

Norval West Bypass Municipal Class Environmental Assessment - Noise Impact Assessment Report
Executive Summary
July 18, 2024

To determine the noise impact at the receptors, a comparison was made between the predicted future daytime noise levels for 2041[1] with the Project (Future Build) and without the Project (Future No-build). Where predicted Future Build noise levels increase more than 5 dB over Future No-build and Future Build noise levels exceed 55 dBA, mitigation was investigated. For the mitigation to be implemented, it must be technically, economically, and administratively feasible.

The Project is in the Town of Halton Hills within the Halton Region. The Town of Halton Hills does not have any noise limits applicable for road projects. The applicable noise by-law (Town of Halton Hills Noise By-Law Number 2010-0030) limits the operation of construction equipment and are considered in this assessment.

The United States Federal Highway Administration (FHWA) Traffic Noise Model (TNM v3.1) as approved by MTO was used for this road noise impact assessment.

The predicted daytime noise levels indicate that the increase in Future Build noise level over Future No-build noise level at all modelled receptors is under 5 dB. Therefore, noise mitigation was not investigated for the Project.

Construction noise for the Project was assessed in accordance with the applicable MECP Publication NPC-115 (MECP, 1977) and NPC-118 (MECP, 1982).

It is expected that most of the planned construction equipment for the Project can be operated in compliance with the MECP limits. However, there is potential for sound levels over the stated limits for some equipment (e.g., paving machines). Once the equipment inventory and construction schedules are finalized, construction equipment sound levels should be reviewed to confirm that nose emissions are within permissible limits. If they exceed the limits, noise control options should be explored. Methods to reduce construction noise impacts are included in the Construction Code of Practice, as outlined in Section 6.2.

[1] Although 2031 horizon year is established in the traffic study, traffic for Year 2041 was calculated based on an annual traffic growth rate of 1%, as the noise study require traffic data for a minimum of 10 year after the completion of the Project.

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Acronyms/Units

ADT	Average Daily Traffic
dB	Decibel
dBA	Decibel, A-weighted
EA	Environmental Assessment
FHWA	Federal Highway Administration
$L_{eq-16hr}$	16-hr Energy Equivalent Sound Level
Km/h	Kilometre Per hour
m	Metre
MECP	Ontario Ministry of the Environment, Conservation and Parks
MOEE	Ontario Ministry of Energy and Environment
MTO	Ontario Ministry of Transportation
NPC	Noise Pollution Control
NSA	Noise Sensitive Area
OLA	Outdoor Living Area
ORNAMENT	Ontario Road Noise Analysis Method for Environment and Transportation
TNM	Traffic Noise Model

1.0 Introduction

Stantec Consulting Ltd. (Stantec) was retained by the Halton Region to undertake a Municipal Class Environmental Assessment (MCEA) for the Norval West Bypass Transportation Corridor Improvements, Highway 7 to 10 Side Road (Regional Road 10). The study is assessing the need for a new Norval West Bypass between Highway 7 and 10 Side Road, as well as improvements to 10 Side Road between Tenth Line and Adamson Street/Winston Churchill Boulevard (the Project).

The purpose of this assessment is to assess the Project noise impact at nearby noise sensitive areas (NSAs) and investigate noise mitigation where needed according to applicable guidance. This noise impact assessment report is completed based on the Preferred layout for the Project as included in Appendix A.

The Project extent along with the site location is shown in Figure 1-1.

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Legend

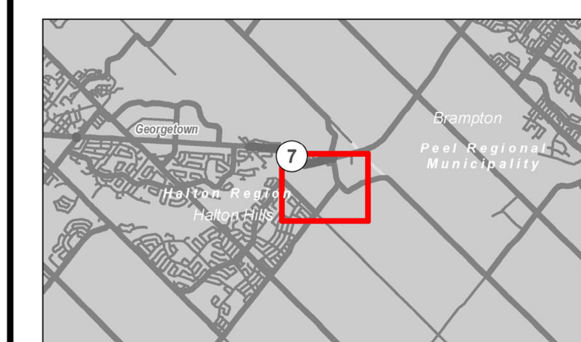
- Site Location
- Recommended Design (The Project)
- Provincial Highway
- Major Road
- Minor Road
- Waterbody
- Municipal Boundary, Halton Region
- Municipal Boundary, Town of Halton Hills

0 100 200 Metres

1:5,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.



Project Location
Halton Region

165010598
Prepared by JSa on 2024-06-21

Client/Project
HALTON REGION
NORVAL WEST BYPASS - CLASS EA

Figure No.
1-1

Title
Project Extent and Site Location

2.0 Study Area

The Study Area for this Class EA Noise Impact Assessment is in the Town of Halton Hills within Halton Region. The Study Area encompasses the area within which NSAs may be impacted from the Project.

The Study Area considered for this noise impact assessment is 600 metres (m) on either side of the proposed Norval West Bypass Road and re-aligned 10 Side Road. The Study Area is shown in Figure 2-1. Figure 2-1 also illustrates the modelled receptors which are discussed in Section 4.0.

