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Noise Control Feasibility Study

Quinn's Pointe Stage 6, 7, 8



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1.0 INTRODUCTION

Minto Communities Inc. (Minto) has retained the services of J.L. Richards & Associates Limited (JLR) to prepare a Noise Control Feasibility Study for their development known as Quinn's Pointe Stages 6, 7, and 8, located in the Barrhaven South Urban Expansion Area (BSUEA), within the City of Ottawa. The legal description of the subject property is Part of Lots 6 and 7, Concession 3 (Rideau Front) Geographic Township of Nepean, City of Ottawa. The purpose of this study is to assess the potential environmental noise impact on the Development, due to vehicular traffic on Highway 416, Realigned Greenbank Road, Barnsdale Road, Kilbirnie Drive, Cappamore Drive, Elevation Road, and Borrisokane Road. This Noise Control Feasibility Study develops a strategy for subdivision development that minimizes the reliance upon noise barriers, ventilation requirements and air conditioning as a means of addressing roadway noise and instead examines land use, roadway layout and building orientation as a principal means to mitigate roadway noise. Land use and building orientation identified in this study will then be examined in detail as part of the Noise Control Detailed Design Study prepared for the subdivision application.

This report is prepared to satisfy the Ministry of the Environment (MOE) Environmental Noise Guidelines NPC-300 and the City of Ottawa Environmental Noise Control Guidelines (approved by City Council January 2016) and in particular Part 4 Section 3.1 Noise Control Feasibility Study Requirements.

2.0 PROJECT DESCRIPTION

The proposed Quinn's Pointe Stage 6, 7, and 8 development is situated on a ±46 ha parcel of land that is bounded by existing Quinn's Pointe Stages 4 & 5 to the east, existing development to the north, future industrial land to the west and Barnsdale Road as well as the new City of Ottawa (City) urban boundary to the south, as shown on Figure 1 - Location Plan. The subject site is also bounded by the new City urban boundary to the west / Borrisokane Road and by future BSUEA development lands to the north. Minto's existing Quinn's Pointe Stages 4 and 5 residential subdivisions are also located to the east of the subject property.

Minto's proposed Quinn's Pointe Stage 6, 7, and 8 development consists of single-family dwellings, townhouse blocks, and back-to-back townhouse blocks. One block has been provided for park use (totaling 3.93 ha), one block for a SWM Pond (totaling 3.66 ha), and one block will be a retained woodlot with open space (totaling 3.29 ha).

3.0 TRANSPORTATION NOISE SOURCE

The transportation noise sources Highway 416, Realigned Greenbank Road, Barnsdale Road, Kilbirnie Drive, Cappamore Drive, Elevation Road, and Borrisokane Road. Drawing N1 (see Appendix 'A') shows the location of the existing and proposed roadways in relation to the proposed development.

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3.1 Transportation Sound Level Criteria

For the purpose of determining the predicted noise levels, and based on the sound level criteria established by the City of Ottawa Environmental Noise Control Guidelines (ENCG), the following will be used as the maximum acceptable sound levels (Leq) for residential development and other land uses, such as nursing homes, schools and daycare centres:

<u>Receiver Location</u>	<u>Criteria</u>	<u>Time Period</u>
Outdoor Living Area:	55 dBA	Daytime (0700 - 2300 hrs.)
Indoor Living/Dining Rooms (inside):	45 dBA	Daytime (0700 - 2300 hrs.)
General Office, Reception Area (inside):	50 dBA	Daytime (0700 - 2300 hrs.)
Sleeping Quarters (inside):	40 dBA	Nighttime (2300 - 0700 hrs.)

Outdoor Living Areas (OLA) are defined as that portion of the outdoor amenity area of a dwelling for the quiet enjoyment of the outdoor environment during the daytime period. Typically, the point of assessment in an OLA is 3.0 m from the building façade mid-point and 1.5 m above the ground within the designated OLA for each individual unit. OLAs commonly include backyards, balconies (with a minimum depth of 4 m as per NPC-300), common outdoor living areas, and passive recreational areas.

3.2 Transportation Noise Attenuation Requirements

When the sound levels are equal to or less than the specified criteria, per the City of Ottawa ENCG and/or MOE NPC-300, no noise attenuation (control) measures are required.

The following tables outline noise attenuation measures to achieve required dBA Leq for surface transportation noise, per the City of Ottawa ENCG.

Table 1: Outdoor Noise Control Measures for Surface Transportation Noise

Primary Mitigation Measure (in order of preference)	Secondary Mitigation Measures	
	Landscape Plantings and/or Non-acoustic Fence to Obscure Noise Source	Warning Clauses
Distance setback with soft ground	Recommended	
Insertion of Noise insensitive land uses between the source and receiver receptor		
Orientation of buildings to provide sheltered zones in rear yards	Required	Warning Clauses necessary and to include: - Reference to specific noise mitigation measures in the development. - Whether noise is expected to increase in the future. - That there is a need to maintain mitigation.
Shared outdoor amenity areas		
Earth berms (sound barriers)		
Acoustic barriers (acoustic barriers)		

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Table 2: Indoor Noise Control Measures for Surface Transportation Noise

Primary Mitigation Measure (in order of preference)	Secondary Mitigation Measures	
	Landscape Plantings and/or Non-acoustic Fence to Obscure Noise Source	Warning Clauses
Distance setback with soft ground Insertion of Noise insensitive land uses between the source and receiver receptor	Recommended	Not necessary
Orientation of buildings to provide sheltered zones or modified interior spaces and amenity areas Enhanced construction techniques and construction quality Earth berms (sound barriers) Indoor isolation – air conditioning and ventilation, enhanced dampening materials (indoor isolation)	Required	Warning Clauses necessary and to include: - Reference to specific noise mitigation measures in the development. - Whether noise is expected to increase in the future. - That there is a need to maintain mitigation.

The following tables outline the noise level limits per the MOE NPC-300 and City of Ottawa ENCG.

Table 3: Outdoor Living Area (OLA) Noise Limit for Surface Transportation

Time Period	Leq (16 hr) (dBA)
16 hr., 07:00 am - 23:00	55

Table 4: Indoor Noise Limit for Surface Transportation

Type of Space	Time Period	Leq (dBA)	
		Road	Rail
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	07:00-23:00	45	40
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	23:00-07:00	45	40
Sleeping quarters	07:00-23:00	45	40
	23:00-07:00	40	35

In addition to the implementation of noise attenuation features, if required, and depending on the severity of the noise problem, warning clauses may be recommended to advise the prospective purchasers/tenants of affected units of the potential environmental noise. These warning clauses should be included in the Site Plan and Subdivision Agreements, in the Offers of Purchase and Sale, and should be registered on Title. Warning clauses may be included for any development, irrespective of whether it is considered noise sensitive land use.

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Where site measures are required to mitigate noise levels, the City of Ottawa requires that notices be placed on Title informing potential buyers and/or tenants of the site conditions. Sample templates of the notices that could be registered on Title are included in Appendix 'B' as presented in the City of Ottawa ENCG.

Detailed wording for clauses should be provided as part of a detailed Noise Impact Study to be completed in support of the Subdivision Application. Clauses are to be worded to describe the mitigation measures and noise conditions applicable where MOE and City of Ottawa noise criteria are exceeded.

3.3 Prediction of Noise Levels (Transportation)

3.3.1 Road Traffic Data

The following traffic data was used to predict noise levels:

Table 5: Road Traffic Data to Predict Noise Levels

Road Name	Total Traffic Volume (AADT)	Day/Night Split (%)	Medium Trucks (%)	Heavy Trucks (%)	Posted Speed (km/hr.)	Road Gradient (%)	Road Classification
HWY-416	18,333 per lane	92 / 8	7	5	100	1	Freeway, Queensway, Highway
Realigned Greenbank Road	35,000	92 / 8	7	5	80	1	4-Lane Urban Arterial-Divided (4-UAD)
Barnsdale Road	15,000	92 / 8	7	5	80	1	2-Lane Rural Arterial (2-RAU)
Kilbirnie Drive	8,000	92 / 8	7	5	50	1	2-Lane Urban Collector (2-UCU)
Cappamore Drive	8,000	92 / 8	7	5	50	1	2-Lane Urban Collector (2-UCU)
Elevation Road	8,000	92 / 8	7	5	50	1	2-Lane Urban Collector (2-UCU)
Borrisokane Road	8,000	92 / 8	7	5	50	1	2-Lane Urban Collector (2-UCU)

Schedule 'C4' of the City of Ottawa Official Plan (November 2024) were utilized to determine the correct road classification and protected right-of-way. These road classifications were compared to Map D4 of the City of Ottawa Transportation Master Plan (Road Network – Urban). All findings were then compared to Table B1 (Part 4, Appendix 'B') of the City of Ottawa Environmental Noise Control Guidelines in order to determine an appropriate AADT value. For the purposes of this

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report, the future realigned Greenbank Road is conservatively considered a 4-Lane Urban Divided Arterial with an AADT of 35,000 and a speed limit of 80 km/hr. This was determined based on using the conceptual alignment from the Greenbank Road Class Environmental Assessment dated July 2014 (as shown on the Draft Plan of Subdivision).

3.3.2 Bus Rapid Transit Corridor Data

Drawing N1 shows the location of the Bus Rapid Transit (BRT) Corridor in relation to the proposed residential development. The BRT shares the same corridor as the proposed Realigned Greenbank Road. The following data was used to predict BRT noise levels:

Table 6: Bus Rapid Transit Corridor Data to Predict Noise Levels

Road Name	Total Traffic Volume (AADT)	Day/Night Split (%)	Medium Trucks (%)	Heavy Trucks (%)	Posted Speed (km/hr.)	Road Gradient (%)
Bus Rapid Transit Corridor	270	74/26	100	0	80	1

The computer program Stamson is used to predict noise levels associated with the bus rapid transit corridor.

3.3.3 Noise Level Calculations (Transportation)

Noise contours for the daytime periods were developed using the MOE Road Traffic Noise Computer program STAMSON, Version 5.03. The following procedure was used to establish the contours:

1. Distances were calculated from the centre of the roadway to even 5 dBA freefield noise levels ranging from 60 dBA to 70 dBA for each of the roadways. Table 7 below presents this information. Computer printouts are included in Appendix 'C'. Drawing N1 identifies the receiver locations as contours for the calculations of the roadway freefield noise levels.
2. Additional calculations were conducted where noise sources intersect then compiled to prepare freefield composite noise level contours for each of Highway 416, Borrisokane Road, Realigned Greenbank Road, Barnsdale Road, Cappamore Drive, Elevation Road, and Kilbirnie Drive. Drawing N1 presents these contours. For the purpose of this study, only the daytime freefield noise levels are presented. Computer printouts are included in Appendix 'D' for each of the receivers presented on Drawing N1.
3. The above procedure was used to establish freefield noise levels for the BRT. It is anticipated that noise levels generated from the BRT will be in the range of 50 to 55 dBA. The noise from the BRT (55 dBA) will have minimal effect on the noise generated from Realigned Greenbank Road (71 dBA). The difference between the BRT and Realigned

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Greenbank Road noise levels is approximately 16 dBA. Using the Nomograph method of adding noise levels together, the noise difference results in an additional 0.1 dBA.

Table 7: Predicted Freefield Noise Levels and Distances from Individual Noise Sources

Roads	Contour (dBA)	OLA (Freefield) Distance (m)
		Daytime
Freeway, Queensway, Highway (Highway 416 NB & SB) 100 km/h	60	238.55
	65	119.20
	70	59.52
4-UAD (Realigned Greenbank Road) 80 km/h	60	115.41
	65	57.69
	70	28.82
2-RAU (Barnsdale Road) 80 km/h	60	69.23
	65	34.63
	70	17.31
2-UCU (Kilbirnie Drive, Cappamore Drive, Elevation Road, Borrisokane Road) 50 km/h	60	27.20
	65	n/a
	70	n/a
BRT 80 km/h	50	46.50
	55	23.23
	60	n/a
	65	n/a
	70	n/a

3.4 Summary of Findings (Transportation)

Quinn's Pointe Stages 6, 7, and 8 will result in multiple blocks of residential units that will be impacted by roadway traffic noise.

