STRIK BALDINELLI MONIZ

PLANNING • CIVIL • STRUCTURAL • MECHANICAL • ELECTRICAL

ENVIRONMENTAL NOISE ASSESSMENT REPORT

24546 ADELAIDE ROAD

STRATHROY, ONTARIO

PROPOSED STACKED TOWNHOUSE DEVELOPMENT

1000585742 ONTARIO INC.

JANUARY 2024

SBM-23-2453

LONDON LOCATION

1599 Adelaide Street N. Units 301 & 203
London, Ont, N5X 4E8
P: 519.471.6667

KITCHENER LOCATION

1415 Huron Rd., Unit 225
Kitchener, Ont, N2R 0L3
P: 519.725.8093

www.sbmltd.ca

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1000585742 Ontario Inc.
69 Hunt Club Drive
London, Ontario N6H 3Y4

January 25, 2024
SBM-23-2453

Re: Environmental Noise Assessment Report
24546 Adelaide Road
Strathroy, Ontario

1 INTRODUCTION

This Noise Assessment Report (Report) has been prepared by Strik, Baldinelli, Moniz Ltd (SBM) in response to the Municipality of Strathroy-Caradoc's Official Plan and Zoning By-Law Amendment pre-consultation comments dated November 1, 2023 requesting a noise study to address noise impacts from Adelaide Road for the proposed residential development at 24546 Adelaide Road in the Municipality of Strathroy-Caradoc.

This site is located on the north side of Adelaide Road, approximately 600m east of Carroll Street. The 0.43 ha site is located within existing general commercial lands proposed to be rezoned to high-density residential lands and is bordered by residential lands to the north, a low density residential dwelling and agricultural lands to the east, Adelaide Road Right-of-Way (ROW) to the south, and vacant commercial lands to the west, as shown in Figure 1 – Location Plan. It is our understanding that the proposed development is to include two (2) three and a half storey townhouse buildings (32 units total) with associated parking areas and common amenity spaces.

This Report will serve the following purposes:

- To summarize the applicable noise criteria and guidelines from the Ministry of the Environment, Conservation, and Parks (MECP) for residential developments;
- To determine future noise levels and how they will affect the future residents using the MECP (formerly Ontario Ministry of the Environment) noise model, ORNAMENT, by utilizing the STAMSON V5.03 computer software;
- Recommend noise control measures (if applicable) to meet the MECP requirements prescribed in the publication *Environmental Noise Guideline NPC-300* (Ministry of the Environment, August 2013);
- Outline general methodology for providing acceptable noise levels for the proposed development.

2 NOISE STUDY CRITERIA

The MECP has compiled guidelines in regards to noise levels (NPC-300) which are used for land use planning and noise estimation. These guidelines, in regards to transportation noise sources, have been further classified with respect to indoor and outdoor locations and day and night time conditions.

2.1 DAYTIME OUTDOOR SOUND LEVEL LIMIT

Table 1: Sound Level Limit for Outdoor Living Areas Road and Rail

Time Period	L_{eq} (16hrs) (dBA)
16-hour (0700 – 2300)	55

As per NPC-300, this One-Hour Equivalent Sound Level (L_{eq}) limit applies to the entire daytime period. The Outdoor Living Area (OLA) should be assessed at a rear yard, patio/terrace, or amenity area. When the L_{eq} at the OLA is equal to 55 dBA or less, no noise control measures are required per NPC-300 "C3.2.2 Daytime Outdoor Sound Level Limit." If the L_{eq} at the OLA is greater than 55 dBA and less than or equal to 60 dBA, the purchasers or tenants should be provided a warning clause so that they may be made aware to the potential noise level issues. If the L_{eq} at the OLA is greater than 60 dBA, a warning clause is required and physical control measures must be implemented. It is noted that balconies and elevated decks/terraces that are less than 4 metres in depth are not considered an OLA.

2.2 DAY AND NIGHT TIME INDOOR SOUND LEVEL LIMIT

Table 2: Indoor Sound Level Limits Road and Rail

Type of Space	Time Period	L_{eq} (dBA) - Road	Leq (dBA) - Rail
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	Day Time 16-hours (0700 – 2300)	45	40
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	Day Time 8-hours (2300 – 0700)	45	40
Sleeping quarters	Day Time 16-hours (0700 – 2300)	45	40
Sleeping quarters	Night Time 8-hours (2300 – 0700)	40	35

The L_{eq} for maximum indoor road noise level is measured at the plane of the window (POW) of a living room or bedroom. These noise values are the maximum levels and are applied to the indoor spaces with windows and doors closed. Examples of noise mitigation for excessive indoor living areas include noise barriers, building envelope measures (i.e. windows, exterior walls, doors, insulation, drywall, etc.) with sound isolation performance upgrades and/or central air conditioning, site planning, and architectural design. When the indoor sound level is equal to 45 dBA or less between the hours of 0700 to 2300, no noise control measures are required. When the indoor sound level is equal to 40 dBA or less between the hours of 2300 to 0700, no noise control measures are required. If the noise levels are exceeded up to a

maximum of 10 dBA, the residence must be designed with the allowance for a central air conditioning system. This is traditionally done by installing heating ducts sized to properly convey a central air conditioning system. A warning clause must also be provided to inform prospective purchasers and tenants of potential road noise levels. When maximum noise levels exceed allowable values in excess of 10 dBA, central air conditioning system installation is mandatory as are noise isolation building components and a warning clause to future purchasers and tenants.

3 CALCULATIONS AND ANALYSIS

Following the MECP noise model, ORNAMENT, which is the basis for calculating anticipated noise levels, STAMSON noise software (v5.03) was used. The software can be used to model noise levels from roadways and railways. The program accepts input values related to noise sources, traffic volumes, and noise barriers.

