

Noise Report

Summerside Subdivision Phase 19 – Block 34
1389 Commissioners Road East, London, ON

Project Number: DEL24-018

Date: November 22, 2024

Prepared For:

Ironstone Building Company



www.deveng.net

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Report Prepared/Reviewed By:



Derek J. Hoevenaars, P.Eng.
Senior Project Engineer

Revisions

Original Report, dated: November 22, 2024

Statement of Qualifications and Limitations

This Report has been prepared for Ironstone Building Company based upon currently available information, to support the Site Plan application to be filed for the proposed residential development. This report has been prepared for the sole use of Ironstone Building Company and any reliance upon this information by any third party is made at the risk of that party. Development Engineering (London) Limited assumes no liability for any injury, loss or damage suffered by any third party based upon decisions made or actions that arise due to that party's reliance upon or interpretation of the contents of this report.

This Statement of Qualifications and Limitations is attached to and forms part of the Report; any use of the Report is subject to the terms contained herein.

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1.0 Introduction

At the request of Ironstone Building Company, Development Engineering (London) Limited (DevEng) has undertaken the following noise assessment of a proposed multi-family residential development to be constructed at MN#1389 Commissioners Road East in London, Ontario. The Corporation of the City of London has indicated that a noise study will be required to determine the effects of vehicular traffic from Highbury Avenue South on the proposed development. This report has been prepared to address that condition.

The purpose of this report will be, therefore, to assess noise levels resulting from road traffic on Highbury Avenue South, and offer recommendations for their mitigation, if required.

2.0 Noise Study Parameters

The Ministry of the Environment, Conservation and Parks (MECP) has created explicit criteria regarding what levels of noise are acceptable within residential developments, and what measures are to be taken, should these criteria be exceeded. These guidelines, as outlined in the Environmental Noise Guideline: Stationary and Transportation Sources – Approval and Planning (Publication NPC-300), Sections C3.2.2 and C3.2.3 are as follows:

- Maximum outdoor noise level - 55 dbA as measured in the Outdoor Living area between the hours of 0700 and 2300 (7:00 am and 11:00 pm);
- When this criterion is met, no abatement measures are required;
- If the outdoor noise level is greater than 55 dbA and less than 60 dbA, physical control measures may be applied to reduce the sound level to 55 dbA. If no physical measures are provided, the prospective purchasers or tenants must be made aware of potential problems through a suitable noise warning clause;
- When this criterion is exceeded by 5 dbA or more, future tenants must be made aware of potential problems through a suitable noise warning clause, and physical abatement measures are required;
- Maximum indoor road noise level:
 - 45 dbA at all times throughout the day within living/dining spaces and between the hours of 0700 and 2300 (7:00 am and 11:00 pm, day-time) within bedroom spaces, assuming all windows and doors closed; and/or,
 - 40 dbA between the hours of 2300 and 0700 (11:00 pm and 7:00 am, night-time) within bedroom spaces, assuming all windows and doors closed.
- When the above criteria are met, no abatement measures are required;
- When the above criteria is exceeded by 1 to 10 dbA, it is required to design the dwelling with a provision for future installation of central air conditioning. This requirement usually implies forced air heating with the ducts sized for central air conditioning. Future tenants must also be made aware of potential road noise through a suitable warning clause; and,
- When the above criteria is exceeded by more than 10 dbA installation of central air conditioning is mandatory, and exterior building components must be specified.

Noise levels are to be predicted through the use of the MECP's model, "Stamson, 5.0", utilizing road traffic data as supplied by the City of London.

3.0 Noise Sources

3.1 Road Traffic Data

Road traffic frequencies are summarized below in Table 1. The average annual daily traffic (AADT) for Highbury Avenue South is 40,000 vehicles/day with 4.4% heavy truck traffic (split between medium and heavy trucks) and a 96/4 day/night split, as obtained from the City of London's Transportation Department and compared against data from noise reports for previous Evans Boulevard MF blocks along Highbury. The figures represent the average annual daily road volumes based on the City of London Master Transportation Study. Correspondence with the City of London is included in Appendix A.