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Due to their proximity to the Quinn's Pointe Stages 6, 7, and 8 development, Barnsdale Road will have the highest noise impact on the development. To help mitigate the noise impact of this transportation noise source, Minto has designed a subdivision layout to include single loaded "window" streets to minimize the number of lots backing onto Barnsdale Road. Minto also positioned, where possible, non-sensitive land uses adjacent to the transportation noise sources (i.e., Park & Ride, Schools, SWM Blocks, and Parks). Finally, Minto also orientated the back-to-back stacked units and a condo block to flank on to the transportation noise sources to mitigate the noise for the development and reduce the need for noise barriers. Despite Minto's efforts to passively mitigate the transportation noise, barriers will be required.

Freefield noise levels at the property lines are estimated to be approximately 60-65 dBA as presented on Drawing N1. Noise barriers and berms are projected to be required to mitigate outdoor living area noise levels. As a minimum, a 2.2 m high noise barrier will be required along the rear and side lot lines. In some locations the noise barriers will be 2.5 m high. The location of receivers and potential noise barriers, based on freefield noise calculations, are presented on Drawing N1. It is recommended that a Noise Control Detailed Study be completed to review and confirm the height and location of required noise barriers.

Setback buffers could be created to reduce or eliminate noise barriers. However, in some location's units flanking arterial roads may have to be eliminated. This is not financially practical.

Warning clauses similar to those presented in Appendix 'B' will be required to highlight the exceedance of MOE and City of Ottawa noise criteria and to identify mitigation measures integrated into the subdivision design. Warning clauses could be required until it can be demonstrated that the noise guideline criteria is not exceeded. It is recommended that specific wording be developed for each unit and/or block in the Noise Control Detailed Study prepared to support the subdivision application.

Predicted mitigated noise levels were calculated based on 2.2 m and 2.5 m high noise barriers. Calculations indicate that a 2.2m high noise barrier for outdoor living areas for Receivers R3 (Lot 151), R4 (Lot 222) and R5 (Lot 196) will mitigate noise levels below the MOE and City's criteria. It is recommended that a 2.5 m high noise barrier be constructed for Receivers R1 (Lot 396), and R2 (Lot 334), receiver locations as shown on Drawing N1.

At the time this study was completed, a detailed grading plan was not available. For the purposes of this analysis, JLR assumed flat ground-level elevations and assumed the barrier base to be min. 0.35 m above the noise source. Noise barrier heights and placement should be reviewed and confirmed during the detailed design phase.

The following Table 8 summarizes the predicted freefield daytime noise levels at selected locations and the potential mitigated noise levels resulting from the inclusion of the noise attenuation barriers, as shown on Drawing N1.

Computer printouts are included in Appendix 'E'.

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Table 8: Potential Noise Attenuation Due to Barriers

Receiver Location	Daytime Noise Level (dBA) Freefield	Attenuation Leq 16 (dBA) with a 2.2 m High Barrier	Attenuation Leq 16 (dBA) with a 2.5 m High Barrier
R1 – Lot 396	66.98	59.79	58.78
R2 – Lot 334	63.77	57.77	57.01
R3 – Lot 151	56.42	51.89	51.39
R4 – Lot 222	62.33	54.97	53.94
R5 – Lot 196	60.74	54.15	53.28

Note: At the time this study was completed, a detailed grading plan was not available. Noise barrier details, such as, height and placement will need to be reviewed and confirmed during the detailed design phase

Based on the freefield noise contours, as presented on Drawing N1, the following Lots and Blocks have the potential of requiring a noise barrier:

- 2.2 m High Barrier: Lots 1, 26, 27, 41, 55-57, 151-162, 196, 222, 234, 263, 269-272, 296, 431, 432 and Blocks 450, 460, 464, 468, 472, 476, 480, 490, 514;
- 2.5 m High Barrier: Lots 323-334, 396, 448 and Block 532

Based on the freefield noise contours, as presented on Drawing N1, the following Lots and Blocks have the potential of requiring the warning clauses as provided in Appendix 'B'.

Generic:

- Lots 1, 26, 27, 41, 55-57, 151-162, 196, 222, 234, 263, 269-272, 296, 431, 432;
- Blocks 450, 460, 464, 468, 472, 476, 480, 490, 514

Extensive Mitigation of Indoor and Outdoor Amenity Area:

- Lots 323-334, 396, 448;
- Block 532

No Outdoor Amenity Area:

- Block 531

3.5 Summary of Findings (Building Component)

This study provides a high-level building component analysis. It is recommended that details concerning building components, be confirmed in a Detailed Building Components Study prepared for building permits.

A Building Component Study is recommended if sound levels exceed the requirements of the MOE NPC-300, Section C7.1.3. JLR completed preliminary analysis of a representative Minto Single Family home, Executive townhome, Avenue townhome to determine if sufficient acoustical insulation is provided with a 'typical' building construction to mitigate interior noise levels to

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MOECC and City of Ottawa criteria. The Acoustical Insulation Factor (AIF) Method, as described in the Ministry of the Environment Ontario, Ontario Publication, Environmental Noise Assessment in Land Use Planning, (ENALUP) 1987 (Page 10-29), was used; to assess the building construction required to mitigate exterior noise to meet interior noise criteria. Exterior freefield noise levels at the plane of the windows were calculated individually for each unit type. A freefield noise level, of 67 dBA, was conservatively utilized to determine wall and window construction.

Minto provided floor plan drawings, for the 'Jasper', 'Rockcliffe 4', and 'Cambridge', the drawings are considered construction level and are confidential, therefore are not included. These units are considered representative units for a typical Minto development. The 'Jasper' is a single-family home which could be expected to be constructed on Lots 1 to 448. The 'Rockcliffe 4' is an executive townhome which could be expected to be constructed on Blocks 450-496, 502-525, and 532-537. The 'Cambridge' is an Avenue home which could be expected to be constructed on Blocks 497-501, 526-531. Using Minto's drawings JLR calculated the window areas, floor areas and wall areas for the each of the rooms within the each of the units. This data was then used to calculate either the window to floor area ratios or the wall to floor area ratios. Design tables provided in ENALUP were then utilized to identify either minimum window construction or wall construction requirements to mitigate the exterior noise levels. Tables 11, 12, and 13 in Appendix 'F' present the working calculations for the window and wall requirements necessary to acoustically insulate each of the principal rooms within each of the representative units. The following table presents a summary of the analysis with the minimum standard window and wall construction required per unit type.

Table 9: Minimum Window and Wall Construction Types

Unit Type	Window Type Glass Thickness (Spacing) Glass Thickness (Spacing) Glass Thickness	Exterior Wall Type	Exterior Door Type
Avenue Townhome (i.e., Cambridge)	3(25)3 Double Pane	EW1	-
Executive Townhome (i.e., Rockcliffe)	3(32)3 Double Pane	EW1 – EW3	-
Single Family Home (i.e., Jasper)	3(20)3 Double Pane	EW1 – EW3	-

For this analysis, the sliding glass door identified on the plans is treated as a window. The acoustic insulation factor methodology does not account for sliding glass doors as a door type. It is noted that no additional doors are identified with a connection to the principal interior rooms such as the living room, bedroom or kitchen area.

A standard wall construction detail with a 38 x 89 mm complete with siding, sheathing, insulation and 12.7 mm gypsum board will provide satisfactory acoustic insulation to achieve indoor noise requirements.

Exterior wall type construction notes:

EW1 – Standard wall construction (noted above), with sheathing, wood or metal siding and fibre backer board.

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EW2 – Standard wall construction (noted above), with rigid insulation (25-30 mm), wood or metal siding, and fibre backer board.

EW3 – Standard wall construction (noted above), with sheathing, 28 x 89 mm framing, sheathing and asphalt roofing material.

EW4 – Standard wall construction (noted above), with sheathing and 20 mm stucco.

Minto's standard exterior wall construction is 38 x 148 mm complete with 140 mm fibre insulation, siding, 19 mm sheathing, 12.7 mm gypsum board, and occasionally brick veneer on the exterior lower level wall.

It should be noted that other types of window and wall construction could be chosen to achieve the same minimum noise mitigation. These details will be established during the detailed building component study in consultation with Minto.

Tables A2 and A3 from Canada Mortgage and Housing's (CMHC) publication, Airport Noise, revised 1981 were used to convert AIF values to the more widely recognized Sound Transmission Class (STC) values. Appendix 'G' presents these CMHC tables.

AIF and equivalent STC values are presented on Table 10 for the town unit bedroom with the highest AIF requirement. It is recommended that at the time of building permit application that the AIF/STC be confirmed to suit the specific unit proposed for the Block.

Table 10: AIF Value Conversion to STC Value

Type of Unit	AIF Required	Windows			Walls		
		Window/Floor Area Ratio	AIF Conversion Formula	STC	Wall/Floor Area Ratio	AIF Conversion Formula	STC
Avenue Towns	35	23%	STC	35	38%	STC – 3	38
Town Unit	34	27%	STC – 1	35	134%	STC – 9	43
Single	34	29%	STC – 1	35	144%	STC – 9	43

4.0 CONCLUSION AND RECOMMENDATIONS

Predicted noise levels are expected to exceed the City of Ottawa ENCG and MOE criteria for the proposed units adjacent to Kilbirnie Drive, Elevation Road, Cappamore Drive, and Barnsdale Road. To address these exceedances, Minto has revised the subdivision plan to reduce the reliance of noise barriers as the primary noise mitigation tool. Building orientation and increased separation to the transportation noise source have been used to reduce noise levels for residential

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units in close proximity to a significant transportation noise source. Noise barriers will still be required to protect outdoor living areas. However, the resulting noise levels are expected to be approximate to the criteria established by the City for each of the proposed residential blocks proposed. Preliminary calculations indicate that 2.2m and 2.5 m high noise barriers will satisfactorily mitigate noise levels for the outdoor living areas for each of the residential blocks.

It is recommended that the City of Ottawa accept the draft plan subdivision submitted and include a condition for the proponent to complete a Noise Control Detailed Study as per the City of Ottawa ENCG 2016 for Quinn's Pointe Stages 6, 7, and 8 development as well as a Detailed Building Components Study, where required, for building permits.

It is further recommended that the following be addressed as part of the Noise Control Detailed Study:

- Noise barrier details, such as height and location are to be identified for each:
 - 2.2 m High Barrier: Lots 1, 26, 27, 41, 55-57, 151-162, 196, 222, 234, 263, 269-272, 296, 431, 432 and Blocks 450, 460, 464, 468, 472, 476, 480, 490, 514;
 - 2.5 m High Barrier: Lots 323-334, 396, 448 and Block 532
- Noise levels should be assessed at the building façade of units nearest the transportation noise sources.

If it is determined that the noise level at the façade of a building exceeds 64.49 dBA, then the Acoustical Insulation Factor (AIF) method should be utilized to review building acoustic measures to be incorporated into the building construction. This method is described in the Ministry of the Environment of Ontario document, *Environmental Noise Assessment in Land Use Planning*, 1987 and 1999.

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Disclaimer

This report has been prepared by J.L. Richards & Associates Limited for Minto's exclusive use. Its discussions and conclusions are summary in nature and cannot properly be used, interpreted or extended to other purposes without a detailed understanding and discussions with the client as to its mandated purpose, scope and limitations. This report is based on information, drawings, data, or reports provided by the named client, its agents, and certain other suppliers or third parties, as applicable, and relies upon the accuracy and completeness of such information. Any inaccuracy or omissions in information provided, or changes to applications, designs, or materials may have a significant impact on the accuracy, reliability, findings, or conclusions of this report.