590500
591000
591500
592000
592500
593000
4833500
4833000
4832500
4832000
Adamson Street North
Old Pinecrest Road
Bovaird Drive West
Mcfarlane Drive
Ridgegate Crescent
Hall Road
Rosefield Drive
Morden Neilson Way
Russell Street
7
Credit River West Branch
Mary Street
Noble Street
Pine Court
Louisa Street
Highway 7
Norval
Adamson Street South
Credit River
Fagan Drive
Chelvin Drive
Kay Lane
Gollop Crescent
Tenth Line
Davis Crescent
Gooderham Drive
Watson Road
Winston Churchill Boulevard
Rosewell Crescent
Branigan Crescent
Overstone Road
10 Side Road
Danby Road
Monarch Drive
Webster Way
Harley Ave
Mull Gate
Samuel Crescent
Argyll Road
Barber Drive
Niagara Trail
Wildflower Lane
Hartwell Road
Morningside Drive
Duffie Cresc
Serenity Street
Emslie Street
Calico Court
R01
R02
R03
R04
R05
R06
R07
R08
R09
R10
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R13
R14
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R22
R23
R24
R25
R26
R27
R28
R29
R30
R31
R32
R33
R34
N

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Stantec

Legend

- Noise Receptor
- Recommended Design (The Project)
- Study Area - 600 m

0 200 400 Metres

1:10,000 (At original document size of 11x17)

Notes

1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2020.
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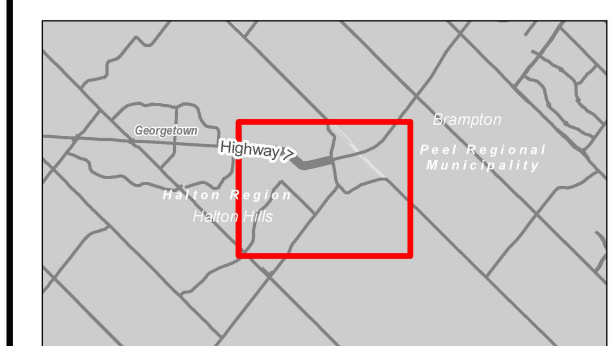


Project Location: Halton Region

165010598
Prepared by JSa on 2024-06-21

Client/Project
HALTON REGION
NORVAL WEST BYPASS - CLASS EA

Figure No.
2-1

Title
Noise Study Area and Receptors

3.0 Applicable Guidelines

For the proposed Norval West Bypass and improvements to 10 Side Road, both operational noise (road traffic noise) and construction noise are assessed with the applicable Regional and Provincial noise guidelines. The Town of Halton Hills does not have any noise guidelines applicable to the operation assessment of the road projects. The applicable noise by-law (Town of Halton Hills Noise By-Law Number 2010-0030) is considered in this assessment as it includes limitations on the operation of construction equipment.

Applicable noise guidelines for the proposed Norval West Bypass and improvements to 10 Side Road are discussed in the following subsections.

3.1 Operational Noise

Ontario has several guidelines and documents related to assessing road traffic noise impacts. The document most applicable to potential impacts of municipal roadway projects on existing NSAs is the Ontario Ministry of the Environment Conservation and Parks (MECP), formerly known as Ministry of Energy and Environment (MOEE), / Ministry of Transportation (MTO) “Joint Protocol,” A Protocol for Dealing with Noise Concerns During the Preparation, Review and Evaluation of Provincial Highway’s Environmental Assessments (MOEE/MTO 1986). Although the MTO Environmental Guide for Noise (MTO, 2006) superseded the Joint Protocol, it has not been adopted by the MECP for municipal projects. Therefore, MOEE/MTO joint protocol has been used for the existing dwellings in this assessment. The Joint Protocol is typically adopted within Ontario to assess regional and municipal road improvement projects, although it is not specifically intended for the purpose.

In accordance with the Joint Protocol, the Project noise impact is assessed by comparing the predicted future daytime noise level with the Project (Future Build) and without the Project (Future No-build) for the existing receptors. Where predicted Future Build noise levels increase more than 5 dB over Future No-build and Future Build noise levels exceed 55 dBA, mitigation measures are to be investigated. Noise level is predicted at the outdoor living area (OLA) as per the Protocol. The assessment will be based on the traffic data for a minimum period of 10 years after the date of completion of the Project (understood to be 2031).

Noise control measures within the right-of-way should be investigated in accordance with the applicable Halton Region Noise Abatement Guidelines (Halton Region, 2009), where predicted Future Build noise levels increase is more than 5 dB over Future No-build.

For the mitigation to be considered for implementation, it must be technically, economically, and administratively feasible. To be technically feasible, it must provide a minimum 5 dB noise level reduction averaged over the first row of receptors[2].

As per the guidelines, traffic noise is assessed at the OLAs in 16-hour equivalent sound level ($L_{eq-16hr}$) for the regional roads. The $L_{eq-16hr}$ represents noise level for the daytime period (07:00 to 23:00).

