

MCNEELY LANDING (FORMERLY RSSR AND LAING LANDS)
NOISE CONTROL FEASIBILITY STUDY



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Novatech File: 119221
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May 13, 2022

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Attention: Julie Stewart, MCIP, RPP
Planner (County of Lanark)

Niki Dwyer, MCIP, RPP
Director of Development Services (Town of Carleton Place)

Reference: McNeely Landing (Formerly RSSR and Laing Lands)
Noise Control Feasibility Study
Novatech File No.: 119221

In support of the Draft Plan of Subdivision application for the above-noted site, you will find enclosed the Noise Control Feasibility Study for the McNeely Landing (Formerly RSSR and Laing Lands) development.

The study evaluates the environmental impact of noise to the proposed residential development, the feasibility of mitigation measures, and recommends the appropriate noise attenuation measures.

Should you have any questions, or require additional information, please contact me.

Yours truly,

NOVATECH



Bassam Bahia, M.Eng., P. Eng.
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/bs

cc: Steve Pentz / Jordan Jackson, Novatech
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1.0 INTRODUCTION

This report addresses the approach to noise control for the McNeely Landing development (Subject Site), formerly known as RSSR and Laing Lands.

The Subject Site is located at the south-west corner of the McNeely Avenue and Captain A. Roy Brown Boulevard intersection, as shown on **Figure 1.1** – Site Plan. The site is bound to the north by the future Captain A. Roy Brown Boulevard extension, to the east by McNeely Avenue, to the south by open space / agricultural lands, and to the west by Highway 15.

The Subject Site has an area of 25.20 ha, and the proposed subdivision will comprise of two hundred and four (204) single dwelling units, one hundred and seventy-one (171) row town-home units, fifty-six (56) medium density units, local roads, pathways, a road widening block (along Highway 15), an institutional block, a stormwater management facility, and parkland. The development will contain municipal road allowances of 18.0 metres wide.

Note that the medium density unit block (Block 210) has not been assessed as part of this report. A separate report will be prepared in support of the Development Permit application for the subject block.

Novatech has been retained by Uniform Urban Developments Ltd. (Developer) to assess the environmental impact of noise for the Subject Site, the feasibility of mitigation measures, and recommend the appropriate noise attenuation measures to ensure compliance with the City of Ottawa Environmental Noise Control Guidelines, January 2016 (ENCG) and the Ministry of the Environment Environmental Noise Guideline, August 2013 (Provincial Guideline).

As outlined within the ENCG, this report is considered a Phase 1 Noise Control Feasibility Study. A Phase 2 Noise Control Detailed Study will be included as part of the supporting documentation submitted in support of the Plan of Subdivision Application.

2.0 NOISE CONTROL CRITERIA AND GUIDELINES

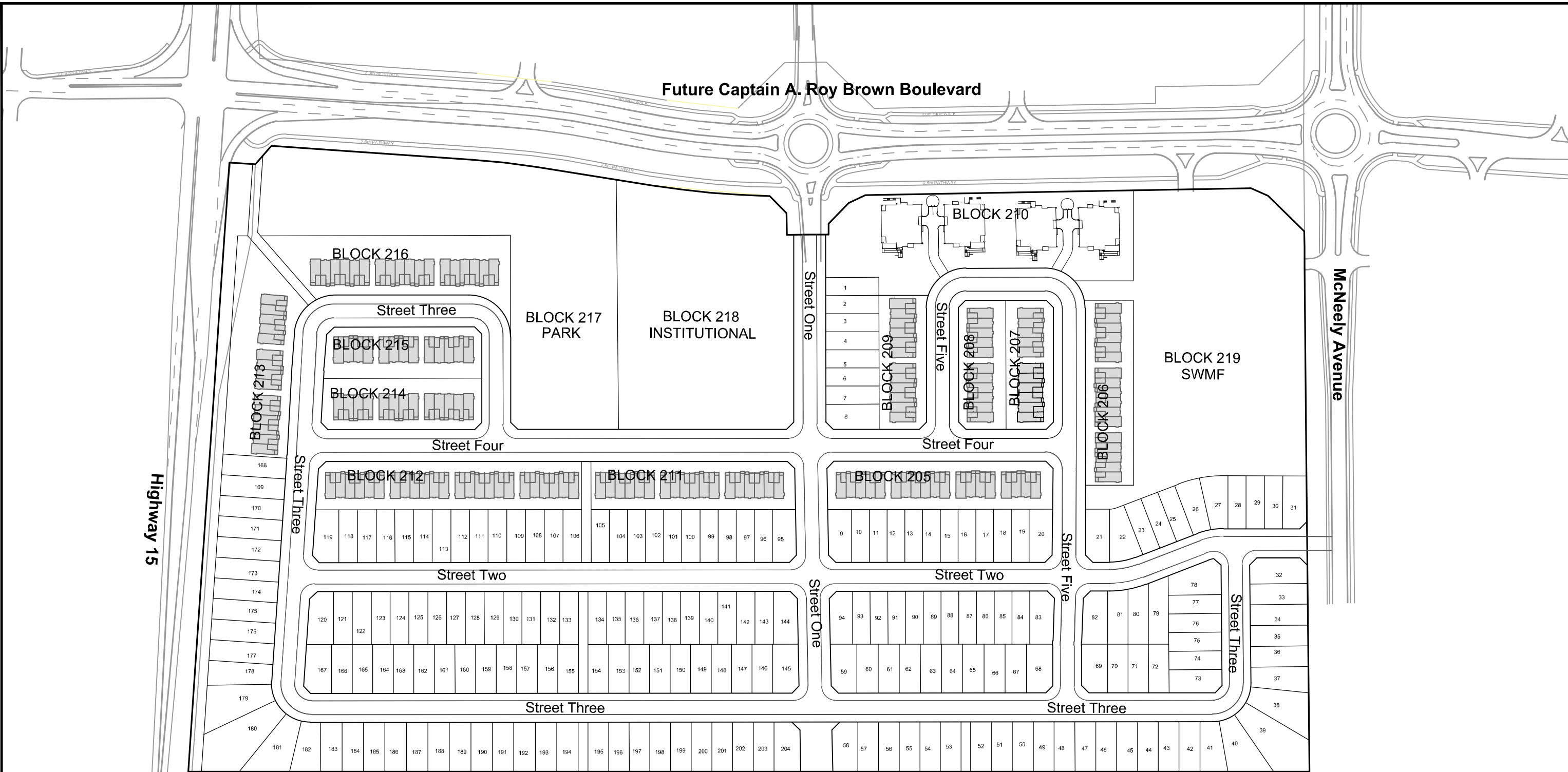
2.1 Sound Level Criteria

In order to adhere to the ENCG and Provincial Guidelines, noise from aircraft, roads, transitways and railways need to be considered when land-use planning. This study considers three noise sources:

- Surface transportation noise from Highway 15;
- Surface transportation noise from future Captain A. Roy Brown Boulevard; and
- Surface transportation noise from McNeely Avenue.

When considering surface transportation noise, proposed noise-sensitive developments must be evaluated within 100 m from the right-of-way of an existing or proposed arterial, collector, major collector, light rail transit, or bus transitway; 250 m from the right-of-way of an existing or proposed highway or a Secondary Main railway line; and 500 m from the right-of-way of a freeway, 400 series provincial highway, or Principle Main railway line. Highway 15, Captain A. Roy Brown Boulevard, and McNeely Avenue are all within 100 m from the Subject Site, thus requiring analysis.

M:\2019\119221\CAD\Design\Figures\Design Brief\Figures revised.dwg, Site Plan, May 13, 2022 - 3:04pm, dcoffey



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McNEELY LANDING

SITE PLAN

SCALE NOT TO SCALE

DATE MAY 2022 JOB 119221 FIGURE 1.1

The mandate of acoustical engineering in respect to land-use planning is typically to analyze, and where required, design an acceptable acoustic environment that complies with the ENCG and Provincial Guidelines to the extent that is both reasonable and practical. The areas which must be assessed for acoustic protection include the Outdoor Living Area (OLA); and the Indoor Living Environment (ILE), for both living/dining area and sleeping quarters.