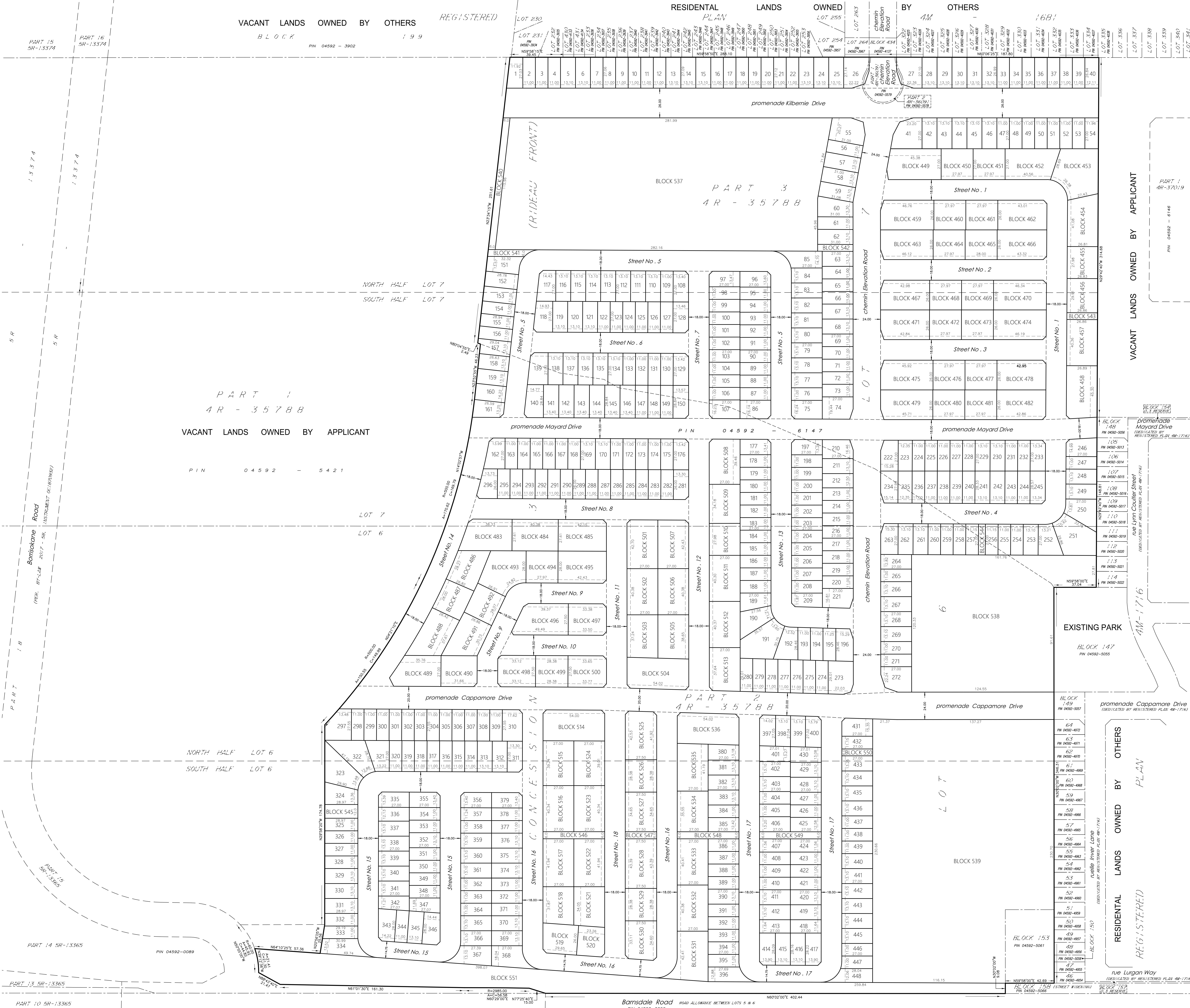
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NOISE CONTROL FEASIBILITY STUDY

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Appendix A

Concept Plan
Freefield Daytime Noise
Contours – N1



DRAFT PLAN OF SUBDIVISION
PART OF LOTS 6 AND 7
CONCESSION 3 (RIDEAU FRONT)
AND
BLOCK 153
REGISTERED PLAN 4M-1716
CITY OF OTTAWA
Scale 1:1000
Stantec Geomatics Ltd.
METRIC CONVERSION
DISTANCES AND COORDINATES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

ADDITIONAL INFORMATION REQUIRED UNDER SECTION 51 OF THE PLANNING ACT.
(A) AS SHOWN ON DRAFT PLAN
(B) AS SHOWN ON DRAFT PLAN
(C) AS SHOWN ON DRAFT AND KEY PLANS
(D) RESIDENTIAL
(E) AS SHOWN ON DRAFT PLAN
(F) AS SHOWN ON DRAFT PLAN
(G) AS SHOWN ON DRAFT PLAN
(H) CITY OF OTTAWA
(I) SEE COL REPORT
(J) AS SHOWN ON DRAFT PLAN
(K) ALL MUNICIPAL SERVICES ARE AVAILABLE
(L) AS SHOWN ON DRAFT PLAN

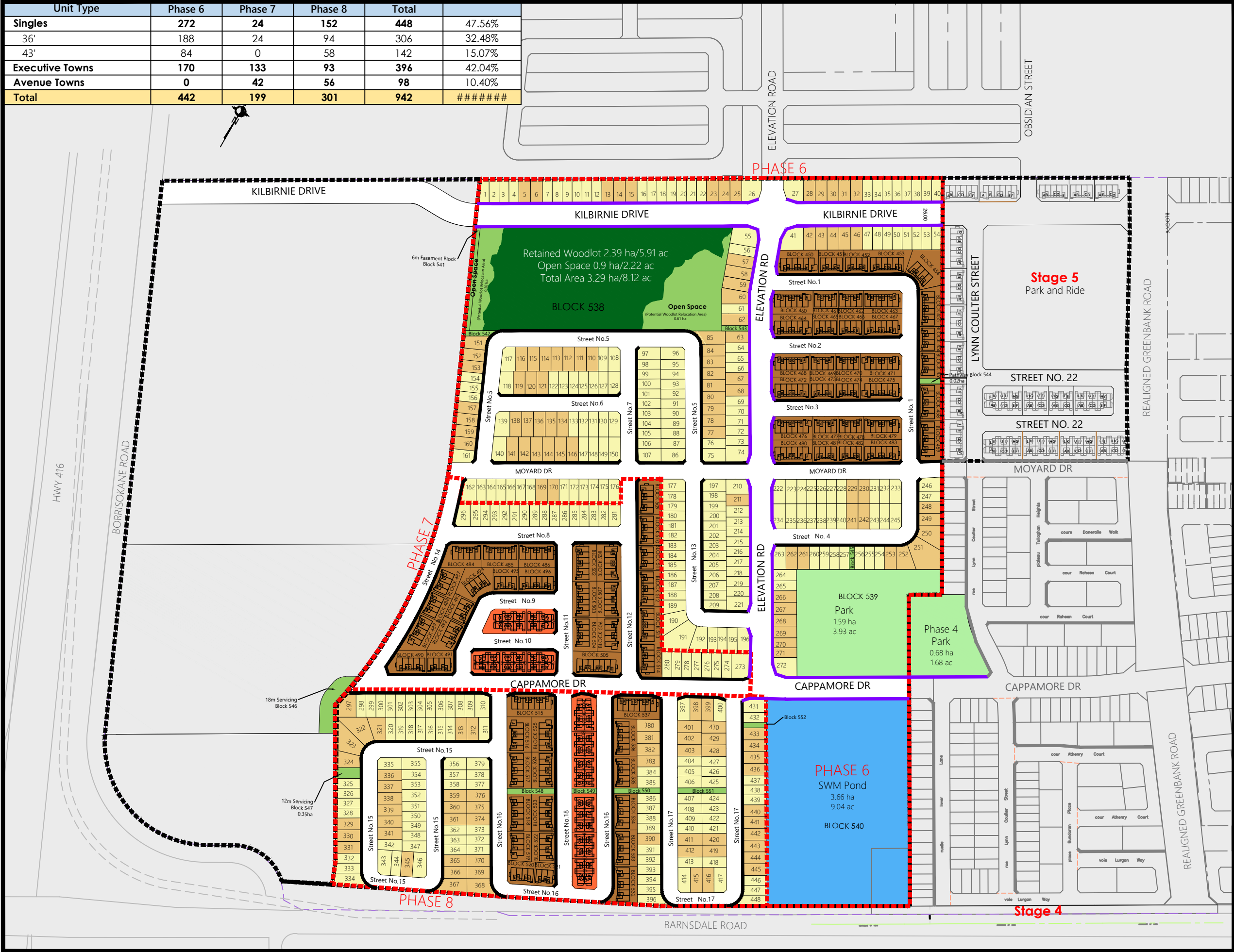
LAND USE
AREA OF SINGLE LOTS (488) = 15,347 Hectares (37.92 Acres)
AREA OF TOWN BLOCKS (88) = 8,861 Hectares (21.90 Acres)
AREA OF PARK BLOCKS (1) = 1,989 Hectares (4.96 Acres)
AREA OF WOODLOTS (3) = 3,241 Hectares (8.01 Acres)
AREA OF EASEMENT BLOCKS (2) = 0,154 Hectares (0.38 Acres)
AREA OF FOOD BLOCKS (1) = 3,699 Hectares (9.16 Acres)
AREA OF CUB BLOCKS (9) = 2,256 Hectares (5.61 Acres)
AREA OF WIDENING BLOCKS (1) = 1,262 Hectares (3.12 Acres)
TOTAL AREA OF SUBDIVISION = 47,304 Hectares (116.89 Acres)

OWNER'S CERTIFICATE
I HEREBY AUTHORIZE STANTEC GEOMATICS LTD. TO SUBMIT THE DRAFT PLAN OF SUBDIVISION ON MY BEHALF

SURVEYOR'S CERTIFICATE
I HEREBY CERTIFY THAT THE BOUNDARIES OF THE SUBJECT LANDS AND THEIR RELATIONSHIP TO ADJOINING LANDS HAVE BEEN ACCURATELY AND CORRECTLY SHOWN.

Stantec Geomatics Ltd.
CANADA LAND SURVEYORS
ONTARIO LAND SURVEYORS
181 CLOVER DRIVE, SUITE 200
OTTAWA, ONTARIO, K2C 3S4
TEL: 416-333-4545
stantec.com
DRAWN: ME CHECKED: J PNC: TL PROJECT NO.: 16161-095-131

Unit Type	Phase 6	Phase 7	Phase 8	Total	
Singles	272	24	152	448	47.56%
36'	188	24	94	306	32.48%
43'	84	0	58	142	15.07%
Executive Towns	170	133	93	396	42.04%
Avenue Towns	0	42	56	98	10.40%
Total	442	199	301	942	#####



Title:
Concept 54 - Rev 17

Project:
Quinn's Pointe Phases 6-8

- Legend**
- Site Boundary
 - Phase Line
 - 36' Singles
 - 43' Singles
 - Executive Towns
 - Avenue Towns (Back to Backs)
 - Rear Lane Towns
 - Condos
 - SWM Pond
 - Parkland
 - Open Space
 - Industrial
 - Woodlot
 - Sidewalks
 - Sidewalks & Cycle Tracks

***Notes:**

- All roads are 18m ROW unless indicated on the plan.
- All singles and executive towns a min. 26m in depth
- All avenues are 27.5m in depth
- The unit count for Metro Town Condos is estimated at a rate of 70 units per 1.00 ha.
- Stage 5 unit count is not included in the park dedication.