3.2 Construction Noise

Construction noise impacts are temporary in nature, and largely unavoidable. For some periods and types of work construction noise may be noticeable, and with adequate controls, impacts can be reduced. This section of the report provides overview of the criteria and applicable noise by-law from the Town of Halton Hills (By-Law Number 2010-0030).

The relevant local noise by-laws and applicable criteria are discussed in the following subsections.

3.2.1 Local Noise By-Laws

Town of Halton Hills Noise By-Law Number 2010-0030 (Town of Halton Hills, 2010) provides prohibited periods for construction as well as noise emissions for construction equipment as provided in MECP Publications NPC-115 (MECP, 1977) and NPC-118 (MECP, 1982). The construction noise limits are described in the following section.

The prohibited construction periods per applicable noise bylaw are listed in Table 3-1.

Table 3-1: Prohibited Periods for Construction Activities

Noise By-Law	Weekdays	Weekends
Town of Halton Hills #2010-0030	19:00 to 07:00 next day (Monday – Thursday), Friday 19:00 to Saturday 08:00	Saturday 18:00 – Monday 07:00, Including Holidays

[2] First Row Receptors means the line of adjacent receptors closest to the road, usually running parallel to each other.

In certain situations, a by-law exception permit for the work that does not align with the local noise control by-laws (e.g., construction during prohibited periods).

3.2.2 MECP Model Municipal Noise Control By-law

The MECP stipulates limits on noise emissions from construction equipment, rather than an overall construction noise limit for the receptors. In the presence of persistent noise complaints, noise emission for the various types of construction equipment used on the project should be verified through measurements to ensure that they meet the specified limits contained in MECP Publication NPC-115 (MECP, 1977) and NPC-118 (MECP, 1982).

Construction equipment noise limits are also provided in Halton Hills Noise By-Law Number 2010-0030 (Halton Hills, 2010) and they are consistent with the MECP limits, and they are summarized in Table 3-2.

Table 3-2: Construction Noise Emission Limits

Type of Unit	Maximum Allowed Sound Pressure Level [a] (dBA)	Distance at Which Sound Levels are Measured (m)	Power Rating (kW)
Excavation Equipment [b]	83	15	Less than 75 kW
	85	15	75 kW or Greater
Pneumatic Equipment [c]	85	7	N/a
Portable Compressors	76	7	N/a
Track Drills	100	15	N/a
Heavy Vehicles with Governed Diesel Engines	95	15	N/a

Notes:

[a] Maximum permissible sound levels presented here are for equipment manufactured after Jan 1, 1981

[b] Excavation equipment includes bulldozers, backhoes, front end loaders, graders, excavators, steam rollers and other equipment capable of being used for similar applications

[c] Pneumatic equipment includes pavement breakers

4.0 Noise Sensitive Areas and Receptors

Under the Joint Protocol, NSAs include the following land uses, provided they have an OLA associated with them:

- Private homes (single family units and townhouses);
- Multiple unit buildings;
- Hospitals and nursing homes;
- Schools, educational facilities, and daycare centres;
- Campgrounds with overnight accommodation;
- Hotels and motels; and
- Churches and places of worship.

However, Halton Region Noise Abatement Guidelines (Regional Official Plan Guidelines) consider residential land uses with OLAs only for road traffic noise assessments. The extended list of receptors listed under the Joint Protocol are conservatively considered for this assessment.

The NSAs with OLAs identified within the Project Study Area include the existing dwellings, daycares and places of worship. Thirty-four (34) representative receptors were identified for this assessment. NSA locations were identified from a review of aerial imagery. Apartment balconies, cemeteries, parks and picnic areas that are not part of OLAs, commercial and industrial properties do not qualify as NSAs.

The receptors considered for the assessment are listed in Table 4-1 and are shown in Figure 2-1.

Table 4-1: Receptors

Receptor ID	Receptor Description	UTM Coordinates (Zone 17)	
		Easting (m)	Northing (m)
R01	Residence on Russell Street	591219	4833254
R02	Residence on Russell Street	591250	4833258
R03	Residence on Russell Street	591267	4833286
R04	Residence on Guelph Street	591501	4833210
R05	Residence on Guelph Street	591532	4833203
R06	Georgetown Daycare Centre& Nursery School Inc.	591571	4833240
R07	Residence on Guelph Street	591609	4833154