Table 1: Road Traffic Data (Highbury Avenue South – 2.2% Medium, 2.2% Heavy)

Time (Hours)	No. of Cars	No. of Medium Trucks	No. of Heavy Trucks	Posted Speed Limit km/hr
Day-Time (0700-2300)	36,710	845	845	100
Night-Time (2300-0700)	1,530	35	35	100

4.0 Noise Level Predictions

Utilizing the MECP's noise prediction model, the projected noise levels for the site were calculated for two sample times during the daylight hours of 0700 to 2300 (7:00 a.m. to 11:00 p.m.) and the night time hours of 2300-0700 (11:00 p.m. to 7:00 a.m.). A 'barrier free' situation was assumed for all calculations due to the existing topography. For all calculations the intervening topography and the distance to the noise source were considered as the only other impediments to noise transmission. In addition, the following assumptions were made:

- The proposed units will have setbacks as per the attached noise study figure (see Figure 1);
- The proposed apartment buildings and townhouses were assumed to be seven (7) stories and three (3) stories respectively;
- Indoor daytime and night-time receiver elevations are as identified on Figure 1; and,
- Outdoor daytime receiver elevation was assumed to be 1.5 m and are located at the allocated common outdoor living area (OLA) as identified in Figure 1.

Refer to Figure 1 for the building and Stamson test locations within the proposed development. The findings are summarized below:

Table 2: STAMSON Noise Levels

Point of Assessment	Unattenuated Stamson Daytime Outdoor Noise Level (dBA)	Attenuated Stamson Daytime Outdoor Noise Level (dBA)	Stamson Day-time Indoor Noise Level (dBA)*	Stamson Night-Time Indoor Noise Level (dBA)*	Warning Clauses/Mitigation Measures
OLA1	51.86	N/A	N/A	N/A	None
Apartment A 1 st Storey	N/A	N/A	49.61	38.80	NWC Type 'C', Provisions for Central Air
Apartment A 6 th Storey	N/A	N/A	53.85	43.05	NWC Type 'C', Provisions for Central Air
Apartment B 1 st Storey	N/A	N/A	49.79	38.98	NWC Type 'C', Provisions for Central Air
Apartment B 6 th Storey	N/A	N/A	53.99	43.19	NWC Type 'C', Provisions for Central Air
Townhouse G 1 st Storey	N/A	N/A	41.79	30.99	None
Townhouse G 3 rd Storey	N/A	N/A	43.98	33.18	None

*Note – The indoor noise levels presented in Table 2 reflect the STAMSON model data at the building face less 10 dBA to reflect reductions caused by a typical wall assembly constructed in accordance with the Ontario Building Code (OBC).

See Appendix A for a complete set of noise level calculations.

5.0 Attenuation Recommendations & Summary

5.1 Interior Noise Levels

As per Table 2, indoor noise level exceeds the MECP criteria across the site. For those units whose maximum predicted indoor noise level exceed the guidelines by 1-10 dBA, an appropriate warning clause should be applied. In addition, provisions must be made for the future installation of central air conditioning. This can be achieved through providing a forced air heating system adequately sized to allow such an installation thus enabling occupants the ability to close their windows should they find noise levels too much of a nuisance.

It is recommended the following warning clause should be applied and provisions for central air conditioning provided for all units in Apartment Buildings A and B specifically. The following warning clause will be included in all agreements of purchase and sale or lease of these dwellings:

"This building 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 Environment. (Note: The location and installation of the outdoor air conditioning device should be done so as to minimize the noise impacts and comply with criteria of MECP Publication NPC-216, Residential Air Conditioning Devices.)"

5.2 Building Components

As per Table 2, indoor noise levels do not exceed the MECP criteria by more than 10 dBA in either the day or night-time scenarios for any of the dwellings within the proposed development. As such, specialized building components are not required for this development.

5.3 Exterior Noise Levels

The outdoor noise levels, as presented in Table 2, are not in excess of MECP guidelines within the designated outdoor living areas. As such, no recommendations for mitigation of outdoor noise levels are required for this site.

A wording similar to the following should also be included in all agreements of purchase of sale or lease of the buildings:

“The Corporation of the City of London assumes no responsibility for noise issues which may arise from the existing or increased traffic on Highbury Avenue South as it relates to the interior or outdoor living areas of any dwelling within the development. The Corporation of the City of London will not be responsible for constructing any form of noise mitigation for this development.”

Proper implementation of the abatement program above should result in noise levels that will meet the MECP’s requirements for this development based on the information provided.