No.	Description	Date	By
17	Cappamore Drive Reduced	2026-06-08	E.H
16	Adjustment to Block 51 and 83	2026-06-03	E.H
15	Revised Concept Plan	2026-06-03	KG

Revisions



Drawn By: G.T
Checked By: C.S

Minto Communities Inc
180 Kent Street,
Ottawa, ON
K1P 0B6

North

Scale: NTS

Appendix B

City of Ottawa Surface
Transportation Sample
Warning Clauses

City of Ottawa Environmental Noise Control Guidelines Sample Warning Clauses

Generic

Purchasers/tenants are advised that sound levels due to increasing road/rail/Light Rail/transitway traffic may occasionally interfere with some outdoor activities as the sound levels may exceed the sound level limits of the City and the Ministry of the Environment.

To help address the need for sound attenuation this development has been designed so as to provide an outdoor amenity area that is within provincial guidelines. Measures for sound attenuation could include:

- A setback of buildings from the noise source and/or
- An acoustic barrier.

To ensure that provincial sound level limits are not exceeded it is important to maintain sound attenuation features.

The acoustic barrier shall be maintained and kept in good repair by the property owner. Any maintenance, repair or replacement is the responsibility of the owner and shall be with the same material or to the same standards, having the same colour, appearance and function of the original.

Additionally this development includes trees and shrubs to screen the source of noise from occupants.

Extensive mitigation of indoor and outdoor amenity area

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/rail/Light Rail/transitway traffic may, on occasion, interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the City and the Ministry of the Environment.

To help address the need for sound attenuation this development includes:

- multi-pane glass;
- double brick veneer;
- an earth berm; and
- an acoustic barrier.

To ensure that provincial sound level limits are not exceeded it is important to maintain these sound attenuation features.

The acoustic barrier shall be maintained and kept in good repair by the property owner. Any maintenance, repair or replacement is the responsibility of the owner and shall be with the same material or to the same standards, having the same colour, appearance and function of the original.

This dwelling unit has also been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City and the Ministry of the Environment. Additionally this development includes trees and shrubs to screen the source of noise from occupants.

No Outdoor amenity area

Purchasers/tenants are advised that sound levels due to increasing road/rail/Light Rail/transitway traffic will interfere with outdoor activities as the sound levels exceed the sound level limits of the City and the Ministry of the Environment.

To help address the need for sound attenuation this development includes:

- multi-pane glass;
- double brick veneer;
- high sound transmission class walls.

To ensure that provincial sound level limits are not exceeded it is important to maintain these sound attenuation features.

This dwelling unit has been supplied with a central air conditioning system and other measures 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 City and the Ministry of the Environment

NOISE CONTROL FEASIBILITY STUDY

Quinn's Pointe Stages 6, 7, 8

Appendix C

Transportation Noise
Source Predictions
- Detailed Predicted
Freefield Noise Level
Calculations (Individual
Noise Sources)

STAMSON 5.0 NORMAL REPORT Date: 18-06-2026 15:50:33
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2rau_50.te Time Period: Day/Night 16/8 hours
Description: 2RAU OLA Freefield 60 dBA

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

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: (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 : 69.23 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: (day)

Source height = 1.50 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	72.49	0.00	-11.03	-1.46	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

↑

Results segment # 1: (night)

Source height = 1.50 m

ROAD (0.00 + 63.59 + 0.00) = 63.59 dBA

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

-90	90	0.57	64.89	0.00	0.00	-1.30	0.00	0.00	0.00	63.59
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 63.59 dBA

Total Leq All Segments: 63.59 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

(NIGHT): 63.59

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 18-06-2026 15:51:28
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2rau_65.te Time Period: Day/Night 16/8 hours
Description: 2RAU OLA Freefield 65 dBA

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

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: (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 : 34.63 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: (day)

Source height = 1.50 m

ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	72.49	0.00	-6.03	-1.46	0.00	0.00	0.00	65.00

Segment Leq : 65.00 dBA

Total Leq All Segments: 65.00 dBA

↑

Results segment # 1: (night)

Source height = 1.50 m

ROAD (0.00 + 63.59 + 0.00) = 63.59 dBA

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

-90	90	0.57	64.89	0.00	0.00	-1.30	0.00	0.00	0.00	63.59
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 63.59 dBA

Total Leq All Segments: 63.59 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 65.00

(NIGHT): 63.59

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 18-06-2026 15:52:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2rau_70.te Time Period: Day/Night 16/8 hours
Description: 2RAU OLA Freefield 70 dBA

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

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: (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 : 17.31 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: (day)

Source height = 1.50 m

ROAD (0.00 + 70.00 + 0.00) = 70.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	72.49	0.00	-1.03	-1.46	0.00	0.00	0.00	70.00

Segment Leq : 70.00 dBA

Total Leq All Segments: 70.00 dBA

↑

Results segment # 1: (night)

Source height = 1.50 m

ROAD (0.00 + 63.59 + 0.00) = 63.59 dBA

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

-90	90	0.57	64.89	0.00	0.00	-1.30	0.00	0.00	0.00	63.59
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 63.59 dBA

Total Leq All Segments: 63.59 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 70.00

(NIGHT): 63.59

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 18-06-2026 15:49:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 2ucu_60.te Time Period: Day/Night 16/8 hours
Description: 2UCU OLA Freefield 60 dBA

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: (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 : 27.20 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: (day)

Source height = 1.50 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	65.75	0.00	-4.29	-1.46	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

↑

Results segment # 1: (night)

Source height = 1.50 m

ROAD (0.00 + 56.85 + 0.00) = 56.85 dBA

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

-90	90	0.57	58.16	0.00	0.00	-1.30	0.00	0.00	0.00	56.85
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 56.85 dBA

Total Leq All Segments: 56.85 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

(NIGHT): 56.85

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 16-06-2026 13:23:00
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 4uad_55.te Time Period: Day/Night 16/8 hours
Description: 4-UAD OLA Freefield 60 dBA

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 80 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: (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 : 115.41 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: (day)

Source height = 1.50 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	76.17	0.00	-14.71	-1.46	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

↑

Results segment # 1: (night)

Source height = 1.50 m

ROAD (0.00 + 67.27 + 0.00) = 67.27 dBA

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

-90	90	0.57	68.57	0.00	0.00	-1.30	0.00	0.00	0.00	67.27
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 67.27 dBA

Total Leq All Segments: 67.27 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

(NIGHT): 67.27

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 16-06-2026 13:23:46
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 4uad_65.te Time Period: Day/Night 16/8 hours
Description: 4-UAD OLA Freefield 65 dBA

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 80 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: (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 : 57.69 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: (day)

Source height = 1.50 m

ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	76.17	0.00	-9.71	-1.46	0.00	0.00	0.00	65.00

Segment Leq : 65.00 dBA

Total Leq All Segments: 65.00 dBA

↑

Results segment # 1: (night)

Source height = 1.50 m

ROAD (0.00 + 67.27 + 0.00) = 67.27 dBA

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

-90	90	0.57	68.57	0.00	0.00	-1.30	0.00	0.00	0.00	67.27
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 67.27 dBA

Total Leq All Segments: 67.27 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 65.00

(NIGHT): 67.27

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 16-06-2026 13:24:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 4uad_70.te Time Period: Day/Night 16/8 hours
Description: 4-UAD OLA Freefield 70 dBA

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 80 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: (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 : 28.82 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: (day)

Source height = 1.50 m

ROAD (0.00 + 70.00 + 0.00) = 70.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	76.17	0.00	-4.71	-1.46	0.00	0.00	0.00	70.00

Segment Leq : 70.00 dBA

Total Leq All Segments: 70.00 dBA

↑

Results segment # 1: (night)

Source height = 1.50 m

ROAD (0.00 + 67.27 + 0.00) = 67.27 dBA

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

-90	90	0.57	68.57	0.00	0.00	-1.30	0.00	0.00	0.00	67.27
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 67.27 dBA

Total Leq All Segments: 67.27 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 70.00

(NIGHT): 67.27

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 17-06-2026 13:11:19
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hwy_60.te Time Period: Day/Night 16/8 hours
Description: Freeway OLA Freefield 60 dBA

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

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 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): 73332
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: (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 : 238.55 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: (day)

Source height = 1.50 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	81.40	0.00	-19.94	-1.46	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

↑

Results segment # 1: (night)

Source height = 1.49 m

ROAD (0.00 + 72.50 + 0.00) = 72.50 dBA

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

-90	90	0.57	73.80	0.00	0.00	-1.30	0.00	0.00	0.00	72.50
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 72.50 dBA

Total Leq All Segments: 72.50 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

(NIGHT): 72.50

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 17-06-2026 13:11:57
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hwy_65.te Time Period: Day/Night 16/8 hours
Description: Freeway OLA Freefield 65 dBA

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

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 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): 73332
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: (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 : 119.20 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: (day)

Source height = 1.50 m

ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	81.40	0.00	-14.94	-1.46	0.00	0.00	0.00	65.00

Segment Leq : 65.00 dBA

Total Leq All Segments: 65.00 dBA

↑

Results segment # 1: (night)

Source height = 1.49 m

ROAD (0.00 + 72.50 + 0.00) = 72.50 dBA

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

-90	90	0.57	73.80	0.00	0.00	-1.30	0.00	0.00	0.00	72.50
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 72.50 dBA

Total Leq All Segments: 72.50 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 65.00

(NIGHT): 72.50

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 17-06-2026 13:12:30
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hwy_70.te Time Period: Day/Night 16/8 hours
Description: Freeway OLA Freefield 70 dBA

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

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 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): 73332
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: (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 : 59.52 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: (day)

Source height = 1.50 m

ROAD (0.00 + 70.00 + 0.00) = 70.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	81.40	0.00	-9.94	-1.46	0.00	0.00	0.00	70.00

Segment Leq : 70.00 dBA

Total Leq All Segments: 70.00 dBA

↑

Results segment # 1: (night)

Source height = 1.49 m

ROAD (0.00 + 72.50 + 0.00) = 72.50 dBA

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

-90	90	0.57	73.80	0.00	0.00	-1.30	0.00	0.00	0.00	72.50
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 72.50 dBA

Total Leq All Segments: 72.50 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 70.00

(NIGHT): 72.50

↑

↑

NOISE CONTROL FEASIBILITY STUDY

Quinn's Pointe Stages 6, 7, 8

Appendix D

Transportation Noise
Source Predictions
- Detailed Predicted
Freefield Noise Level
Calculations (Combined
Road Noise Sources)

STAMSON 5.0 NORMAL REPORT Date: 18-06-2026 15:31:45
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hwrau60.te Time Period: Day/Night 16/8 hours
Description: 2RAU & HWY OLA Freefield Composite 60 dBA

Road data, segment # 1: 2RAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: 2RAU (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 : 69.23 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Road data, segment # 2: HWY (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 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): 73332
Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 7.00
 Heavy Truck % of Total Volume : 5.00
 Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: HWY (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 : 500.00 / 15.00 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑

Results segment # 1: 2RAU (day)

Source height = 1.50 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	72.49	0.00	-11.03	-1.46	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

↑

Results segment # 2: HWY (day)

Source height = 1.50 m

ROAD (0.00 + 54.66 + 0.00) = 54.66 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	81.40	0.00	-25.28	-1.46	0.00	0.00	0.00	54.66

Segment Leq : 54.66 dBA

Total Leq All Segments: 61.11 dBA

↑

Results segment # 1: 2RAU (night)

Source height = 1.50 m

ROAD (0.00 + 63.59 + 0.00) = 63.59 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.89	0.00	0.00	-1.30	0.00	0.00	0.00	63.59

Segment Leq : 63.59 dBA

↑

Results segment # 2: HWY (night)

Source height = 1.49 m

ROAD (0.00 + 72.50 + 0.00) = 72.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	73.80	0.00	0.00	-1.30	0.00	0.00	0.00	72.50