The OLA is defined as part of the outdoor amenity area provided for the quiet enjoyment of the outdoor environment during the day-time period. These amenity areas are typically backyards, gardens, terraces and patios.

The ILE is provided for the quiet enjoyment of the living/dining and sleeping quarters within a dwelling, during both the day-time and night-time periods.

Surface Transportation Noise

The OLA noise target for road surface transportation noise sources is 55 dBA. This criterion may be exceeded by an amount not greater than 5 dBA, subject to justification and the use of a warning clause.

The ILE sets noise target for road surface transportation noise sources at 45 dBA (day-time) and 40 dBA (night-time), respectively. If this criterion is exceeded, the property may be subject to building component analysis to ensure noise criteria are met and warning clauses.

The outdoor and indoor sound level criteria for surface transportation noise are summarized below in **Table 2.1**.

Table 2.1: Outdoor and Indoor Sound Level Criteria for Surface Transportation Noise

Environment	Receiver Location and Description	Time Period	Abbreviation for Report & Modelling	ENCG Equivalent Sound Level Criteria, L_{eq}
Outdoor	Outdoor living area	Day-time (07:00 - 23:00 hrs) 16 hour period	OLA-16	55 dBA
Indoor	Living/ dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	Day-time (07:00 - 23:00 hrs) 16 hour period	ILED-16	45 dBA
	Living/ dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	Night-time (23:00 - 07:00 hrs) 8 hour period	ILED-8 *	45 dBA
	Sleeping quarters	Day-time (07:00 - 23:00 hrs) 16 hour period	ILES-16	45 dBA
	Sleeping quarters	Night-time (23:00 - 07:00 hrs) 8 hour period	ILES-8	40 dBA

Notes:

(1) **ILED-8** has not been analysed or modelled in this study, as the noise levels would be governed by **ILES-8**.

2.2 Noise Attenuation Requirements

When sound levels are predicted to be less than the specified criteria for the day-time and nighttime conditions, no attenuation measures are required by the proponent. As the noise criteria is exceeded, a combination of attenuation measures is recommended to modify the development environment. These attenuation measures may include:

- Adjusting the site layout to maximize noise insensitive land uses between the noise source and sensitive receptor;
- Orienting buildings to provide sheltered zones in rear yards;
- Constructing noise barriers and/or berms;
- Building component design for acoustic insulation;
- Installation of a forced air ventilation system with provision for central air conditioning;
- Warning Clauses within Subdivision Agreement and Agreement of Purchase and Sale of prospective home buyers, all of which will be registered on title.

Where excessive noise levels may adversely affect property or its use, the ENCG and Provincial Guidelines require notices in the form of a Warning Clause to be placed on title in order to alert the buyer or renter of a possible environmental noise condition or a limitation on his/her property rights. The notices on title must be included in the Development Agreement(s) and in the Agreement(s) or Offer(s) of Purchase and Sale.

3.0 NOISE SOURCES

3.1 Surface Transportation – Highway 15 (Source 1)

Highway 15 is classified as a highway that falls under the jurisdiction of the Ministry of Transportation. The road parameters used for the sound level predictions were based on the Highway 7 and Highway 15 Intersection Improvements Study (WSP, June 2020). An excerpt of the study and the road parameters has been provided in **Appendix A**. The roadway noise parameters are summarized below in **Table 3.1**.

Table 3.1: Highway 15 Traffic and Road Parameters

Roadway Parameters	Highway 15
Roadway Classification	Highway
Annual Average Daily Traffic (AADT)	12,107 vehicles/day
Posted Speed	70 km/hr.
Day / Night Split (%)	92 / 8
Medium Trucks (%)	7
Heavy Trucks (%)	5

Notes:

(1) AADT = 9,400 vehicles/day in 2016. Assuming an increase at 1.2% per year to 2040, AADT = 12,107 vehicles/day.

3.2 Surface Transportation – Captain A. Roy Brown Boulevard (Source 2)

Captain A. Roy Brown Boulevard is classified as a rural arterial road that falls under the jurisdiction of the Town of Carleton Place. The road parameters used for the sound level predictions were based on the Highway 7 and Highway 15 Intersection Improvements Study (WSP, June 2020). An excerpt of the study and the road parameters has been provided in **Appendix A**. The roadway noise parameters are summarized below in **Table 3.2**.

Table 3.2: Captain A. Roy Brown Boulevard Traffic and Road Parameters

Roadway Parameters	Captain A. Roy Brown Boulevard
Roadway Classification	Rural Arterial
Annual Average Daily Traffic (AADT)	9,760 vehicles/day
Posted Speed	60 km/hr.
Day / Night Split (%)	92 / 8
Medium Trucks (%)	7
Heavy Trucks (%)	5

Notes:

(1) 2040 projections show 536 AM, 976 PM. Assuming two-way peak volumes = 10% AADT, AADT = 9,760 vehicles/day.

3.3 Surface Transportation – McNeely Avenue (Source 3)

McNeely Avenue is classified as a rural arterial road that falls under the jurisdiction of the Town of Carleton Place. The road parameters used for the sound level predictions were based on the Highway 7 and Highway 15 Intersection Improvements Study (WSP, June 2020). An excerpt of the study and the road parameters has been provided in **Appendix A**. The roadway noise parameters are summarized below in **Table 3.2**.

Table 3.2: McNeely Avenue Traffic and Road Parameters

Roadway Parameters	McNeely Avenue
Roadway Classification	Rural Arterial
Annual Average Daily Traffic (AADT)	5,000 vehicles/day
Posted Speed	60 km/hr.
Day / Night Split (%)	92 / 8
Medium Trucks (%)	7
Heavy Trucks (%)	5

Notes:

(1) 2040 projections show 194 AM, 246 PM. Assuming two-way peak volumes = 10% AADT, AADT = 2,460 vehicles/day.

(2) With a Day/Night split of 92/8, the AADT south of Cpt. A Roy Brown was increased to 5000 vehicles/day due to the requirement of a minimum of 40 vehicles/hour in the STAMSON modelling software.

4.0 NOISE LEVEL MODELLING AND PREDICTIONS

4.1 Surface Transportation - Acoustic Modeling

For surface transportation sources, noise levels are calculated using the STAMSON computer program, version 5.03. This program allows us to input variables of a road or railway such as traffic volume, types of vehicles, speed, barrier locations and topography to determine the environmental noise impact at a point of reception.

To analyze the noise impact on the Subject Site from the aforementioned surface transportation noise source, three points of reception were implemented at the critical OLAs and two points of reception were implemented at the critical ILEs. The noise control plan for surface transportation noise (Figure 119221-NC1) shows the receiver locations.

The parameters used in STAMSON to assess the noise impacts at the receiver locations can be found below in **Table 4.1**.

Noise modeling was undertaken for the following environments:

OLAs

For the purposes of this noise impact assessment, all receivers for the OLA-16 time period are located 3.0 meters from the building façade, 1.5 meters above grade, and aligned with the midpoint of the subject façade.

ILES

For the purposes of this noise impact assessment, all receivers for the ILED-16 time period are located at the plane of window, 1.5 meters above grade, and aligned in closest proximity to the noise source.

All receivers for the ILES-16, and ILES-8 time periods are located at the plane of window, 4.5 meters above grade, and aligned in closest proximity to the noise source.