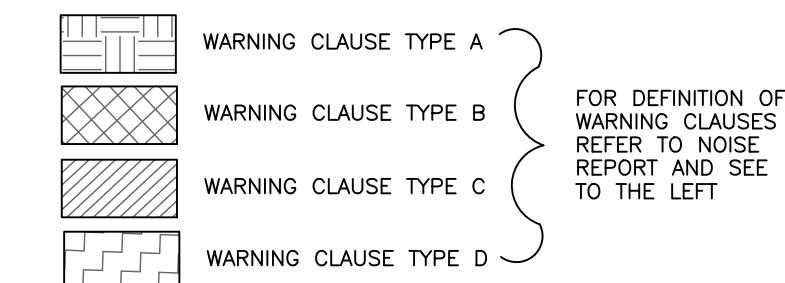
Respectfully submitted,

Development Engineering (London) Limited

Appendix A: Noise Level Calculations

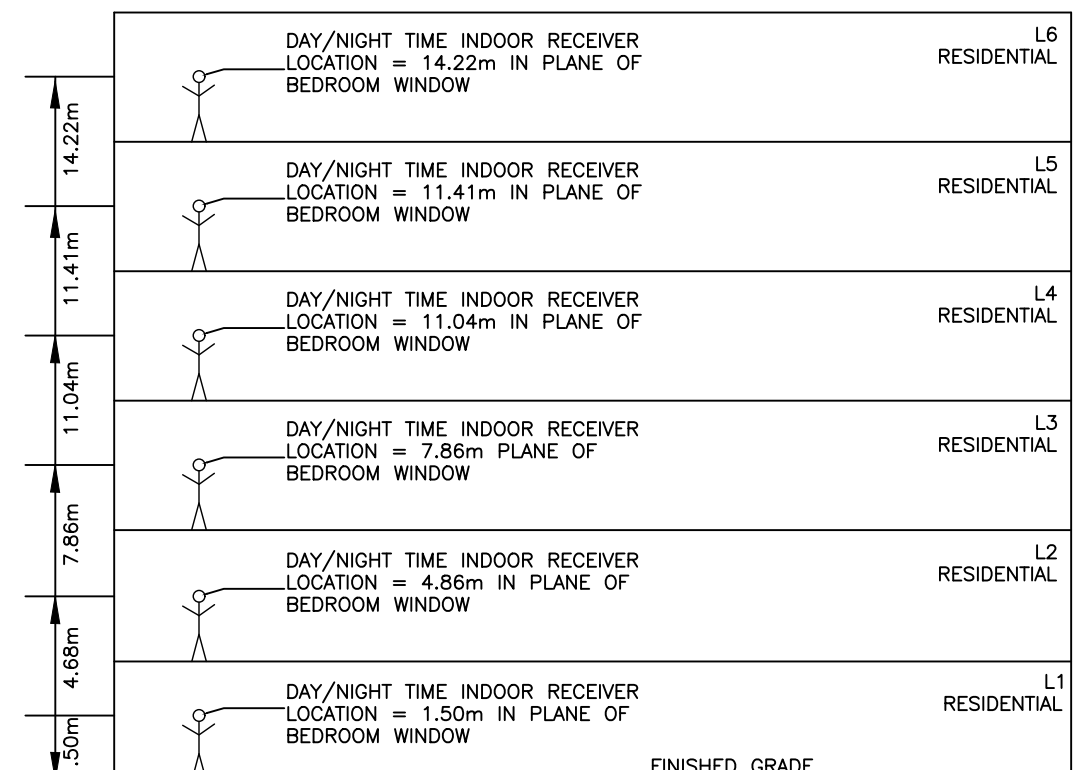
NOISE LEGEND & WARNING CLAUSES:

- 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 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 Environment."
- C - "This building 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 Environment. (Note: The location and installation of the outdoor air conditioning device should be done so as to minimize the noise impacts and comply with criteria of MECP Publication NPC-216, Residential Air Conditioning Devices.)"
- 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 Environment. (Note: The location and installation of the air conditioning device should be done so as to minimize the noise impacts and comply with criteria of MECP Publication NPC-216, Residential Air Conditioning Devices.)"



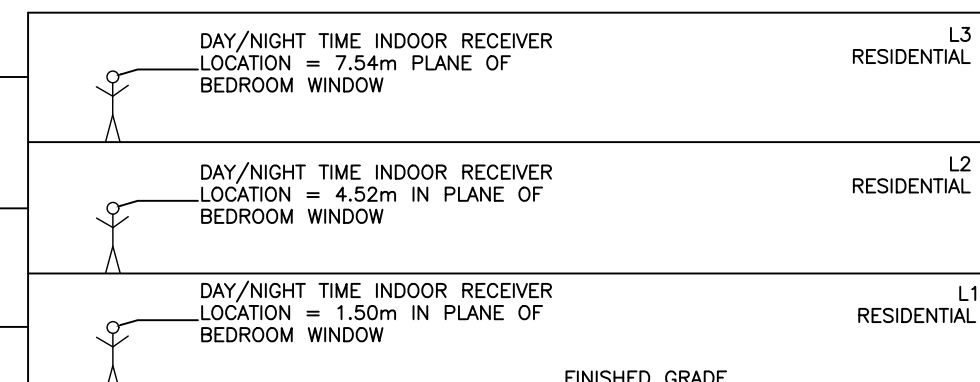
- (AC) MANDATORY INSTALLATION OF CENTRAL AIR CONDITIONING
- (BC) MANDATORY INSTALLATION OF BUILDING COMPONENTS
- (●) DENOTES STAMSON TEST LOCATION
- ([A]) DENOTES PROPOSED NOISE WALL

