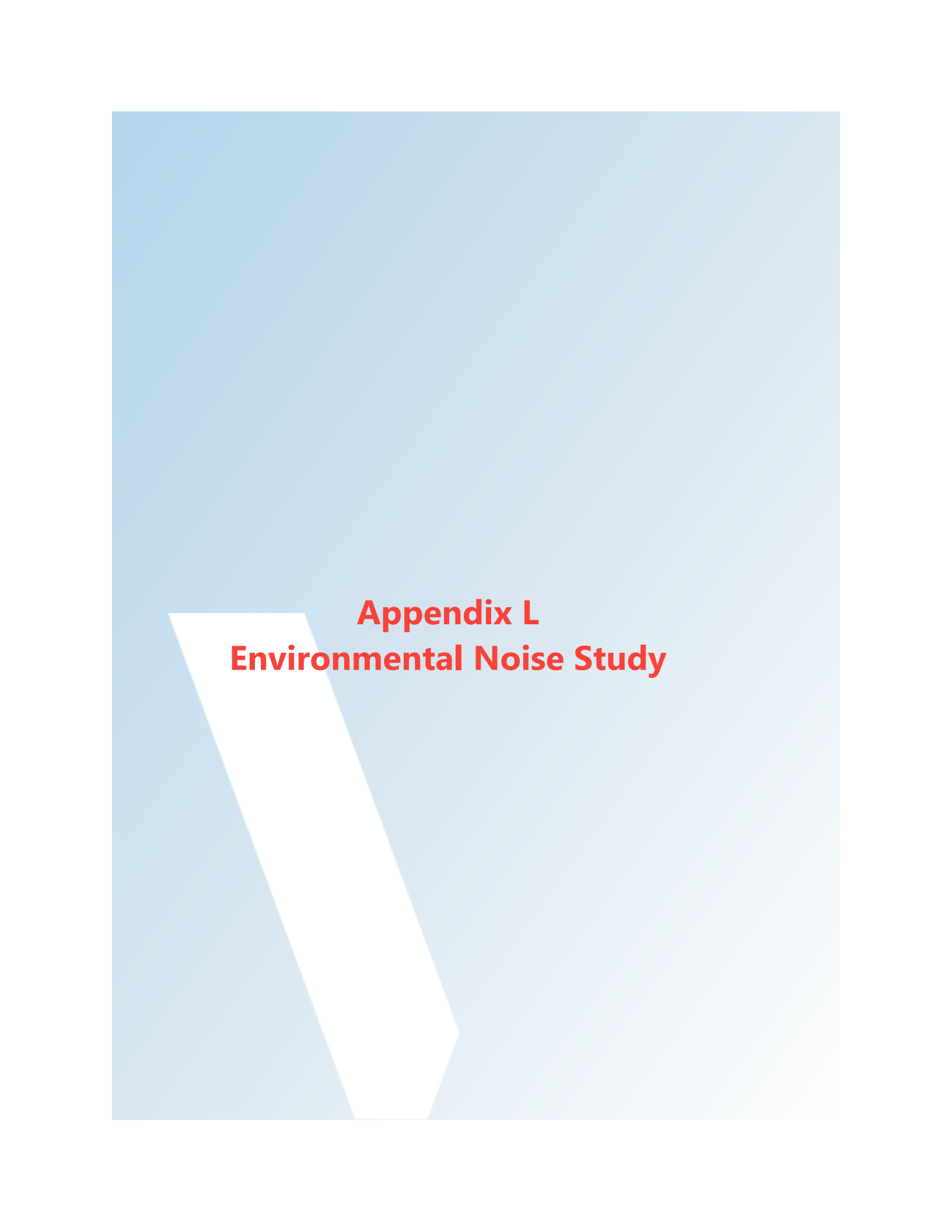




Appendix L

Environmental Noise Study

City of Hamilton

Barton Street and Fifty Road Improvements Environmental Noise Study

July 10, 2024

Barton Street and Fifty Road Improvements Environmental Noise Study

July 10, 2024

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Version Control (optional)

Issue	Revision No.	Date Issued	Page No.	Description	Reviewed By
0	Draft	2024-07-10			

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1 Introduction

The City of Hamilton retained Arcadis to prepare an Environmental Noise Study as part of a Municipal Class Environmental Assessment (MCEA) study. The study was conducted in accordance with the planning and design process for Schedule 'C' projects as outlined in the Municipal Engineers Association MCEA (February 2024).

With improvements to the road, noise levels will potentially change. The purpose of this Environmental Noise Study is to:

- Estimate current noise levels based on existing conditions;
- Estimate future forecasted noise levels for future predicted traffic volumes; and,
- Assess whether the future conditions, based on Provincial noise guidelines, warrant mitigation.

2 Noise Criteria

The Ontario Ministry of Transportation (MTO) "Environmental Noise Guide" (February 2022) policy document has been referenced to determine the noise assessment and mitigation methodology along Barton Street. This policy establishes environmental noise criteria for road improvements or modifications to roadways. As a general summary of the criteria, noise attenuation will be considered for existing residential properties under the following conditions:

- a. If the Outdoor Living Area (OLA) for each residential lot has side-yard and rear-yard exposure to a municipal road;
- b. Where the projected noise levels (Leq) during the 0700 to 2300 (i.e., 16-hour) period are predicted to:
 - Exceed 65 dBA with the proposed "improvement"; or,
 - Where the projected noise levels with the "improvement" are predicted to increase by 5 dBA or more over the future noise level without the proposed "improvement".
- c. The proposed mitigation measures must provide a minimum reduction of 5 dBA or be mitigated to as close to ambient as technically feasible over the 0700 to 2300 period to warrant construction.