3.1 NOISE SOURCES

The noise sources considered for this site were:

- Adelaide Road (Arterial Road)

Railways were not considered as the nearest rail corridor is in excess of 1.5 km away and has numerous developments and wooded areas between itself and the subject site.

3.2 ROAD TRAFFIC – ADELAIDE ROAD

Road traffic information was provided for Adelaide Road by the Middlesex County's Road Department, as per the email correspondence provided in Appendix A.

The Annual Average Daily Traffic (AADT) volume for Adelaide Road (CR 81) in 2023 was 8,372 vehicles per day. To forecast the future traffic conditions (10-year forecast) for the purpose of this study, a growth rate of 2.5% per year has been applied to the 2023 AADT. This growth rate was selected as a conservative estimate after reviewing the Middlesex County Population Projections Report prepared by Middlesex County Planning Staff and dated January 19, 2021, which forecasts population growth in Strathroy-Caradoc to be approximately 1.75% per annum between 2016 and 2036. The 2034 AADT forecast is 11,000 vehicles per day on Adelaide Road.

Truck traffic percentages of 2.0% medium trucks and 2.0% heavy trucks were used in the analysis along with a 90%/10% day/night split. Adelaide Road traffic information is summarized below in Table 3.

Table 3: Adelaide Road - Road and Traffic Information (10-year Forecast)

Time Period	No. of Cars	No. of Medium Trucks	No. of Heavy Trucks	Posted Speed Limit (km/hr)
0700 – 2300	9504	198	198	70
2300 – 0700	1056	22	22	

Noise calculations are attached in Appendix B

3.3 PROJECTED NOISE LEVELS

Using STAMSON (v5.03) computer software, noise levels were predicted for day and night time conditions based on the MECP's noise model, ORNAMENT. The following assumptions were made for all calculations:

- Day time conditions comprise the time period 0700 to 2300.
- Night time conditions comprise the time period of 2300 to 0700.
- An average road gradient of 0% for Adelaide Road.
- Each building will contain units stacked three high; lower level units, main floor units, upper level front units, and upper level rear units.
- **Receiver locations are shown on the attached Noise Study Plan (see Figure 2).**
- The south building's west unit will mirror the results of the east unit (PoR-02).
- Indoor day time and night time receiver locations assumed to be at building face and at elevations of 0.0m (lower level), 3.0m (main floor), and 9.0m (top floor) above ground level (covers all critical locations of units on all levels).
- Outdoor day time receiver locations assumed to be at the centre of the common amenity spaces (between the buildings, west side of the north building, and northeast of the north building) for the site.
- A standard wall construction provides a noise level attenuation of 10 dBA (i.e. if the outside POW calculated value was 65 dBA, the indoor value would be 55 dBA).

POW, indoor building, and OLA noise levels were calculated (see Appendix B for STAMSON reports) and have been summarized in Table 4 below.

Table 4: Noise Level Summary

Receiver Location	Outdoor Living Area (OLA)	Day Time Indoor Noise Level Limit (dBA)	Day Time Outdoor Noise Level Limit (dBA)	STAMSON Outdoor Calculated Noise Level (dBA)	STAMSON Indoor Calculated Noise Level (dBA)	Exceeds Noise Level Limit By (dBA)	Comment	Night Time Indoor Noise Level Limit (dBA)	STAMSON Outdoor Calculated Noise Level (dBA)	STAMSON Indoor Calculated Noise Level (dBA)	Exceeds Noise Level Limit By (dBA)	Comment
PoR-01 (0.0m HT)	N/A	45	55	62.8	52.8	7.8	**WC 'C' (provisions for AC)**	40	56.2	46.2	6.2	Day L_{eq} Dictates
PoR-01 (3.0m HT)	N/A	45	55	62.9	52.9	7.9	**WC 'C' (provisions for AC)**	40	56.4	46.4	6.4	Day L_{eq} Dictates
PoR-01 (9.0m HT)	N/A	45	55	63.5	53.5	8.5	**WC 'C' (provisions for AC)**	40	57.0	47.0	7.0	Day L_{eq} Dictates
PoR-02 (9.0m HT)	N/A	45	55	58.7	48.7	3.7	**WC 'C' (provisions for AC)**	40	52.2	42.2	2.2	Day L_{eq} Dictates
PoR-03 (0.0m HT)	N/A	45	55	51.5	41.5	0	**None**	40	45.0	35.0	0	Day L_{eq} Dictates
PoR-03 (3.0m HT)	N/A	45	55	51.8	41.8	0	**None**	40	45.3	35.3	0	Day L_{eq} Dictates
PoR-03 (9.0m HT)	N/A	45	55	53.7	43.7	0	**None**	40	47.1	37.1	0	Day L_{eq} Dictates
PoR-04 (1.5m HT)	Yes	45	55	50.2	N/A	0	**None**	40	N/A	N/A	N/A	Day L_{eq} Dictates
PoR-05 (1.5m HT)	Yes	45	55	52.4	N/A	0	**None**	40	N/A	N/A	N/A	Day L_{eq} Dictates
PoR-06 (1.5m HT)	Yes	45	55	51.7	N/A	0	**None**	40	N/A	N/A	N/A	Day L_{eq} Dictates

Table 4 Footnotes:

- Warning Clause (WC) may refer to WC Type A, Type B, Type D, or Type D as per "Noise Study Plan," Figure 2 and the guidelines of Section C7 "Noise Control Measures" of the "Environmental Noise Guideline - Stationary and Transportation Sources - Approval and Planning (NPC-300)." August 2013. Ontario Ministry of Environment and Climate Change.
- Central Air Conditioning System (AC) installation should be designed by a Professional Engineer and adhere to the guidelines of the Ontario Building Code (OBC) and the following publications:
    - "Environmental Noise Guidelines for Installation of Residential Air Conditioning Devices." September 1994. Ontario Ministry of Environment and Energy. ISBN 0-7778-1616-4. PIBS 2721e01.
    - "Residential Air Conditioning Devices - Publication NPC-216." 1993. Ontario Ministry of Environment and Energy.
- A standard wall construction provides a noise level attenuation of 10 dBA.

