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Appendix H

Noise Impact Assessment



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**Noise Impact Assessment
Binbrook Road, Trinity Church Road,
and White Church Road Intersection
Improvements
Municipal Class Environmental
Assessment**

City of Hamilton

**R.J. Burnside & Associates Limited
6990 Creditview Road, Unit 2
Mississauga ON L5N 8R9 CANADA**

**May 2026
300059627.0000**

Municipal Class Environmental Assessment
Noise Impact Assessment
May 2026

Distribution List

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0	Yes	Yes	City of Hamilton

Record of Revisions

Revision	Date	Description
0	May 28, 2026	Initial Submission to City of Hamilton

R.J. Burnside & Associates Limited

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Executive Summary

R.J. Burnside & Associates Limited (Burnside) has prepared a Noise Impact Assessment to support the Municipal Class Environmental Assessment for the proposed road improvements to the Binbrook Road, Trinity Church Road, and White Church Road Intersection. The extents of the road improvements being considered are located in the City of Hamilton and the roads are also under the jurisdiction of the City of Hamilton.

The traffic data relied upon was provided by Burnside's Traffic Group who prepared the Traffic Assessment for the project. This report presents the results of road traffic noise impact assessment conducted using the United States Federal Highway Administration's (FHWA) Traffic Noise Model (TNM) software. The assessment used 66 Noise Sensitive Areas (NSAs) with assessment at the most exposed Outdoor Living Area (OLA) location. Modelled noise levels were calculated for three scenarios: Current, Future No Build, and Future Build. The Future No Build scenario represents conditions in the future without proposed road improvements, while the Future Build scenario represents conditions with the proposed road improvement. The results of this assessment for each of the scenarios were compared to criteria in the Ontario Ministry of Transportation's (MTO) Environmental Guide for Noise 2022.

The determination as to whether mitigation measures need to be considered is based on the difference in predicted sound levels between the Future Build and Future No Build scenarios and comparison with the 65 dBA threshold, which is the MTO's Noise Guide established acceptable noise threshold for NSAs impacted by road improvements. If the difference in the predicted sound levels between the Future Build and Future No Build scenarios is less than 5 dBA and the Future Build predicted sound levels are less than 65 dBA, then mitigation measures do not need to be considered.

For all NSAs the change in the future sound levels was less than 5 dBA with the implementation of the proposed design, when compared to the Future No Build scenario, and all sound levels were less than 65 dBA. Therefore, no significant increases in traffic noise are expected as a result of the project and noise mitigation measures are not required.

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Municipal Class Environmental Assessment
Noise Impact Assessment
May 2026

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Aerial Photography taken from Google Earth Professional, 2021.

In acoustics it is impossible to achieve no adverse effects for one hundred percent of the population. Some people are hypersensitive to noise and will always experience adverse effects.

Glossary of Terms and Acronyms

AADT	Annual Average Daily Traffic
Burnside	R.J. Burnside & Associates Limited
EA	Environmental Assessment
MECP	Ministry of the Environment, Conservation and Parks
MTO	Ontario Ministry of Transportation
Noise Guide	Ontario Ministry of Transportation Environmental Guide for Noise, February 2022
NSA	Noise Sensitive Area
OLA	Outdoor Living Area
ORNAMENT	Ontario Road Noise Analysis Method
POR	Point of Reception
POW	Plane of Window
STAMSON	MECP Transportation Noise Modeling Software
TNM	Federal Highway Administration Traffic Noise Modeling Software
vpd	Vehicles per day
Region	City of Hamilton

1.0 Introduction

The City of Hamilton (Hamilton) has initiated a Municipal Class Environmental Assessment (EA) for the improvements to the Binbrook Road, Trinity Church Road, and White Church Road Intersection.

As part of the EA process R.J. Burnside & Associates Limited (Burnside) has prepared a Noise Impact Assessment for the proposed road improvements to Binbrook Road, Trinity Church Road, and White Church Road Intersection. The extents of road sections being considered are located in the City of Hamilton. The roads are also under the jurisdiction of the City of Hamilton. The study objective was to determine changes to the noise levels within the study area from the road improvements and to determine whether any mitigation measures are required.

The Noise Impact Assessment investigates the following scenarios:

1. Current Conditions
2. Future No Build Conditions
3. Future Build – Proposed Alignment

The Noise Impact Assessment has been completed for the preferred design concept (Alternative 1) identified for the redevelopment of the Binbrook Road, Trinity Church Road, and White Church Road Intersection. A plan showing the preferred design concept for the intersection improvements is provided as Figure 1.

The EA is being completed in accordance with the requirements of an MCEA, Schedule C undertaking as outlined in the Municipal Engineers Association Municipal Class Environmental Assessment Document (October 2000, as amended 2007, 2011 & 2015), which is an approved process under the *Ontario Environmental Assessment Act*. The assessment process is carried out primarily based on the Ontario Ministry of Transportation (MTO) Environmental Guide for Noise (MTO Noise Guide) (February 2022).

Note that since all of the vehicles expected on the roadways will have rubber tires, vibration impacts are not expected.

2.0 MTO Noise Guide 2022 Requirements

The MTO Noise Guide (2022) requires the following steps to be undertaken within the noise assessment:

- Identify the study area / area of investigation
- Identify Noise Sensitive Areas (NSAs)
- Determine Future No Build and Future Build noise levels
- Identify impacts and significance
- Consider mitigation (Preliminary)
- Provide input into the process for the preferred alternative

The MTO Noise Guide states in Section 5 “Noise Prediction Methodologies” that sound levels must only be undertaken as set out in MECP Publication NPC-306, Methods to Determine Sound Levels Due to Road and Rail Traffic. NPC-306 replaces STAMSON with the “Traffic Noise Model” (TNM) published by the United States Federal Highway Administration (FHWA). Although a transition period exists where STAMSON could still be used, the interpretation of this transition period may require redoing the analysis on a case-by-case basis as determined by the MECP and MTO factoring in timing of the project, changes which may have occurred between report issue and review, and the mitigation recommendations made.

To remove the potential of re-modeling using a different traffic noise prediction method at a later date, Burnside has elected to use the TNM method endorsed by draft NPC-306 for this report. It is notable that NPC-306 is currently only released from the MECP as a draft, but the MTO guide acknowledges that NPC-306 is not yet published.

3.0 Determination of Study Area

The MTO Noise Guide requires the study area to be 600 m perpendicular to the roadways and 100 m past the end of the roadways under investigation¹. Burnside identified all the closest receptors in the study area and assessed the impact there. Dwellings in the second row are included if they have unique angles of exposure to the noise sources compared to the first-row receptors in the vicinity. This may include difference in elevation, angle of exposures, or presence of existing noise mitigation measures. The study area for the Binbrook Road, Trinity Church Road, and White Church Road intersection improvements is illustrated in Figure 2.

¹ MTO Guide, Section 6.2.

4.0 Determination of Noise Sensitive Areas

The MTO Noise Guide requires that NSAs are set at 1.5 m above the ground, 3 m away from a wall at the Outdoor Living Area (OLA) and represent a maximum of three acoustically similar dwellings in the first row of receptors. Where receptors are not tightly grouped (such as in rural areas) NSAs are required to assess a single property.

An NSA, as described by the MTO Noise Guide, means:

- Private homes such as single-family residences (owned or rental).
- Townhouses (owned or rental).
- Multiple unit buildings, such as apartments with OLAs for use by all occupants.
- Hospitals, nursing homes for the aged, where there are OLAs for the patients.

As part of a community, the following land uses would also be included in the definition of an NSA:

- Educational facilities and daycare centres, where there are OLAs for students.
- Campgrounds that provide overnight accommodation.
- Hotels / motels where there are OLAs (e.g., swimming pool area, etc.) for visitors.
- Community centres with OLAs (e.g., outdoor basketball courts, etc.).
- Municipal parks (excluding golf courses and trails).
- Places of worship with OLAs.

Based on the defined study area and aerial imagery, Burnside has established there are 71 residential properties which are noise sensitive land uses, which by the MTO Noise Guide requirement must be represented by 66 NSAs. No community receptors were identified. Figure 3 illustrates all sensitive receptors for all the NSAs within the study area.

5.0 Noise Assessment

5.1 Noise Impact Assessment Criteria

Binbrook Road, Trinity Church Road, and White Church Road are considered major arterial roads under the jurisdiction of the City of Hamilton. The City of Hamilton does not have a noise policy concerning road improvements. In the absence of municipal guidelines, reliance was made on the provincial MTO Noise Guide. The MTO Noise Guide uses a ten-year future date after proposed construction. For this assessment it is not yet known exactly when construction will complete so a decision was made to set the future year to 2041 to allow for the full construction of intersection improvements.