The environmental noise assessment for road improvement projects typically considers only noise levels at Outdoor Living Areas (OLAs). Noise mitigation for existing building interiors is typically not considered as it is not practical to implement given the subject building exists and its sensitive receiver locations are typically elevated precluding the use of exterior noise barriers.

The OLA is defined as:

- The backyard or patio within 3 m of the rear wall of a residential unit;
- The common outdoor area allocated for recreational purposes outside residential buildings such as apartments or condominiums; and,
- Balconies of residential units where the balcony is greater than 4m in depth and is outside the building façade and unenclosed.

3 Noise Prediction Methods

The Ministry of Environment, Conservation and Parks (MECP) noise modeling software, STAMSON v5.04, which incorporates “Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT)”, was used to model the noise levels generated for the existing and future conditions. This software is recognized for the purposes of transportation environmental noise modelling in Ontario.

STAMSON uses several inputs to predict noise levels, including:

- Traffic volumes;
- Traffic speed (posted speed limit);
- Traffic characteristics (time of day, vehicular types, etc.);
- Topography (elevation differences, road slope, etc.); and,
- Distance (between sources, receivers, barriers, etc.).

All intermediate surfaces were modelled as absorptive. Output for the various scenarios modelled in this study is included in **Appendix B**.

4 Traffic Data

Existing and proposed data was derived from the “Barton Street and Fifty Road Class EA Study Transportation and Traffic Analysis Report” (August 2018) prepared by Paradigm Transportation Solutions Limited as input to this Study. The data contained detailed information for annual average daily traffic (AADT) and truck data for the Barton Street and Fifty Road. Data were provided for existing conditions as well as for the future traffic scenario. The data used in the modelling are summarized in Table 4-1. The trucks percentage were assumed to be evenly split between medium and heavy trucks.

Refer to Figures 1-3 to 3-3 included in **Appendix A** for a graphical description of the road segments.

Barton Street and Fifty Road Improvements Environmental Noise Study

Table 4-1 Existing and Future Traffic Data

Road Segment ID	Road Segment	Existing AADT (vpd)	Future AADT (vpd)	Trucks (%)	Road Gradient (%)	Posted Speed Limit (km/h)
Barton Street						
1	Fruitland Road to Jones Road	7,530	12,816	4.1	0.1	60
2	Jones Road to Glover Road	7,110	10,272	5.4	0.2	60
3	Glover Road to McNeilly Road	6,050	9,416	3.7	0.1	60
4	McNeilly Road to Lewis Road	3,240	7,384	2.3	0.1	50
5	Lewis Road to Winona Road	3,200	7,712	1.0	0.3	50
6	Winona Road to Fifty Road	3,100	6,196	0.8	0.1	50
Fifty Road						
1	South Service Road to Barton Street	7,120	10,392	1.8	1.1	50
2	Barton Street to Highway 8	5,590	6,996	2.3	0.8	50

5 Receiver Locations

Representative sensitive receiver locations were selected along each road segment where rear-yard or side-yard exposure to the road was present. The receiver locations along Barton Street are summarized in Table 5-1 and are shown in Figures 1-3 to 3-3 in **Appendix A**. Note that no sensitive receiver locations were identified along the Fifty Road segments.

Table 5-1 Sensitive Receiver Locations

Receiver ID	Address	Road Section	OLA Receiver Location	Distance to Barton Street Centreline (m)
A	302 Jones Road	Barton Street - 2	Southeast corner of Barton Street & Jones Road Rear yard of side-lotted property	27.5
B	301 Christina Avenue	Barton Street - 3	East of Glover Road Rear yards of side-lotted properties on both side of Christina Avenue	20.9
C	299 Winona Road	Barton Street - 5	Southwest corner of Winona Road & Barton Street Rear yards of side-lotted properties	32.0
D	315 Winona Road	Barton Street - 5	Northwest corner of Winona Road & Barton Street Rear yards of side-lotted properties	25.0
E	1 Mockingbird Lane	Barton Street - 6	Rear yards of side-lotted properties (new Townhome development)	19.4

6 Analysis & Results

A free-field analysis was completed using STAMSON to determine the maximum limits (offset distance from centreline of road) of impact on each of the identified road segments. This analysis is an assessment of noise impacts without consideration for any physical mitigation (e.g., topographical features, noise barriers, etc.) that would provide reduction of noise levels. This analysis facilitates a worst-case review (i.e., without any mitigation), and thus identifies any areas of potential concern that can be further investigated if needed.

The free-field analysis considered two noise levels:

- 60 dBA: This is the lower noise limit where possible noise mitigation might be warranted; and,
- 65 dBA: This is the limit above which would require mitigation.

The free-field analysis found that the 65 dBA free-field limit for all road segments was less than 15 m and is thus not shown (note, STAMSON will not calculate noise levels for distances less than 15 m).

The existing and future conditions 60 dBA free-field limits greater than 15m for each of the road segments are summarized in Table 6-1 and shown graphically on Figures 1-3 to 3-3 (**Appendix A**). STAMSON cannot calculate noise levels for traffic volumes less than 40 vehicles per hour.

Table 6-1 Existing and Future Free-Field Limits (60 dBA)

Road Segment ID	Existing Free-Field Limit (m)	Proposed Free-Field Limit (m)	Increase in Free-Field (m)
Barton Street			
1	21.66	29.80	+ 8.14
2	23.05	28.79	+ 5.74
3	18.36	23.97	+ 5.61
4	-	-	-
5	-	-	-
6	- *	-	-
Fifty Road			
1	16.75	20.98	+ 4.23
2	15.30	17.49	+ 2.19

* Existing AADT for Barton Street Segment 6, < 40 vph

As shown in Table 6-1, several road segments have an increase in the 60 dBA free-field offset distance from road centreline. While this demonstrates that noise levels are increasing, the criteria states that the increase must exceed 5 dBA and be above 60 dBA to warrant noise mitigation. Table 6-2 summarizes the existing and future noise levels at each of the sensitive receiver locations.