4 NOISE RECOMMENDATIONS

Based on the preceding analysis, the following recommendations can be put forth for this site:

- As per Table 4, the OLAs at PoR-04, PoR-05, PoR-06 are below the outdoor noise level limit, therefore no noise control measures are required for the OLAs.
- Provisions for a central air conditioning system are required for units whose indoor noise levels exceed the guidelines by less than 10 dBA. Typically, this is achieved by sizing the heating ducts sufficiently to allow for a future installation of a central air conditioning system. Prospective residents will then have the option of closing their windows and doors to block bothersome noise levels. This requirement will apply to all units in the south building (see Figure 2 for details), and the following warning clause shall be given to prospective purchasers or tenants of all units in the south building.

  Warning Clause Type C:

  "This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."

  Refer to *Environmental Noise Guideline NPC-300* (Ministry of the Environment, August 2013) for clarification and additional measures. Refer to "Residential Air Conditioning Devices (NPC-216)," Ontario Ministry of the Environment and Energy (MOEE), 1993 for clarification and recommendation as to air conditioning system criteria, placement, installation, etc. Central air conditioning systems are to be designed and constructed to the specifications of a registered professional engineer in accordance with the Ontario Building Code."

  If air conditioning will be provided in the units, the warning clause Type D should be used instead of warning clause Type C:

  Warning Clause Type D:

  "This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."
- We recommend that the following disclaimer be included in all agreements in regards to purchase, sale, or lease for all residential units on this site:

  "Under no circumstances shall the Municipality, County or its affiliates, suppliers, partners or licensors be liable for any construction of noise reduction structures or mitigation measures for the subject site. Under no circumstances shall the Municipality, County or its affiliates, suppliers, partners or licensors be held responsible for increased noise levels in the outdoor or indoor areas of the subject site dwellings due to increased traffic on adjacent roadways."

5 NOISE CONCLUSION

Proper execution of the above noise mitigation measures should produce noise levels within this development that will meet noise requirements of the MECP.

6 LIMITATIONS

This Report was prepared by SBM for Municipality of Strathroy-Caradoc, County of Middlesex, and 100585472 Ontario Inc. Use of this report by any third party, or any reliance upon its findings, is solely the responsibility of that party. SBM accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions undertaken as a result of this report. Third party use of this report, without the express written consent of the Consultant, denies any claims, whether in contract, tort, and/or any other cause of action in law, against the Consultant.

All findings and conclusions presented in this report are based on site conditions as they appeared during the period of the investigation. This report is not intended to be exhaustive in scope, or to imply a risk-free facility. It should be recognized that the passage of time may alter the opinions, conclusions, and recommendations provided herein.

The design was limited to the documents referenced herein and on the SBM drawings provided separately. SBM accepts no responsibility for the accuracy of the information provided by others. All designs and recommendations presented in this report are based on the information available at the time of the review.

7 CLOSURE

We trust this Report meets your satisfaction. Should you have any questions or require further information, please do not hesitate to contact us.

Respectfully submitted,

Strik, Baldinelli, Moniz Ltd.
Planning • Civil • Structural • Mechanical • Electrical