Table 4.1: Road Segment/ Receiver Parameters

Receiver	Segment Reference	Road Segment - Receiver Angles		Shielding - Barrier Angles		Shielding - Barrier Parameters				
		RØ1	RØ2	BØ1	BØ2	Receiver source distance (m)	Barrier receiver distance (m)	Source ground elevation (m)	Receiver ground elevation (m)	Barrier ground elevation (m)
Outdoor Living Areas										
R1	S1	-90	90	-90	90	39.7	14.0	136.00	136.00	135.50
R2	S1	-90	90	-	-	90.6	-	136.00	136.00	-
R3	S1	-90	90	-	-	89.7	-	132.00	132.00	-
R4	S1	-90	90	-	-	106.0	-	132.00	132.00	-
R5	S1	-90	90	-	-	28.0	-	135.50	135.50	-
Indoor Living Environments										
R1	S1	-90	90	-90	90	42.4	16.2	136.00	136.00	135.50
R2	S1	-90	90	-	-	95.4	-	136.00	136.00	-
R3	S1	-90	90	-	-	85.0	-	132.00	132.00	-
R4	S1	-90	90	-	-	102.3	-	132.00	132.00	-
R5	S1	-90	90	-	-	24.8	-	135.50	135.50	-

Notes:

- (1) Refer to Figure 119221-NC1 for receiver and noise source locations.
- (2) All receiver angles are the same for both unattenuated and attenuated scenarios.
- (3) All receiver angles are the same for ILEs (i.e., ILED-16, ILES-16, and ILES-8).
- (4) Source height = source ground elevation + 1.5m.
- (5) Receiver height = receiver ground elevation + 1.5m (for all OLA and ILED-16 time periods); receiver ground elevation + 4.5m (for ILES-16, and ILES-8 time periods).

4.2 Surface Transportation - Noise Level Predictions

The following **Table 4.2** summarizes the predicted sound levels at the receiver locations from the results of the STAMSON environmental noise software calculation. The complete modelling outputs can be found in **Appendix B**.

Table 4.2: OLA Noise Level Summary

Receiver	Unattenuated L_{eq}	Attenuated L_{eq}	Noise Barrier Reference
	OLA-16	OLA-16	
R1	61.91	56.47	Noise Barrier No.1 – 3.0 m Ht
R2	51.61	-	No barrier required
R3	53.78	-	No barrier required
R4	52.58	-	No barrier required
R5	59.27	-	No barrier required

Notes:

(1) Refer to Figure 119221-NC1 for receiver and noise source locations.

As outlined in **Table 2.1**, the target noise level for the OLA is 55 dBA, with a provision of an additional 5 dBA tolerance subject to justification and the use of a warning clause. For the established OLAs affected by the surface transportation noise within this proposed development, the day-time noise levels fall below the required OLA noise levels or maximum tolerable OLA noise levels when implementing the attenuated measures where required. Refer to further discussions in Section 5.1 of this report.

Table 4.3: ILE Noise Level Summary

Receiver	Unattenuated / Attenuated L_{eq} (as specified)		
	ILED-16	ILES-16	ILES-8
R1	56.16 (A)	62.00 (A)	54.38 (A)
R2	51.30 (U)	52.22 (U)	44.63 (U)
R3	54.17 (U)	55.00 (U)	47.41 (U)
R4	52.83 (U)	53.74 (U)	46.14 (U)
R5	60.14 (U)	60.49 (U)	52.90 (U)

Notes:

(1) Refer to Figure 119221-NC1 for receiver and noise source locations.

The target noise levels for the ILE, also outlined in **Table 2.1**, for both living/dining area and sleeping quarters is 45 dBA and 40 dBA, respectively. To mitigate these sound levels, additional building component analysis is required to ensure noise criteria are met. Refer to further discussions in Section 5.2 of this report.

5.0 NOISE LEVEL ATTENUATION MEASURES

5.1 Outdoor – Proposed Noise Barrier

To meet the required OLA noise levels for the surface transportation and based on the current plan of subdivision layout, it is anticipated that one noise barrier will need to be implemented within the Subject Site. The following outlines the proposed:

- Noise Barrier No.1 – 3.0 m high noise barrier, along the rear yards backing onto Highway 15;

The above is based on the current conceptual grading plan for the Subject Site and preliminary design of the future Captain A. Roy Brown Boulevard which is being completed by By-town Engineering. As part of Phase 2 Noise Control Detailed Study, further review of the detailed grading will be completed to confirm noise barrier heights and locations.

Additional details on the noise barriers will also be provided as part of Phase 2 Noise Control Detailed Study.

5.2 Indoor – Proposed Building Component Assessment

When ILE noise levels exceed the ENCG day-time or night-time criteria, the exterior shell system of the building envelope must be acoustically assessed to ensure the indoor noise criteria is achieved for the surface transportation noise sources. Based on the results in Section 4.2 of this report, in the proposed development the sound levels at the ILE receiver locations falls above the day-time and night-time allowances.

Notwithstanding the above, and per common industry practice, buildings built in conformance with the Ontario Building Code (OBC) typically provide a 25 dBA reduction to the noise levels. As such, if the buildings are built to provide exterior wall, window and patio door, roof and ceiling, and exterior door component assemblies to meet the prescribed requirements of the OBC, no further assessment on the building envelope is required.

Additional details and assessment of the proposed building components will be provided as part of the Phase 2 Noise Control Detailed Study.

5.3 Provision for Central Air Conditioning

To provide indoor isolation and avoid noise intrusion through open windows or doors, the installation of a forced air ventilation system with provisions for central air conditioning may be required.

Additional details on which lots may be required to implement provisions for central air conditioning will be provided as part of the Phase 2 Noise Control Detailed Study.

5.4 Proposed Warning Clauses

If noise levels are expected to exceed the applicable ENCG and Provincial Guidelines sound level criteria, it is recommended that a Warning Clause be registered on title and incorporated into the Development Agreement(s) and in the Agreement(s) or Offer(s) of Purchase and Sale. The Warning Clause serves to alert potential buyers and/or renters of the possible noise condition and of any limitations that may exist on his/her property rights.

Additional details on which lots will be required to apply Warning Clauses will be provided as part of the Phase 2 Noise Control Detailed Study.

6.0 CONCLUSIONS AND RECOMMENDATIONS

This study confirms the predicted noise levels for the units within the proposed residential development backing onto Highway 15, Captain A. Roy Brown Boulevard, and McNeely Avenue are in excess of the ENCG and Provincial Guidelines required criteria. The following outlines the summary of findings and recommendations being made:

- Based on the noise level results, it is anticipated that there will be a requirement for a noise barrier along Highway 15 due to the surface transportation noise.
- A Phase 2 Noise Control Detailed Study will be required to provide:
 - Further review of the detailed grading for the Subject Site and the future Captain A. Roy Brown Boulevard to confirm noise barrier heights and locations;
 - Additional details on the noise barriers;
 - Additional details and assessment of the proposed building components;
 - Additional details on which lots/blocks may be required to implement provisions for central air conditioning; and
 - Additional details on which lots/blocks will be required to apply Warning Clauses.
- The medium density unit block (Block 210) has not been assessed as part of this report. A separate report will be prepared in support of the Development Permit application for the subject block.

This study is respectfully submitted in support of the subdivision application. Please contact the undersigned should you have questions or require additional information.