SITE PLANS PROVIDED BY OWNER. DEVELOPMENT ENGINEERING ACCEPTS NO RESPONSIBILITY FOR INFORMATION SHOWN THAT IS NOT ACCURATE. THIS PLAN IS FOR NOISE PURPOSES ONLY AND THE CONTRACTOR SHOULD REFER TO THE SERVING AND GRADING PLANS PREPARED BY THE SITE ENGINEER.

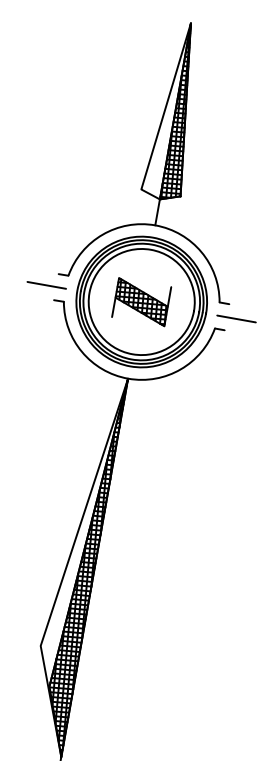


TYPICAL SECTION (APARTMENTS)

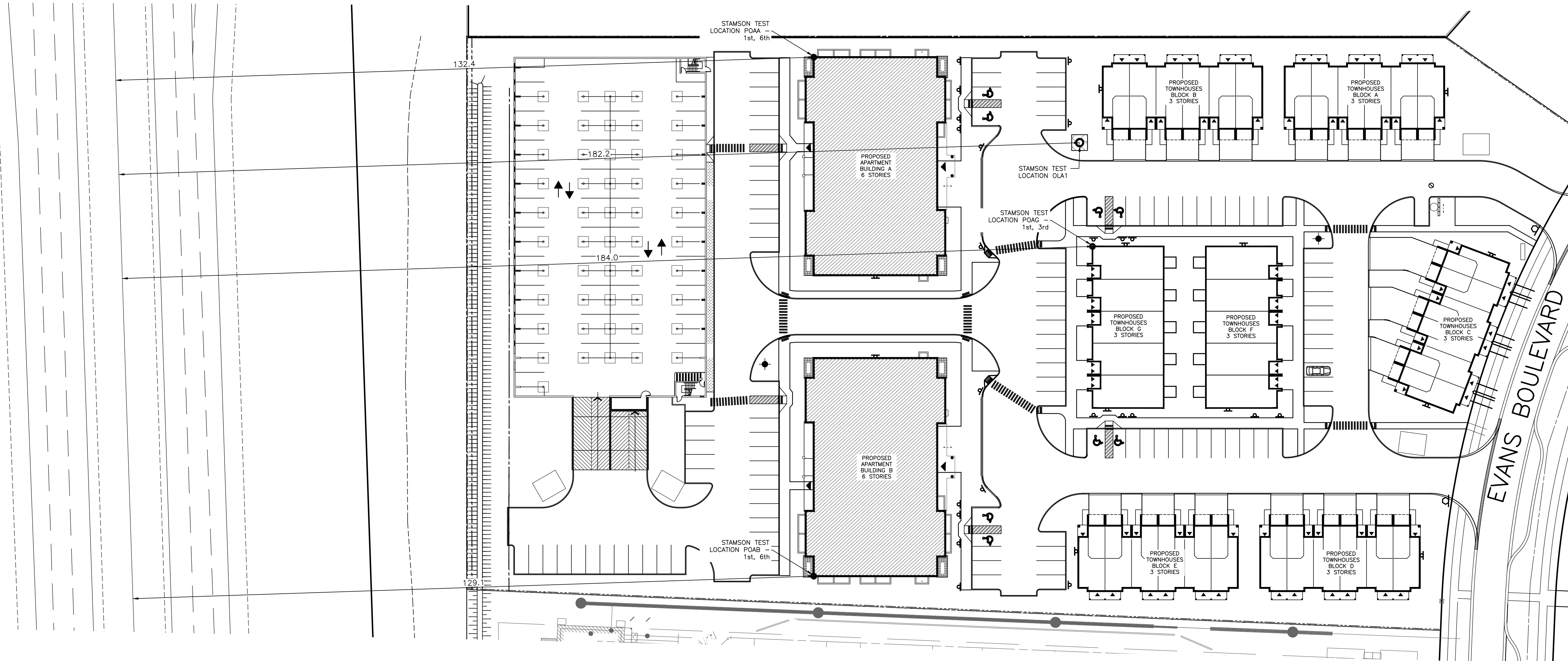
DAYTIME OUTDOOR RECEIVER LOCATION (1.50m ABOVE THE FINISHED GRADE IN THE DESIGNATED OUTDOOR LIVING AREA OLA1)