Jonah Lester, P.Eng.
Transportation Project Lead, Eng III

Cloe Maw, EIT
Civil Engineering Trainee I

DRAWN BY	CHECKED BY	DRAWING No.
CM	JBL	FIG1
DATE		
25/01/2024		
SCALE		
1:7500		
PROJECT No.		
SBM-23-2453		

No.	REVISIONS	D/M/Y
1	FOR OPA AND ZBA	25/01/24

CONSULTANT
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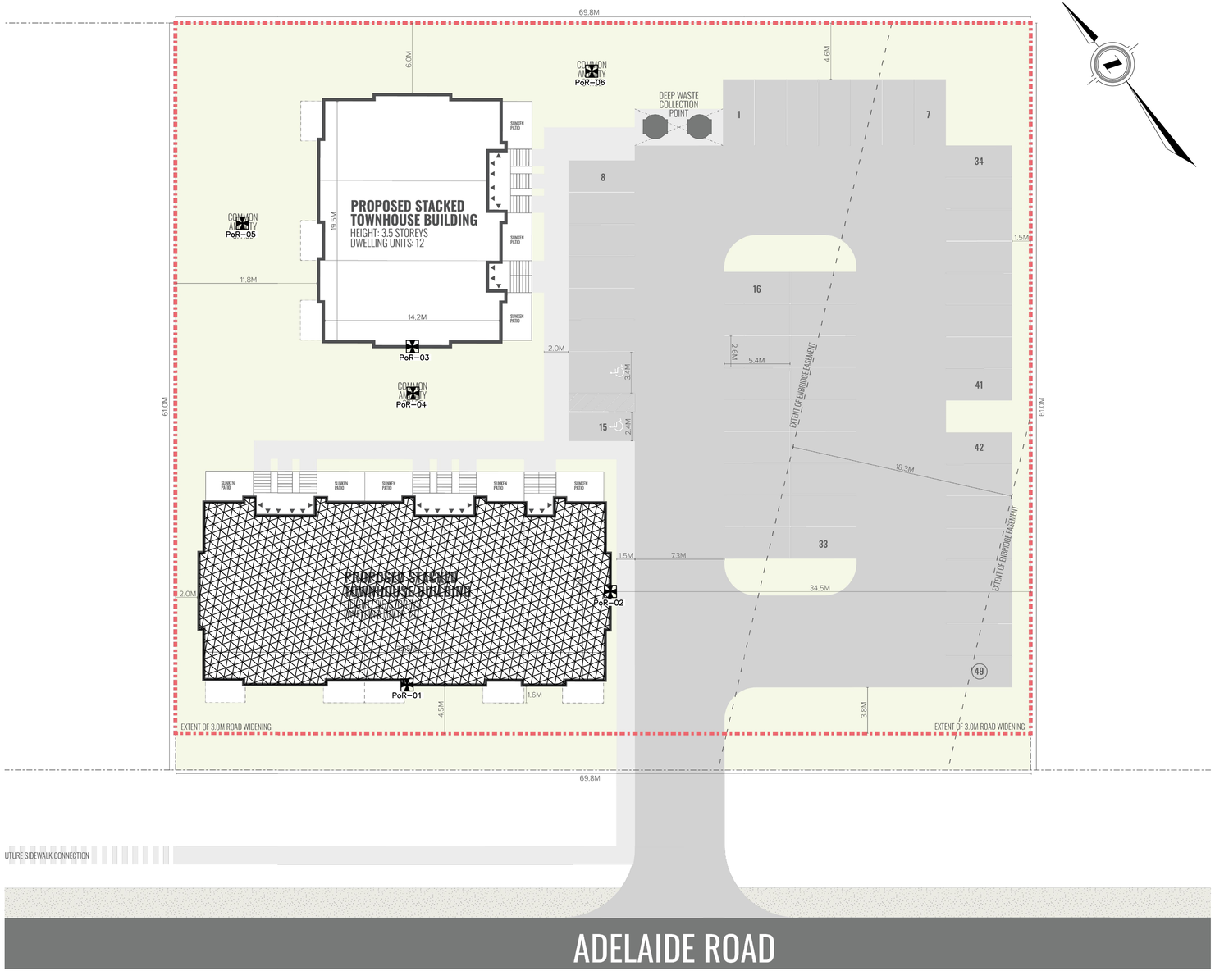
TITLE
LOCATION PLAN

PROJECT
PROPOSED STACKED TOWNHOUSE DEVELOPMENT
24546 ADELAIDE ROAD
STRATHROY, ON.



SITE PLAN SOURCE: SIV–IK PLANNING AND DESIGN INC.

LEGEND:

- ORNAMENT (STAMSON) RECEIVER TEST LOCATION
- WARNING CLAUSE 'A' APPLICABLE
- WARNING CLAUSE 'B' APPLICABLE
- WARNING CLAUSE 'C' APPLICABLE
- WARNING CLAUSE 'D' APPLICABLE

KEY PLAN

N.T.S.

POINT OF ASSESSMENT NOTES:

1. FOR THE PURPOSE OF NOISE IMPACT ASSESSMENT IN AN OUTDOOR LIVING AREA, THE RECEIVER LOCATION HAS BEEN ASSUMED TO BE AT THE CENTRE OF THE OUTDOOR AMENITY AREA (COMMON AMENITY SPACE).

2. NOISE SENSITIVE LAND USES MAY HAVE ONE OR MORE POINTS OF RECEPTION. THE FOLLOWING IS A POINT OF RECPTION:
   2.1. LOCATION IN THE CENTRE OF ANY WINDOW ON A NOISE SENSITIVE SPACE OF A DWELLING OR A BUILDING USED FOR NOISE SENSITIVE INSTITUTIONAL PURPOSE OR A NOISE SENSITIVE COMMERCIAL PURPOSE; THE LOCATION SHOULD BE A MINIMUM OF 1.5 METRES ABOVE GROUND FOR A FIRST STOREY WINDOW, A MINIMUM OF 4.5 METRES ABOVE GROUND FOR A SECOND STOREY WINDOW, A MINIMUM OF 7.5 METRES ABOVE GROUND FOR A THIRD STOREY WINDOW, AND THE HEIGHT OF THE VERTICAL MIDPOINT OF THE NEAREST AND MOST EXPOSED STOREY FOR A HIGH–RISE MULTI–UNIT BUILDING.

PLEASE REFER TO "ENVIRONMENTAL NOISE GUIDELINE – STATIONARY AND TRANSPORTATION SOURCES – APPROVAL AND PLANNING (NPC–300)," MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE (MOECC), AUG. 2013

WARNING CLAUSES:

A. "PURCHASERS/TENANTS ARE ADVISED THAT SOUND LEVELS DUE TO INCREASING ROAD TRAFFIC MAY OCCASIONALLY INTERFERE WITH SOME ACTIVITIES OF THE DWELLING OCCUPANTS AS THE SOUND LEVELS EXCEED THE SOUND LEVEL LIMITS OF THE MUNICIPALITY AND THE MINISTRY OF THE ENVIRONMENT."

B. "PURCHASERS/TENANTS ARE ADVISED THAT DESPITE THE INCLUSION OF NOISE CONTROL FEATURES IN THE DEVELOPMENT AND WITHIN THE BUILDING UNITS, SOUND LEVELS DUE TO INCREASING ROAD TRAFFIC MAY ON OCCASIONS INTERFERE WITH SOME ACTIVITIES OF THE DWELLING OCCUPANTS AS THE SOUND LEVELS EXCEED THE SOUND LEVEL LIMITS OF THE MUNICIPALITY AND THE MINISTRY OF THE ENVIRONMENT."