NOVATECH

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Appendix A
Traffic Study Excerpts

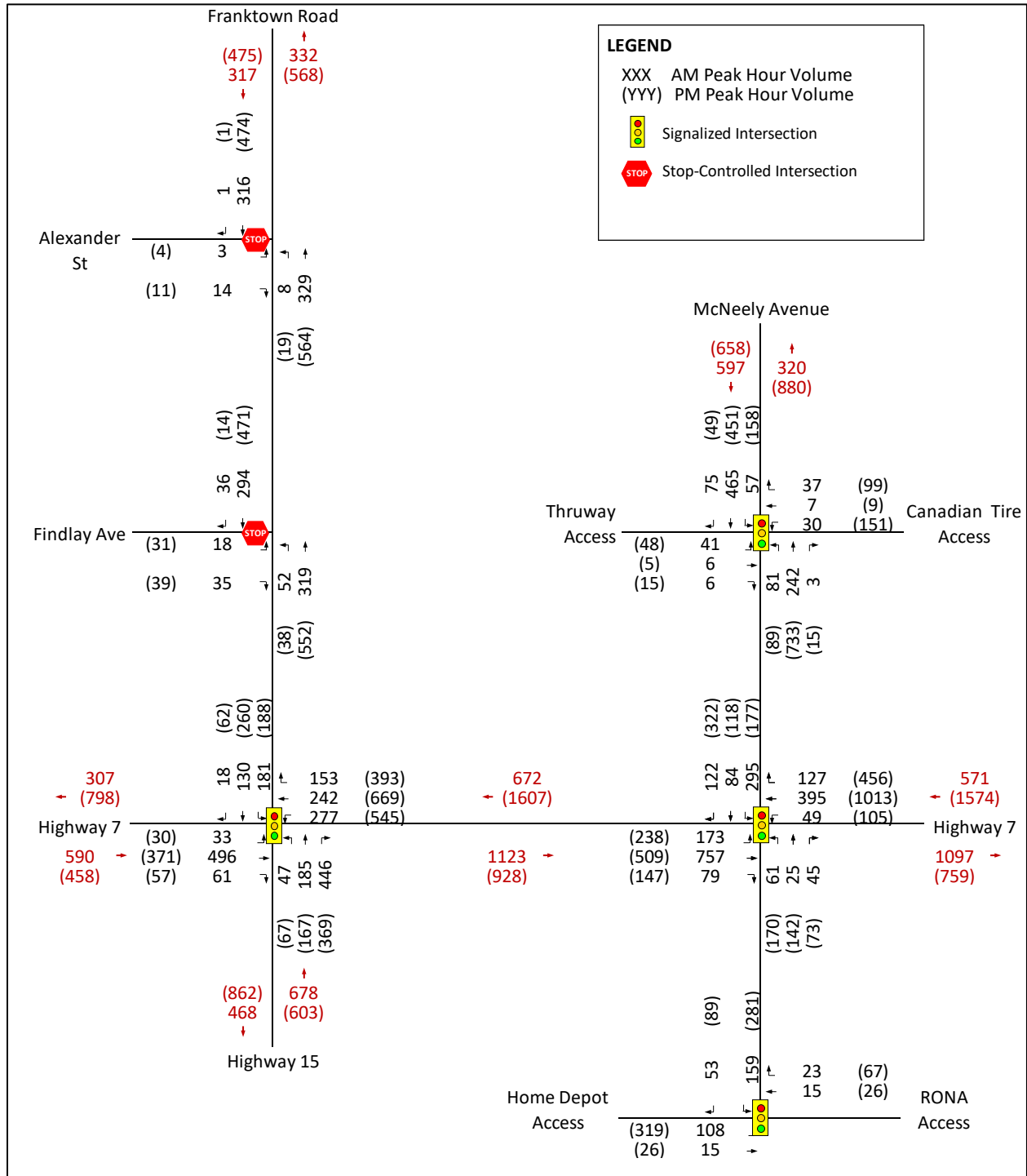


Figure 3: Existing (2018) Peak Hour Traffic Volumes

5 FUTURE TRAFFIC CONDITIONS

The future traffic condition analyses were conducted for the interim (2025) and long-term (2040) planning horizons. To forecast the future traffic demands for the study area, the historical traffic volumes and available traffic study reports were reviewed, and the findings are described below.

5.1 FUTURE TRAFFIC DEMAND FORECASTS

5.1.1 Review of Historical Traffic Volumes

The historical traffic volumes on Highway 7 and Highway 15 from 2001 to 2016 are presented in **Table 7** and **Figure 8**.

Table 7: Historical AADT Volume and Growth Rates for Highway 7 and Highway 15 (2001-2016)

Year	Highway 7 east of Highway 15 (at McNeely Avenue)	Highway 7 west of Highway 15 (at Highway 15)	Highway 15 south of Highway 7 (at Beckwith Eighth Line)
2001	13,900	8,550	7,900
2002	14,100	8,700	8,000
2003	13,600	8,850	8,000
2004	15,800	9,050	8,050
2005	16,200	9,200	8,150
2006	16,600	9,400	8,200
2007	16,900	9,550	8,150
2008	17,300	9,750	8,350
2009	17,700	9,900	8,450
2010	16,900	7,500	8,500
2011	17,200	7,100	8,600
2012	17,900	9,300	9,600
2013	17,800	9,600	9,750
2014	18,000	9,900	9,200
2015	18,300	10,200	9,300
2016	18,500	10,500	9,400
Annual Growth Rate (using 2001-2016 trend)	1.5%	0.7%	1.2%

Source: Provincial Highway Traffic Volumes, MTO

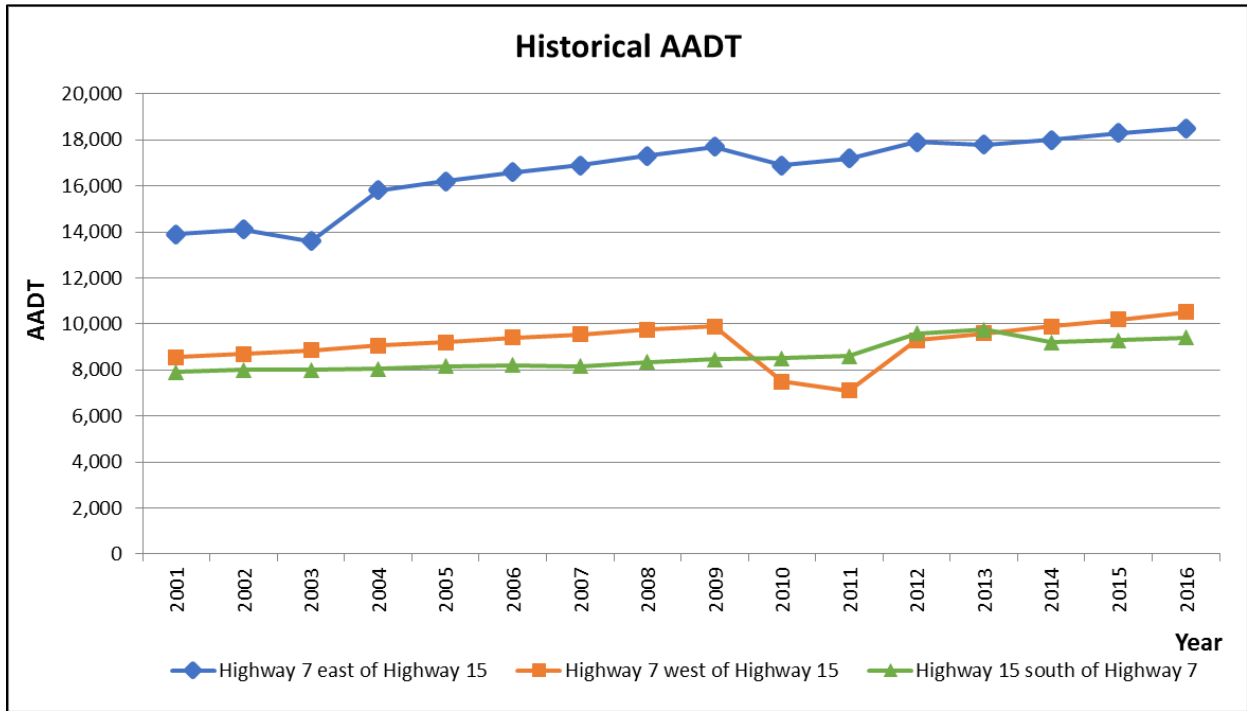
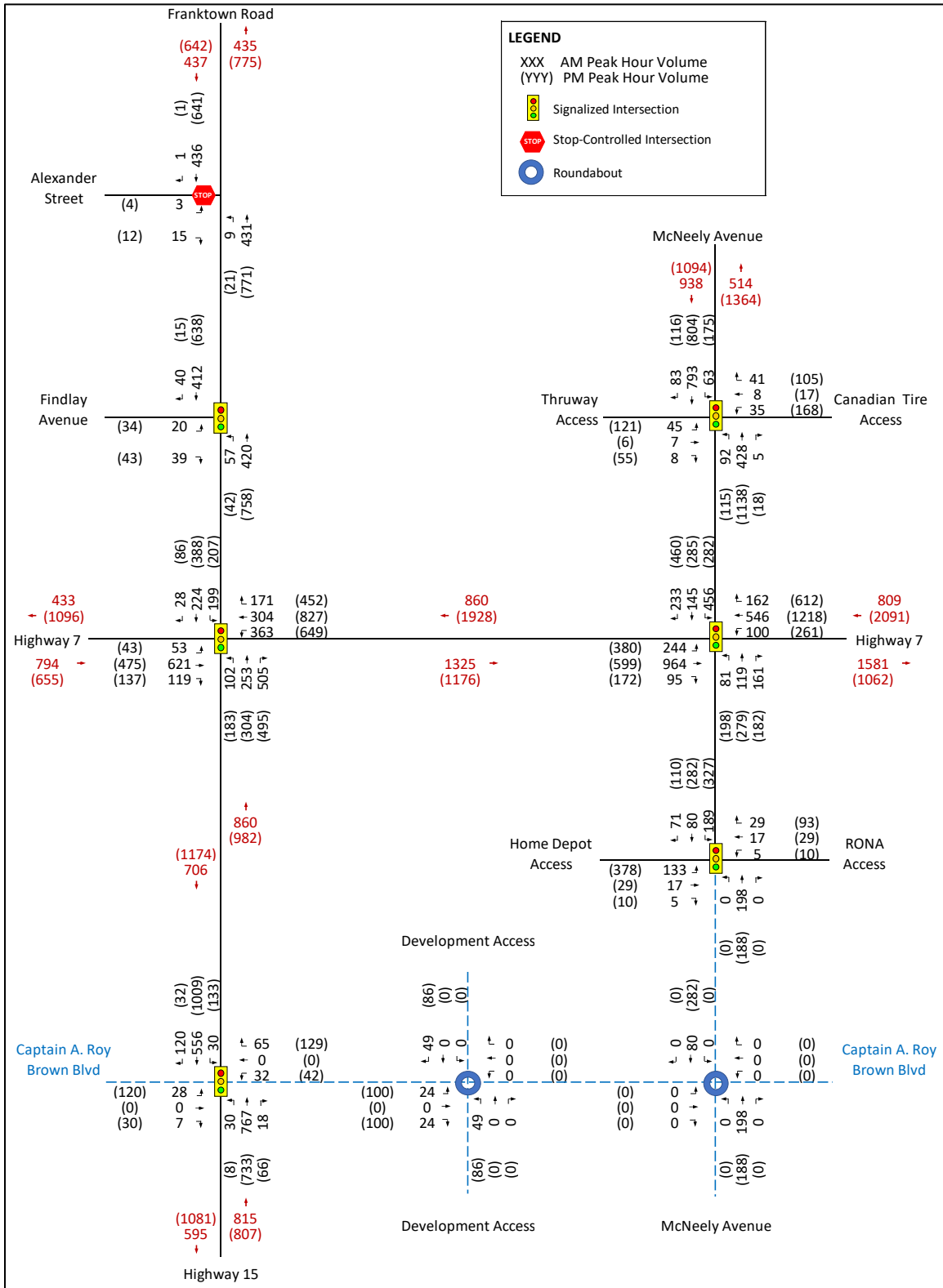