Table 6-2 Receiver Noise Levels

Receiver	Existing Conditions (dBA)	Future Conditions (dBA)	Increase (dBA)
A	58.7	60.3	+ 1.6
B	59.0	60.9	+ 1.9
C	49.0	52.9	+ 3.8
D	52.7	56.5	+ 3.8
E	- *	53.5	-

* Existing AADT for Barton Street for Receiver E, < 40 vph

As shown in Table 6-2, the increase in noise level between the existing and future scenarios is below 5 dBA (maximum increase is 3.8 dBA), and the future noise level remains below 65 dBA at each OLA receiver location. Accordingly, noise mitigation is not warranted based on the noise criteria.

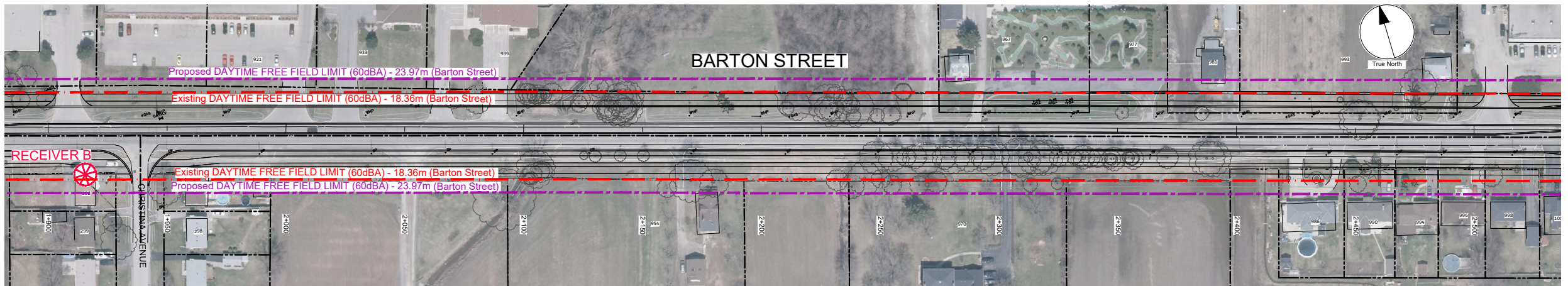
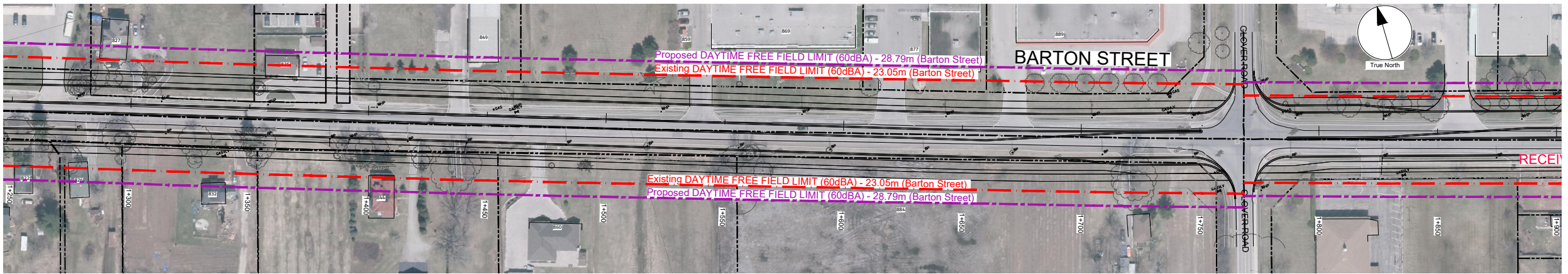
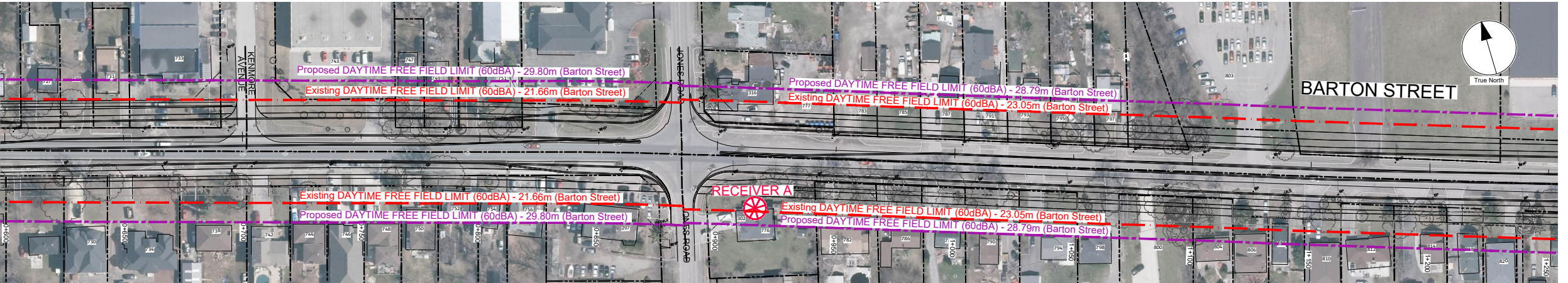
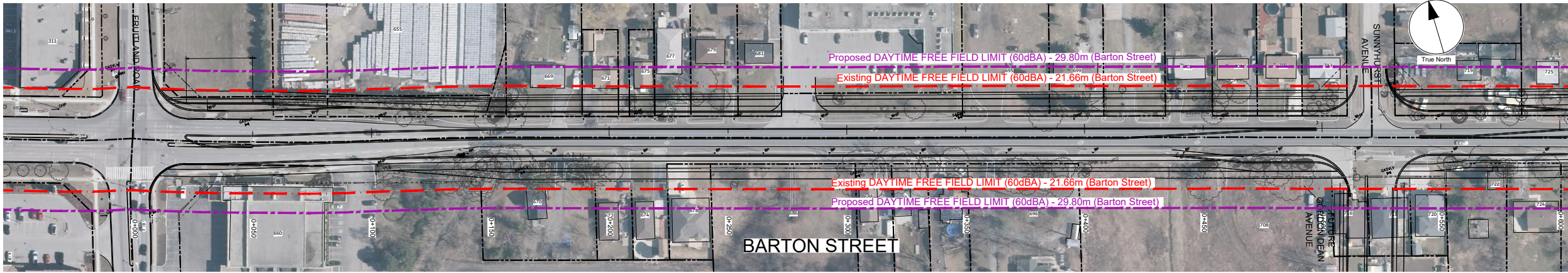
7 Summary