C. "THIS DWELLING UNIT HAS BEEN DESIGNED WITH THE PROVISION FOR ADDING CENTRAL AIR CONDITIONING AT THE OCCUPANT'S DISCRETION. INSTALLATION OF CENTRAL AIR CONDITIONING BY THE OCCUPANT IN LOW AND MEDIUM DENSITY DEVELOPMENTS WILL ALLOW WINDOWS AND EXTERIOR DOORS TO REMAIN CLOSED, THEREBY ENSURING THAT THE INDOOR SOUND LEVELS ARE WITHIN THE SOUND LEVEL LIMITS OF THE MUNICIPALITY AND THE MINISTRY OF THE ENVIRONMENT."

D. "THIS DWELLING UNIT HAS BEEN SUPPLIED WITH A CENTRAL AIR CONDITIONING SYSTEM WHICH WILL ALLOW WINDOWS AND EXTERIOR DOORS TO REMAIN CLOSED, THEREBY ENSURING THAT THE INDOOR SOUND LEVELS ARE WITHIN THE SOUND LEVEL LIMITS OF THE MUNICIPALITY AND THE MINISTRY OF THE ENVIRONMENT."

REFER TO "ENVIRONMENTAL NOISE GUIDELINE – STATIONARY AND TRANSPORTATION SOURCES – APPROVAL AND PLANNING (NPC–300)," SECTION C8.1, ONTARIO MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE (MOECC), AUG. 2013 FOR CLARIFICATION AND ADDITIONAL MEASURES.

REFER TO "RESIDENTIAL AIR CONDITIONING DEVICES (NPC–216)," ONTARIO MINISTRY OF THE ENVIRONMENT AND ENERGY (MOEE), 1993 FOR CLARIFICATION AND RECOMMENDATION AS TO AIR CONDITIONING SYSTEM CRITERIA, PLACEMENT, INSTALLATION, ETC.

REFER TO "MODEL MUNICIPAL NOISE CONTROL BY–LAW: FINAL REPORT," ONTARIO MINISTRY OF THE ENVIRONMENT (MOE), AUG. 1978 FOR CLARIFICATION AND RECOMMENDATION AS TO AIR CONDITIONING SYSTEM CRITERIA, PLACEMENT, INSTALLATION, ETC.

CENTRAL AIR CONDITIONING SYSTEMS ARE TO BE DESIGNED AND CONSTRUCTED TO THE SPECIFICATIONS OF A REGISTERED PROFESSIONAL ENGINEER IN ACCORDANCE WITH THE ONTARIO BUILDING CODE.

AS CONSTRUCTED SERVICES	COMPLETION		No.	REVISIONS	D/M/Y	BY
		DESIGN CM	1	ISSUED FOR OPA AND ZBA	25/01/24	CM
		DRAWN CM				
		CHECKED JBL				
		APPROVED JBL				
		DATE 25/01/24				
		CAD 23–2453				

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ENGINEER'S STAMP

ENGINEER'S STAMP

CLIENT
1000585742 ONTARIO INC.
69 HUNT CLUB DRIVE
LONDON, ON
N6H 3Y4
P: 519.318.0544

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TITLE
NOISE STUDY PLAN

PROPOSED STACKED TOWNHOUSE DEVELOPMENT
24546 ADELAIDE ROAD
STRATHROY, ON.

PROJECT No.
SBM–23–2453

SHEET No.
FIG2

PLAN FILE No.
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Appendix A – Traffic Data

TRAFFIC VOLUMES ON MIDDLESEX COUNTY ROADS - 2023

ROAD NO.	LOCATION	AVERAGE TRAFFIC COUNT	LENGTH (Km)	BOUNDARY LENGTH	EQUIVALENT LENGTH	DAILY VEH-(Km)
ADELAIDE RD. 81	CR#14 TO SOUTH LIMITS OF STRATHROY	*8372*	10.9		10.9	91255

Cloe Maw

From: Rick Tweddle <rtweddle@middlesex.ca>
Sent: Monday, November 20, 2023 7:42 AM
To: Ryan Hillinger; Jonah Lester
Cc: Cloe Maw
Subject: RE: Traffic Data Request for Noise Study - Adelaide Road (County Road 81) at South End of Strathroy SBM-23-2453
Attachments: TRAFFIC COUNTS SPREADSHEET 2023 CR81.xlsx

Hello Jonah

The County only has AADT's. (see attached)

Rick Tweddle
Engineering Tech II
County of Middlesex
Email rtweddle@middlesex.ca
Phone 519-434-7321

From: Ryan Hillinger <rhillinger@middlesex.ca>
Sent: Monday, November 20, 2023 6:29 AM
To: Jonah Lester <jlester@sbmltd.ca>; Rick Tweddle <rtweddle@middlesex.ca>
Cc: Cloe Maw <cmaw@sbmltd.ca>
Subject: RE: Traffic Data Request for Noise Study - Adelaide Road (County Road 81) at South End of Strathroy SBM-23-2453

Good Morning Rick,

Can you please help Jonah with his request.