TYPICAL SECTION (STACKED TOWNS)



HIGHBURY AVENUE SOUTH



Drawings: Nov.21/24-3.33pm DEL24-018 - Noise Base.dwg

EXISTING SERVICES	DRAWING #, SOURCE	DATE	AS CONSTRUCTED SERVICES	COMPLETION	DETAILS	No.	REVISIONS	DATE	CONSULTANT	CONSULTANT OR DIVISION	ENGINEER'S STAMP	SCALE	TITLE	PROJECT No.
					DESIGN BY DJH	1	ISSUED FOR APPROVAL	NOV. 22/24	DEVENG	London Office 41 Adelaide St. N., Unit 71 (519) 672-8310	 CONSULTING CIVIL ENGINEERS	 SCALE - 1:400 4 0 8m	BLOCK 34 1389 COMMISSIONERS ROAD EAST NOISE STUDY - BLOCK 34	DEL24-018
					DRAWN BY DJH CHECKED BY DJH F.BK. ***				Paris Office 31 Mechanic St., Unit 301 (519) 442-1441	FIG1				
FILE: DEL24-018 - NOISE BASE.DWG														

Derek Hoevenaars


From: Karavadra, Vijay <vkaravad@london.ca>
Sent: Wednesday, August 07, 2024 12:35 PM
To: Derek Hoevenaars
Cc: Shawn Duncan; 'CObrien@drewloholdings.com'; Traffic Signals; TMC; Jogie, Suresh
Subject: RE: DEL24-018 - Summerside PH19 Block 34 Transportation Request

Good afternoon Derek,

Most recent AADT we have on record for this road segment is 40,000 VPD. The posted speed limit on Highbury Ave S btwn Commissioners Rd E and Bradley Ave E is 100km/h. Unfortunately, I am not able to confirm % of truck traffic and day/night split.

Let me know if you have any further questions.

Regards,

 **Vijay Karavadra** [he/him]
Transportation Management Centre Technologist
Traffic Engineering
City of London

Fire Hall #12, 275 Boler Road, London, ON N6K 2J9
P: 519.661.CITY(2489) x 7443 || Fax: 519.661.1062
vkaravad@london.ca | www.london.ca

“Street Light & Traffic Signal Outage Hotline: 519.661.2641”

From: Jogie, Suresh <sjogie@London.ca>
Sent: Wednesday, August 7, 2024 9:44 AM
To: Karavadra, Vijay <vkaravad@london.ca>
Cc: Traffic Signals <TrafficSignals@london.ca>; TMC <TMC@london.ca>
Subject: FW: DEL24-018 - Summerside PH19 Block 34 Transportation Request

Vijay,
Can you please assist?
Thanks.

 **Suresh Jogie** (he/him)
Traffic Signal and Street Light Technologist
Traffic Engineering
City of London
300 Dufferin Ave, London, ON, N6A 4L9
P: 519.661.CITY (2489) x 8410 Fax: 519.661.4734
sjogie@london.ca | www.london.ca

For street light and traffic signal outages please call 519 661-2641.

From: Derek Hoevenaars <DHoevenaars@deveng.net>
Sent: Wednesday, August 7, 2024 9:40 AM
To: Jogie, Suresh <sjogie@London.ca>
Cc: Shawn Duncan <sduncan@deveng.net>; Carrie O'Brien <CObrien@drewloholdings.com>
Subject: [EXTERNAL] RE: DEL24-018 - Summerside PH19 Block 34 Transportation Request

Good morning Suresh,

Just a follow-up on the below request. If you could please provide a response at your earliest opportunity it would be much appreciated.