The future traffic volumes will cause some increases in noise levels as compared to existing conditions (maximum 3.8 dBA). However, based on the results of this study and the noise level criteria utilized, mitigation measures are not warranted as the increase does not exceed 5 dBA, and the noise levels remain below 65 dBA.

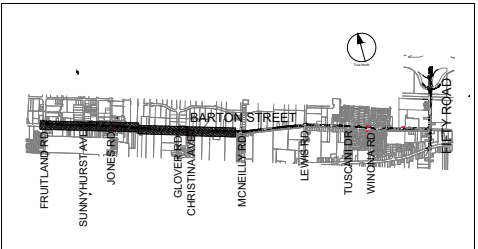
All of which is respectfully submitted.

Appendix A

Figures



KEY MAP



LEGEND

- RECEIVER LOCATION
- PROPOSED DAYTIME (60dBA)
- EXISTING DAYTIME (60dBA)
- PROPERTY LINE
- ROAD CENTERLINE LINE



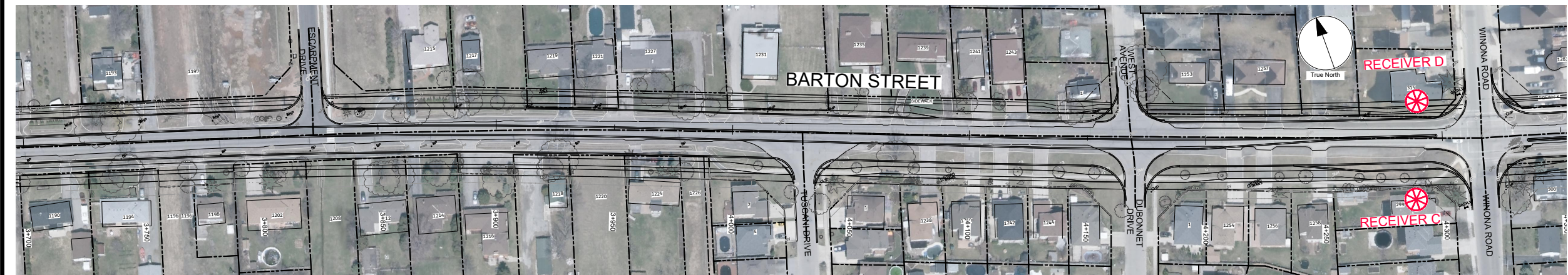
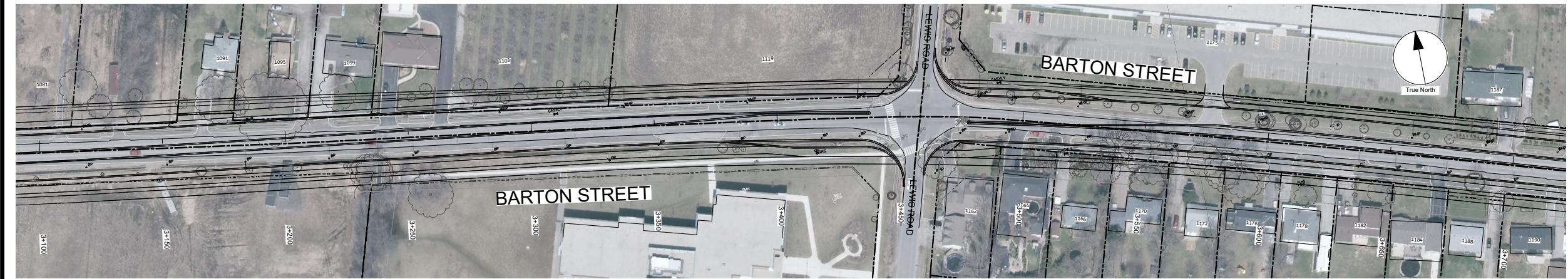
410 Albert Street - Suite 101
Waterloo ON N2L 3V3 Canada
tel 519 585 2255
www.arcadis.com

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DATE JULY 2024
PROJECT No. 146889

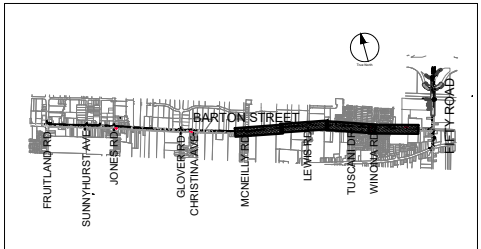
BARTON STREET CLASS EA
Environmental Noise Study