Figure 8: Historical Traffic Volumes (AADTs) for Highway 7 & Highway 15 (2001-2016)

As presented in **Table 7**, the east segment of Highway 7 – between Highway 15 and McNeely Avenue has experienced an annual growth rate of 1.5%. In the same period, traffic on the west segment of Highway 7 (i.e. west of Highway 15) observed a lower growth rate of 0.7% per annum. The traffic volumes on Highway 15 have increased at an average growth rate of 1.2% per annum. The higher traffic growth rate observed on the east segment of Highway 7 indicates the impact of developments in the Town of Carleton Place.



Note: Traffic demands at Captain A. Roy Brown Blvd roundabouts were assumed for 2025 planning horizon

Figure 14: Future Total Traffic Volumes for 2025

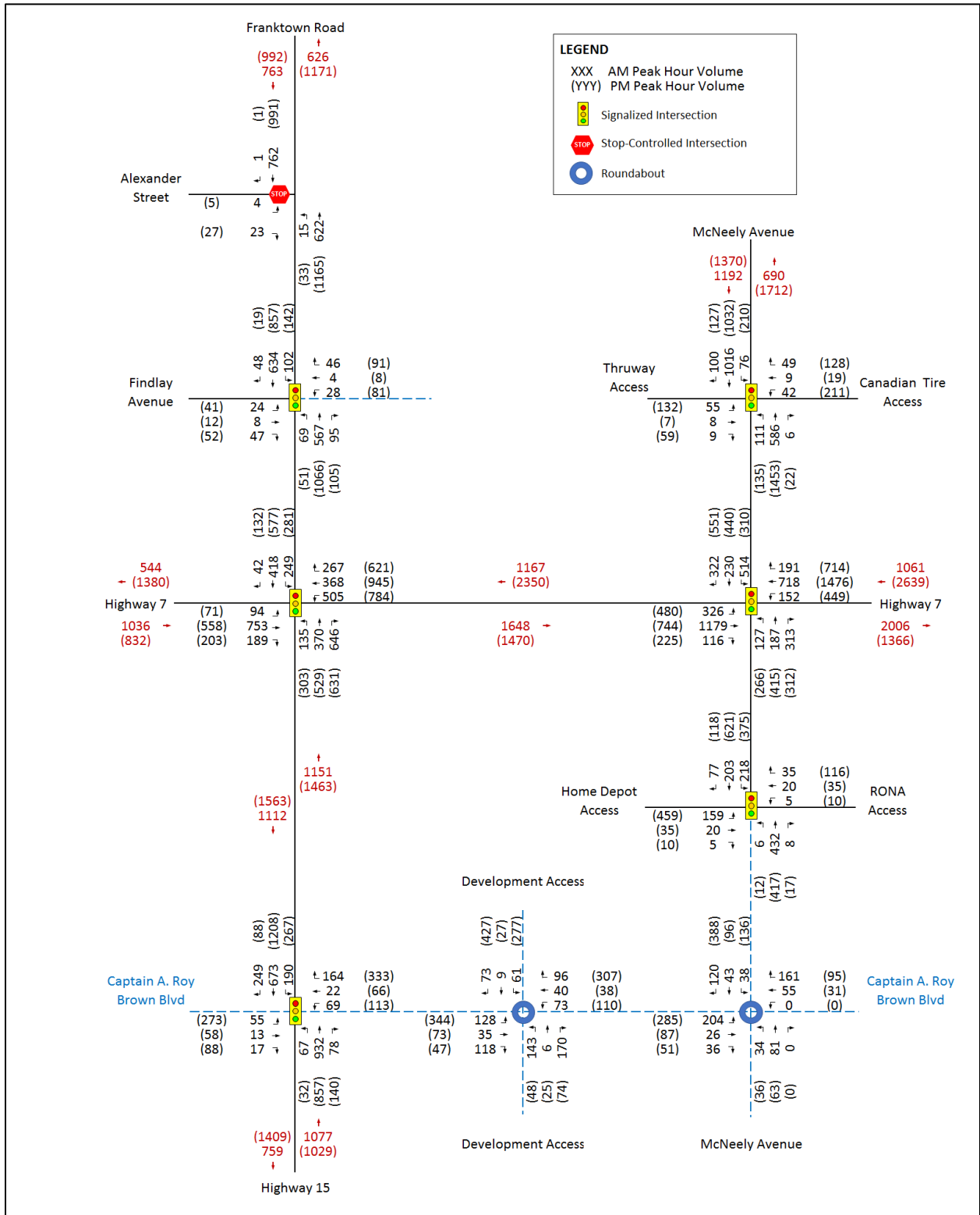


Figure 15: Future Total Traffic Volumes for 2040

Appendix B
STAMSON Noise Modelling Results

Filename: olal.te Time Period: Day/Night 16/8 hours
Description: Unattenuated - OLA1