Receptor ID	Receptor Description	UTM Coordinates (Zone 17)	
		Easting (m)	Northing (m)
R08	Residence on Guelph Street	591629	4833161
R09	Residence on Guelph Street	591657	4833166
R10	St. George Syriac Orthodox Church	591687	4833169
R11	Residence on Guelph Street	591743	4833182
R12	Residence on Guelph Street	591766	4833187
R13	Norval Presbyterian Church	591787	4833253
R14	Residence on Guelph Street	591807	4833198
R15	Residence on Guelph Street	591856	4833203
R16	Residence on Guelph Street	591890	4833177
R17	Residence on Green Street	591973	4833140
R18	St Paul's Anglican Church	592098	4833167
R19	St Paul's Anglican Church Hall	592107	4833133
R20	Residence on Adamson Street	592097	4832870
R21	Residence on Winston Churchill Boulevard	592283	4832731
R22	Residence on Winston Churchill Boulevard	592318	4832719
R23	Residence on Winston Churchill Boulevard	592378	4832672
R24	Residence on Winston Churchill Boulevard	592329	4832506
R25	Residence on Tenth Line	591658	4832318
R26	Residence on Tenth Line	591600	4832378
R27	Residence on Tenth Line	591503	4832473
R28	Residence on Tenth Line	591429	4832548
R29	Residence on Tenth Line	591344	4832636
R30	Residence on Tenth Line	591263	4832711
R31	Residence on Tenth Line	591186	4832779
R32	Residence on Tenth Line	591128	4832852
R33	Residence on Tenth Line	591083	4832891
R34	Residence on Tenth Line	591027	4832944

Note: The receptors represent the OLA of the NSA(s) and are located at 1.5 m above the existing ground surface and 3 m from the dwelling wall.

5.0 Operations Noise Assessment

The assessment predicts road traffic noise levels for the Future No-build and Future Build scenarios for Year 2041[3]:

- The Future No-build (without the Project) scenario – considers road traffic noise from the existing road network for Year 2041 traffic; and
- The Future Build (with the Project) scenario – considers road traffic noise from the proposed Norval West Bypass Road and associated re-aligned roads and improvements for Year 2041 traffic.

Project noise impacts are assessed in terms 16-hour equivalent sound level ($L_{eq\text{-}16hr}$) for the time period between 07:00 and 23:00 as per the guidelines for all receptors.

5.1 Assessment Methods

The MECP recommends the latest version of the United States Federal Highway Administration Traffic Noise Model (FHWA TNM©) for assessing road traffic noise in the recently published 'Methods to Determine Sound Levels Due to Road and Rail Traffic NPC-306', dated February 2020 which is currently in draft from MECP (MECP 2020).

The US FHWA Traffic Noise Model, version 3.1 (TNM v3.1) was used for this noise impact assessment. The road traffic noise model considers the following inputs:

- Average Daily Traffic (ADT)
- Commercial vehicle percentages, including heavy and medium trucks
- Vehicle speed
- Shielding from intervening ground
- Pavement type
- Elevation profiles for the existing and new/modified roadways

[3] Although 2031 horizon year was established in the traffic study, traffic for Year 2041 is calculated based on an annual traffic growth rate of 1%, as the noise study require traffic data for a minimum of 10 year after the completion of the Project.

Estimates of the ADT, annual traffic growth and commercial vehicle percentages used for the noise modelling were provided by the Project traffic team. The percentage of vehicles for day/night and heavy/medium truck were estimated based on Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT) Technical Document (MECP, 1989).

Road traffic data used for noise modelling of Future No-build and Future Build scenarios is summarized in Table 5-1 and in

Table 5-3.

Table 5-1: Future No-Build Road Traffic Data for Year 2041

Road Segment	2041 ADT [a]	Medium Truck %	Heavy Truck %	Day/Night Split % [b]	Traffic Speed (km/h) [c]
Hwy 7 West of Adamson Street	26,713	3	1	90/10	50
Hwy 7 East of Adamson Street	23,135	3	1	90/10	50
Adamson Street N North of Highway 7	10,978	3	1	90/10	50
Adamson Street N South of Highway 8	25,328	3	1	90/10	50
Winston Churchill Boulevard	10,516	3	1	90/10	50
10 Side Road West of Tenth Line	16,633	3	1	90/10	70
10 Side Road East of Tenth Line	19,583	3	1	90/10	60
Tenth Line South of 10 Side Road	8,105	3	1	90/10	80
Tenth Line North of 10 Side Road	5,604	3	1	90/10	60

Notes:

[a] ADT for 2041 calculated from peak hour traffic data for the horizon year 2031 using 1% annual traffic growth.

[b] Traffic split based on the Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT) Technical Document.

[c] Posted speed limits.

Table 5-2: Future Build Road Traffic Data for Year 2041

Road Segment	2041 ADT [a]	Medium Truck %	Heavy Truck %	Day/Night Split % [b]	Traffic Speed (km/h)
Highway 7 West of Bypass	22,534	3	1	90/10	50
Highway 7 East of Bypass	12,007	3	1	90/10	50
Highway 7 East of Adamson Street	6,318	3	1	90/10	50
Norval West Bypass	15,608	3	1	90/10	60
Adamson Street N North of Highway 7	6,849	3	1	90/10	50
Adamson Street N South of Highway 7	13,156	3	1	90/10	50
Winston Churchill Boulevard North Connection	3,844	3	1	90/10	50
Tenth Line North of 10 Side Road	4,573	3	1	90/10	60
Tenth Line South of 10 Side Road	9,953	3	1	90/10	80
10 Side Road West of Tenth Line	18,016	3	1	90/10	70
10 Side Road East of Tenth Line	19,220	3	1	90/10	60
Winston Churchill Boulevard South Connection	13,035	3	1	90/10	60

Notes:

[a] ADT for 2041 calculated from peak hour traffic data for the horizon year 2031 using 1% annual traffic growth.