Segment Leq : 72.50 dBA

Total Leq All Segments: 73.03 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 61.11
(NIGHT): 73.03

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 18-06-2026 15:32:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hwrau60b.te Time Period: Day/Night 16/8 hours
Description: 2RAU & HWY OLA Freefield Composite 60 dBA

Road data, segment # 1: 2RAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: 2RAU (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 : 225.00 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Road data, segment # 2: HWY (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 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): 73332
Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 7.00
 Heavy Truck % of Total Volume : 5.00
 Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: HWY (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 : 238.55 / 15.00 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑

Results segment # 1: 2RAU (day)

Source height = 1.50 m

ROAD (0.00 + 51.51 + 0.00) = 51.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	72.49	0.00	-19.52	-1.46	0.00	0.00	0.00	51.51

Segment Leq : 51.51 dBA

↑

Results segment # 2: HWY (day)

Source height = 1.50 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	81.40	0.00	-19.94	-1.46	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.58 dBA

↑

Results segment # 1: 2RAU (night)

Source height = 1.50 m

ROAD (0.00 + 63.59 + 0.00) = 63.59 dBA

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

-90	90	0.57	64.89	0.00	0.00	-1.30	0.00	0.00	0.00	63.59
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 63.59 dBA

↑

Results segment # 2: HWY (night)

Source height = 1.49 m

ROAD (0.00 + 72.50 + 0.00) = 72.50 dBA

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

-90	90	0.57	73.80	0.00	0.00	-1.30	0.00	0.00	0.00	72.50
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 72.50 dBA

Total Leq All Segments: 73.03 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 60.58

(NIGHT): 73.03

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 18-06-2026 15:33:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hwrau65.te Time Period: Day/Night 16/8 hours
Description: 2RAU & HWY OLA Freefield Composite 65 dBA

Road data, segment # 1: 2RAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: 2RAU (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 : 34.63 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Road data, segment # 2: HWY (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 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): 73332
Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 7.00
 Heavy Truck % of Total Volume : 5.00
 Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: HWY (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 : 450.00 / 15.00 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑

Results segment # 1: 2RAU (day)

Source height = 1.50 m

ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	72.49	0.00	-6.03	-1.46	0.00	0.00	0.00	65.00

Segment Leq : 65.00 dBA

↑

Results segment # 2: HWY (day)

Source height = 1.50 m

ROAD (0.00 + 55.42 + 0.00) = 55.42 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	81.40	0.00	-24.52	-1.46	0.00	0.00	0.00	55.42

Segment Leq : 55.42 dBA

Total Leq All Segments: 65.45 dBA

↑

Results segment # 1: 2RAU (night)

Source height = 1.50 m

ROAD (0.00 + 63.59 + 0.00) = 63.59 dBA

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

-90	90	0.57	64.89	0.00	0.00	-1.30	0.00	0.00	0.00	63.59
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 63.59 dBA

↑

Results segment # 2: HWY (night)

Source height = 1.49 m

ROAD (0.00 + 72.50 + 0.00) = 72.50 dBA

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

-90	90	0.57	73.80	0.00	0.00	-1.30	0.00	0.00	0.00	72.50
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 72.50 dBA

Total Leq All Segments: 73.03 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 65.45

(NIGHT): 73.03

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 18-06-2026 15:35:24
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hwrau65b.te Time Period: Day/Night 16/8 hours
Description: 2RAU & HWY OLA Freefield Composite 65 dBA

Road data, segment # 1: 2RAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: 2RAU (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 : 200.00 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Road data, segment # 2: HWY (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 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): 73332
Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 7.00
 Heavy Truck % of Total Volume : 5.00
 Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: HWY (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 : 119.20 / 15.00 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑

Results segment # 1: 2RAU (day)

Source height = 1.50 m

ROAD (0.00 + 52.36 + 0.00) = 52.36 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	72.49	0.00	-18.67	-1.46	0.00	0.00	0.00	52.36

Segment Leq : 52.36 dBA

↑

Results segment # 2: HWY (day)

Source height = 1.50 m

ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	81.40	0.00	-14.94	-1.46	0.00	0.00	0.00	65.00

Segment Leq : 65.00 dBA

Total Leq All Segments: 65.23 dBA

↑

Results segment # 1: 2RAU (night)

Source height = 1.50 m

ROAD (0.00 + 63.59 + 0.00) = 63.59 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.89	0.00	0.00	-1.30	0.00	0.00	0.00	63.59

Segment Leq : 63.59 dBA

↑

Results segment # 2: HWY (night)

Source height = 1.49 m

ROAD (0.00 + 72.50 + 0.00) = 72.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	73.80	0.00	0.00	-1.30	0.00	0.00	0.00	72.50

Segment Leq : 72.50 dBA

Total Leq All Segments: 73.03 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 65.23
(NIGHT): 73.03

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 18-06-2026 15:22:31
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hwrau70.te Time Period: Day/Night 16/8 hours
Description: 2RAU & HWY OLA Freefield Composite 70 dBA

Road data, segment # 1: 2RAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: 2RAU (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 : 17.31 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Road data, segment # 2: HWY (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 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): 73332
Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 7.00
 Heavy Truck % of Total Volume : 5.00
 Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: HWY (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 : 300.00 / 15.00 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑

Results segment # 1: 2RAU (day)

Source height = 1.50 m

ROAD (0.00 + 70.00 + 0.00) = 70.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	72.49	0.00	-1.03	-1.46	0.00	0.00	0.00	70.00

Segment Leq : 70.00 dBA

↑

Results segment # 2: HWY (day)

Source height = 1.50 m

ROAD (0.00 + 58.34 + 0.00) = 58.34 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	81.40	0.00	-21.60	-1.46	0.00	0.00	0.00	58.34

Segment Leq : 58.34 dBA

Total Leq All Segments: 70.29 dBA

↑

Results segment # 1: 2RAU (night)

Source height = 1.50 m

ROAD (0.00 + 63.59 + 0.00) = 63.59 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.89	0.00	0.00	-1.30	0.00	0.00	0.00	63.59

Segment Leq : 63.59 dBA

↑

Results segment # 2: HWY (night)

Source height = 1.49 m

ROAD (0.00 + 72.50 + 0.00) = 72.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	73.80	0.00	0.00	-1.30	0.00	0.00	0.00	72.50

Segment Leq : 72.50 dBA

Total Leq All Segments: 73.03 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 70.29
(NIGHT): 73.03

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 18-06-2026 15:22:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hwrau70b.te Time Period: Day/Night 16/8 hours
Description: 2RAU & HWY OLA Freefield Composite 70 dBA

Road data, segment # 1: 2RAU (day/night)

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: 2RAU (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 : 100.00 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Road data, segment # 2: HWY (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 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): 73332
Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 7.00
 Heavy Truck % of Total Volume : 5.00
 Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: HWY (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 : 59.52 / 15.00 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑

Results segment # 1: 2RAU (day)

Source height = 1.50 m

ROAD (0.00 + 57.35 + 0.00) = 57.35 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	72.49	0.00	-13.68	-1.46	0.00	0.00	0.00	57.35

Segment Leq : 57.35 dBA

↑

Results segment # 2: HWY (day)

Source height = 1.50 m

ROAD (0.00 + 70.00 + 0.00) = 70.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	81.40	0.00	-9.94	-1.46	0.00	0.00	0.00	70.00

Segment Leq : 70.00 dBA

Total Leq All Segments: 70.23 dBA

↑

Results segment # 1: 2RAU (night)

Source height = 1.50 m

ROAD (0.00 + 63.59 + 0.00) = 63.59 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.89	0.00	0.00	-1.30	0.00	0.00	0.00	63.59

Segment Leq : 63.59 dBA

↑

Results segment # 2: HWY (night)

Source height = 1.49 m

ROAD (0.00 + 72.50 + 0.00) = 72.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	73.80	0.00	0.00	-1.30	0.00	0.00	0.00	72.50

Segment Leq : 72.50 dBA

Total Leq All Segments: 73.03 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 70.23
(NIGHT): 73.03

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 18-06-2026 15:36:32
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hwucu60.te Time Period: Day/Night 16/8 hours
Description: 2UCU & HWY OLA Freefield Composite 60 dBA

Road data, segment # 1: 2-UCU (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: 2-UCU (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 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Road data, segment # 2: HWY (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 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): 73332
Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 7.00
 Heavy Truck % of Total Volume : 5.00
 Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: HWY (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 : 238.55 / 15.00 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑

Results segment # 1: 2-UCU (day)

Source height = 1.50 m

ROAD (0.00 + 58.83 + 0.00) = 58.83 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.75	0.00	-5.46	-1.46	0.00	0.00	0.00	58.83

Segment Leq : 58.83 dBA

↑

Results segment # 2: HWY (day)

Source height = 1.50 m

ROAD (0.00 + 53.97 + 0.00) = 53.97 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	75.37	0.00	-19.94	-1.46	0.00	0.00	0.00	53.97

Segment Leq : 53.97 dBA

Total Leq All Segments: 60.06 dBA

↑

Results segment # 1: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 56.85 + 0.00) = 56.85 dBA

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

-90	90	0.57	58.16	0.00	0.00	-1.30	0.00	0.00	0.00	56.85
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 56.85 dBA

↑

Results segment # 2: HWY (night)

Source height = 1.49 m

ROAD (0.00 + 66.47 + 0.00) = 66.47 dBA

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

-90	90	0.57	67.77	0.00	0.00	-1.30	0.00	0.00	0.00	66.47
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 66.47 dBA

Total Leq All Segments: 66.92 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 60.06

(NIGHT): 66.92

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 18-06-2026 15:37:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: hwucu60b.te Time Period: Day/Night 16/8 hours
Description: 2UCU & HWY OLA Freefield Composite 60 dBA

Road data, segment # 1: 2-UCU (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: 2-UCU (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 : 27.20 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Road data, segment # 2: HWY (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 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): 73332
Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 7.00
 Heavy Truck % of Total Volume : 5.00
 Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: HWY (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 : 500.00 / 15.00 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑

Results segment # 1: 2-UCU (day)

Source height = 1.50 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	65.75	0.00	-4.29	-1.46	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

↑

Results segment # 2: HWY (day)

Source height = 1.50 m

ROAD (0.00 + 48.64 + 0.00) = 48.64 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	75.37	0.00	-25.28	-1.46	0.00	0.00	0.00	48.64

Segment Leq : 48.64 dBA

Total Leq All Segments: 60.31 dBA

↑

Results segment # 1: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 56.85 + 0.00) = 56.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	58.16	0.00	0.00	-1.30	0.00	0.00	0.00	56.85

Segment Leq : 56.85 dBA

↑

Results segment # 2: HWY (night)

Source height = 1.49 m

ROAD (0.00 + 66.47 + 0.00) = 66.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	67.77	0.00	0.00	-1.30	0.00	0.00	0.00	66.47

Segment Leq : 66.47 dBA

Total Leq All Segments: 66.92 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 60.31
(NIGHT): 66.92

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 18-06-2026 15:37:49
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ucucu60.te Time Period: Day/Night 16/8 hours
Description: 2UCU & 2UCU OLA Freefield Composite 60 dBA

Road data, segment # 1: 2-UCU (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: 2-UCU (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 : 27.20 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Road data, segment # 2: 2-ucu (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 7.00
 Heavy Truck % of Total Volume : 5.00
 Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: 2-ucu (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 : 75.00 / 15.00 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑

Results segment # 1: 2-UCU (day)

 Source height = 1.50 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	65.75	0.00	-4.29	-1.46	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

↑

Results segment # 2: 2-ucu (day)

 Source height = 1.50 m

ROAD (0.00 + 52.69 + 0.00) = 52.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.75	0.00	-11.60	-1.46	0.00	0.00	0.00	52.69

Segment Leq : 52.69 dBA

Total Leq All Segments: 60.74 dBA

↑

Results segment # 1: 2-UCU (night)