Thanks,

Derek Hoevenaars, P.Eng | Senior Project Engineer
t: 519-672-8310 Ext. 148

From: Derek Hoevenaars
Sent: Wednesday, July 31, 2024 4:44 PM
To: Jogie, Suresh <sjogie@london.ca>
Cc: Shawn Duncan <sduncan@deveng.net>; Carrie O'Brien <CObrien@drewloholdings.com>
Subject: DEL24-018 - Summerside PH19 Block 34 Transportation Request

Good afternoon Suresh,

We would like to officially request vehicular traffic information (AADT traffic counts, % truck traffic, posted speed limit and day/night split) for Highbury Avenue South between Commissioners Road East and Bradley Avenue for use in noise modeling efforts for the proposed Summerside Subdivision Phase 19, Block 34 on Evans Boulevard (refer to the attached sketch for the approximate site location). Per previous correspondence with the City's Planning & Development group, we typically assume an AADT of 36,000 VPD and a 90/10 day/night split for City arterial roads but I would imagine that Highbury would see slightly higher traffic than a typical arterial.

Let us know if you have any questions or concerns and thank you for your time,

Derek Hoevenaars, P.Eng | Senior Project Engineer

Ext. 148 dhoevenaars@deveng.net www.deveng.net

Development Engineering (London) Limited

London	41 Adelaide St. N.	Unit 71	ON	N6B 3P4	t: 519-672-8310
Paris	31 Mechanic St.	Unit 301	ON	N3L 1K1	t: 519-442-1441

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STAMSON 5.0 NORMAL REPORT Date: 09-08-2024 10:53:17
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

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

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

 Car traffic volume : 36710/1530 veh/TimePeriod *
 Medium truck volume : 845/35 veh/TimePeriod *
 Heavy truck volume : 845/35 veh/TimePeriod *
 Posted speed limit : 100 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): 40000
 Percentage of Annual Growth : 0.00
 Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 2.20
 Heavy Truck % of Total Volume : 2.20
 Day (16 hrs) % of Total Volume : 96.00

Data for Segment # 1: Highbury (day/night)

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1 / 1
 House density : 80 %
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 182.20 / 182.20 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Highbury (day)

 Source height = 1.22 m

ROAD (0.00 + 51.86 + 0.00) = 51.86 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	76.76	0.00	-18.00	-1.46	0.00	-5.44	0.00	51.86

Segment Leq : 51.86 dBA

Total Leq All Segments: 51.86 dBA

Results segment # 1: Highbury (night)

 Source height = 1.22 m

ROAD (0.00 + 41.06 + 0.00) = 41.06 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.96	0.00	-18.00	-1.46	0.00	-5.44	0.00	41.06

Segment Leq : 41.06 dBA

Total Leq All Segments: 41.06 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 51.86
 (NIGHT): 41.06

STAMSON 5.0 NORMAL REPORT Date: 09-08-2024 10:46:28
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POAA1st.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 36710/1530 veh/TimePeriod *
Medium truck volume : 845/35 veh/TimePeriod *
Heavy truck volume : 845/35 veh/TimePeriod *
Posted speed limit : 100 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): 40000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.20
Heavy Truck % of Total Volume : 2.20
Day (16 hrs) % of Total Volume : 96.00

Data for Segment # 1: Highbury (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 : 132.40 / 132.40 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Highbury (day)

Source height = 1.22 m

ROAD (0.00 + 59.61 + 0.00) = 59.61 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	76.76	0.00	-15.70	-1.46	0.00	0.00	0.00	59.61

Segment Leq : 59.61 dBA

Total Leq All Segments: 59.61 dBA

Results segment # 1: Highbury (night)

Source height = 1.22 m

ROAD (0.00 + 48.80 + 0.00) = 48.80 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.96	0.00	-15.70	-1.46	0.00	0.00	0.00	48.80

Segment Leq : 48.80 dBA

Total Leq All Segments: 48.80 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.61
(NIGHT): 48.80

STAMSON 5.0 NORMAL REPORT Date: 21-11-2024 15:18:18
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POAA6th.te Time Period: Day/Night 16/8 hours
 Description:

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

```
-----
Car traffic volume   : 36710/1530  veh/TimePeriod  *
Medium truck volume :   845/35    veh/TimePeriod  *
Heavy truck volume  :   845/35    veh/TimePeriod  *
Posted speed limit  :   100 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): 40000
Percentage of Annual Growth         : 0.00
Number of Years of Growth           : 0.00
Medium Truck % of Total Volume      : 2.20
Heavy Truck % of Total Volume       : 2.20
Day (16 hrs) % of Total Volume      : 96.00
```