[b] Traffic split based on the Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT) Technical Document.

5.2 Future Noise Impacts

Road traffic noise levels for the daytime period were predicted at the representative receptors for the Future Build and Future No-Build scenarios for Year 2041.

Table 5-3 lists the predicted daytime noise levels and identifies if noise mitigation should be investigated based on the appliable guidelines.

Table 5-3: Predicted Daytime Noise Levels and Mitigation Requirements

Receptor ID	Predicted Daytime ($L_{eq-16hr}$) Noise Levels (dBA)		Predicted Noise Impact			
	Future No-build (2041)	Future Build (2041)	Increase in Noise Levels [a] (dB)	Is Increase in Noise Levels > 5 dB? (Yes/No)	Future Build Noise Levels > 55 dBA? (Yes/No)	Mitigation Investigation Required? (Yes/No)
R01	49	47	-2	No	No	No
R02	50	49	-2	No	No	No
R03	47	48	1	No	No	No
R04	61	59	-2	No	Yes	No
R05	64	58	-6	No	Yes	No
R06	59	56	-3	No	Yes	No
R07	62	59	-3	No	Yes	No
R08	61	58	-3	No	Yes	No
R09	64	61	-3	No	Yes	No
R10	61	58	-3	No	Yes	No
R11	61	57	-4	No	Yes	No
R12	61	58	-3	No	Yes	No
R13	62	59	-3	No	Yes	No
R14	63	59	-4	No	Yes	No
R15	62	58	-4	No	Yes	No
R16	58	55	-3	No	No	No
R17	57	54	-3	No	No	No
R18	63	60	-3	No	Yes	No
R19	62	59	-3	No	Yes	No
R20	63	60	-3	No	Yes	No
R21	58	54	-4	No	No	No

Receptor ID	Predicted Daytime ($L_{eq-16hr}$) Noise Levels (dBA)		Predicted Noise Impact			
	Future No-build (2041)	Future Build (2041)	Increase in Noise Levels [a] (dB)	Is Increase in Noise Levels > 5 dB? (Yes/No)	Future Build Noise Levels > 55 dBA? (Yes/No)	Mitigation Investigation Required? (Yes/No)
R22	60	55	-5	No	No	No
R23	58	55	-3	No	No	No
R24	51	54	3	No	No	No
R25	60	60	0	No	Yes	No
R26	58	57	0	No	Yes	No
R27	58	58	0	No	Yes	No
R28	56	56	0	No	Yes	No
R29	56	56	0	No	Yes	No
R30	53	49	-4	No	No	No
R31	52	49	-3	No	No	No
R32	54	56	2	No	Yes	No
R33	50	51	1	No	No	No
R34	45	46	1	No	No	No

Note:

[a] Increase in noise level is calculated as the difference between Future Build and Future No-build road traffic noise levels.

The predicted daytime sound levels at the modelled receptors indicate that the maximum increase in predicted sound level from Future No-Build to Future Build is expected to be 3 dB at receptor R24 and is below the limits for investigating noise mitigation. Predicted sound levels at most of the receptors are expected to be reduced due to the Project. The Project road traffic noise levels at the receptors are expected to be within the Halton Region and MOEE/MTO Joint Protocol limits, and no mitigation is required for the Project.

Sample calculations from the noise model are included in Appendix B.

6.0 Construction Noise Assessment

This section of the report provides an evaluation of construction equipment noise and discusses construction Code of Practice to reduce noise impacts.

Construction activities will vary temporally and spatially based on construction staging. Noise levels from construction at a given receptor location will also vary over time as different activities take place, and as those activities change location within the right-of-way.

6.1 Construction Noise Levels

Table 6-1 lists the construction equipment considered for the assessment and a comparison of their noise emissions to the applicable NPC-115 and NPC-118 noise limits. A detailed construction plan or equipment list is not currently available. Table 6-1 represents typical equipment expected to be used for this type of construction project. The listed construction equipment noise emissions are based on Stantec's database of field measurements of construction equipment.

Table 6-1: Construction Equipment Sound Level Assessment

Type of Equipment	Typical Range of Maximum Sound Levels at 15 m (dBA)	NPC-115/118 Sound Level at 15 m (dBA)	Meets NPC-115/118 Sound Level? (Y/N)
Front-End Loaders	77 – 85	85	Y
Backhoe	66 – 80	85	Y
Auger	76 – 84	85	Y
Dump Trucks	76 – 88	95	Y
Concrete Trucks	77 – 85	85	Y
Concrete Pump and Boom	77 – 82	85	Y
Vibratory Compactors	79 – 83	85	Y
Paving Machines [a]	77 – 89	85	N
Cranes	73 – 83	85	Y
Grader	79 – 85	85	Y

Note:
[a] These equipment units have potential to exceed the applicable MECP limits and precautions/noise control feasibility should be investigated if they are used near sensitive receptors.