Source height = 1.50 m

ROAD (0.00 + 56.85 + 0.00) = 56.85 dBA

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

-90	90	0.57	58.16	0.00	0.00	-1.30	0.00	0.00	0.00	56.85
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 56.85 dBA

↑

Results segment # 2: 2-ucu (night)

Source height = 1.50 m

ROAD (0.00 + 56.85 + 0.00) = 56.85 dBA

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

-90	90	0.57	58.16	0.00	0.00	-1.30	0.00	0.00	0.00	56.85
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 56.85 dBA

Total Leq All Segments: 59.86 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 60.74

(NIGHT): 59.86

↑

↑

NOISE CONTROL FEASIBILITY STUDY

Quinn's Pointe Stages 6, 7, 8

Appendix E

Transportation Noise Source
Predictions

- Detailed Predicted Mitigated
Noise Level Calculations

STAMSON 5.0 NORMAL REPORT Date: 23-06-2026 08:28:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R1_2_2.te Time Period: Day/Night 16/8 hours
Description: R1 Barnsdale RD 2.2m noise fence

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

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Barnsdale (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 : 26.30 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.20 m
Barrier receiver distance : 6.00 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Results segment # 1: Barnsdale (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source	!	Receiver	!	Barrier	!	Elevation of
Height (m)	!	Height (m)	!	Height (m)	!	Barrier Top (m)
-----+-----+-----+-----						
1.50	!	1.50	!	1.15	!	1.50

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	0.53	72.49	0.00	-3.73	-1.23	0.00	0.00	-7.74	59.79

Segment Leq : 59.79 dBA

Total Leq All Segments: 59.79 dBA

↑
Results segment # 1: Barnsdale (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source	!	Receiver	!	Barrier	!	Elevation of
Height (m)	!	Height (m)	!	Height (m)	!	Barrier Top (m)
-----+-----+-----+-----						
1.50	!	4.50	!	2.15	!	2.50

ROAD (0.00 + 58.82 + 0.00) = 58.82 dBA

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

-90	90	0.44	64.89	0.00	0.00	-1.06	0.00	0.00	-5.01	58.82

Segment Leq : 58.82 dBA

Total Leq All Segments: 58.82 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 59.79
(NIGHT): 58.82

↑
↑

STAMSON 5.0 NORMAL REPORT Date: 23-06-2026 08:29:31
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R1_2_5.te Time Period: Day/Night 16/8 hours
Description: R1 Barnsdale RD 2.5m noise fence

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

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Barnsdale (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 : 26.30 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.50 m
Barrier receiver distance : 6.00 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Results segment # 1: Barnsdale (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source	!	Receiver	!	Barrier	!	Elevation of
Height (m)	!	Height (m)	!	Height (m)	!	Barrier Top (m)
-----+-----+-----+-----						
1.50	!	1.50	!	1.15	!	1.50

ROAD (0.00 + 58.78 + 0.00) = 58.78 dBA

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

-90	90	0.51	72.49	0.00	-3.68	-1.19	0.00	0.00	-8.83	58.78

Segment Leq : 58.78 dBA

Total Leq All Segments: 58.78 dBA

↑
Results segment # 1: Barnsdale (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source	!	Receiver	!	Barrier	!	Elevation of
Height (m)	!	Height (m)	!	Height (m)	!	Barrier Top (m)
-----+-----+-----+-----						
1.50	!	4.50	!	2.15	!	2.50

ROAD (0.00 + 58.32 + 0.00) = 58.32 dBA

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

-90	90	0.42	64.89	0.00	0.00	-1.02	0.00	0.00	-5.55	58.32

Segment Leq : 58.32 dBA

Total Leq All Segments: 58.32 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 58.78
(NIGHT): 58.32

↑
↑

STAMSON 5.0 NORMAL REPORT Date: 23-06-2026 08:25:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R1_ff.te Time Period: Day/Night 16/8 hours
Description: R1 Barnsdale RD. freefield

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

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Barnsdale (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 : 26.30 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Results segment # 1: Barnsdale (day)

Source height = 1.50 m

ROAD (0.00 + 66.98 + 0.00) = 66.98 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	72.49	0.00	-4.05	-1.46	0.00	0.00	0.00	66.98

Segment Leq : 66.98 dBA

Total Leq All Segments: 66.98 dBA

↑

Results segment # 1: Barnsdale (night)

Source height = 1.50 m

ROAD (0.00 + 63.59 + 0.00) = 63.59 dBA

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

-90	90	0.57	64.89	0.00	0.00	-1.30	0.00	0.00	0.00	63.59
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 63.59 dBA

Total Leq All Segments: 63.59 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 66.98

(NIGHT): 63.59

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 23-06-2026 09:05:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R2_2_2.te Time Period: Day/Night 16/8 hours
Description: R2 Barnsdale & HWY 416 2.2m noise fence

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

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Barnsdale (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 : 47.50 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.20 m
Barrier receiver distance : 7.00 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Road data, segment # 2: HWY416 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 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): 73332
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: HWY416 (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 : 356.60 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.20 m
Barrier receiver distance : 8.00 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Results segment # 1: Barnsdale (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	Barrier Top (m)
1.50 !	1.50 !	1.15 !	1.50

ROAD (0.00 + 56.33 + 0.00) = 56.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.53	72.49	0.00	-7.65	-1.23	0.00	0.00	-7.28	56.33

Segment Leq : 56.33 dBA

↑

Results segment # 2: HWY416 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.15	1.50

ROAD (0.00 + 52.29 + 0.00) = 52.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.53	81.40	0.00	-21.03	-1.23	0.00	0.00	-6.85	52.29

Segment Leq : 52.29 dBA

Total Leq All Segments: 57.77 dBA



Results segment # 1: Barnsdale (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	2.15	2.50

ROAD (0.00 + 58.82 + 0.00) = 58.82 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.44	64.89	0.00	0.00	-1.06	0.00	0.00	-5.01	58.82

Segment Leq : 58.82 dBA



Results segment # 2: HWY416 (night)

Source height = 1.49 m

Barrier height for grazing incidence

```

-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.49 !          4.50 !          2.15 !          2.50

```

ROAD (0.00 + 67.73 + 0.00) = 67.73 dBA

```

Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----
  -90    90    0.44  73.80   0.00   0.00  -1.06   0.00   0.00  -5.01  67.73
-----

```

Segment Leq : 67.73 dBA

Total Leq All Segments: 68.26 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 57.77
(NIGHT): 68.26

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 23-06-2026 09:06:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R2_2_5.te Time Period: Day/Night 16/8 hours
Description: R2 Barnsdale & HWY 416 2.5m noise fence

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

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Barnsdale (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 : 47.50 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.50 m
Barrier receiver distance : 7.00 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Road data, segment # 2: HWY416 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 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): 73332
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: HWY416 (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 : 356.60 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.50 m
Barrier receiver distance : 8.00 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Results segment # 1: Barnsdale (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	Barrier Top (m)
1.50 !	1.50 !	1.15 !	1.50

ROAD (0.00 + 55.48 + 0.00) = 55.48 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	72.49	0.00	-7.56	-1.19	0.00	0.00	-8.25	55.48

Segment Leq : 55.48 dBA

↑

Results segment # 2: HWY416 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.15	1.50

ROAD (0.00 + 51.72 + 0.00) = 51.72 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	81.40	0.00	-20.78	-1.19	0.00	0.00	-7.70	51.72

Segment Leq : 51.72 dBA

Total Leq All Segments: 57.01 dBA

↑
Results segment # 1: Barnsdale (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	2.15	2.50

ROAD (0.00 + 58.32 + 0.00) = 58.32 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.42	64.89	0.00	0.00	-1.02	0.00	0.00	-5.55	58.32

Segment Leq : 58.32 dBA

↑
Results segment # 2: HWY416 (night)

Source height = 1.49 m

Barrier height for grazing incidence

```

-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.49 !          4.50 !          2.15 !          2.50

```

ROAD (0.00 + 67.23 + 0.00) = 67.23 dBA

```

Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----
  -90    90    0.42  73.80   0.00   0.00  -1.02   0.00   0.00  -5.55  67.23
-----

```

Segment Leq : 67.23 dBA

Total Leq All Segments: 67.76 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 57.01
(NIGHT): 67.76

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 23-06-2026 08:50:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R2_ff.te Time Period: Day/Night 16/8 hours
Description: R2 Barnsdale & HWY 416 freefield

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

Car traffic volume : 12144/1056 veh/TimePeriod *
Medium truck volume : 966/84 veh/TimePeriod *
Heavy truck volume : 690/60 veh/TimePeriod *
Posted speed limit : 80 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): 15000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Barnsdale (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 : 47.50 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Road data, segment # 2: HWY416 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 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): 73332
Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 7.00
 Heavy Truck % of Total Volume : 5.00
 Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: HWY416 (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 : 356.60 / 15.00 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑

Results segment # 1: Barnsdale (day)

Source height = 1.50 m

ROAD (0.00 + 62.72 + 0.00) = 62.72 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	72.49	0.00	-8.31	-1.46	0.00	0.00	0.00	62.72

Segment Leq : 62.72 dBA

↑

Results segment # 2: HWY416 (day)

Source height = 1.50 m

ROAD (0.00 + 57.10 + 0.00) = 57.10 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	81.40	0.00	-22.84	-1.46	0.00	0.00	0.00	57.10

Segment Leq : 57.10 dBA

Total Leq All Segments: 63.77 dBA

↑

Results segment # 1: Barnsdale (night)

Source height = 1.50 m

ROAD (0.00 + 63.59 + 0.00) = 63.59 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	64.89	0.00	0.00	-1.30	0.00	0.00	0.00	63.59

Segment Leq : 63.59 dBA

↑
Results segment # 2: HWY416 (night)

Source height = 1.49 m

ROAD (0.00 + 72.50 + 0.00) = 72.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	73.80	0.00	0.00	-1.30	0.00	0.00	0.00	72.50

Segment Leq : 72.50 dBA

Total Leq All Segments: 73.03 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 63.77
(NIGHT): 73.03

↑
↑

STAMSON 5.0 NORMAL REPORT Date: 25-06-2026 14:30:30
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3_2_2.te Time Period: Day/Night 16/8 hours
Description: R3 kilbirnie, 416, borrisokane 2.2m noise fence

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Kilbirnie (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 : 141.30 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.20 m
Barrier receiver distance : 6.90 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Road data, segment # 2: HWY416 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 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): 73332
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: HWY416 (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 : 440.80 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.20 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Road data, segment # 3: Borrisokane (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 3: Borrisokane (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 : 342.30 / 15.00 m
 Receiver height : 1.50 / 4.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
 Barrier height : 2.20 m
 Barrier receiver distance : 10.00 / 10.00 m
 Source elevation : 0.00 m
 Receiver elevation : 0.00 m
 Barrier elevation : 0.35 m
 Reference angle : 0.00

↑

Results segment # 1: Kilbirnie (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.15	1.50

ROAD (0.00 + 42.52 + 0.00) = 42.52 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.53	65.75	0.00	-14.88	-1.23	0.00	0.00	-7.12	42.52

Segment Leq : 42.52 dBA

↑

Results segment # 2: HWY416 (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.15	1.50

ROAD (0.00 + 51.19 + 0.00) = 51.19 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.53	65.75	0.00	-14.88	-1.23	0.00	0.00	-7.12	42.52

-90	90	0.53	81.40	0.00	-22.44	-1.23	0.00	0.00	-6.55	51.19
-----	----	------	-------	------	--------	-------	------	------	-------	-------

Segment Leq : 51.19 dBA

↑
Results segment # 3: Borrisokane (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	! Receiver ! Height (m)	! Barrier ! Height (m)	! Elevation of ! Barrier Top (m)
1.50	!	1.50	!
		1.15	!
			1.50