NOISE INFORMATION PLAN - TRAFFIC

FIGURE 1-3
STA. 0+000 TO 2+500



KEY MAP



LEGEND

- RECEIVER LOCATION
- PROPOSED DAYTIME (60dBA)
- EXISTING DAYTIME (60dBA)
- PROPERTY LINE
- ROAD CENTERLINE LINE



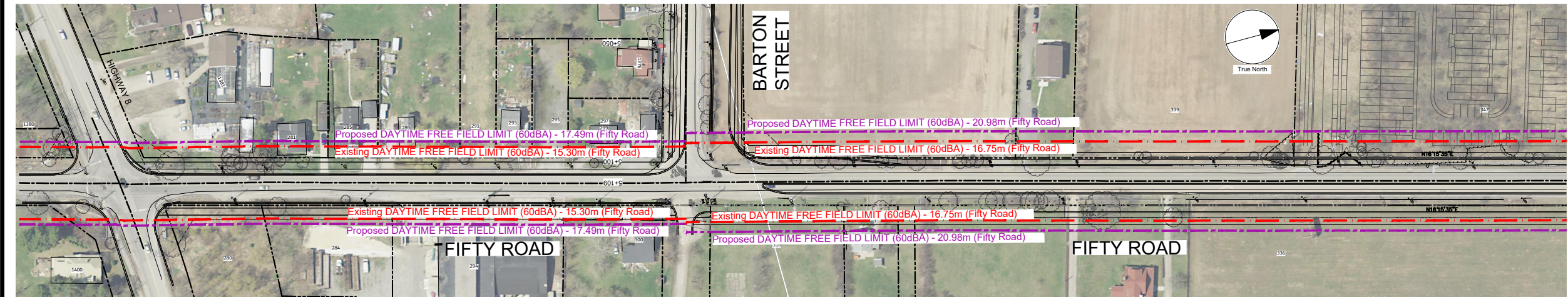
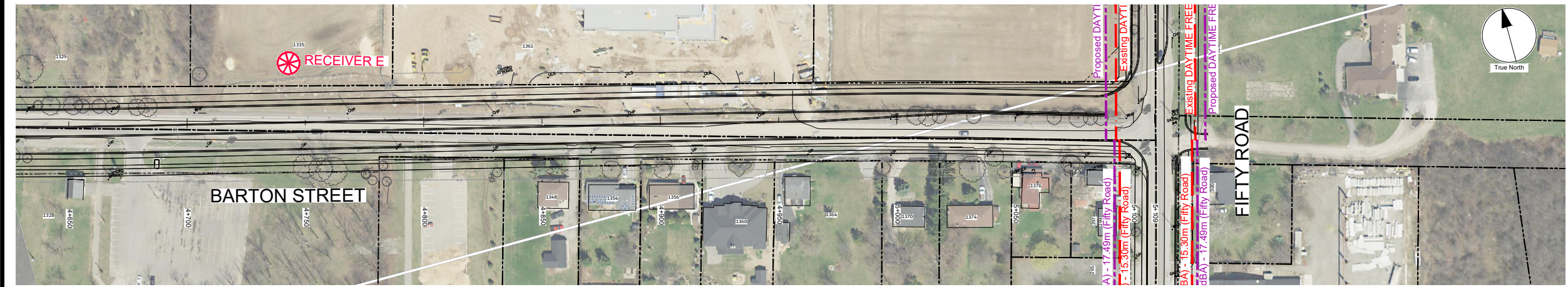
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DATE JULY 2024
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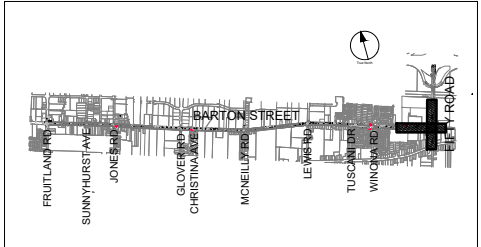
BARTON STREET CLASS EA
Environmental Noise Study

NOISE INFORMATION PLAN - TRAFFIC

FIGURE 2-3
STA. 2+500 TO 4+900



KEY MAP



LEGEND

- RECEIVER LOCATION
- PROPOSED DAYTIME (60dBA)
- EXISTING DAYTIME (60dBA)
- PROPERTY LINE
- ROAD CENTERLINE LINE



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SCALE 1:2000
DATE JULY 2024
PROJECT No. 146889

BARTON STREET CLASS EA
Environmental Noise Study

NOISE INFORMATION PLAN - TRAFFIC

FIGURE 3-3
STA. 4+650 TO 5+190

Appendix B

STAMSON Model Output

FREE-FIELD LIMITS

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 19:47:06

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: EXB1.te

Time Period: Day/Night 16/8 hours

Description: Barton St. (Section 1) - Existing Free Field Limit

Road data, segment # 1: Barton S1 (day/night)

Car traffic volume : 6499/722 veh/TimePeriod *

Medium truck volume : 139/15 veh/TimePeriod *

Heavy truck volume : 139/15 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): 7530

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 2.05

Heavy Truck % of Total Volume : 2.05

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Barton S1 (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 : 21.66 / 21.66 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Barton S1 (day)

Source height = 1.20 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	64.10	0.00	-2.65	-1.46	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

STAMSON 5.0 NORMAL REPORT Date: 19-05-2024 19:52:10

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: EXB2.te Time Period: Day/Night 16/8 hours

Description: Barton St. (Section 2) - Existing Free Field Limit

Road data, segment # 1: Barton S2 (day/night)

Car traffic volume : 6053/673 veh/TimePeriod *

Medium truck volume : 173/19 veh/TimePeriod *

Heavy truck volume : 173/19 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): 7110

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 2.70

Heavy Truck % of Total Volume : 2.70

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Barton S2 (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 : 23.05 / 23.05 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Barton S2 (day)

Source height = 1.28 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA

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

-90	90	0.66	64.56	0.00	-3.10	-1.46	0.00	0.00	0.00	60.00
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Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 19:59:05

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: exb3.te

Time Period: Day/Night 16/8 hours

Description: Barton St. (Section 3) - Existing Free Field Limit

Road data, segment # 1: Barton S3 (day/night)