The typical sound levels presented in Table 6-1 show that most equipment expected for this type of Project can be operated in compliance with the MECP NPC-115/118 limits. The list also shows that there is the potential for higher sound levels than permissible limits for paving machines. Once equipment and construction schedules are finalized, the equipment noise data should be reviewed during detailed design to confirm that noise emissions are within the permissible limits. If the sound levels are higher than the limits, noise control options should be explored.

6.2 Construction Code of Practice

The following best practices for construction should be considered to minimize disturbances outside of the noise by-law requirements:

- All construction equipment should be properly maintained to limit noise emissions. As such, all construction equipment should be operated with effective muffling devices that are in good working order.
- There should be explicit indication that Contractors are expected to comply with all applicable requirements of the contract and local noise by-laws. Enforcement of noise control by-laws is the responsibility of the Municipality for all work done by Contractors.
- The Contract documents should contain a provision that any initial noise complaint will trigger verification of construction noise and typical noise control measures.
- In the presence of persistent noise complaints, all construction equipment should be verified to comply with MECP NPC-115 and NPC-118 guidelines.
- In the presence of persistent complaints and subject to the results of a field investigation, alternative noise control measures may be required, where reasonably available. In selecting appropriate noise control and mitigation measures, consideration should be given to the technical, administrative, and economic feasibility of the various alternatives.

7.0 Conclusion and Closure

Operational and construction noise impacts from the proposed Norval West Bypass and improvements to 10 Side Road were assessed.

Thirty-four (34) representative receptors, including existing dwellings, daycares and places of worship were identified for this assessment, and they are consistent with the Air Quality assessment for the Project. No approved subdivisions are identified in the area. Noise assessment and mitigation for the subdivisions under the Southeast Georgetown Secondary Plan are expected to be completed by the developers.

The predicted daytime noise levels indicate that the increase in Future Build noise level over Future No-build noise level at all modelled receptors is under 5 dB. Therefore, noise mitigation was not investigated or recommended for the Project.

It is expected that most of the construction equipment typical for this type of Project can be operated in compliance with the MECP limits. However, there is potential for higher sound levels for some equipment (e.g., paving machines). Once equipment and construction schedules are finalized, construction equipment sound levels should be reviewed to confirm that nose emissions are within permissible limits. If they are higher than the limits, noise control options should be explored for the construction equipment exceeding the limits. Methods to reduce construction noise impacts are included in the Construction Code of Practice, as outlined in Section 6.2.

8.0 References

Ontario Ministry of Energy and Environment/Ministry of Transportation. 1986. “Joint Protocol,” A Protocol for Dealing with Noise Concerns During the Preparation, Review and Evaluation of Provincial Highway’s Environmental Assessments.”

Ontario Ministry of the Environment, Conservation and Parks. 2020. MECP NPC-306 “Methods to Determine Sound Levels Due to Road and Rail Traffic.”

Ontario Ministry of the Environment, Conservation and Parks. 1977. “Model Municipal Noise Control Bylaw - Publication NPC - 115, Construction Equipment.”