ROAD (0.00 + 37.21 + 0.00) = 37.21 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.53	65.75	0.00	-20.76	-1.23	0.00	0.00	-6.56	37.21

Segment Leq : 37.21 dBA

Total Leq All Segments: 51.89 dBA

↑
Results segment # 1: Kilbirnie (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	! Receiver ! Height (m)	! Barrier ! Height (m)	! Elevation of ! Barrier Top (m)
1.50	!	4.50	!
		2.15	!
			2.50

ROAD (0.00 + 52.09 + 0.00) = 52.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.44	58.16	0.00	0.00	-1.06	0.00	0.00	-5.01	52.09

Segment Leq : 52.09 dBA

↑

Results segment # 2: HWY416 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source	!	Receiver	!	Barrier	!	Elevation of
Height (m)	!	Height (m)	!	Height (m)	!	Barrier Top (m)
-----	+	-----	+	-----	+	-----
1.49	!	4.50	!	2.15	!	2.50

ROAD (0.00 + 67.73 + 0.00) = 67.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-90	90	0.44	73.80	0.00	0.00	-1.06	0.00	0.00	-5.01	67.73
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Segment Leq : 67.73 dBA

↑

Results segment # 3: Borrisokane (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source	!	Receiver	!	Barrier	!	Elevation of
Height (m)	!	Height (m)	!	Height (m)	!	Barrier Top (m)
-----	+	-----	+	-----	+	-----
1.50	!	4.50	!	2.15	!	2.50

ROAD (0.00 + 52.09 + 0.00) = 52.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-90	90	0.44	58.16	0.00	0.00	-1.06	0.00	0.00	-5.01	52.09
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

Segment Leq : 52.09 dBA

Total Leq All Segments: 67.96 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 51.89
(NIGHT): 67.96



STAMSON 5.0 NORMAL REPORT Date: 25-06-2026 14:32:28
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3_2_5.te Time Period: Day/Night 16/8 hours
Description: R3 kilbirnie, 416, borrisokane 2.5m noise fence

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Kilbirnie (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 : 141.30 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.50 m
Barrier receiver distance : 6.90 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Road data, segment # 2: HWY416 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 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): 73332
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: HWY416 (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 : 440.80 / 440.80 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.50 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Road data, segment # 3: Borrisokane (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 3: Borrisokane (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg

Results segment # 1: Kilbirnie (day)

Barrier height for grazing incidence

ROAD (0.00 + 41.80 + 0.00) = 41.80 dBA										
Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	65.75	0.00	-14.71	-1.19	0.00	0.00	-8.05	41.80

Results segment # 2: HWY416 (day)

Barrier height for grazing incidence

ROAD (0.00 + 50.74 + 0.00) = 50.74 dBA

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

-90	90	0.51	81.40	0.00	-22.17	-1.19	0.00	0.00	-7.30	50.74
-----	----	------	-------	------	--------	-------	------	------	-------	-------

Segment Leq : 50.74 dBA

↑
Results segment # 3: Borrisokane (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	! Receiver ! Height (m)	! Barrier ! Height (m)	! Elevation of ! Barrier Top (m)
1.50	!	1.50	!
		1.15	!
			1.50

ROAD (0.00 + 36.15 + 0.00) = 36.15 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	65.75	0.00	-21.10	-1.19	0.00	0.00	-7.30	36.15

Segment Leq : 36.15 dBA

Total Leq All Segments: 51.39 dBA

↑
Results segment # 1: Kilbirnie (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	! Receiver ! Height (m)	! Barrier ! Height (m)	! Elevation of ! Barrier Top (m)
1.50	!	4.50	!
		2.15	!
			2.50

ROAD (0.00 + 51.59 + 0.00) = 51.59 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.42	58.16	0.00	0.00	-1.02	0.00	0.00	-5.55	51.59

Segment Leq : 51.59 dBA



Results segment # 2: HWY416 (night)

Source height = 1.49 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.49	!	4.50	!
		4.08	!
			4.43

ROAD (0.00 + 49.44 + 0.00) = 49.44 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.42	73.80	0.00	-20.85	-1.02	0.00	0.00	-0.71	51.21*
-90	90	0.57	73.80	0.00	-23.05	-1.30	0.00	0.00	0.00	49.44

* Bright Zone !

Segment Leq : 49.44 dBA



Results segment # 3: Borrisokane (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	! Receiver Height (m)	! Barrier Height (m)	! Elevation of Barrier Top (m)
1.50	!	4.50	!
		2.15	!
			2.50

ROAD (0.00 + 51.59 + 0.00) = 51.59 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.42	58.16	0.00	0.00	-1.02	0.00	0.00	-5.55	51.59

Segment Leq : 51.59 dBA

Total Leq All Segments: 55.76 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 51.39
(NIGHT): 55.76



STAMSON 5.0 NORMAL REPORT Date: 25-06-2026 14:26:44
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3_ff.te Time Period: Day/Night 16/8 hours
Description: R3 kilbirnie, 416, borrisokane freefield

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Kilbirnie (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 : 141.30 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Road data, segment # 2: HWY416 (day/night)

Car traffic volume : 59370/5163 veh/TimePeriod *
Medium truck volume : 4723/411 veh/TimePeriod *
Heavy truck volume : 3373/293 veh/TimePeriod *
Posted speed limit : 100 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): 73332
Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 7.00
 Heavy Truck % of Total Volume : 5.00
 Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: HWY416 (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 : 440.80 / 15.00 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑

Road data, segment # 3: Borrisokane (day/night)

 Car traffic volume : 6477/563 veh/TimePeriod *
 Medium truck volume : 515/45 veh/TimePeriod *
 Heavy truck volume : 368/32 veh/TimePeriod *
 Posted speed limit : 50 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): 8000
 Percentage of Annual Growth : 0.00
 Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 7.00
 Heavy Truck % of Total Volume : 5.00
 Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 3: Borrisokane (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 : 374.30 / 15.00 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑

Results segment # 1: Kilbirnie (day)

Source height = 1.50 m

ROAD (0.00 + 48.12 + 0.00) = 48.12 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.75	0.00	-16.17	-1.46	0.00	0.00	0.00	48.12

Segment Leq : 48.12 dBA

↑

Results segment # 2: HWY416 (day)

Source height = 1.50 m

ROAD (0.00 + 55.57 + 0.00) = 55.57 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	81.40	0.00	-24.37	-1.46	0.00	0.00	0.00	55.57

Segment Leq : 55.57 dBA

↑

Results segment # 3: Borrisokane (day)

Source height = 1.50 m

ROAD (0.00 + 41.10 + 0.00) = 41.10 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.75	0.00	-23.19	-1.46	0.00	0.00	0.00	41.10

Segment Leq : 41.10 dBA

Total Leq All Segments: 56.42 dBA

↑

Results segment # 1: Kilbirnie (night)

Source height = 1.50 m

ROAD (0.00 + 56.85 + 0.00) = 56.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	58.16	0.00	0.00	-1.30	0.00	0.00	0.00	56.85

Segment Leq : 56.85 dBA

↑
Results segment # 2: HWY416 (night)

Source height = 1.49 m

ROAD (0.00 + 72.50 + 0.00) = 72.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	73.80	0.00	0.00	-1.30	0.00	0.00	0.00	72.50

Segment Leq : 72.50 dBA

↑
Results segment # 3: Borrisokane (night)

Source height = 1.50 m

ROAD (0.00 + 56.85 + 0.00) = 56.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	58.16	0.00	0.00	-1.30	0.00	0.00	0.00	56.85

Segment Leq : 56.85 dBA

Total Leq All Segments: 72.73 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 56.42
 (NIGHT): 72.73

↑
↑

STAMSON 5.0 NORMAL REPORT Date: 23-06-2026 09:57:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R4_2_2.te Time Period: Day/Night 16/8 hours
Description: R4 Elevation Rd 2.2m noise fence

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Elevation (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 : 19.70 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.20 m
Barrier receiver distance : 7.50 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Results segment # 1: Elevation (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source	!	Receiver	!	Barrier	!	Elevation of
Height (m)	!	Height (m)	!	Height (m)	!	Barrier Top (m)
-----+-----+-----+-----						
1.50	!	1.50	!	1.15	!	1.50

ROAD (0.00 + 54.97 + 0.00) = 54.97 dBA

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

-90	90	0.53	65.75	0.00	-1.81	-1.23	0.00	0.00	-7.75	54.97

Segment Leq : 54.97 dBA

Total Leq All Segments: 54.97 dBA

↑

Results segment # 1: Elevation (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source	!	Receiver	!	Barrier	!	Elevation of
Height (m)	!	Height (m)	!	Height (m)	!	Barrier Top (m)
-----+-----+-----+-----						
1.50	!	4.50	!	2.15	!	2.50

ROAD (0.00 + 52.09 + 0.00) = 52.09 dBA

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

-90	90	0.44	58.16	0.00	0.00	-1.06	0.00	0.00	-5.01	52.09

Segment Leq : 52.09 dBA

Total Leq All Segments: 52.09 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 54.97
(NIGHT): 52.09

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 23-06-2026 10:00:31
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R4_2_5.te Time Period: Day/Night 16/8 hours
Description: R4 Elevation Rd 2.5m noise fence

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Elevation (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 : 19.70 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.50 m
Barrier receiver distance : 7.50 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Results segment # 1: Elevation (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source	!	Receiver	!	Barrier	!	Elevation of
Height (m)	!	Height (m)	!	Height (m)	!	Barrier Top (m)
-----+-----+-----+-----						
1.50	!	1.50	!	1.15	!	1.50

ROAD (0.00 + 53.94 + 0.00) = 53.94 dBA

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

-90	90	0.51	65.75	0.00	-1.79	-1.19	0.00	0.00	-8.83	53.94

Segment Leq : 53.94 dBA

Total Leq All Segments: 53.94 dBA

↑
Results segment # 1: Elevation (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source	!	Receiver	!	Barrier	!	Elevation of
Height (m)	!	Height (m)	!	Height (m)	!	Barrier Top (m)
-----+-----+-----+-----						
1.50	!	4.50	!	2.15	!	2.50

ROAD (0.00 + 51.59 + 0.00) = 51.59 dBA

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

-90	90	0.42	58.16	0.00	0.00	-1.02	0.00	0.00	-5.55	51.59

Segment Leq : 51.59 dBA

Total Leq All Segments: 51.59 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 53.94
(NIGHT): 51.59

↑
↑

STAMSON 5.0 NORMAL REPORT Date: 23-06-2026 09:42:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R4_ff.te Time Period: Day/Night 16/8 hours
Description: R4 Elevation Rd Freefield

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Elevation (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 : 19.70 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Results segment # 1: Elevation (day)

Source height = 1.50 m

ROAD (0.00 + 62.33 + 0.00) = 62.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.75	0.00	-1.97	-1.46	0.00	0.00	0.00	62.33

Segment Leq : 62.33 dBA

Total Leq All Segments: 62.33 dBA

↑

Results segment # 1: Elevation (night)

Source height = 1.50 m

ROAD (0.00 + 56.85 + 0.00) = 56.85 dBA

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

-90	90	0.57	58.16	0.00	0.00	-1.30	0.00	0.00	0.00	56.85
-----	----	------	-------	------	------	-------	------	------	------	-------

Segment Leq : 56.85 dBA

Total Leq All Segments: 56.85 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 62.33

(NIGHT): 56.85

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 23-06-2026 10:35:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5_2_2.te Time Period: Day/Night 16/8 hours
Description: R5 Elevation & Cappamore 2.2m noise fence

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Elevation (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 : 27.20 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.20 m
Barrier receiver distance : 8.50 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Road data, segment # 2: Cappamore (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Cappamore (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 : 75.00 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.20 m
Barrier receiver distance : 8.00 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Results segment # 1: Elevation (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	Barrier Top (m)
1.50 !	1.50 !	1.15 !	1.50