Car traffic volume : 5244/583 veh/TimePeriod *

Medium truck volume : 101/11 veh/TimePeriod *

Heavy truck volume : 101/11 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): 6050

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 1.85

Heavy Truck % of Total Volume : 1.85

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Barton S3 (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 : 18.36 / 18.36 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Barton S3 (day)

Source height = 1.17 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA

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

-90	90	0.66	62.91	0.00	-1.46	-1.46	0.00	0.00	0.00	60.00
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Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 20:20:43

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: exfl.te

Time Period: Day/Night 16/8 hours

Description: Fifty Rd. (Section 1) - Existing Free Field Limit

Road data, segment # 1: Fifty S1 (day/night)

Car traffic volume : 6293/699 veh/TimePeriod *

Medium truck volume : 58/6 veh/TimePeriod *

Heavy truck volume : 58/6 veh/TimePeriod *

Posted speed limit : 60 km/h

Road gradient : 1 %

Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 7120

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 0.90

Heavy Truck % of Total Volume : 0.90

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Fifty S1 (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 : 16.75 / 26.66 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Fifty S1 (day)

Source height = 0.98 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA

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

-90	90	0.66	62.25	0.00	-0.80	-1.46	0.00	0.00	0.00	60.00
-----	----	------	-------	------	-------	-------	------	------	------	-------

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 20:24:21

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: exf2.te

Time Period: Day/Night 16/8 hours

Description: Fifty Rd. (Section 2) - Existing Free Field Limit

Road data, segment # 1: Fifty S2 (day/night)

Car traffic volume : 4915/546 veh/TimePeriod *

Medium truck volume : 58/6 veh/TimePeriod *

Heavy truck volume : 58/6 veh/TimePeriod *

Posted speed limit : 60 km/h

Road gradient : 1 %

Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 5590

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 1.15

Heavy Truck % of Total Volume : 1.15

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Fifty S2 (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 : 15.30 / 15.30 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Fifty S2 (day)

Source height = 1.04 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA

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

-90	90	0.66	61.60	0.00	-0.14	-1.46	0.00	0.00	0.00	60.00
-----	----	------	-------	------	-------	-------	------	------	------	-------

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 19:49:15

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: FUB1.te

Time Period: Day/Night 16/8 hours

Description: Barton St. (Section 1) - Future Free Field Limit

Road data, segment # 1: Barton S1 (day/night)

Car traffic volume : 11061/1229 veh/TimePeriod *

Medium truck volume : 236/26 veh/TimePeriod *

Heavy truck volume : 236/26 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): 12816

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 2.05

Heavy Truck % of Total Volume : 2.05

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Barton S1 (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 : 29.80 / 29.80 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Barton S1 (day)

Source height = 1.20 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA

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

-90	90	0.66	66.40	0.00	-4.95	-1.46	0.00	0.00	0.00	60.00
-----	----	------	-------	------	-------	-------	------	------	------	-------

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 19:54:09

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: FUB2.te

Time Period: Day/Night 16/8 hours

Description: Barton St. (Section 2) - Future Free Field Limit

Road data, segment # 1: Barton S2 (day/night)

Car traffic volume : 8746/972 veh/TimePeriod *
Medium truck volume : 250/28 veh/TimePeriod *
Heavy truck volume : 250/28 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): 10272
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.70
Heavy Truck % of Total Volume : 2.70
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Barton S2 (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 : 28.79 / 28.79 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Barton S2 (day)

Source height = 1.28 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA

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

-90	90	0.66	66.15	0.00	-4.70	-1.46	0.00	0.00	0.00	60.00
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Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 20:01:04

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: fub3.te

Time Period: Day/Night 16/8 hours

Description: Barton St. (Section 3) - Future Free Field Limit

Road data, segment # 1: Barton S3 (day/night)

Car traffic volume : 8161/907 veh/TimePeriod *

Medium truck volume : 157/17 veh/TimePeriod *

Heavy truck volume : 157/17 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): 9416

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 1.85

Heavy Truck % of Total Volume : 1.85

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Barton S3 (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 : 23.97 / 23.97 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Barton S3 (day)

Source height = 1.17 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA

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

-90	90	0.66	64.83	0.00	-3.38	-1.46	0.00	0.00	0.00	60.00
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Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 20:22:15

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: fuf1.te

Time Period: Day/Night 16/8 hours

Description: Fifty Rd. (Section 1) - Future Free Field Limit

Road data, segment # 1: Fifty S1 (day/night)

Car traffic volume : 9184/1020 veh/TimePeriod *

Medium truck volume : 84/9 veh/TimePeriod *

Heavy truck volume : 84/9 veh/TimePeriod *

Posted speed limit : 60 km/h

Road gradient : 1 %

Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 10392

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 0.90

Heavy Truck % of Total Volume : 0.90

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Fifty S1 (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 : 20.98 / 33.71 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Fifty S1 (day)

Source height = 0.97 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA

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

-90	90	0.66	63.88	0.00	-2.42	-1.46	0.00	0.00	0.00	60.00
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Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 20:26:08

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: fuf2.te

Time Period: Day/Night 16/8 hours

Description: Fifty Rd. (Section 2) - Future Free Field Limit

Road data, segment # 1: Fifty S2 (day/night)

Car traffic volume : 6152/684 veh/TimePeriod *
Medium truck volume : 72/8 veh/TimePeriod *
Heavy truck volume : 72/8 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 6996
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.15
Heavy Truck % of Total Volume : 1.15
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Fifty S2 (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 : 17.49 / 28.29 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Fifty S2 (day)

Source height = 1.03 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA

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

-90	90	0.66	62.56	0.00	-1.11	-1.46	0.00	0.00	0.00	60.00
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Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

RECEIVERS

STAMSON 5.0 NORMAL REPORT Date: 19-05-2024 20:28:16

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: RA_EX.te Time Period: Day/Night 16/8 hours