According to the MTO Noise Guide, where an increase in sound level is predicted, mitigation measures may be required as summarized in Table 1. For freeways, the MTO Noise Guide outlines that the sound levels should be based on the 24-hour equivalent sound level (Leq 24 hr). For all other road types, the sound level should be based on the 16-hour daytime equivalent sound level (Leq 16 hr).

Table 1: Mitigation Effort Required for the Projected Noise Level with the Proposed Improvements Above the Ambient²

Change in Noise Level Above Ambient / Projected Noise Levels with Proposed Improvements	Mitigation Effort Required
< 5 dBA ³ change AND < 65 dBA	• None.
≥ 5 dBA change OR ≥ 65 dBA	• Investigate noise control measures on right-of-way. • Introduce noise control measures within right-of-way 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.

Mitigation measures, if applicable, must attempt to achieve levels that otherwise would be experienced without the proposed project if technically, economically, and administratively feasible⁴.

² MTO Noise Guide, Table 2-1.

³dBA (A-weighted decibel) is an expression of the relative loudness of sounds in air as perceived by the human ear.

⁴ MTO Noise Guide, Table 2-2.

5.2 Noise Impact Assessment Methodology

To determine the potential noise impact, future predicted sound levels with and without the proposed road improvements were compared for the worst-case OLA locations of each NSA, which is in general 3 m off the rear facade of the dwelling. Sound levels were predicted using the most up to date version of TNM (version 3.2), as required by the MTO. The MTO Noise Guide outlines that ultimate traffic data should be used in the analysis for high-density urban areas, whereas for rural environments, the 10-year future traffic volumes should be used.

The sound levels were predicted based on the Annual Average Daily Traffic (AADT) value as required by the MTO for three scenarios: Present, Future No Build, and Future Build. The future scenarios are based on forecasted traffic (to 2041), as the study area is rural. The Future No Build scenario represents conditions in the future without the proposed road improvements, while the Future Build scenario represents conditions with the proposed road improvement.

5.3 Traffic Data

Traffic data for this report was obtained from the Burnside Traffic Group preparing the traffic analysis. In the Traffic Impact Study (TIS), Burnside established the following traffic patterns for the various road segments. Traffic patterns for the smaller road segments (from the forks to the intersections for the current arrangement and within and between the proposed roundabouts) were determined based on Turning Movement Count (TMC) traffic data provided in the TIS.

Trinity Church Road (North of Intersection)

- Current Peak Hourly Count (2025): 770
- Future Build Peak Hourly (2041): 1,124
- Future No Build Hourly Count (2041): 1,071

Binbrook Road

- Current Peak Hourly Count (2025): 1,137
- Future Build Peak Hourly (2041): 1,452
- Future No Build Hourly Count (2041): 1,443

Trinity Church Road (South of Intersection)

- Current Peak Hourly Count (2025): 224
- Future Build Peak Hourly (2041): 355
- Future No Build Hourly Count (2041): 354

White Church Road

- Current Peak Hourly Count (2025): 726
- Future Build Peak Hourly (2041): 919
- Future No Build Hourly Count (2041): 921

Note that the PM time period was used. The traffic growth assumptions and truck percentages were provided by Burnside Transportation Group. Based on the MTO Noise Guide, the ratio of medium trucks to heavy trucks was assumed to be 5:8. The speed limits are assumed to not change from the existing limits posted in the area. The traffic data projections used from the TIS are provided in Appendix A.

AADT traffic counts are required for the noise predictions. It is a standard assumption that when AADT is not available to assume that AADT is equivalent to ten times the peak hourly count. This assumption produces the following AADTs.

Table 2: TNM Trinity Church Road (North of Intersection) Traffic Inputs

Scenario	AADT ^[1]	Day Night Split ^[2]	Posted Speed Limit (kph) ^[3]	% of Medium Trucks ^[1]	% of Heavy Trucks ^[1]
Present	7,700	90 / 10	60	1.1%	1.8%
Future No Build	10,710	90 / 10	60	1.1%	1.8%
Future Build	11,240	90 / 10	60	1.1%	1.8%
[1] Assumed based on peak hourly counts from TIS.					
[2] The day-night traffic volume was split 90/10 as per STAMSON Technical Document recommendation.					
[3] As per most recent Google Street View at time of report preparation.					

Table 3: TNM Binbrook Road Traffic Inputs

Scenario	AADT ^[1]	Day Night Split ^[2]	Posted Speed Limit (kph) ^[3]	% of Medium Trucks ^[1]	% of Heavy Trucks ^[1]
Present	11,370	90 / 10	60	1.2%	1.9%
Future No Build	14,430	90 / 10	60	1.2%	1.9%
Future Build	14,520	90 / 10	60	1.2%	1.9%
[1] Assumed based on peak hourly counts from TIS.					
[2] The day-night traffic volume was split 90/10 as per STAMSON Technical Document recommendation.					
[3] As per most recent Google Street View at time of report preparation.					

Table 4: TNM Trinity Church Road (South of Intersection) Traffic Inputs

Scenario	AADT ^[1]	Day Night Split ^[2]	Posted Speed Limit (kph) ^[3]	% of Medium Trucks ^[1]	% of Heavy Trucks ^[1]
Present	2,240	90 / 10	60	1.5%	2.5%
Future No Build	3,540	90 / 10	60	1.5%	2.5%
Future Build	3,550	90 / 10	60	1.5%	2.5%
[1] Assumed based on peak hourly counts from TIS.					
[2] The day-night traffic volume was split 90/10 as per STAMSON Technical Document recommendation.					
[3] As per most recent Google Street View at time of report preparation.					

Table 5: TNM White Church Road Traffic Inputs

Scenario	AADT ^[1]	Day Night Split ^[2]	Posted Speed Limit (kph) ^[3]	% of Medium Trucks ^[1]	% of Heavy Trucks ^[1]
Present	7,260	90 / 10	60	1.3%	2.1%
Future No Build	9,210	90 / 10	60	1.3%	2.1%
Future Build	9,190	90 / 10	60	1.3%	2.1%
[1] Assumed based on peak hourly counts from TIS.					
[2] The day-night traffic volume was split 90/10 as per STAMSON Technical Document recommendation.					
[3] As per most recent Google Street View at time of report preparation.					

5.4 Results

The MECP provides the following table of impacts and how they should be interpreted:

Table 6: Interpretation of Adjusted Impact Level

Excess Above Sound Level Criterion (dBA)	Change in Subjective Loudness	Subjective Rating of Noise Impact
No excess	--	No expected noise impact
1 to 3 inclusive	Generally Imperceptible	Insignificant
3 to 5 inclusive	Clearly Perceptible	Noticeable
5 to 10 inclusive	Almost twice as loud	Significant

The predicted sound levels and the expected change in sound levels due to the proposed road improvements are summarized in Table 7. Sample noise modelling printouts can be found in Appendix B. All sound levels are predicted for the daytime as the MTO criteria is designed for OLAs which are not expected to be used during the nighttime hour. As all roads in this assessment have been estimated to have a

90/10 daytime-nighttime traffic split, the nighttime impacts at all receptors will be significantly lower than the reported daytime results.