Road data, segment # 1: HWY 15 (day/night)

Car traffic volume : 9802/852 veh/TimePeriod *
Medium truck volume : 780/68 veh/TimePeriod *
Heavy truck volume : 557/48 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 12107
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: HWY 15 (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 39.70 / 39.70 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: HWY 15 (day)

Source height = 1.50 m

ROAD (0.00 + 61.91 + 0.00) = 61.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.66	70.39	0.00	-7.02	-1.46	0.00	0.00	0.00
61.91									

Segment Leq : 61.91 dBA

Total Leq All Segments: 61.91 dBA

Results segment # 1: HWY 15 (night)

Source height = 1.49 m

ROAD (0.00 + 54.83 + 0.00) = 54.83 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.57	62.77	0.00	-6.64	-1.30	0.00	0.00	0.00
54.83									

Segment Leq : 54.83 dBA

Total Leq All Segments: 54.83 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.91
(NIGHT): 54.83

Filename: olal.te Time Period: Day/Night 16/8 hours
Description: Attenuated (3m HT Noise Barrier) - OLAL

Road data, segment # 1: HWY 15 (day/night)

Car traffic volume : 9802/852 veh/TimePeriod *
Medium truck volume : 780/68 veh/TimePeriod *
Heavy truck volume : 557/48 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 12107
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: HWY 15 (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 39.70 / 39.70 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with
barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 3.00 m
Barrier receiver distance : 14.00 / 14.00 m
Source elevation : 136.00 m
Receiver elevation : 136.00 m
Barrier elevation : 135.50 m
Reference angle : 0.00

Results segment # 1: HWY 15 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
 1.50 ! 1.50 ! 2.00 ! 137.50

ROAD (0.00 + 56.47 + 0.00) = 56.47 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.48 70.39 0.00 -6.26 -1.14 0.00 0.00 -6.53
56.47

Segment Leq : 56.47 dBA

Total Leq All Segments: 56.47 dBA

Results segment # 1: HWY 15 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.49 ! 4.50 ! 3.94 ! 139.44

ROAD (0.00 + 54.83 + 0.00) = 54.83 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.39 62.77 0.00 -5.88 -0.96 0.00 0.00 -2.92
53.01*
-90 90 0.57 62.77 0.00 -6.64 -1.30 0.00 0.00 0.00
54.83

* Bright Zone !

Segment Leq : 54.83 dBA

Total Leq All Segments: 54.83 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.47
(NIGHT): 54.83

Filename: ile1.te Time Period: Day/Night 16/8 hours
Description: Attenuated (3m HT Noise Barrier) - ILED1

Road data, segment # 1: HWY 15 (day/night)

Car traffic volume : 9802/852 veh/TimePeriod *
Medium truck volume : 780/68 veh/TimePeriod *
Heavy truck volume : 557/48 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 12107
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: HWY 15 (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 42.40 / 42.40 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with
barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 3.00 m
Barrier receiver distance : 16.20 / 16.20 m
Source elevation : 136.00 m
Receiver elevation : 136.00 m
Barrier elevation : 135.50 m
Reference angle : 0.00

Results segment # 1: HWY 15 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.50 ! 1.50 ! 2.00 ! 137.50

ROAD (0.00 + 56.16 + 0.00) = 56.16 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.48 70.39 0.00 -6.68 -1.14 0.00 0.00 -6.40
56.16

Segment Leq : 56.16 dBA

Total Leq All Segments: 56.16 dBA

Results segment # 1: HWY 15 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.49 ! 4.50 ! 3.85 ! 139.35

ROAD (0.00 + 54.38 + 0.00) = 54.38 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.39 62.77 0.00 -6.27 -0.96 0.00 0.00 -3.56
51.97*
-90 90 0.57 62.77 0.00 -7.09 -1.30 0.00 0.00 0.00
54.38

* Bright Zone !

Segment Leq : 54.38 dBA

Total Leq All Segments: 54.38 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.16
(NIGHT): 54.38

Filename: ile1.te Time Period: Day/Night 16/8 hours
Description: Attenuated (3m HT Noise Barrier) - ILES1

Road data, segment # 1: HWY 15 (day/night)

Car traffic volume : 9802/852 veh/TimePeriod *
Medium truck volume : 780/68 veh/TimePeriod *
Heavy truck volume : 557/48 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 12107
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: HWY 15 (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 42.40 / 42.40 m
Receiver height : 4.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with
barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 3.00 m
Barrier receiver distance : 16.20 / 16.20 m
Source elevation : 136.00 m
Receiver elevation : 136.00 m
Barrier elevation : 135.50 m
Reference angle : 0.00

Results segment # 1: HWY 15 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.50 ! 4.50 ! 3.85 ! 139.35

ROAD (0.00 + 62.00 + 0.00) = 62.00 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.39 70.39 0.00 -6.27 -0.96 0.00 0.00 -3.56
59.60*
-90 90 0.57 70.39 0.00 -7.09 -1.30 0.00 0.00 0.00
62.00

* Bright Zone !

Segment Leq : 62.00 dBA

Total Leq All Segments: 62.00 dBA

Results segment # 1: HWY 15 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
1.49 ! 4.50 ! 3.85 ! 139.35

ROAD (0.00 + 54.38 + 0.00) = 54.38 dBA

Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.39 62.77 0.00 -6.27 -0.96 0.00 0.00 -3.56
51.97*
-90 90 0.57 62.77 0.00 -7.09 -1.30 0.00 0.00 0.00
54.38

* Bright Zone !

Segment Leq : 54.38 dBA

Total Leq All Segments: 54.38 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.00
(NIGHT): 54.38

STAMSON 5.0 NORMAL REPORT Date: 12-05-2022 19:01:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola2.te Time Period: Day/Night 16/8 hours
Description: Unattenuated - OLA2

Road data, segment # 1: CARB BLVD (day/night)

Car traffic volume : 7902/687 veh/TimePeriod *
Medium truck volume : 629/55 veh/TimePeriod *
Heavy truck volume : 449/39 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 9760
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: CARB BLVD (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 90.60 / 90.60 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: CARB BLVD (day)

Source height = 1.50 m

ROAD (0.00 + 51.61 + 0.00) = 51.61 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
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SubLeq									

-90	90	0.36	68.13	0.00	-10.62	-0.90	-5.00	0.00	0.00
51.61									

Segment Leq : 51.61 dBA

Total Leq All Segments: 51.61 dBA

Results segment # 1: CARB BLVD (night)

Source height = 1.49 m

ROAD (0.00 + 44.91 + 0.00) = 44.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
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SubLeq									

-90	90	0.27	60.54	0.00	-9.92	-0.70	-5.00	0.00	0.00
44.91									

Segment Leq : 44.91 dBA

Total Leq All Segments: 44.91 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 51.61
(NIGHT): 44.91

Filename: ile2.te Time Period: Day/Night 16/8 hours
Description: Unattenuated - ILED2

Road data, segment # 1: CARB BLVD (day/night)

Car traffic volume : 7902/687 veh/TimePeriod *
Medium truck volume : 629/55 veh/TimePeriod *
Heavy truck volume : 449/39 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 9760
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: CARB BLVD (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 95.40 / 95.40 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: CARB BLVD (day)

Source height = 1.50 m

ROAD (0.00 + 51.30 + 0.00) = 51.30 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
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SubLeq									

-90	90	0.36	68.13	0.00	-10.93	-0.90	-5.00	0.00	0.00
51.30									

Segment Leq : 51.30 dBA

Total Leq All Segments: 51.30 dBA

Results segment # 1: CARB BLVD (night)

Source height = 1.49 m

ROAD (0.00 + 44.63 + 0.00) = 44.63 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.27	60.54	0.00	-10.21	-0.70	-5.00	0.00	0.00
44.63									