Thanks,

Ryan Hillinger CET
Engineering Supervisor
Middlesex County
519-930-1001 x 2233

From: Jonah Lester <jlester@sbmltd.ca>
Sent: Thursday, November 16, 2023 11:57 AM
To: Ryan Hillinger <rhillinger@middlesex.ca>
Cc: Cloe Maw <cmaw@sbmltd.ca>
Subject: Traffic Data Request for Noise Study - Adelaide Road (County Road 81) at South End of Strathroy SBM-23-2453

Appendix B – Noise Calculations

STAMSON 5.0 NORMAL REPORT Date: 24-01-2024 10:25:51
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r01_000.te Time Period: Day/Night 16/8 hours
Description: PoR-01 0.0m (SBM-23-2453)

Road data, segment # 1: Adelaide Rd (day/night)

Car traffic volume : 9504/1056 veh/TimePeriod *
Medium truck volume : 198/22 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Adelaide Rd (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 : 22.50 / 22.50 m
Receiver height : 0.00 / 0.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Results segment # 1: Adelaide Rd (day)

Source height = 1.19 m

ROAD (0.00 + 62.77 + 0.00) = 62.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	67.15	0.00	-2.92	-1.46	0.00	0.00	0.00	62.77

Segment Leq : 62.77 dBA

Total Leq All Segments: 62.77 dBA

↟
Results segment # 1: Adelaide Rd (night)

Source height = 1.19 m

ROAD (0.00 + 56.24 + 0.00) = 56.24 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	60.62	0.00	-2.92	-1.46	0.00	0.00	0.00	56.24

Segment Leq : 56.24 dBA

Total Leq All Segments: 56.24 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 62.77
(NIGHT): 56.24
↟
↟

STAMSON 5.0 NORMAL REPORT Date: 24-01-2024 10:28:50
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r01_030.te Time Period: Day/Night 16/8 hours
Description: PoR-01 3.0m (SBM-23-2453)

Road data, segment # 1: Adelaide Rd (day/night)

Car traffic volume : 9504/1056 veh/TimePeriod *
Medium truck volume : 198/22 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Adelaide Rd (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 : 22.50 / 22.50 m
Receiver height : 3.00 / 3.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Results segment # 1: Adelaide Rd (day)

Source height = 1.19 m

ROAD (0.00 + 62.90 + 0.00) = 62.90 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.62	67.15	0.00	-2.86	-1.40	0.00	0.00	0.00	62.90

Segment Leq : 62.90 dBA

Total Leq All Segments: 62.90 dBA

↟
Results segment # 1: Adelaide Rd (night)

Source height = 1.19 m

ROAD (0.00 + 56.36 + 0.00) = 56.36 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.62	60.62	0.00	-2.86	-1.40	0.00	0.00	0.00	56.36

Segment Leq : 56.36 dBA

Total Leq All Segments: 56.36 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 62.90
(NIGHT): 56.36
↟
↟

STAMSON 5.0 NORMAL REPORT Date: 24-01-2024 10:37:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r01_090.te Time Period: Day/Night 16/8 hours
Description: PoR-01 9.0m (SBM-23-2453)

Road data, segment # 1: Adelaide Rd (day/night)

Car traffic volume : 9504/1056 veh/TimePeriod *
Medium truck volume : 198/22 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Adelaide Rd (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 : 22.50 / 22.50 m
Receiver height : 9.00 / 9.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Results segment # 1: Adelaide Rd (day)

Source height = 1.19 m

ROAD (0.00 + 63.54 + 0.00) = 63.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.44	67.15	0.00	-2.54	-1.07	0.00	0.00	0.00	63.54

Segment Leq : 63.54 dBA

Total Leq All Segments: 63.54 dBA

↟
Results segment # 1: Adelaide Rd (night)

Source height = 1.19 m

ROAD (0.00 + 57.01 + 0.00) = 57.01 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.44	60.62	0.00	-2.54	-1.07	0.00	0.00	0.00	57.01

Segment Leq : 57.01 dBA

Total Leq All Segments: 57.01 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 63.54
(NIGHT): 57.01
↟
↟

STAMSON 5.0 NORMAL REPORT Date: 24-01-2024 10:44:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r02_090.te Time Period: Day/Night 16/8 hours
Description: PoR-02 9.0m (SBM-23-2453)

Road data, segment # 1: Adelaide Rd (day/night)

Car traffic volume : 9504/1056 veh/TimePeriod *
Medium truck volume : 198/22 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Adelaide Rd (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 30.20 / 30.20 m
Receiver height : 9.00 / 9.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Results segment # 1: Adelaide Rd (day)

Source height = 1.19 m

ROAD (0.00 + 58.68 + 0.00) = 58.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.44	67.15	0.00	-4.39	-4.08	0.00	0.00	0.00	58.68

Segment Leq : 58.68 dBA

Total Leq All Segments: 58.68 dBA

↟
Results segment # 1: Adelaide Rd (night)

Source height = 1.19 m

ROAD (0.00 + 52.15 + 0.00) = 52.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.44	60.62	0.00	-4.39	-4.08	0.00	0.00	0.00	52.15

Segment Leq : 52.15 dBA

Total Leq All Segments: 52.15 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 58.68
(NIGHT): 52.15
↟
↟

STAMSON 5.0 NORMAL REPORT Date: 24-01-2024 11:04:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r03_000.te Time Period: Day/Night 16/8 hours
Description: PoR-03 0.0m (SBM-23-2453)

Road data, segment # 1: Adelaide Rd (day/night)

Car traffic volume : 9504/1056 veh/TimePeriod *
Medium truck volume : 198/22 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Adelaide Rd (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 : 50.20 / 50.20 m
Receiver height : 0.00 / 0.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -51.00 deg Angle2 : 53.00 deg
Barrier height : 12.00 m
Barrier receiver distance : 12.30 / 12.30 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

↑
Results segment # 1: Adelaide Rd (day)