Table 7: Predicted Daytime Sound Levels

Point of Reception (POR) ID – Location	Current Conditions Sound Levels (2025)	Future Sound Levels for No Build Scenario (2041)	Future Sound Levels for Build Scenario (2041)	Change due to Proposed Road Improvement (Future Build – Future No Build)
	Leq (16 hr) (dBA)	Leq (16 hr) (dBA)	Leq (16 hr) (dBA)	(dB)
NSA-1 – 2567 Trinity Church Rd	54	56	55	-1
NSA-2 – 2581 Trinity Church Rd	53	54	54	0
NSA-3 – 2591 Trinity Church Rd	53	54	54	0
NSA-4 – 2611 Trinity Church Rd	53	55	55	0
NSA-5 – 2611 Trinity Church Rd	54	55	55	0
NSA-6 – 2631 Trinity Church Rd	54	56	56	0
NSA-7 – 2641 Trinity Church Rd	54	56	56	0
NSA-8 – 2651 Trinity Church Rd	55	57	57	0
NSA-9 – 4372 Binbrook Rd	57	58	58	0
NSA-10 – 4368 Binbrook Rd	54	56	55	-1
NSA-11 – 2688 Trinity Church Rd	53	55	55	0
NSA-12 – 5080 White Church Rd E	50	51	51	0
NSA-13 – 5100 White Church Rd E	48	49	49	0
NSA-14 – 3005 Trinity Church Rd	53	55	55	0
NSA-15 – 3009 Trinity Church Rd	51	53	53	0

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Point of Reception (POR) ID – Location	Current Conditions Sound Levels (2025)	Future Sound Levels for No Build Scenario (2041)	Future Sound Levels for Build Scenario (2041)	Change due to Proposed Road Improvement (Future Build – Future No Build)
	Leq (16 hr) (dBA)	Leq (16 hr) (dBA)	Leq (16 hr) (dBA)	(dB)
NSA-16 – 3013 Trinity Church Rd	51	52	52	0
NSA-17 – 4251 Binbrook Rd	46	47	47	0
NSA-18 – 5193 White Church Rd E	53	54	53	-1
NSA-19 – 5187 White Church Rd E	53	54	54	0
NSA-20 – 5175 White Church Rd E	54	55	55	0
NSA-21 – 5161 White Church Rd E	54	55	55	0
NSA-22 – 5155 White Church Rd E	54	55	55	0
NSA-23 – 5149 White Church Rd E	54	55	55	0
NSA-24 – 5141 White Church Rd E	54	55	55	0
NSA-25 – 5131 White Church Rd E	54	55	55	0
NSA-26 – 5121 White Church Rd E	55	56	56	0
NSA-27 – 5111 White Church Rd E	55	56	56	0
NSA-28 – 5105 White Church Rd E	55	56	55	-1
NSA-29 – 5095 White Church Rd E	55	56	55	-1
NSA-30 – 5089 White Church Rd E	54	55	55	0
NSA-31 – 5081 White Church Rd E	53	55	54	-1
NSA-32 – 5073 White Church Rd E	53	54	54	0
NSA-33 – 5063 White Church Rd E	53	54	54	0

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Point of Reception (POR) ID – Location	Current Conditions Sound Levels (2025)	Future Sound Levels for No Build Scenario (2041)	Future Sound Levels for Build Scenario (2041)	Change due to Proposed Road Improvement (Future Build – Future No Build)
	Leq (16 hr) (dBA)	Leq (16 hr) (dBA)	Leq (16 hr) (dBA)	(dB)
NSA-34 – 5057 White Church Rd E	53	54	54	0
NSA-35 – 5053 White Church Rd E	53	54	54	0
NSA-36 – 5045 White Church Rd E	53	54	54	0
NSA-37 – 5037 White Church Rd E	52	53	54	+1
NSA-38 – 5027 White Church Rd E	52	53	54	+1
NSA-39 – 5021 White Church Rd E	52	54	54	0
NSA-40 – 5011 White Church Rd E	53	55	55	0
NSA-41 – 3026 Trinity Church Rd	51	53	53	0
NSA-42 – 3034 Trinity Church Rd	51	52	53	+1
NSA-43 – 3044 Trinity Church Rd	51	52	52	0
NSA-44 – 3048 Trinity Church Rd	50	52	52	0
NSA-45 – 3056 Trinity Church Rd	50	52	52	0
NSA-46 – 3064 Trinity Church Rd	50	52	52	0
NSA-47 – 3072 Trinity Church Rd	49	51	51	0
NSA-48 – 3080 Trinity Church Rd	49	51	51	0
NSA-49 – 3088 Trinity Church Rd	49	51	51	0
NSA-50 – 3094 Trinity Church Rd	49	51	51	0
NSA-51 – 3102 Trinity Church Rd	50	52	52	0

Point of Reception (POR) ID – Location	Current Conditions Sound Levels (2025)	Future Sound Levels for No Build Scenario (2041)	Future Sound Levels for Build Scenario (2041)	Change due to Proposed Road Improvement (Future Build – Future No Build)
	Leq (16 hr) (dBA)	Leq (16 hr) (dBA)	Leq (16 hr) (dBA)	(dB)
NSA-52 – 3110 Trinity Church Rd	49	51	51	0
NSA-53 – 3118 Trinity Church Rd	49	51	51	0
NSA-54 – 3124 Trinity Church Rd	49	51	51	0
NSA-55 – 3132 Trinity Church Rd	49	51	51	0
NSA-56 – 3140 Trinity Church Rd	48	50	50	0
NSA-57 – 3148 Trinity Church Rd	49	50	51	+1
NSA-58 – 3154 Trinity Church Rd	49	51	51	0
NSA-59 – 3164 Trinity Church Rd	50	52	52	0
NSA-60 – 3186 Trinity Church Rd	50	52	52	0
NSA-61 – 3190 Trinity Church Rd	49	51	51	0
NSA-62 – 3202 Trinity Church Rd	47	49	49	0
NSA-63 – 3019 Trinity Church Rd	51	52	52	0
NSA-64 – 3055 Trinity Church Rd	51	53	53	0
NSA-65 – 3085 Trinity Church Rd	50	52	52	0
NSA-66 – 4199 Binbrook Rd	52	53	53	0

In Table 7, the difference between the sound levels for “Current Conditions” and “Future No Build Scenario” are all caused by the increase in traffic from population growth. In general, the increases from current to future is approximately 1-2 dB.

The difference between the sound levels for “Future No Build Scenario” and “Future Build Scenario” are due to the change in alignment of the road. An increase in sound level occurs when the road moves closer to the receptor while the sound level decreases where the road moves further from the receptor. The MTO Noise Guide outlines that the calculated sound levels are rounded to the nearest whole number for reporting and comparison with the criteria.

The results show that of the 66 locations modelled, only four locations show an increase in sound level. For these locations the increase was 1 dB. In addition, none of the predicted sound levels exceed the MTO criteria of 65 dBA. Therefore, the study area does not require further noise assessment, and no noise mitigation is required for the Future Build case.

It should be noted that the calculation methods of the MTO criteria do not allow for consideration of a few factors which could increase the experienced sound levels at the PORs. Such factors include increase in true driving speed from the better road quality or decrease of congestion. As the MTO criteria require the posted speed limit be used in the calculation these effects are not captured by the model.

6.0 Conclusion

If the proposed improvements to the Binbrook Road, Trinity Church Road, and White Church Road Intersection are constructed, the increase in sound levels expected throughout the study area are expected to be less than 5 dBA and no receptor is expected to be exposed to sound levels of 65 dBA or higher; therefore, noise mitigation measures are not recommended following the guidance in the MTO Noise Guide. Based on the MECP interpretation of the noise impact levels, the noise impact due to the proposed improvements to the Binbrook Road, Trinity Church Road, and White Church Road Intersection is considered to be insignificant.

7.0 References

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Figures



Alternative 1
Dual Roundabouts on
Binbrook Rd / White Church Rd E

Figure 1: Preferred Design Concept



 BURNSIDE			
Client			
City of Hamilton			
Figure Title			
Noise Impact Assessment			
Study Area			
Drawn	Checked	Date	Figure No.
AR	BM	May 2026	
Scale	Project No.		
1:150,000	300059627.0000		2