Data for Segment # 1: Highbury (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 : 132.40 / 132.40 m
Receiver height  :  14.22 / 14.22 m
Topography      :      1      (Flat/gentle slope; no barrier)
Reference angle  :      0.00
```

Results segment # 1: Highbury (day)

Source height = 1.22 m

ROAD (0.00 + 63.85 + 0.00) = 63.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.29	76.76	0.00	-12.17	-0.74	0.00	0.00	0.00	63.85

Segment Leq : 63.85 dBA

Total Leq All Segments: 63.85 dBA

Results segment # 1: Highbury (night)

Source height = 1.22 m

ROAD (0.00 + 53.05 + 0.00) = 53.05 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.29	65.96	0.00	-12.17	-0.74	0.00	0.00	0.00	53.05

Segment Leq : 53.05 dBA

Total Leq All Segments: 53.05 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.85
 (NIGHT): 53.05

STAMSON 5.0 NORMAL REPORT Date: 09-08-2024 10:48:13
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POAA7th.te Time Period: Day/Night 16/8 hours
 Description:

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

 Car traffic volume : 36710/1530 veh/TimePeriod *
 Medium truck volume : 845/35 veh/TimePeriod *
 Heavy truck volume : 845/35 veh/TimePeriod *
 Posted speed limit : 100 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): 40000
 Percentage of Annual Growth : 0.00
 Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 2.20
 Heavy Truck % of Total Volume : 2.20
 Day (16 hrs) % of Total Volume : 96.00

Data for Segment # 1: Highbury (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 : 132.40 / 132.40 m
 Receiver height : 17.40 / 17.40 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Highbury (day)

 Source height = 1.22 m

ROAD (0.00 + 64.98 + 0.00) = 64.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.19	76.76	0.00	-11.27	-0.52	0.00	0.00	0.00	64.98

 Segment Leq : 64.98 dBA

Total Leq All Segments: 64.98 dBA

Results segment # 1: Highbury (night)

 Source height = 1.22 m

ROAD (0.00 + 54.17 + 0.00) = 54.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.19	65.96	0.00	-11.27	-0.52	0.00	0.00	0.00	54.17

 Segment Leq : 54.17 dBA

Total Leq All Segments: 54.17 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.98
 (NIGHT): 54.17

STAMSON 5.0 NORMAL REPORT Date: 08-08-2024 16:04:05
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POAB1st.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 36710/1530 veh/TimePeriod *
Medium truck volume : 845/35 veh/TimePeriod *
Heavy truck volume : 845/35 veh/TimePeriod *
Posted speed limit : 100 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): 40000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.20
Heavy Truck % of Total Volume : 2.20
Day (16 hrs) % of Total Volume : 96.00

Data for Segment # 1: Highbury (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 : 129.10 / 129.10 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Highbury (day)

Source height = 1.22 m

ROAD (0.00 + 59.79 + 0.00) = 59.79 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	76.76	0.00	-15.52	-1.46	0.00	0.00	0.00	59.79

Segment Leq : 59.79 dBA

Total Leq All Segments: 59.79 dBA

Results segment # 1: Highbury (night)

Source height = 1.22 m

ROAD (0.00 + 48.98 + 0.00) = 48.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.96	0.00	-15.52	-1.46	0.00	0.00	0.00	48.98

Segment Leq : 48.98 dBA

Total Leq All Segments: 48.98 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 59.79
(NIGHT): 48.98

STAMSON 5.0 NORMAL REPORT Date: 09-08-2024 10:45:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POAB6th.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 36710/1530 veh/TimePeriod *
Medium truck volume : 845/35 veh/TimePeriod *
Heavy truck volume : 845/35 veh/TimePeriod *
Posted speed limit : 100 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): 40000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.20
Heavy Truck % of Total Volume : 2.20
Day (16 hrs) % of Total Volume : 96.00

Data for Segment # 1: Highbury (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 : 129.10 / 129.10 m
Receiver height : 14.22 / 14.22 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Highbury (day)

Source height = 1.22 m

ROAD (0.00 + 63.99 + 0.00) = 63.99 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.29	76.76	0.00	-12.03	-0.74	0.00	0.00	0.00	63.99

Segment Leq : 63.99 dBA

Total Leq All Segments: 63.99 dBA

Results segment # 1: Highbury (night)

Source height = 1.22 m

ROAD (0.00 + 53.19 + 0.00) = 53.19 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.29	65.96	0.00	-12.03	-0.74	0.00	0.00	0.00	53.19

Segment Leq : 53.19 dBA

Total Leq All Segments: 53.19 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.99
(NIGHT): 53.19

STAMSON 5.0 NORMAL REPORT Date: 09-08-2024 10:44:31
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POAb7th.te Time Period: Day/Night 16/8 hours
 Description:

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