Source height = 1.19 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !        0.00 !        0.29 !         0.29

ROAD (48.40 + 39.53 + 48.03) = 51.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -51   0.66  67.15   0.00  -8.71 -10.05   0.00   0.00   0.00  48.40
-------------------------------------------------------------------------------
   -51     53   0.00  67.15   0.00  -5.25  -2.38   0.00   0.00 -20.00  39.53
-------------------------------------------------------------------------------
    53     90   0.66  67.15   0.00  -8.71 -10.42   0.00   0.00   0.00  48.03
-------------------------------------------------------------------------------

Segment Leq : 51.51 dBA

Total Leq All Segments: 51.51 dBA

↟
Results segment # 1: Adelaide Rd (night)
-----------------------------------------

Source height = 1.19 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !        0.00 !        0.29 !         0.29

ROAD (41.87 + 32.99 + 41.50) = 44.98 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -51   0.66  60.62   0.00  -8.71 -10.05   0.00   0.00   0.00  41.87
-------------------------------------------------------------------------------
   -51     53   0.00  60.62   0.00  -5.25  -2.38   0.00   0.00 -20.00  32.99
-------------------------------------------------------------------------------
    53     90   0.66  60.62   0.00  -8.71 -10.42   0.00   0.00   0.00  41.50
-------------------------------------------------------------------------------

Segment Leq : 44.98 dBA

Total Leq All Segments: 44.98 dBA

↟
```

TOTAL Leq FROM ALL SOURCES (DAY): 51.51
(NIGHT): 44.98

STAMSON 5.0 NORMAL REPORT Date: 24-01-2024 11:08:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r03_030.te Time Period: Day/Night 16/8 hours
Description: PoR-03 3.0m (SBM-23-2453)

Road data, segment # 1: Adelaide Rd (day/night)

Car traffic volume : 9504/1056 veh/TimePeriod *
Medium truck volume : 198/22 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Adelaide Rd (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 : 50.20 / 50.20 m
Receiver height : 3.00 / 3.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -51.00 deg Angle2 : 53.00 deg
Barrier height : 12.00 m
Barrier receiver distance : 12.30 / 12.30 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

↑
Results segment # 1: Adelaide Rd (day)

Source height = 1.19 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.19	3.00	2.56	2.56

ROAD (48.75 + 39.53 + 48.38) = 51.84 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-51	0.62	67.15	0.00	-8.52	-9.89	0.00	0.00	0.00	48.75
-51	53	0.00	67.15	0.00	-5.25	-2.38	0.00	0.00	-20.00	39.53
53	90	0.62	67.15	0.00	-8.52	-10.25	0.00	0.00	0.00	48.38

Segment Leq : 51.84 dBA

Total Leq All Segments: 51.84 dBA

↟

Results segment # 1: Adelaide Rd (night)

Source height = 1.19 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.19	3.00	2.56	2.56

ROAD (42.21 + 32.99 + 41.85) = 45.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-51	0.62	60.62	0.00	-8.52	-9.89	0.00	0.00	0.00	42.21
-51	53	0.00	60.62	0.00	-5.25	-2.38	0.00	0.00	-20.00	32.99
53	90	0.62	60.62	0.00	-8.52	-10.25	0.00	0.00	0.00	41.85

Segment Leq : 45.31 dBA

Total Leq All Segments: 45.31 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 51.84
(NIGHT): 45.31

STAMSON 5.0 NORMAL REPORT Date: 24-01-2024 11:11:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r03_090.te Time Period: Day/Night 16/8 hours
Description: PoR-03 9.0m (SBM-23-2453)

Road data, segment # 1: Adelaide Rd (day/night)

Car traffic volume : 9504/1056 veh/TimePeriod *
Medium truck volume : 198/22 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Adelaide Rd (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 : 50.20 / 50.20 m
Receiver height : 9.00 / 9.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -51.00 deg Angle2 : 53.00 deg
Barrier height : 12.00 m
Barrier receiver distance : 12.30 / 12.30 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

↑
Results segment # 1: Adelaide Rd (day)

Source height = 1.19 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !        9.00 !        7.09 !         7.09

ROAD (50.53 + 41.56 + 50.21) = 53.66 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -51   0.44  67.15   0.00  -7.58  -9.04   0.00   0.00   0.00  50.53
-------------------------------------------------------------------------------
   -51     53   0.00  67.15   0.00  -5.25  -2.38   0.00   0.00 -17.96  41.56
-------------------------------------------------------------------------------
    53     90   0.44  67.15   0.00  -7.58  -9.37   0.00   0.00   0.00  50.21
-------------------------------------------------------------------------------

Segment Leq : 53.66 dBA

Total Leq All Segments: 53.66 dBA

↟
Results segment # 1: Adelaide Rd (night)
----------------------------------------

Source height = 1.19 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !        9.00 !        7.09 !         7.09

ROAD (44.00 + 35.03 + 43.68) = 47.13 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -51   0.44  60.62   0.00  -7.58  -9.04   0.00   0.00   0.00  44.00
-------------------------------------------------------------------------------
   -51     53   0.00  60.62   0.00  -5.25  -2.38   0.00   0.00 -17.96  35.03
-------------------------------------------------------------------------------
    53     90   0.44  60.62   0.00  -7.58  -9.37   0.00   0.00   0.00  43.68
-------------------------------------------------------------------------------

Segment Leq : 47.13 dBA

Total Leq All Segments: 47.13 dBA

↟
```

TOTAL Leq FROM ALL SOURCES (DAY): 53.66
(NIGHT): 47.13

STAMSON 5.0 NORMAL REPORT Date: 24-01-2024 11:42:00
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r04_015.te Time Period: Day/Night 16/8 hours
Description: PoR-04 1.5m (SBM-23-2453)