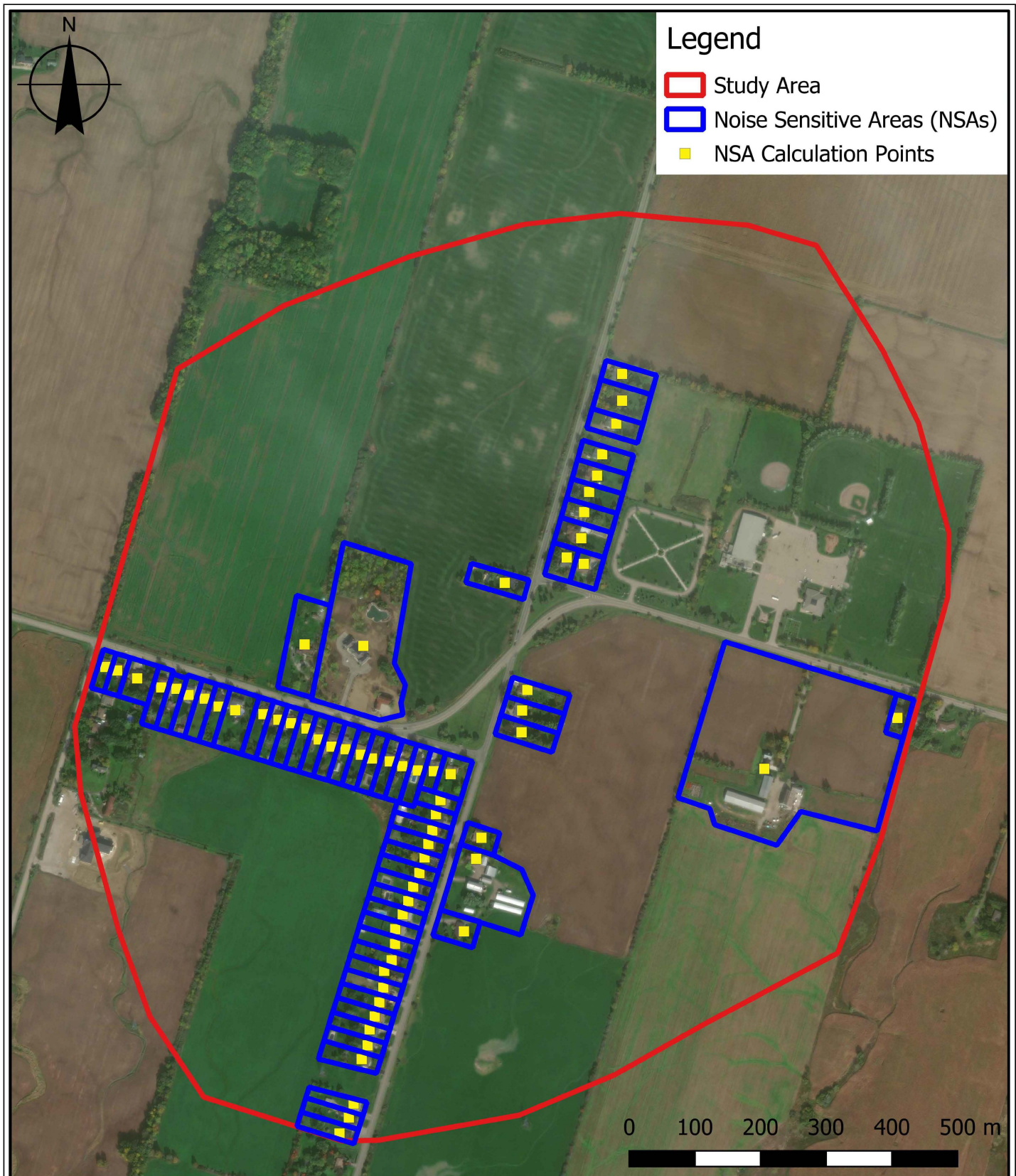


		Figure Title Noise Impact Assessment Points of Reception - Overall	
Client City of Hamilton	Drawn AR	Checked BM	Date May 2026
	Scale 1:8,000	Project No. 300059627.0000	
			Figure No. 3a

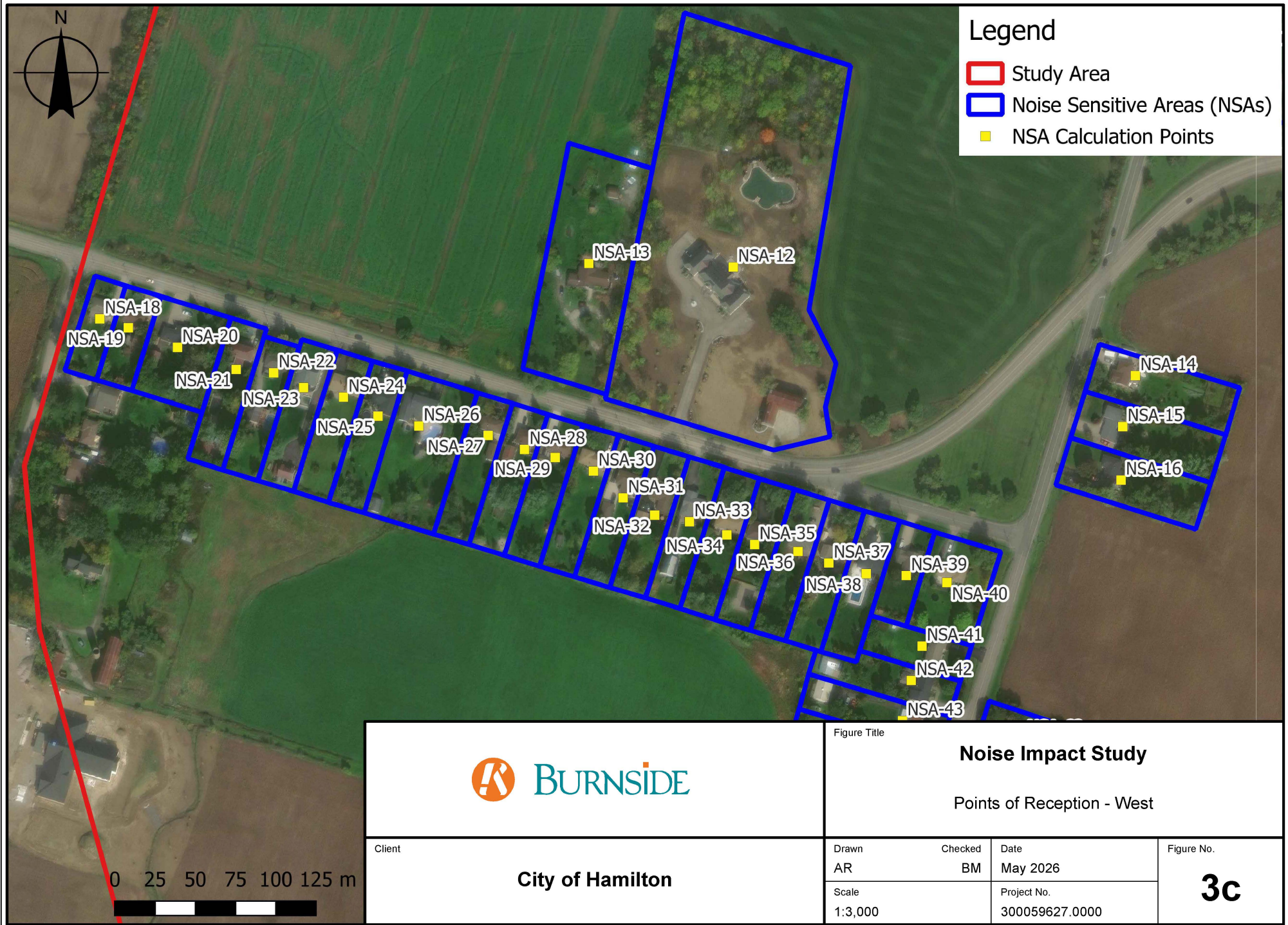


		Figure Title Noise Impact Assessment Points of Reception - Northeast			
Client	City of Hamilton	Drawn	Checked	Date	Figure No.
		AR	BM	May 2026	
		Scale		Project No.	3b
		1:4,000		300059627.0000	



Legend

-  Study Area
-  Noise Sensitive Areas (NSAs)
-  NSA Calculation Points





Legend

Study Area

Noise Sensitive Areas (NSAs)

NSA Calculation Points

		Figure Title Noise Impact Study Points of Reception - South		
Client City of Hamilton	Drawn AR	Checked BM	Date May 2026	Figure No. 3d
	Scale 1:3,000		Project No. 300059627.0000	