Segment Leq : 44.63 dBA

Total Leq All Segments: 44.63 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 51.30
(NIGHT): 44.63

STAMSON 5.0 NORMAL REPORT Date: 12-05-2022 19:03:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ile2.te Time Period: Day/Night 16/8 hours
Description: Unattenuated - ILES2

Road data, segment # 1: CARB BLVD (day/night)

Car traffic volume : 7902/687 veh/TimePeriod *
Medium truck volume : 629/55 veh/TimePeriod *
Heavy truck volume : 449/39 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 9760
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: CARB BLVD (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 1 (Wood depth 30 to less than 60 metres)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 95.40 / 95.40 m
Receiver height : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: CARB BLVD (day)

Source height = 1.50 m

ROAD (0.00 + 52.22 + 0.00) = 52.22 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.27	68.13	0.00	-10.21	-0.70	-5.00	0.00	0.00
52.22									

Segment Leq : 52.22 dBA

Total Leq All Segments: 52.22 dBA

Results segment # 1: CARB BLVD (night)

Source height = 1.49 m

ROAD (0.00 + 44.63 + 0.00) = 44.63 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
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SubLeq									

-90	90	0.27	60.54	0.00	-10.21	-0.70	-5.00	0.00	0.00
44.63									

Segment Leq : 44.63 dBA

Total Leq All Segments: 44.63 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.22
(NIGHT): 44.63

Filename: ola3.te Time Period: Day/Night 16/8 hours
Description: Unattenuated - OLA3

Road data, segment # 1: CARB BLVD (day/night)

Car traffic volume : 7902/687 veh/TimePeriod *
Medium truck volume : 629/55 veh/TimePeriod *
Heavy truck volume : 449/39 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 9760
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: CARB BLVD (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 89.70 / 89.70 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: CARB BLVD (day)

Source height = 1.50 m

ROAD (0.00 + 53.78 + 0.00) = 53.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.66	68.13	0.00	-12.89	-1.46	0.00	0.00	0.00
53.78									

Segment Leq : 53.78 dBA

Total Leq All Segments: 53.78 dBA

Results segment # 1: CARB BLVD (night)

Source height = 1.49 m

ROAD (0.00 + 47.04 + 0.00) = 47.04 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.57	60.54	0.00	-12.20	-1.30	0.00	0.00	0.00
47.04									

Segment Leq : 47.04 dBA

Total Leq All Segments: 47.04 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.78
(NIGHT): 47.04

Filename: ile3.te Time Period: Day/Night 16/8 hours
Description: Unattenuated - ILED3

Road data, segment # 1: CARB BLVD (day/night)

Car traffic volume : 7902/687 veh/TimePeriod *
Medium truck volume : 629/55 veh/TimePeriod *
Heavy truck volume : 449/39 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 9760
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: CARB BLVD (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 85.00 / 85.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: CARB BLVD (day)

Source height = 1.50 m

ROAD (0.00 + 54.17 + 0.00) = 54.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq

-90 90 0.66 68.13 0.00 -12.51 -1.46 0.00 0.00 0.00
54.17

Segment Leq : 54.17 dBA

Total Leq All Segments: 54.17 dBA

Results segment # 1: CARB BLVD (night)

Source height = 1.49 m

ROAD (0.00 + 47.41 + 0.00) = 47.41 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.57	60.54	0.00	-11.83	-1.30	0.00	0.00	0.00
47.41									

Segment Leq : 47.41 dBA

Total Leq All Segments: 47.41 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.17
(NIGHT): 47.41

Filename: ile3.te Time Period: Day/Night 16/8 hours
Description: Unattenuated - ILES3

Road data, segment # 1: CARB BLVD (day/night)

Car traffic volume : 7902/687 veh/TimePeriod *
Medium truck volume : 629/55 veh/TimePeriod *
Heavy truck volume : 449/39 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 9760
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: CARB BLVD (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 85.00 / 85.00 m
Receiver height : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: CARB BLVD (day)

Source height = 1.50 m

ROAD (0.00 + 55.00 + 0.00) = 55.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.57	68.13	0.00	-11.83	-1.30	0.00	0.00	0.00
55.00									

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

Results segment # 1: CARB BLVD (night)

Source height = 1.49 m

ROAD (0.00 + 47.41 + 0.00) = 47.41 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.57	60.54	0.00	-11.83	-1.30	0.00	0.00	0.00
47.41									

Segment Leq : 47.41 dBA

Total Leq All Segments: 47.41 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.00
(NIGHT): 47.41

Filename: ola4.te Time Period: Day/Night 16/8 hours
Description: Unattenuated - OLA4

Road data, segment # 1: CARB BLVD (day/night)

Car traffic volume : 7902/687 veh/TimePeriod *
Medium truck volume : 629/55 veh/TimePeriod *
Heavy truck volume : 449/39 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 9760
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: CARB BLVD (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 106.00 / 106.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: CARB BLVD (day)

Source height = 1.50 m

ROAD (0.00 + 52.58 + 0.00) = 52.58 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.66	68.13	0.00	-14.10	-1.46	0.00	0.00	0.00
52.58									

Segment Leq : 52.58 dBA

Total Leq All Segments: 52.58 dBA

Results segment # 1: CARB BLVD (night)

Source height = 1.49 m

ROAD (0.00 + 45.90 + 0.00) = 45.90 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
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SubLeq									

-90	90	0.57	60.54	0.00	-13.33	-1.30	0.00	0.00	0.00
45.90									

Segment Leq : 45.90 dBA

Total Leq All Segments: 45.90 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.58
(NIGHT): 45.90

Filename: ile4.te Time Period: Day/Night 16/8 hours
Description: Unattenuated - ILED4

Road data, segment # 1: CARB BLVD (day/night)

Car traffic volume : 7902/687 veh/TimePeriod *
Medium truck volume : 629/55 veh/TimePeriod *
Heavy truck volume : 449/39 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 9760
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: CARB BLVD (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 102.30 / 102.30 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: CARB BLVD (day)

Source height = 1.50 m

ROAD (0.00 + 52.83 + 0.00) = 52.83 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.66	68.13	0.00	-13.84	-1.46	0.00	0.00	0.00
52.83									

Segment Leq : 52.83 dBA

Total Leq All Segments: 52.83 dBA

Results segment # 1: CARB BLVD (night)

Source height = 1.49 m

ROAD (0.00 + 46.14 + 0.00) = 46.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.57	60.54	0.00	-13.09	-1.30	0.00	0.00	0.00
46.14									

Segment Leq : 46.14 dBA

Total Leq All Segments: 46.14 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.83
(NIGHT): 46.14

STAMSON 5.0 NORMAL REPORT Date: 12-05-2022 19:13:10
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ile4.te Time Period: Day/Night 16/8 hours
Description: Unattenuated - ILES4

Road data, segment # 1: CARB BLVD (day/night)

Car traffic volume : 7902/687 veh/TimePeriod *
Medium truck volume : 629/55 veh/TimePeriod *
Heavy truck volume : 449/39 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 9760
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: CARB BLVD (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 102.30 / 102.30 m
Receiver height : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: CARB BLVD (day)

Source height = 1.50 m

ROAD (0.00 + 53.74 + 0.00) = 53.74 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.57	68.13	0.00	-13.09	-1.30	0.00	0.00	0.00
53.74									

Segment Leq : 53.74 dBA

Total Leq All Segments: 53.74 dBA

Results segment # 1: CARB BLVD (night)

Source height = 1.49 m

ROAD (0.00 + 46.14 + 0.00) = 46.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.57	60.54	0.00	-13.09	-1.30	0.00	0.00	0.00
46.14									

Segment Leq : 46.14 dBA

Total Leq All Segments: 46.14 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.74
(NIGHT): 46.14

Filename: ola5.te Time Period: Day/Night 16/8 hours
Description: Unattenuated - OLA5