Road data, segment # 1: Adelaide Rd (day/night)

Car traffic volume : 9504/1056 veh/TimePeriod *
Medium truck volume : 198/22 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Adelaide Rd (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 : 46.30 / 46.30 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -61.00 deg Angle2 : 63.00 deg
Barrier height : 12.00 m
Barrier receiver distance : 8.40 / 8.40 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

Results segment # 1: Adelaide Rd (day)

Source height = 1.19 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !        1.50 !        1.44 !         1.44

ROAD (46.89 + 40.64 + 46.38) = 50.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -61   0.66  67.15   0.00  -8.13 -12.14   0.00   0.00   0.00  46.89
-------------------------------------------------------------------------------
   -61     63   0.00  67.15   0.00  -4.89  -1.62   0.00   0.00 -20.00  40.64
-------------------------------------------------------------------------------
    63     90   0.66  67.15   0.00  -8.13 -12.64   0.00   0.00   0.00  46.38
-------------------------------------------------------------------------------

Segment Leq : 50.17 dBA

Total Leq All Segments: 50.17 dBA

↟
Results segment # 1: Adelaide Rd (night)
-----------------------------------------

Source height = 1.19 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !        1.50 !        1.44 !         1.44

ROAD (40.36 + 34.11 + 39.85) = 43.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -61   0.66  60.62   0.00  -8.13 -12.14   0.00   0.00   0.00  40.36
-------------------------------------------------------------------------------
   -61     63   0.00  60.62   0.00  -4.89  -1.62   0.00   0.00 -20.00  34.11
-------------------------------------------------------------------------------
    63     90   0.66  60.62   0.00  -8.13 -12.64   0.00   0.00   0.00  39.85
-------------------------------------------------------------------------------

Segment Leq : 43.64 dBA

Total Leq All Segments: 43.64 dBA

↟
```

TOTAL Leq FROM ALL SOURCES (DAY): 50.17
(NIGHT): 43.64

STAMSON 5.0 NORMAL REPORT Date: 24-01-2024 12:01:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r05_015.te Time Period: Day/Night 16/8 hours
Description: PoR-05 1.5m (SBM-23-2453)

Road data, segment # 1: Adelaide Rd (day/night)

Car traffic volume : 9504/1056 veh/TimePeriod *
Medium truck volume : 198/22 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Adelaide Rd (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 : 60.10 / 60.10 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 8.00 deg
Barrier height : 12.00 m
Barrier receiver distance : 22.20 / 22.20 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

Results segment # 1: Adelaide Rd (day)

Source height = 1.19 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !        1.50 !        1.39 !         1.39

ROAD (0.00 + 40.92 + 52.11) = 52.42 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      8   0.00  67.15   0.00  -6.03  -2.64   0.00   0.00 -17.56  40.92
-------------------------------------------------------------------------------
     8     90   0.66  67.15   0.00 -10.01  -5.04   0.00   0.00   0.00  52.11
-------------------------------------------------------------------------------

Segment Leq : 52.42 dBA

Total Leq All Segments: 52.42 dBA

↟
Results segment # 1: Adelaide Rd (night)
----------------------------------------

Source height = 1.19 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !        1.50 !        1.39 !         1.39

ROAD (0.00 + 34.39 + 45.57) = 45.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      8   0.00  60.62   0.00  -6.03  -2.64   0.00   0.00 -17.56  34.39
-------------------------------------------------------------------------------
     8     90   0.66  60.62   0.00 -10.01  -5.04   0.00   0.00   0.00  45.57
-------------------------------------------------------------------------------

Segment Leq : 45.89 dBA

Total Leq All Segments: 45.89 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 52.42
                           (NIGHT): 45.89
↟
↟
```

STAMSON 5.0 NORMAL REPORT Date: 24-01-2024 12:06:15
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r06_015.te Time Period: Day/Night 16/8 hours
Description: PoR-06 1.5m (SBM-23-2453)

Road data, segment # 1: Adelaide Rd (day/night)

Car traffic volume : 9504/1056 veh/TimePeriod *
Medium truck volume : 198/22 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 2.00
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Adelaide Rd (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 : 72.70 / 72.70 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 0.00 deg Angle2 : 90.00 deg
Barrier height : 12.00 m
Barrier receiver distance : 35.20 / 35.20 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

Results segment # 1: Adelaide Rd (day)

Source height = 1.19 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !        1.50 !        1.35 !         1.35

ROAD (51.31 + 40.39 + 0.00) = 51.65 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.66  67.15   0.00 -11.38  -4.47   0.00   0.00   0.00  51.31
-------------------------------------------------------------------------------
     0     90   0.00  67.15   0.00  -6.85  -3.01   0.00   0.00 -16.90  40.39
-------------------------------------------------------------------------------

Segment Leq : 51.65 dBA

Total Leq All Segments: 51.65 dBA

↟
Results segment # 1: Adelaide Rd (night)
----------------------------------------

Source height = 1.19 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.19 !        1.50 !        1.35 !         1.35

ROAD (44.78 + 33.85 + 0.00) = 45.11 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      0   0.66  60.62   0.00 -11.38  -4.47   0.00   0.00   0.00  44.78
-------------------------------------------------------------------------------
     0     90   0.00  60.62   0.00  -6.85  -3.01   0.00   0.00 -16.90  33.85
-------------------------------------------------------------------------------

Segment Leq : 45.11 dBA

Total Leq All Segments: 45.11 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 51.65
                           (NIGHT): 45.11
↟
↟
```