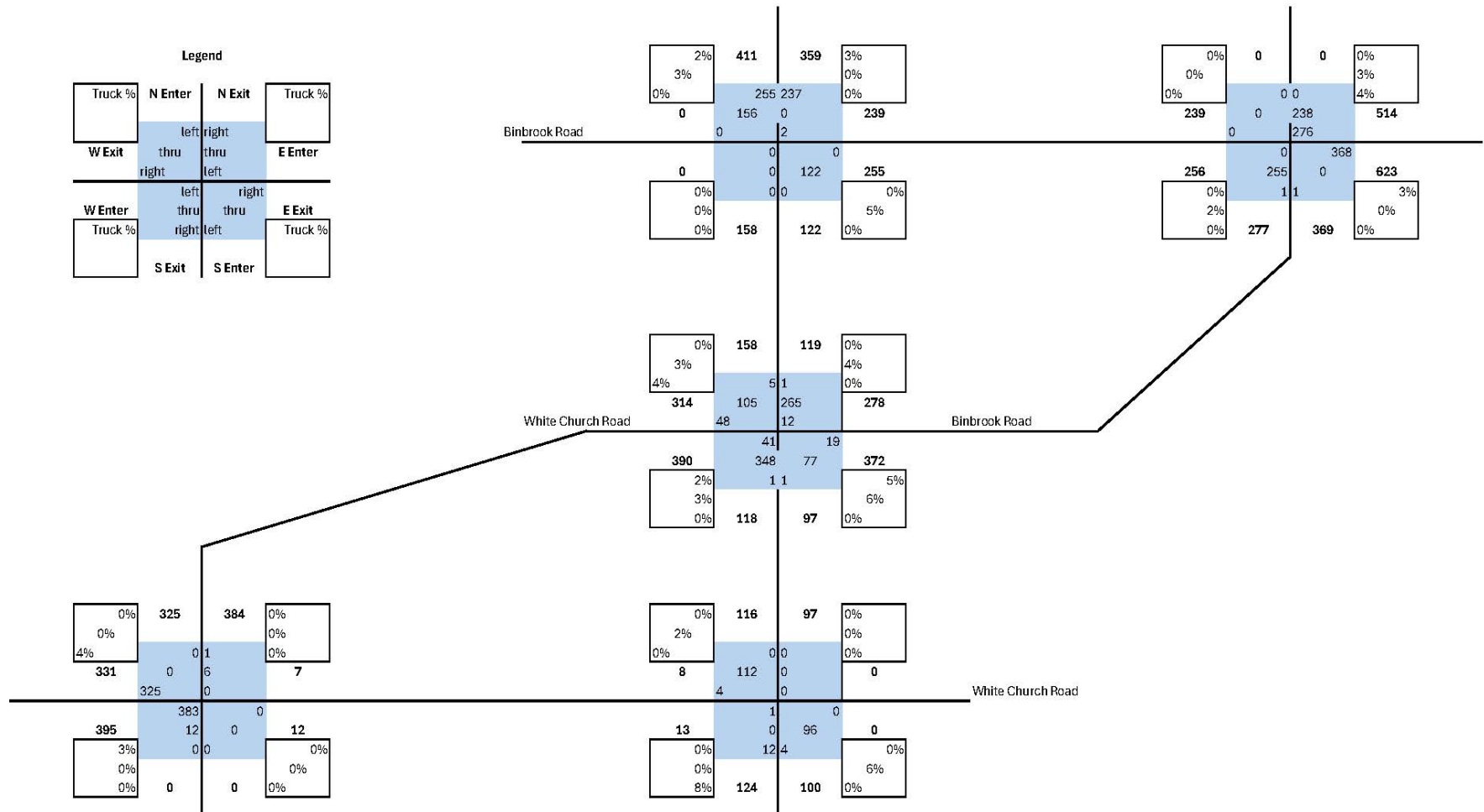
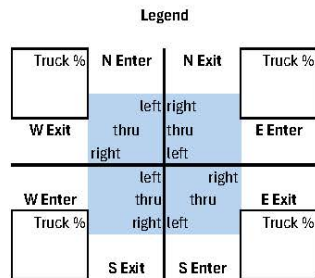
BURNSIDE

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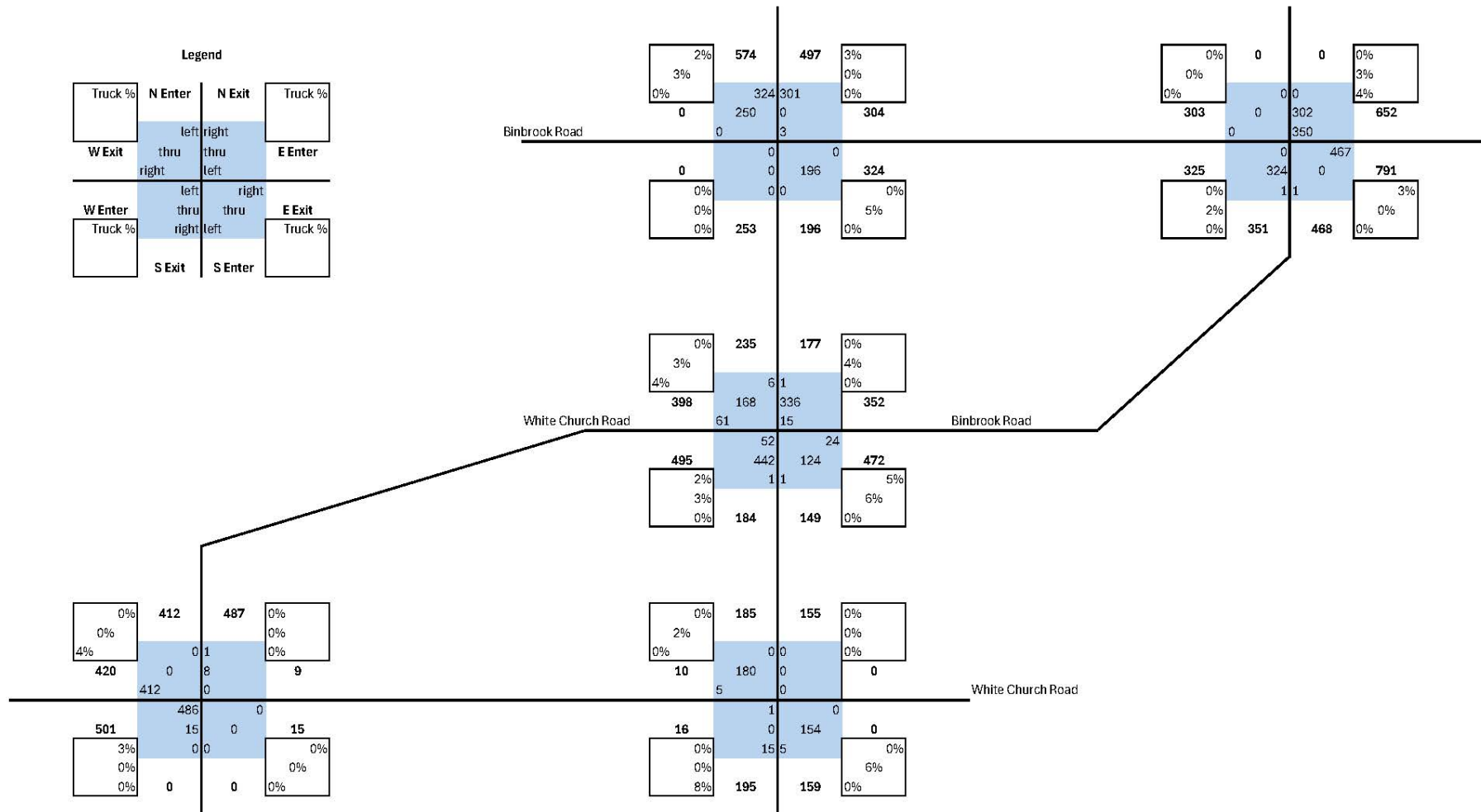
Appendix A