Description: Receiver A - Existing Noise Levels

Road data, segment # 1: Barton S2 (day/night)

Car traffic volume : 6053/673 veh/TimePeriod *

Medium truck volume : 173/19 veh/TimePeriod *

Heavy truck volume : 173/19 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): 7110

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 2.70

Heavy Truck % of Total Volume : 2.70

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Barton S2 (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 : 27.50 / 27.50 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Barton S2 (day)

Source height = 1.28 m

ROAD (0.00 + 58.73 + 0.00) = 58.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	64.56	0.00	-4.37	-1.46	0.00	0.00	0.00	58.73

Segment Leq : 58.73 dBA

Total Leq All Segments: 58.73 dBA

Results segment # 1: Barton S2 (night)

Source height = 1.28 m

ROAD (0.00 + 52.17 + 0.00) = 52.17 dBA

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

-90 90 0.66 57.99 0.00 -4.37 -1.46 0.00 0.00 0.00 52.17

Segment Leq : 52.17 dBA

Total Leq All Segments: 52.17 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.73

(NIGHT): 52.17

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 20:29:57

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ra_fu.te

Time Period: Day/Night 16/8 hours

Description: Receiver A - Future Noise Levels

Road data, segment # 1: Barton S2 (day/night)

Car traffic volume : 8746/972 veh/TimePeriod *

Medium truck volume : 250/28 veh/TimePeriod *

Heavy truck volume : 250/28 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): 10272

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 2.70

Heavy Truck % of Total Volume : 2.70

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Barton S2 (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 : 27.50 / 27.50 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Barton S2 (day)

Source height = 1.28 m

ROAD (0.00 + 60.33 + 0.00) = 60.33 dBA

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

-90	90	0.66	66.15	0.00	-4.37	-1.46	0.00	0.00	0.00	60.33
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Segment Leq : 60.33 dBA

Total Leq All Segments: 60.33 dBA

Results segment # 1: Barton S2 (night)

Source height = 1.28 m

ROAD (0.00 + 53.82 + 0.00) = 53.82 dBA

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

-90	90	0.66	59.65	0.00	-4.37	-1.46	0.00	0.00	0.00	53.82
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Segment Leq : 53.82 dBA

Total Leq All Segments: 53.82 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.33

(NIGHT): 53.82

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 20:31:09

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rb_ex.te

Time Period: Day/Night 16/8 hours

Description: Receiver B - Existing Noise Levels

Road data, segment # 1: Barton S3 (day/night)

Car traffic volume : 5244/583 veh/TimePeriod *

Medium truck volume : 101/11 veh/TimePeriod *

Heavy truck volume : 101/11 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): 6050

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 1.85

Heavy Truck % of Total Volume : 1.85

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Barton S3 (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 : 20.90 / 20.90 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Barton S3 (day)

Source height = 1.17 m

ROAD (0.00 + 59.07 + 0.00) = 59.07 dBA

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

-90	90	0.66	62.91	0.00	-2.39	-1.46	0.00	0.00	0.00	59.07
-----	----	------	-------	------	-------	-------	------	------	------	-------

Segment Leq : 59.07 dBA

Total Leq All Segments: 59.07 dBA

Results segment # 1: Barton S3 (night)

Source height = 1.16 m

ROAD (0.00 + 52.49 + 0.00) = 52.49 dBA

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

-90	90	0.66	56.34	0.00	-2.39	-1.46	0.00	0.00	0.00	52.49
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Segment Leq : 52.49 dBA

Total Leq All Segments: 52.49 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.07

(NIGHT): 52.49

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 20:32:24

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: fub3.te

Time Period: Day/Night 16/8 hours

Description: Receiver B - Future Noise Levels

Road data, segment # 1: Barton S3 (day/night)

Car traffic volume : 8161/907 veh/TimePeriod *

Medium truck volume : 157/17 veh/TimePeriod *

Heavy truck volume : 157/17 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): 9416

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 1.85

Heavy Truck % of Total Volume : 1.85

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Barton S3 (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 : 20.90 / 20.90 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Barton S3 (day)

Source height = 1.17 m

ROAD (0.00 + 60.98 + 0.00) = 60.98 dBA

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

-90	90	0.66	64.83	0.00	-2.39	-1.46	0.00	0.00	0.00	60.98
-----	----	------	-------	------	-------	-------	------	------	------	-------

Segment Leq : 60.98 dBA

Total Leq All Segments: 60.98 dBA

Results segment # 1: Barton S3 (night)

Source height = 1.16 m

ROAD (0.00 + 54.39 + 0.00) = 54.39 dBA

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

-90	90	0.66	58.24	0.00	-2.39	-1.46	0.00	0.00	0.00	54.39
-----	----	------	-------	------	-------	-------	------	------	------	-------

Segment Leq : 54.39 dBA

Total Leq All Segments: 54.39 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.98

(NIGHT): 54.39

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 20:34:11

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rc_ex.te

Time Period: Day/Night 16/8 hours

Description: Receiver C - Existing Noise Levels

Road data, segment # 1: Barton S5 (day/night)

Car traffic volume : 2851/317 veh/TimePeriod *

Medium truck volume : 14/2 veh/TimePeriod *

Heavy truck volume : 14/2 veh/TimePeriod *

Posted speed limit : 50 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): 3200

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 0.50

Heavy Truck % of Total Volume : 0.50

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Barton S5 (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 : 32.00 / 32.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Barton S5 (day)

Source height = 0.84 m

ROAD (0.00 + 49.09 + 0.00) = 49.09 dBA

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

-90	90	0.66	56.01	0.00	-5.46	-1.46	0.00	0.00	0.00	49.09
-----	----	------	-------	------	-------	-------	------	------	------	-------