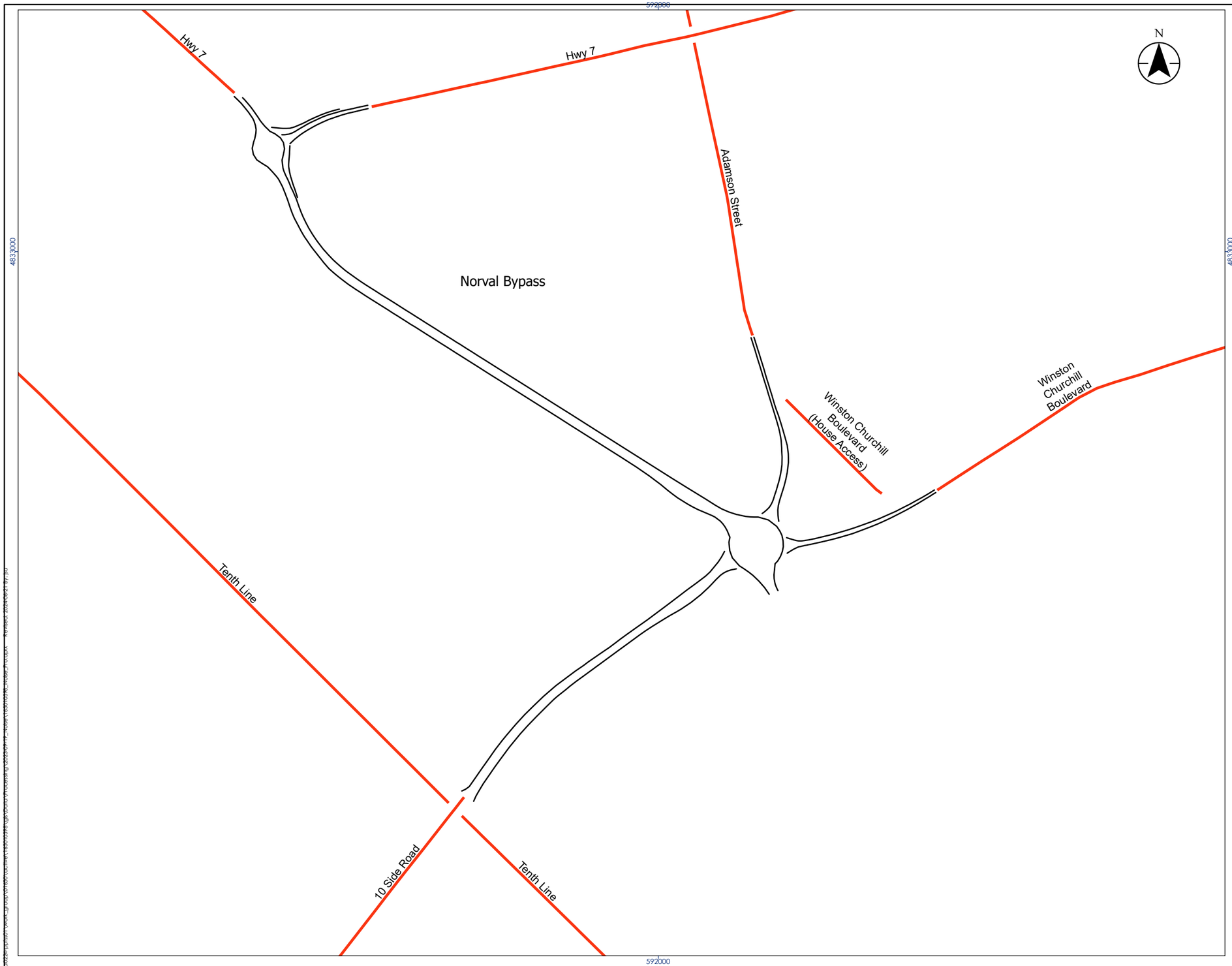
Ontario Ministry of the Environment, Conservation and Parks. 1982. “Publication NPC-118 for Motorized Conveyances.”

Ontario Ministry of the Environment, Conservation and Parks (MECP), 1989, Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT).

The Halton Region Noise Abatement Guidelines. 2009. Regional Official Plan Guidelines.

The Town of Halton Hills. 2006. “By-law Number 2010-0030.”

Appendix A
Project Layout



Stantec

Legend
- Existing Road
- Recommended Design (The Project)

0 100 200 Metres

1:5,000 (At original document size of 11x17)

Notes
1. Coordinate System: NAD 1983 UTM Zone 17N
2. Base features produced under license with the Ontario Ministry of Natural Resources and Forestry © Queen's Printer for Ontario, 2019.

Project Location
Halton Region

165010598
Prepared by jsa on 2024-06-21

Client/Project
HALTON REGION
NORVAL WEST BYPASS - CLASS EA

Figure No.
Appendix A

Title
Project Layout

Appendix B
Sample Calculations

REPORT:	**Future No Build**		
TNM VERSION	3.1.7970.376	REPORT DATE:	28 February 2024
CALCULATED WITH:	3.1.7970.376	CALCULATION DATE:	2/28/2024 5:27:51 PM
CASE:	TNM	ORGANIZATION:	Stantec
UNITS:	Metric	ANALYSIS BY:	mst
DEFAULT GROUND TYPE:	HardSoil	PROJECT/CONTRACT	Norval West Bypass
ATMOSPHERICS:	20°C, 50%	Average pavement type shall be used unless a state highway agency substantiates the use of a different type with approval FHWA.	
PAVEMENT TYPE(S) USED:	Average		

Receiver				Modeled Traffic Noise Levels				
				LAeq		Increase over Existing		
Name	No.	Nb. R.R.	Existing LAeq	Calc.	Absolute Criterion	Calc.	Relative Criterion	Type of Impact
			dBA	dBA	dBA	dBA	dBA	
Receiver-1	1	1	---	48.5	55.0	---	---	None
Receiver-2	2	1	---	50.4	55.0	---	---	None
Receiver-3	3	1	---	47.2	55.0	---	---	None
Receiver-4	4	1	---	61.5	55.0	---	---	None
Receiver-5	5	1	---	63.8	55.0	---	---	None
Receiver-6	6	1	---	58.8	55.0	---	---	None
Receiver-7	7	1	---	62.1	55.0	---	---	None
Receiver-8	8	1	---	61.0	55.0	---	---	None
Receiver-9	9	1	---	64.2	55.0	---	---	None
Receiver-10	10	1	---	61.0	55.0	---	---	None
Receiver-11	11	1	---	60.8	55.0	---	---	None
Receiver-12	12	1	---	61.4	55.0	---	---	None
Receiver-13	13	1	---	62.1	55.0	---	---	None
Receiver-14	14	1	---	62.5	55.0	---	---	None
Receiver-15	15	1	---	61.7	55.0	---	---	None
Receiver-16	16	1	---	57.9	55.0	---	---	None
Receiver-17	17	1	---	57.1	55.0	---	---	None
Receiver-18	18	1	---	62.8	55.0	---	---	None
Receiver-19	19	1	---	62.2	55.0	---	---	None
Receiver-20	20	1	---	63.1	55.0	---	---	None
Receiver-21	21	1	---	57.8	55.0	---	---	None
Receiver-22	22	1	---	59.6	55.0	---	---	None
Receiver-23	23	1	---	58.1	55.0	---	---	None
Receiver-24	24	1	---	50.5	55.0	---	---	None
Receiver-25	25	1	---	60.2	55.0	---	---	None
Receiver-26	26	1	---	57.7	55.0	---	---	None
Receiver-27	27	1	---	58.1	55.0	---	---	None
Receiver-28	28	1	---	56.3	55.0	---	---	None
Receiver-29	29	1	---	56.0	55.0	---	---	None
Receiver-30	30	1	---	52.6	55.0	---	---	None
Receiver-31	31	1	---	51.6	55.0	---	---	None
Receiver-32	32	1	---	54.3	55.0	---	---	None
Receiver-33	33	1	---	50.1	55.0	---	---	None
Receiver-34	34	1	---	45.4	55.0	---	---	None