Road data, segment # 1: MCNEELY AVE (day/night)

Car traffic volume : 4048/352 veh/TimePeriod *
Medium truck volume : 322/28 veh/TimePeriod *
Heavy truck volume : 230/20 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 5000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: MCNEELY AVE (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 28.00 / 28.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: MCNEELY AVE (day)

Source height = 1.50 m

ROAD (0.00 + 59.27 + 0.00) = 59.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
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SubLeq									

-90	90	0.66	65.22	0.00	-4.50	-1.46	0.00	0.00	0.00
59.27									

Segment Leq : 59.27 dBA

Total Leq All Segments: 59.27 dBA

Results segment # 1: MCNEELY AVE (night)

Source height = 1.50 m

ROAD (0.00 + 52.07 + 0.00) = 52.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
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SubLeq									

-90	90	0.57	57.63	0.00	-4.26	-1.30	0.00	0.00	0.00
52.07									

Segment Leq : 52.07 dBA

Total Leq All Segments: 52.07 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.27
(NIGHT): 52.07

Filename: ile5.te Time Period: Day/Night 16/8 hours
Description: Unattenuated - ILED5

Road data, segment # 1: MCNEELY AVE (day/night)

Car traffic volume : 4048/352 veh/TimePeriod *
Medium truck volume : 322/28 veh/TimePeriod *
Heavy truck volume : 230/20 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 5000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: MCNEELY AVE (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 24.80 / 24.80 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: MCNEELY AVE (day)

Source height = 1.50 m

ROAD (0.00 + 60.14 + 0.00) = 60.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.66	65.22	0.00	-3.62	-1.46	0.00	0.00	0.00
60.14									

Segment Leq : 60.14 dBA

Total Leq All Segments: 60.14 dBA

Results segment # 1: MCNEELY AVE (night)

Source height = 1.50 m

ROAD (0.00 + 52.90 + 0.00) = 52.90 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
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SubLeq									

-90	90	0.57	57.63	0.00	-3.43	-1.30	0.00	0.00	0.00
52.90									

Segment Leq : 52.90 dBA

Total Leq All Segments: 52.90 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.14
(NIGHT): 52.90

Filename: ile5.te Time Period: Day/Night 16/8 hours
Description: Unattenuated - ILES5

Road data, segment # 1: MCNEELY AVE (day/night)

Car traffic volume : 4048/352 veh/TimePeriod *
Medium truck volume : 322/28 veh/TimePeriod *
Heavy truck volume : 230/20 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 5000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: MCNEELY AVE (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 24.80 / 24.80 m
Receiver height : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: MCNEELY AVE (day)

Source height = 1.50 m

ROAD (0.00 + 60.49 + 0.00) = 60.49 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.57	65.22	0.00	-3.43	-1.30	0.00	0.00	0.00
60.49									

Segment Leq : 60.49 dBA

Total Leq All Segments: 60.49 dBA

Results segment # 1: MCNEELY AVE (night)

Source height = 1.50 m

ROAD (0.00 + 52.90 + 0.00) = 52.90 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

-90	90	0.57	57.63	0.00	-3.43	-1.30	0.00	0.00	0.00
52.90									

Segment Leq : 52.90 dBA

Total Leq All Segments: 52.90 dBA

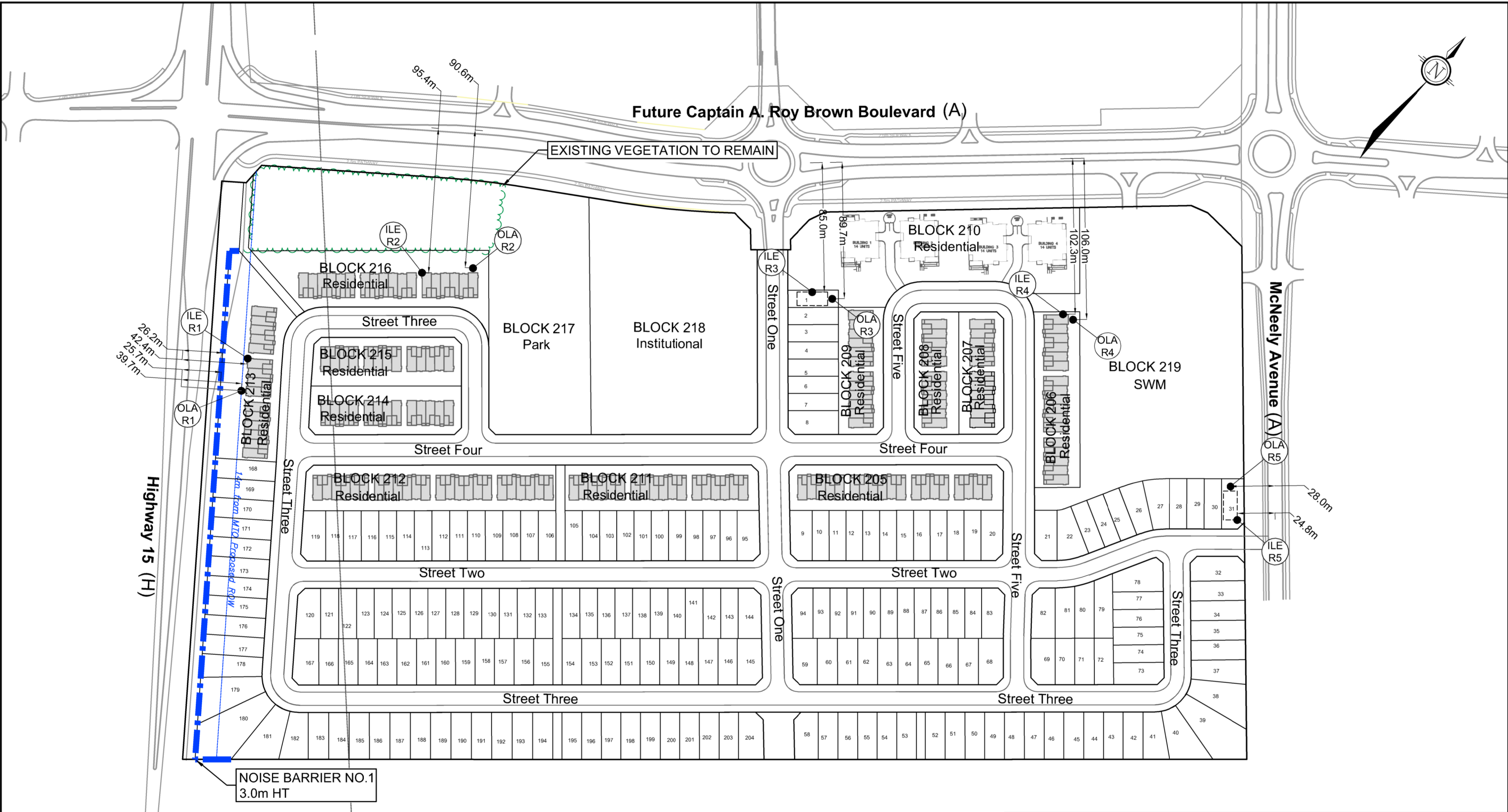
TOTAL Leq FROM ALL SOURCES (DAY): 60.49
(NIGHT): 52.90

Enclosures


119221-NC1

Noise Control Plan

M:\2019\119221\CAD\Design\Figures\Noise\119221-NC_Rev1.dwg, NC, May 12, 2022 - 8:25pm, bsweet



LEGEND

-  PROPERTY LINE
-  PROPOSED 3.0m NOISE BARRIER
-  RECEIVER-OUTDOOR LIVING AREA (OLA)
-  RECEIVER-INDOOR LIVING ENVIRONMENT (ILE)
-  HIGHWAY CLASSIFICATION
-  ARTERIAL ROAD CLASSIFICATION

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McNEELY LANDING		
NOISE CONTROL PLAN		
SCALE	NOT TO SCALE	
DATE	JOB	FIGURE
MAY 2022	119221	NC-1