```
-----
Car traffic volume   : 36710/1530   veh/TimePeriod   *
Medium truck volume :    845/35     veh/TimePeriod   *
Heavy truck volume  :    845/35     veh/TimePeriod   *
Posted speed limit  :    100 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): 40000
Percentage of Annual Growth         :    0.00
Number of Years of Growth           :    0.00
Medium Truck % of Total Volume      :    2.20
Heavy Truck % of Total Volume       :    2.20
Day (16 hrs) % of Total Volume      :   96.00
```

Data for Segment # 1: Highbury (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 : 129.10 / 129.10 m
Receiver height  :    17.40 / 17.40 m
Topography      :         1   (Flat/gentle slope; no barrier)
Reference angle  :         0.00
```

Results segment # 1: Highbury (day)

Source height = 1.22 m

ROAD (0.00 + 65.11 + 0.00) = 65.11 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.19	76.76	0.00	-11.14	-0.52	0.00	0.00	0.00	65.11

Segment Leq : 65.11 dBA

Total Leq All Segments: 65.11 dBA

Results segment # 1: Highbury (night)

Source height = 1.22 m

ROAD (0.00 + 54.30 + 0.00) = 54.30 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.19	65.96	0.00	-11.14	-0.52	0.00	0.00	0.00	54.30

Segment Leq : 54.30 dBA

Total Leq All Segments: 54.30 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.11
 (NIGHT): 54.30

STAMSON 5.0 NORMAL REPORT Date: 09-08-2024 10:53:40
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POAG1st.te Time Period: Day/Night 16/8 hours
 Description:

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

 Car traffic volume : 36710/1530 veh/TimePeriod *
 Medium truck volume : 845/35 veh/TimePeriod *
 Heavy truck volume : 845/35 veh/TimePeriod *
 Posted speed limit : 100 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): 40000
 Percentage of Annual Growth : 0.00
 Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 2.20
 Heavy Truck % of Total Volume : 2.20
 Day (16 hrs) % of Total Volume : 96.00

Data for Segment # 1: Highbury (day/night)

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1 / 1
 House density : 80 %
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 184.00 / 184.00 m
 Receiver height : 1.50 / 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Highbury (day)

 Source height = 1.22 m

ROAD (0.00 + 51.79 + 0.00) = 51.79 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	76.76	0.00	-18.07	-1.46	0.00	-5.44	0.00	51.79

Segment Leq : 51.79 dBA

Total Leq All Segments: 51.79 dBA

Results segment # 1: Highbury (night)

 Source height = 1.22 m

ROAD (0.00 + 40.99 + 0.00) = 40.99 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.96	0.00	-18.07	-1.46	0.00	-5.44	0.00	40.99

Segment Leq : 40.99 dBA

Total Leq All Segments: 40.99 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 51.79
 (NIGHT): 40.99

STAMSON 5.0 NORMAL REPORT Date: 09-08-2024 10:51:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POAG3rd.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 36710/1530 veh/TimePeriod *
Medium truck volume : 845/35 veh/TimePeriod *
Heavy truck volume : 845/35 veh/TimePeriod *
Posted speed limit : 100 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): 40000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.20
Heavy Truck % of Total Volume : 2.20
Day (16 hrs) % of Total Volume : 96.00

Data for Segment # 1: Highbury (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 1
House density : 80 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 184.00 / 184.00 m
Receiver height : 7.54 / 7.54 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Highbury (day)

Source height = 1.22 m

ROAD (0.00 + 53.98 + 0.00) = 53.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.49	76.76	0.00	-16.19	-1.15	0.00	-5.44	0.00	53.98

Segment Leq : 53.98 dBA

Total Leq All Segments: 53.98 dBA

Results segment # 1: Highbury (night)

Source height = 1.22 m

ROAD (0.00 + 43.18 + 0.00) = 43.18 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.49	65.96	0.00	-16.19	-1.15	0.00	-5.44	0.00	43.18

Segment Leq : 43.18 dBA

Total Leq All Segments: 43.18 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.98
(NIGHT): 43.18