Traffic Data

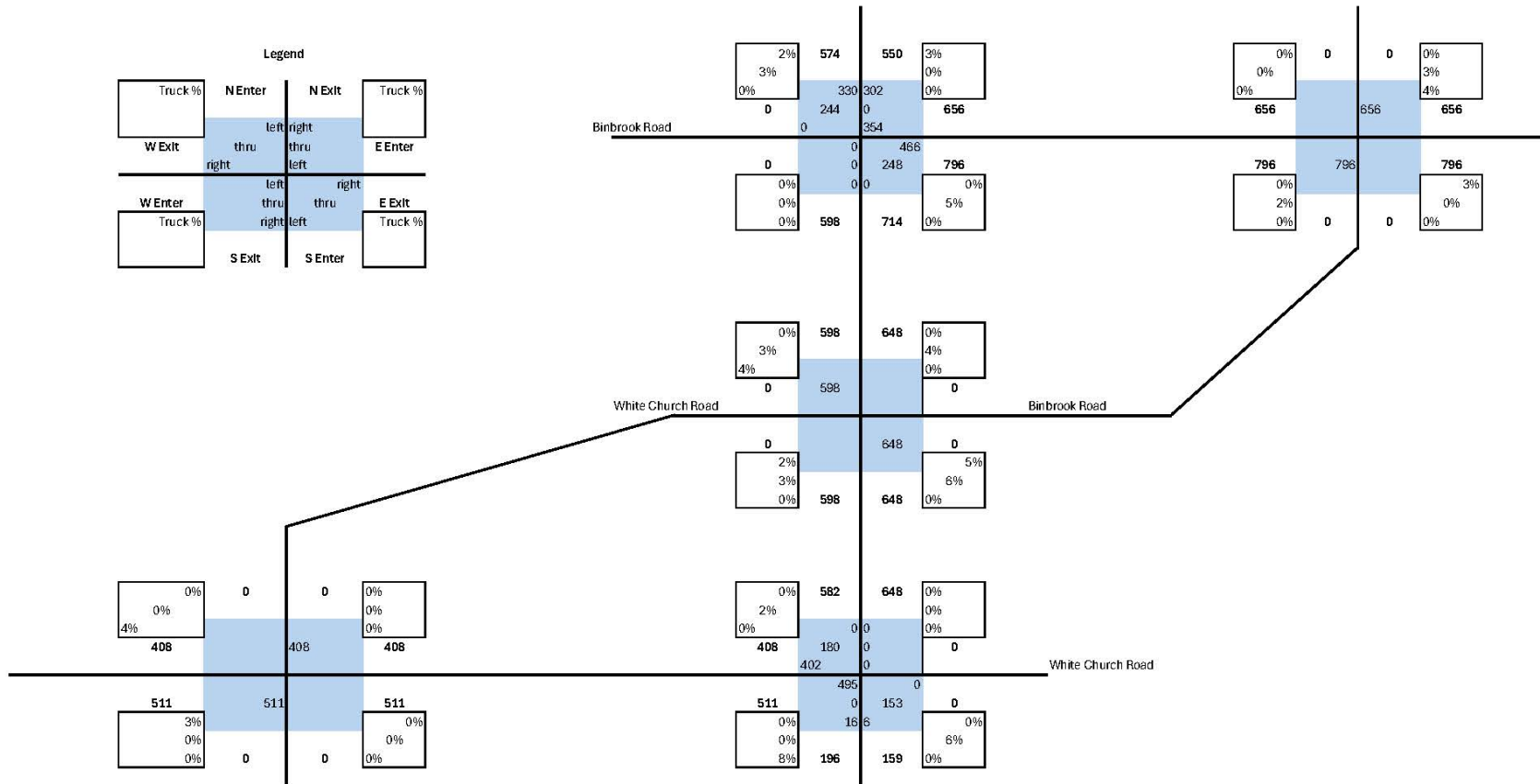
Existing PM Volume 2025



2041 PM Base Volume



2041 PM Scenario1 Volume





BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix B

Sample Noise Calculations

Current Model Results

REPORT:

Results: Sound Levels - No Barrier Objects

TNM VERSION

3.2.8741.34338

REPORT DATE:

22 May 2026

CALCULATED WITH:

TNM v3.2.8741.34338

CALCULATION DATE:

5/22/2026 11:02:30 AM

CASE:

Hamilton Binbrook Rd
MCEA,
300059627.0000

ORGANIZATION:

R.J. Burnside & Associates Limited

UNITS:

Metric

ANALYSIS BY:

ARogers

DEFAULT GROUND TYPE:

HardSoil

PROJECT/CONTRACT

ATMOSPHERICS:

20°C, 50%

Average pavement type shall be used unless a state

PAVEMENT TYPE(S) USED:

Average

highway agency substantiates the use of a different

type with approval FHWA.

Receiver				Modeled Traffic Noise Levels					
Name	No.	Nb. R.R.	Existing LAeq dBA						
				LAeq		Increase over Existing		Type of Impact	
				Calc.	Absolute Criterion	Calc.	Relative Criterion		
				dBA	dBA	dBA	dBA		
NSA-1	0	0	---	54.4	0.0	---	---	Sound Level	
NSA-2	0	0	---	52.8	0.0	---	---	Sound Level	
NSA-3	0	0	---	52.7	0.0	---	---	Sound Level	
NSA-4	0	0	---	53.4	0.0	---	---	Sound Level	
NSA-5	0	0	---	53.6	0.0	---	---	Sound Level	
NSA-6	0	0	---	54.2	0.0	---	---	Sound Level	
NSA-7	0	0	---	54.5	0.0	---	---	Sound Level	
NSA-8	0	0	---	55.3	0.0	---	---	Sound Level	
NSA-9	0	0	---	56.9	0.0	---	---	Sound Level	
NSA-10	0	0	---	54.5	0.0	---	---	Sound Level	
NSA-11	0	0	---	53.4	0.0	---	---	Sound Level	
NSA-12	0	0	---	49.6	0.0	---	---	Sound Level	
NSA-13	0	0	---	48.4	0.0	---	---	Sound Level	
NSA-14	0	0	---	53.4	0.0	---	---	Sound Level	

Current Model Results

REPORT:

Results: Sound Levels - No Barrier Objects

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3.2.8741.34338

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UNITS:

Metric

ANALYSIS BY:

ARogers

DEFAULT GROUND TYPE:

HardSoil

PROJECT/CONTRACT

ATMOSPHERICS:

20°C, 50%

Average pavement type shall be used unless a state

PAVEMENT TYPE(S) USED:

Average

highway agency substantiates the use of a different
type with approval FHWA.

Receiver				Modeled Traffic Noise Levels				
Name	No.	Nb. R.R.	Existing LAeq dBA	LAeq		Increase over Existing		Type of Impact
				Calc. dBA	Absolute Criterion dBA	Calc. dBA	Relative Criterion dBA	
NSA-15	0	0	---	51.4	0.0	---	---	Sound Level
NSA-16	0	0	---	50.7	0.0	---	---	Sound Level
NSA-17	0	0	---	45.8	0.0	---	---	Sound Level
NSA-18	0	0	---	52.6	0.0	---	---	Sound Level
NSA-19	0	0	---	53.3	0.0	---	---	Sound Level
NSA-20	0	0	---	53.5	0.0	---	---	Sound Level
NSA-21	0	0	---	53.5	0.0	---	---	Sound Level
NSA-22	0	0	---	54.2	0.0	---	---	Sound Level
NSA-23	0	0	---	53.9	0.0	---	---	Sound Level
NSA-24	0	0	---	54.1	0.0	---	---	Sound Level
NSA-25	0	0	---	53.9	0.0	---	---	Sound Level
NSA-26	0	0	---	55.0	0.0	---	---	Sound Level
NSA-27	0	0	---	55.1	0.0	---	---	Sound Level
NSA-28	0	0	---	54.8	0.0	---	---	Sound Level

Current Model Results

REPORT:

Results: Sound Levels - No Barrier Objects

TNM VERSION

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DEFAULT GROUND TYPE:

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PROJECT/CONTRACT

ATMOSPHERICS:

20°C, 50%

Average pavement type shall be used unless a state

PAVEMENT TYPE(S) USED:

Average

highway agency substantiates the use of a different

type with approval FHWA.

Receiver				Modeled Traffic Noise Levels					
Name	No.	Nb. R.R.	Existing LAeq dBA						Type of Impact
				LAeq		Increase over Existing			
				Calc.	Absolute Criterion	Calc.	Relative Criterion		
				dBA	dBA	dBA	dBA		
NSA-29	0	0	---	54.8	0.0	---	---	Sound Level	
NSA-30	0	0	---	54.4	0.0	---	---	Sound Level	
NSA-31	0	0	---	53.5	0.0	---	---	Sound Level	
NSA-32	0	0	---	53.0	0.0	---	---	Sound Level	
NSA-33	0	0	---	53.1	0.0	---	---	Sound Level	
NSA-34	0	0	---	52.9	0.0	---	---	Sound Level	
NSA-35	0	0	---	52.7	0.0	---	---	Sound Level	
NSA-36	0	0	---	52.6	0.0	---	---	Sound Level	
NSA-37	0	0	---	52.2	0.0	---	---	Sound Level	
NSA-38	0	0	---	52.0	0.0	---	---	Sound Level	
NSA-39	0	0	---	52.3	0.0	---	---	Sound Level	
NSA-40	0	0	---	53.2	0.0	---	---	Sound Level	
NSA-41	0	0	---	51.2	0.0	---	---	Sound Level	
NSA-42	0	0	---	50.8	0.0	---	---	Sound Level	

Current Model Results

REPORT:

Results: Sound Levels - No Barrier Objects

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PROJECT/CONTRACT

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PAVEMENT TYPE(S) USED:

Average

highway agency substantiates the use of a different
type with approval FHWA.