Segment Leq : 49.09 dBA

Total Leq All Segments: 49.09 dBA

Results segment # 1: Barton S5 (night)

Source height = 0.89 m

ROAD (0.00 + 42.89 + 0.00) = 42.89 dBA

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

-90	90	0.66	49.81	0.00	-5.46	-1.46	0.00	0.00	0.00	42.89
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Segment Leq : 42.89 dBA

Total Leq All Segments: 42.89 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 49.09

(NIGHT): 42.89

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 20:35:21

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rc_fu.te

Time Period: Day/Night 16/8 hours

Description: Receiver C - Future Noise Levels

Road data, segment # 1: Barton S5 (day/night)

Car traffic volume : 6871/763 veh/TimePeriod *

Medium truck volume : 35/4 veh/TimePeriod *

Heavy truck volume : 35/4 veh/TimePeriod *

Posted speed limit : 50 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): 7712

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 0.50

Heavy Truck % of Total Volume : 0.50

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Barton S5 (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 : 32.00 / 32.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Barton S5 (day)

Source height = 0.84 m

ROAD (0.00 + 52.95 + 0.00) = 52.95 dBA

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

-90	90	0.66	59.87	0.00	-5.46	-1.46	0.00	0.00	0.00	52.95
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Segment Leq : 52.95 dBA

Total Leq All Segments: 52.95 dBA

Results segment # 1: Barton S5 (night)

Source height = 0.85 m

ROAD (0.00 + 46.45 + 0.00) = 46.45 dBA

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

-90	90	0.66	53.37	0.00	-5.46	-1.46	0.00	0.00	0.00	46.45
-----	----	------	-------	------	-------	-------	------	------	------	-------

Segment Leq : 46.45 dBA

Total Leq All Segments: 46.45 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.95

(NIGHT): 46.45

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 20:49:15

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rd_ex.te

Time Period: Day/Night 16/8 hours

Description: Receiver D - Existing Noise Levels

Road data, segment # 1: Barton S5 (day/night)

Car traffic volume : 2851/317 veh/TimePeriod *

Medium truck volume : 14/2 veh/TimePeriod *

Heavy truck volume : 14/2 veh/TimePeriod *

Posted speed limit : 50 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): 3200

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 0.50

Heavy Truck % of Total Volume : 0.50

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Barton S5 (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 : 19.40 / 19.40 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Barton S5 (day)

Source height = 0.84 m

ROAD (0.00 + 52.70 + 0.00) = 52.70 dBA

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

-90	90	0.66	56.01	0.00	-1.85	-1.46	0.00	0.00	0.00	52.70
-----	----	------	-------	------	-------	-------	------	------	------	-------

Segment Leq : 52.70 dBA

Total Leq All Segments: 52.70 dBA

Results segment # 1: Barton S5 (night)

Source height = 0.89 m

ROAD (0.00 + 46.49 + 0.00) = 46.49 dBA

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

-90	90	0.66	49.81	0.00	-1.85	-1.46	0.00	0.00	0.00	46.49
-----	----	------	-------	------	-------	-------	------	------	------	-------

Segment Leq : 46.49 dBA

Total Leq All Segments: 46.49 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.70

(NIGHT): 46.49

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 20:50:33

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rd_fu.te

Time Period: Day/Night 16/8 hours

Description: Receiver D - Future Noise Levels

Road data, segment # 1: Barton S5 (day/night)

Car traffic volume : 6871/763 veh/TimePeriod *

Medium truck volume : 35/4 veh/TimePeriod *

Heavy truck volume : 35/4 veh/TimePeriod *

Posted speed limit : 50 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): 7712

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 0.50

Heavy Truck % of Total Volume : 0.50

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Barton S5 (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 : 19.40 / 19.40 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Barton S5 (day)

Source height = 0.84 m

ROAD (0.00 + 56.56 + 0.00) = 56.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
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-90	90	0.66	59.87	0.00	-1.85	-1.46	0.00	0.00	0.00	56.56
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Segment Leq : 56.56 dBA

Total Leq All Segments: 56.56 dBA

Results segment # 1: Barton S5 (night)

Source height = 0.85 m

ROAD (0.00 + 50.06 + 0.00) = 50.06 dBA

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

-90	90	0.66	53.37	0.00	-1.85	-1.46	0.00	0.00	0.00	50.06
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Segment Leq : 50.06 dBA

Total Leq All Segments: 50.06 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.56

(NIGHT): 50.06

STAMSON 5.0

NORMAL REPORT

Date: 19-05-2024 20:38:49

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: re_fu.te

Time Period: Day/Night 16/8 hours

Description: Receiver E - Future Noise Levels

Road data, segment # 1: Barton S6 (day/night)

Car traffic volume : 5532/615 veh/TimePeriod *

Medium truck volume : 22/2 veh/TimePeriod *

Heavy truck volume : 22/2 veh/TimePeriod *

Posted speed limit : 50 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): 6196

Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00

Medium Truck % of Total Volume : 0.40

Heavy Truck % of Total Volume : 0.40

Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Barton S6 (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 : 25.00 / 25.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Barton S6 (day)

Source height = 0.79 m

ROAD (0.00 + 53.51 + 0.00) = 53.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
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-90	90	0.66	58.65	0.00	-3.68	-1.46	0.00	0.00	0.00	53.51
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Segment Leq : 53.51 dBA

Total Leq All Segments: 53.51 dBA

Results segment # 1: Barton S6 (night)

Source height = 0.75 m

ROAD (0.00 + 46.79 + 0.00) = 46.79 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
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-90	90	0.66	51.93	0.00	-3.68	-1.46	0.00	0.00	0.00	46.79
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Segment Leq : 46.79 dBA

Total Leq All Segments: 46.79 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.51

(NIGHT): 46.79

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