REPORT:	**Results: Sound Levels - No Barrier Objects**		
TNM VERSION	3.1.7970.37608	REPORT DATE:	28 February 2024
CALCULATED WITH:	3.1.7970.37608	CALCULATION DATE:	2/28/2024 10:22:15 PM
CASE:	TNM_Future_Build	ORGANIZATION:	Stantec
UNITS:	Metric	ANALYSIS BY:	mst
DEFAULT GROUND TYPE:	HardSoil	PROJECT/CONTRACT	Norval West Bypass
ATMOSPHERICS:	20°C, 50%	Average pavement type shall be used unless a state highway agency substantiates the use of a different type with approval FHWA.	
PAVEMENT TYPE(S) USED:	Average		

Receiver				Modeled Traffic Noise Levels				
				LAeq		Increase over Existing		
Name	No.	Nb. R.R.	Existing LAeq	Calc.	Absolute Criterion	Calc.	Relative Criterion	Type of Impact
			dBA	dBA	dBA	dBA	dBA	
Receiver-1	1	1	48.5	46.9	55.0	-1.7	5	None
Receiver-2	2	1	50.4	48.8	55.0	-1.6	5	None
Receiver-3	3	1	47.2	47.7	55.0	0.4	5	None
Receiver-4	4	1	61.5	59.0	55.0	-2.5	5	None
Receiver-5	5	1	63.8	58.2	55.0	-5.6	5	None
Receiver-6	6	1	58.8	55.9	55.0	-2.9	5	None
Receiver-7	7	1	62.1	59.0	55.0	-3.1	5	None
Receiver-8	8	1	61.0	58.0	55.0	-3.0	5	None
Receiver-9	9	1	64.2	60.8	55.0	-3.3	5	None
Receiver-10	10	1	61.0	57.9	55.0	-3.2	5	None
Receiver-11	11	1	60.8	57.5	55.0	-3.3	5	None
Receiver-12	12	1	61.4	58.2	55.0	-3.1	5	None
Receiver-13	13	1	62.1	58.8	55.0	-3.4	5	None
Receiver-14	14	1	62.5	59.2	55.0	-3.4	5	None
Receiver-15	15	1	61.7	58.3	55.0	-3.4	5	None
Receiver-16	16	1	57.9	54.5	55.0	-3.4	5	None
Receiver-17	17	1	57.1	53.7	55.0	-3.5	5	None
Receiver-18	18	1	62.8	59.8	55.0	-3.0	5	None
Receiver-19	19	1	62.2	59.3	55.0	-2.9	5	None
Receiver-20	20	1	63.1	60.0	55.0	-3.1	5	None
Receiver-21	21	1	57.8	54.1	55.0	-3.8	5	None
Receiver-22	22	1	59.6	55.5	55.0	-4.2	5	None
Receiver-23	23	1	58.1	54.9	55.0	-3.2	5	None
Receiver-24	24	1	50.5	53.8	55.0	3.3	5	None
Receiver-25	25	1	60.2	59.8	55.0	-0.3	5	None
Receiver-26	26	1	57.7	57.2	55.0	-0.5	5	None
Receiver-27	27	1	58.1	57.5	55.0	-0.6	5	None
Receiver-28	28	1	56.3	55.8	55.0	-0.5	5	None
Receiver-29	29	1	56.0	55.8	55.0	-0.2	5	None
Receiver-30	30	1	52.6	49.3	55.0	-3.3	5	None
Receiver-31	31	1	51.6	49.0	55.0	-2.6	5	None
Receiver-32	32	1	54.3	55.8	55.0	1.5	5	None
Receiver-33	33	1	50.1	50.7	55.0	0.6	5	None
Receiver-34	34	1	45.4	45.8	55.0	0.4	5	None