Receiver				Modeled Traffic Noise Levels				
Name	No.	Nb. R.R.	Existing LAeq dBA	LAeq		Increase over Existing		Type of Impact
				Calc.	Absolute Criterion	Calc.	Relative Criterion	
NSA-43	0	0	---	50.5	0.0	---	---	Sound Level
NSA-44	0	0	---	50.4	0.0	---	---	Sound Level
NSA-45	0	0	---	50.4	0.0	---	---	Sound Level
NSA-46	0	0	---	49.8	0.0	---	---	Sound Level
NSA-47	0	0	---	49.4	0.0	---	---	Sound Level
NSA-48	0	0	---	49.4	0.0	---	---	Sound Level
NSA-49	0	0	---	49.3	0.0	---	---	Sound Level
NSA-50	0	0	---	49.1	0.0	---	---	Sound Level
NSA-51	0	0	---	49.7	0.0	---	---	Sound Level
NSA-52	0	0	---	49.3	0.0	---	---	Sound Level
NSA-53	0	0	---	48.7	0.0	---	---	Sound Level
NSA-54	0	0	---	48.9	0.0	---	---	Sound Level
NSA-55	0	0	---	48.6	0.0	---	---	Sound Level
NSA-56	0	0	---	48.5	0.0	---	---	Sound Level

Current Model Results

REPORT:

Results: Sound Levels - No Barrier Objects

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UNITS:

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ANALYSIS BY:

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PROJECT/CONTRACT

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Average

highway agency substantiates the use of a different

type with approval FHWA.

Receiver				Modeled Traffic Noise Levels					
Name	No.	Nb. R.R.	Existing LAeq dBA						
				LAeq		Increase over Existing		Type of Impact	
				Calc.	Absolute Criterion	Calc.	Relative Criterion		
				dBA	dBA	dBA	dBA		
NSA-57	0	0	---	48.6	0.0	---	---	Sound Level	
NSA-58	0	0	---	49.1	0.0	---	---	Sound Level	
NSA-59	0	0	---	49.6	0.0	---	---	Sound Level	
NSA-60	0	0	---	50.0	0.0	---	---	Sound Level	
NSA-61	0	0	---	49.3	0.0	---	---	Sound Level	
NSA-62	0	0	---	47.1	0.0	---	---	Sound Level	
NSA-63	0	0	---	50.6	0.0	---	---	Sound Level	
NSA-64	0	0	---	50.7	0.0	---	---	Sound Level	
NSA-65	0	0	---	50.3	0.0	---	---	Sound Level	
NSA-66	0	0	---	52.3	0.0	---	---	Sound Level	

Future No Build Model Results

REPORT:

Results: Sound Levels - No Barrier Objects

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highway agency substantiates the use of a different

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Receiver				Modeled Traffic Noise Levels					
Name	No.	Nb. R.R.	Existing LAeq dBA						
				LAeq		Increase over Existing		Type of Impact	
				Calc.	Absolute Criterion	Calc.	Relative Criterion		
				dBA	dBA	dBA	dBA		
NSA-1	0	0	---	55.8	0.0	---	---	Sound Level	
NSA-2	0	0	---	54.2	0.0	---	---	Sound Level	
NSA-3	0	0	---	54.0	0.0	---	---	Sound Level	
NSA-4	0	0	---	54.8	0.0	---	---	Sound Level	
NSA-5	0	0	---	54.9	0.0	---	---	Sound Level	
NSA-6	0	0	---	55.5	0.0	---	---	Sound Level	
NSA-7	0	0	---	55.8	0.0	---	---	Sound Level	
NSA-8	0	0	---	56.6	0.0	---	---	Sound Level	
NSA-9	0	0	---	58.3	0.0	---	---	Sound Level	
NSA-10	0	0	---	55.7	0.0	---	---	Sound Level	
NSA-11	0	0	---	54.8	0.0	---	---	Sound Level	
NSA-12	0	0	---	50.8	0.0	---	---	Sound Level	
NSA-13	0	0	---	49.5	0.0	---	---	Sound Level	
NSA-14	0	0	---	54.7	0.0	---	---	Sound Level	

Future No Build Model Results

REPORT:

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Receiver				Modeled Traffic Noise Levels					
Name	No.	Nb. R.R.	Existing LAeq dBA						
				LAeq		Increase over Existing		Type of Impact	
				Calc.	Absolute Criterion	Calc.	Relative Criterion		
				dBA	dBA	dBA	dBA		
NSA-15	0	0	---	52.8	0.0	---	---	Sound Level	
NSA-16	0	0	---	52.1	0.0	---	---	Sound Level	
NSA-17	0	0	---	46.9	0.0	---	---	Sound Level	
NSA-18	0	0	---	53.6	0.0	---	---	Sound Level	
NSA-19	0	0	---	54.4	0.0	---	---	Sound Level	
NSA-20	0	0	---	54.6	0.0	---	---	Sound Level	
NSA-21	0	0	---	54.6	0.0	---	---	Sound Level	
NSA-22	0	0	---	55.3	0.0	---	---	Sound Level	
NSA-23	0	0	---	54.9	0.0	---	---	Sound Level	
NSA-24	0	0	---	55.1	0.0	---	---	Sound Level	
NSA-25	0	0	---	54.9	0.0	---	---	Sound Level	
NSA-26	0	0	---	56.1	0.0	---	---	Sound Level	
NSA-27	0	0	---	56.2	0.0	---	---	Sound Level	
NSA-28	0	0	---	55.9	0.0	---	---	Sound Level	

Future No Build Model Results

REPORT:

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Receiver				Modeled Traffic Noise Levels					
Name	No.	Nb. R.R.	Existing LAeq dBA						
				LAeq		Increase over Existing		Type of Impact	
				Calc.	Absolute Criterion	Calc.	Relative Criterion		
				dBA	dBA	dBA	dBA		
NSA-29	0	0	---	55.8	0.0	---	---	Sound Level	
NSA-30	0	0	---	55.5	0.0	---	---	Sound Level	
NSA-31	0	0	---	54.5	0.0	---	---	Sound Level	
NSA-32	0	0	---	54.0	0.0	---	---	Sound Level	
NSA-33	0	0	---	54.2	0.0	---	---	Sound Level	
NSA-34	0	0	---	54.0	0.0	---	---	Sound Level	
NSA-35	0	0	---	53.8	0.0	---	---	Sound Level	
NSA-36	0	0	---	53.8	0.0	---	---	Sound Level	
NSA-37	0	0	---	53.4	0.0	---	---	Sound Level	
NSA-38	0	0	---	53.3	0.0	---	---	Sound Level	
NSA-39	0	0	---	53.7	0.0	---	---	Sound Level	
NSA-40	0	0	---	54.8	0.0	---	---	Sound Level	
NSA-41	0	0	---	52.8	0.0	---	---	Sound Level	
NSA-42	0	0	---	52.5	0.0	---	---	Sound Level	

Future No Build Model Results

REPORT:

Results: Sound Levels - No Barrier Objects

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Receiver				Modeled Traffic Noise Levels					
Name	No.	Nb. R.R.	Existing LAeq dBA						
				LAeq		Increase over Existing		Type of Impact	
				Calc.	Absolute Criterion	Calc.	Relative Criterion		
				dBA	dBA	dBA	dBA		
NSA-43	0	0	---	52.2	0.0	---	---	Sound Level	
NSA-44	0	0	---	52.2	0.0	---	---	Sound Level	
NSA-45	0	0	---	52.1	0.0	---	---	Sound Level	
NSA-46	0	0	---	51.6	0.0	---	---	Sound Level	
NSA-47	0	0	---	51.2	0.0	---	---	Sound Level	
NSA-48	0	0	---	51.2	0.0	---	---	Sound Level	
NSA-49	0	0	---	51.1	0.0	---	---	Sound Level	
NSA-50	0	0	---	50.9	0.0	---	---	Sound Level	
NSA-51	0	0	---	51.6	0.0	---	---	Sound Level	
NSA-52	0	0	---	51.2	0.0	---	---	Sound Level	
NSA-53	0	0	---	50.6	0.0	---	---	Sound Level	
NSA-54	0	0	---	50.8	0.0	---	---	Sound Level	
NSA-55	0	0	---	50.5	0.0	---	---	Sound Level	
NSA-56	0	0	---	50.4	0.0	---	---	Sound Level	

Future No Build Model Results

REPORT:

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Name	No.	Nb. R.R.	Existing LAeq dBA						
				LAeq		Increase over Existing		Type of Impact	
				Calc.	Absolute Criterion	Calc.	Relative Criterion		
				dBA	dBA	dBA	dBA		
NSA-57	0	0	---	50.5	0.0	---	---	Sound Level	
NSA-58	0	0	---	51.0	0.0	---	---	Sound Level	
NSA-59	0	0	---	51.6	0.0	---	---	Sound Level	
NSA-60	0	0	---	52.0	0.0	---	---	Sound Level	
NSA-61	0	0	---	51.3	0.0	---	---	Sound Level	
NSA-62	0	0	---	49.1	0.0	---	---	Sound Level	
NSA-63	0	0	---	52.4	0.0	---	---	Sound Level	
NSA-64	0	0	---	52.6	0.0	---	---	Sound Level	
NSA-65	0	0	---	52.2	0.0	---	---	Sound Level	
NSA-66	0	0	---	53.4	0.0	---	---	Sound Level	

Future Build Model Results

REPORT:

Results: Sound Levels - No Barrier Objects

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MCEA,
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UNITS:

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				LAeq		Increase over Existing		Type of Impact	
				Calc.	Absolute Criterion	Calc.	Relative Criterion		
				dBA	dBA	dBA	dBA		
NSA-1	0	0	---	55.3	0.0	---	---	Sound Level	
NSA-2	0	0	---	54.1	0.0	---	---	Sound Level	
NSA-3	0	0	---	54.1	0.0	---	---	Sound Level	
NSA-4	0	0	---	54.9	0.0	---	---	Sound Level	
NSA-5	0	0	---	55.1	0.0	---	---	Sound Level	
NSA-6	0	0	---	55.6	0.0	---	---	Sound Level	
NSA-7	0	0	---	55.9	0.0	---	---	Sound Level	
NSA-8	0	0	---	56.6	0.0	---	---	Sound Level	
NSA-9	0	0	---	58.3	0.0	---	---	Sound Level	
NSA-10	0	0	---	55.5	0.0	---	---	Sound Level	
NSA-11	0	0	---	54.7	0.0	---	---	Sound Level	
NSA-12	0	0	---	50.8	0.0	---	---	Sound Level	
NSA-13	0	0	---	49.2	0.0	---	---	Sound Level	
NSA-14	0	0	---	55.2	0.0	---	---	Sound Level	

Future Build Model Results

REPORT:

Results: Sound Levels - No Barrier Objects

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UNITS:

Metric

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DEFAULT GROUND TYPE:

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Receiver				Modeled Traffic Noise Levels					
Name	No.	Nb. R.R.	Existing LAeq dBA						
				LAeq		Increase over Existing		Type of Impact	
				Calc.	Absolute Criterion	Calc.	Relative Criterion		
				dBA	dBA	dBA	dBA		
NSA-15	0	0	---	53.0	0.0	---	---	Sound Level	
NSA-16	0	0	---	52.3	0.0	---	---	Sound Level	
NSA-17	0	0	---	47.2	0.0	---	---	Sound Level	
NSA-18	0	0	---	53.5	0.0	---	---	Sound Level	
NSA-19	0	0	---	54.3	0.0	---	---	Sound Level	
NSA-20	0	0	---	54.5	0.0	---	---	Sound Level	
NSA-21	0	0	---	54.5	0.0	---	---	Sound Level	
NSA-22	0	0	---	55.2	0.0	---	---	Sound Level	
NSA-23	0	0	---	54.8	0.0	---	---	Sound Level	
NSA-24	0	0	---	55.0	0.0	---	---	Sound Level	
NSA-25	0	0	---	54.7	0.0	---	---	Sound Level	
NSA-26	0	0	---	55.6	0.0	---	---	Sound Level	
NSA-27	0	0	---	55.7	0.0	---	---	Sound Level	
NSA-28	0	0	---	55.3	0.0	---	---	Sound Level	

Future Build Model Results

REPORT:

Results: Sound Levels - No Barrier Objects

TNM VERSION

3.2.8741.34338

REPORT DATE:

22 May 2026

CALCULATED WITH:

TNM v3.2.8741.34338

CALCULATION DATE:

5/22/2026 11:36:39 AM

CASE:

Hamilton Binbrook Rd
MCEA,
300059627.0000

ORGANIZATION:

R.J. Burnside & Associates Limited

UNITS:

Metric

ANALYSIS BY:

ARogers

DEFAULT GROUND TYPE:

HardSoil

PROJECT/CONTRACT

ATMOSPHERICS:

20°C, 50%

Average pavement type shall be used unless a state

PAVEMENT TYPE(S) USED:

Average

highway agency substantiates the use of a different

type with approval FHWA.

Receiver				Modeled Traffic Noise Levels					
Name	No.	Nb. R.R.	Existing LAeq dBA						Type of Impact
				LAeq		Increase over Existing			
				Calc.	Absolute Criterion	Calc.	Relative Criterion		
				dBA	dBA	dBA	dBA		
NSA-29	0	0	---	55.3	0.0	---	---	Sound Level	
NSA-30	0	0	---	55.2	0.0	---	---	Sound Level	
NSA-31	0	0	---	54.3	0.0	---	---	Sound Level	
NSA-32	0	0	---	53.9	0.0	---	---	Sound Level	
NSA-33	0	0	---	54.1	0.0	---	---	Sound Level	
NSA-34	0	0	---	54.0	0.0	---	---	Sound Level	
NSA-35	0	0	---	53.9	0.0	---	---	Sound Level	
NSA-36	0	0	---	54.0	0.0	---	---	Sound Level	
NSA-37	0	0	---	53.7	0.0	---	---	Sound Level	
NSA-38	0	0	---	53.6	0.0	---	---	Sound Level	
NSA-39	0	0	---	54.0	0.0	---	---	Sound Level	
NSA-40	0	0	---	54.9	0.0	---	---	Sound Level	
NSA-41	0	0	---	52.9	0.0	---	---	Sound Level	
NSA-42	0	0	---	52.6	0.0	---	---	Sound Level	

Future Build Model Results

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PROJECT/CONTRACT

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PAVEMENT TYPE(S) USED:

Average

highway agency substantiates the use of a different

type with approval FHWA.

Receiver				Modeled Traffic Noise Levels					
Name	No.	Nb. R.R.	Existing LAeq dBA						
				LAeq		Increase over Existing		Type of Impact	
				Calc.	Absolute Criterion	Calc.	Relative Criterion		
				dBA	dBA	dBA	dBA		
NSA-43	0	0	---	52.3	0.0	---	---	Sound Level	
NSA-44	0	0	---	52.2	0.0	---	---	Sound Level	
NSA-45	0	0	---	52.2	0.0	---	---	Sound Level	
NSA-46	0	0	---	51.6	0.0	---	---	Sound Level	
NSA-47	0	0	---	51.2	0.0	---	---	Sound Level	
NSA-48	0	0	---	51.2	0.0	---	---	Sound Level	
NSA-49	0	0	---	51.1	0.0	---	---	Sound Level	
NSA-50	0	0	---	50.9	0.0	---	---	Sound Level	
NSA-51	0	0	---	51.6	0.0	---	---	Sound Level	
NSA-52	0	0	---	51.2	0.0	---	---	Sound Level	
NSA-53	0	0	---	50.6	0.0	---	---	Sound Level	
NSA-54	0	0	---	50.8	0.0	---	---	Sound Level	
NSA-55	0	0	---	50.5	0.0	---	---	Sound Level	
NSA-56	0	0	---	50.4	0.0	---	---	Sound Level	

Future Build Model Results

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PAVEMENT TYPE(S) USED:

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highway agency substantiates the use of a different
type with approval FHWA.

Receiver				Modeled Traffic Noise Levels					
Name	No.	Nb. R.R.	Existing LAeq dBA						
				LAeq		Increase over Existing		Type of Impact	
				Calc.	Absolute Criterion	Calc.	Relative Criterion		
				dBA	dBA	dBA	dBA		
NSA-57	0	0	---	50.5	0.0	---	---	Sound Level	
NSA-58	0	0	---	51.1	0.0	---	---	Sound Level	
NSA-59	0	0	---	51.6	0.0	---	---	Sound Level	
NSA-60	0	0	---	52.0	0.0	---	---	Sound Level	
NSA-61	0	0	---	51.3	0.0	---	---	Sound Level	
NSA-62	0	0	---	49.1	0.0	---	---	Sound Level	
NSA-63	0	0	---	52.2	0.0	---	---	Sound Level	
NSA-64	0	0	---	52.6	0.0	---	---	Sound Level	
NSA-65	0	0	---	52.3	0.0	---	---	Sound Level	
NSA-66	0	0	---	53.0	0.0	---	---	Sound Level	