ROAD (0.00 + 53.25 + 0.00) = 53.25 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.53	65.75	0.00	-3.95	-1.23	0.00	0.00	-7.32	53.25

Segment Leq : 53.25 dBA

↑

Results segment # 2: Cappamore (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source	!	Receiver	!	Barrier	!	Elevation of
Height (m)	!	Height (m)	!	Height (m)	!	Barrier Top (m)
1.50	!	1.50	!	1.15	!	1.50

ROAD (0.00 + 46.85 + 0.00) = 46.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.53	65.75	0.00	-10.68	-1.23	0.00	0.00	-6.99	46.85

Segment Leq : 46.85 dBA

Total Leq All Segments: 54.15 dBA



Results segment # 1: Elevation (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source	!	Receiver	!	Barrier	!	Elevation of
Height (m)	!	Height (m)	!	Height (m)	!	Barrier Top (m)
1.50	!	4.50	!	2.15	!	2.50

ROAD (0.00 + 52.09 + 0.00) = 52.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.44	58.16	0.00	0.00	-1.06	0.00	0.00	-5.01	52.09

Segment Leq : 52.09 dBA



Results segment # 2: Cappamore (night)

Source height = 1.50 m

Barrier height for grazing incidence

```

-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.50 !          4.50 !          2.15 !          2.50

```

ROAD (0.00 + 52.09 + 0.00) = 52.09 dBA

```

Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----
  -90    90    0.44  58.16   0.00   0.00  -1.06   0.00   0.00  -5.01  52.09
-----

```

Segment Leq : 52.09 dBA

Total Leq All Segments: 55.10 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 54.15
(NIGHT): 55.10

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 23-06-2026 10:37:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5_2_5.te Time Period: Day/Night 16/8 hours
Description: R5 Elevation & Cappamore 2.5m noise fence

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Elevation (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 : 27.20 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.50 m
Barrier receiver distance : 8.50 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Road data, segment # 2: Cappamore (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Cappamore (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 : 75.00 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.50 m
Barrier receiver distance : 8.00 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.35 m
Reference angle : 0.00

↑

Results segment # 1: Elevation (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	Barrier Top (m)
1.50 !	1.50 !	1.15 !	1.50

ROAD (0.00 + 52.35 + 0.00) = 52.35 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	65.75	0.00	-3.90	-1.19	0.00	0.00	-8.31	52.35

Segment Leq : 52.35 dBA

↑

Results segment # 2: Cappamore (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.15	1.50

ROAD (0.00 + 46.12 + 0.00) = 46.12 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	65.75	0.00	-10.56	-1.19	0.00	0.00	-7.88	46.12

Segment Leq : 46.12 dBA

Total Leq All Segments: 53.28 dBA

↑

Results segment # 1: Elevation (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	4.50	2.15	2.50

ROAD (0.00 + 51.59 + 0.00) = 51.59 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.42	58.16	0.00	0.00	-1.02	0.00	0.00	-5.55	51.59

Segment Leq : 51.59 dBA

↑

Results segment # 2: Cappamore (night)

Source height = 1.50 m

Barrier height for grazing incidence

```

-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.50 !          4.50 !          2.15 !          2.50

```

ROAD (0.00 + 51.59 + 0.00) = 51.59 dBA

```

Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----
   -90    90    0.42  58.16   0.00   0.00  -1.02   0.00   0.00  -5.55  51.59
-----

```

Segment Leq : 51.59 dBA

Total Leq All Segments: 54.60 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 53.28
(NIGHT): 54.60

↑

↑

STAMSON 5.0 NORMAL REPORT Date: 23-06-2026 10:07:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R5_ff.te Time Period: Day/Night 16/8 hours
Description: R5 Elevation & Cappamore ff

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Elevation (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 : 27.20 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑

Road data, segment # 2: Cappamore (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 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): 8000
Percentage of Annual Growth : 0.00

Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 7.00
 Heavy Truck % of Total Volume : 5.00
 Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 2: Cappamore (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 : 75.00 / 15.00 m
 Receiver height : 1.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

↑
 Results segment # 1: Elevation (day)

Source height = 1.50 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	65.75	0.00	-4.29	-1.46	0.00	0.00	0.00	60.00

Segment Leq : 60.00 dBA

↑
 Results segment # 2: Cappamore (day)

Source height = 1.50 m

ROAD (0.00 + 52.69 + 0.00) = 52.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.75	0.00	-11.60	-1.46	0.00	0.00	0.00	52.69

Segment Leq : 52.69 dBA

Total Leq All Segments: 60.74 dBA

↑
 Results segment # 1: Elevation (night)

Source height = 1.50 m

ROAD (0.00 + 56.85 + 0.00) = 56.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	58.16	0.00	0.00	-1.30	0.00	0.00	0.00	56.85

Segment Leq : 56.85 dBA

↑

Results segment # 2: Cappamore (night)

Source height = 1.50 m

ROAD (0.00 + 56.85 + 0.00) = 56.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.57	58.16	0.00	0.00	-1.30	0.00	0.00	0.00	56.85

Segment Leq : 56.85 dBA

Total Leq All Segments: 59.86 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 60.74
(NIGHT): 59.86

↑

↑

Appendix F

Building Component Calculations

- Room Calculations
- Table 11: Building
Component Template
(Jasper)
- Table 12: Building
Component Template
(Rockcliffe 4)
- Table 13: Building
Component Template
(Cambridge)

ROOM BY ROOM CALCULATIONS - CAMBRIDGE

Note: Ceiling Height 8' 1" (Ground floor) 9' 1" (Second floor) and 8' 1" (Third floor)

Kitchen / Breakfast / Living / Dining Room

Floor Area (sq.m)

46.7

	Width	Height	Area	
Window 1 (front)	1.8	1.7	3.2	
Window 2 (side)	1.5	1.7	2.6	
Patio Door (front)	1.5	2.1	3.2	
			8.9	Total Window Area
			19.05%	% of Floor Area

	Width	Height	Area	
Exterior Door	0	0	0	
			0	Total Door Area
			0.00%	% of Floor Area

	Width	Height	Area	Area minus windows/doors	
Exterior Wall (front)	6.3	2.8	17.45	11.14	
Exterior Wall (side)	7.4	2.8	20.50	17.91	
				11.14	Total Exterior Wall Area
				23.86%	% of Floor Area

Bedroom 2

Floor Area (sq.m)

11.9

	Width	Height	Area	
Window 1	1.8	1.5	2.7	
			2.7	Total Window Area
			22.69%	% of Floor Area

	Width	Height	Area	
Exterior Door	0	0	0	
			0	Total Door Area
			0.00%	% of Floor Area

	Width	Height	Area	Area minus windows/doors	
Exterior Wall (front)	2.9	2.5	7.25	4.55	
				4.55	Total Exterior Wall Area
				38.24%	% of Floor Area

Primary Bedroom

Floor Area (sq.m)

17.1

	Width	Height	Area	
Window 1 (front)	1.5	1.7	2.55	
Window 2 (side)	0.76	1.6	1.216	
			2.55	Total Window Area
			14.91%	% of Floor Area

	Width	Height	Area	
Exterior Door	0	0	0	
			0	Total Door Area
			0.00%	% of Floor Area

	Width	Height	Area	Area minus windows/doors	
Exterior Wall (front)	3.4	2.5	8.50	5.95	
Exterior Wall (side)	5.5	2.5	13.75	12.53	
				5.95	Total Exterior Wall Area
				34.80%	% of Floor Area

ROOM BY ROOM CALCULATIONS - Rockcliffe 4

Note: Ceiling Height 9' 1" (first floor) and 8' 1" (second floor)

Kitchen / Breakfast / Great Room / Dining Room

Floor Area (sq.m)

46.5

	Width	Height	Area
Window 1 (Patio door)	1.6	2.4	3.8
Window 2 (rear)	1.8	1.6	2.9
Window 4 (side)	0.6	1.6	1.0
Window 5 (side)	0.6	1.6	1.0

8.64

Total Window Area

18.58%

% of Floor Area

	Width	Height	Area
Exterior Door	0	0	0

0

Total Door Area

0.00%

% of Floor Area

	Width	Height	Area	Area minus windows/doors
Exterior Wall (rear)	6.1	2.8	16.84	10.12
Exterior Wall (side)	6.1	2.8	16.84	14.92

25.03

Total Exterior Wall Area

53.83%

% of Floor Area

Bedroom 3

Floor Area (sq.m)	9.5			
Window 1 (front)	Width	Height	Area	
	1.8	1.4	2.52	
			2.52	Total Window Area
			26.53%	% of Floor Area
Exterior Door	Width	Height	Area	
	0	0	0	
			0	Total Door Area
			0.00%	% of Floor Area
Exterior Wall (front)	Width	Height	Area	Area minus windows/doors
	3.0	2.5	7.40	4.88
			4.88	Total Exterior Wall Area
			51.32%	% of Floor Area

Primary Bedroom

Floor Area (sq.m)	16.6			
Window 1 (rear)	Width	Height	Area	
	1.8	1.2	2.23	
	2.23			Total Window Area
	13.45%			% of Floor Area
Exterior Door	0	0	0	
	0			Total Door Area
	0.00%			% of Floor Area
Exterior Wall (rear)	Width	Height	Area	Area minus windows/doors
	3.2	2.5	7.89	5.66
	5.66			Total Exterior Wall Area
	34.07%			% of Floor Area

Bedroom 2

Floor Area (sq.m)	9.9				
Window 1 (front)	Width	Height	Area		
	1.8	1.4	2.52		
			2.52	Total Window Area	
			25.45%	% of Floor Area	
Exterior Door	Width	Height	Area		
	0	0	0		
			0	Total Door Area	
			0.00%	% of Floor Area	
Exterior Wall (front)	Width	Height	Area	Area minus windows/doors	
	3.0	2.5	7.40	4.88	
	Exterior Wall (side)	3.4	2.5	8.38	8.38
				13.26	Total Exterior Wall Area
				133.90%	% of Floor Area

Bedroom 4

Floor Area (sq.m)	9.2			
Window 1 (side)	Width	Height	Area	
	1.2	1.3	1.56	
			1.56	
			16.96%	
			Total Window Area	
			% of Floor Area	
Exterior Door	Width	Height	Area	
	0	0	0	
			0	
			0.00%	
			Total Door Area	
			% of Floor Area	
Exterior Wall (side)	Width	Height	Area	Area minus windows/doors
	3.4	2.5	8.38	6.82
				6.82
				74.14%
				Total Exterior Wall Area
				% of Floor Area

ROOM BY ROOM CALCULATIONS - JASPER

Note: Ceiling Height 9' 1" (first floor) and 8' 1" (second floor)

Kitchen / Breakfast / Great Room / Dining Room

Floor Area (sq.m)	62.8		
	Width	Height	Area
Window 1 (Patio door)	1.8	2.4	4.3
Window 2 (rear)	0.7	1.8	1.3
Window 3 (rear)	0.7	1.8	1.3
Window 4 (side)	0.7	1.8	1.3
Window 5 (side)	0.7	1.8	1.3
Window 6 (side)	1.6	1.8	2.9
			12.50
			19.91%
	Total Window Area % of Floor Area		
	Width	Height	Area
Exterior Door	0	0	0
			0
			0.00%
	Total Door Area % of Floor Area		
	Width	Height	Area
Exterior Wall (rear)	8.7	2.8	24.07
Exterior Wall (side)	6.4	2.8	17.65
			33.16
			52.80%
	Total Exterior Wall Area % of Floor Area		

Den

Floor Area (sq.m)	9.59		
	Width	Height	Area
Window 1 (front)	1.6	1.8	2.74
			2.74
			28.61%
	Total Window Area % of Floor Area		
	Width	Height	Area
Exterior Door	0.0	0.0	0
	0.0	0.0	0
			0
			0.00%
	Total Door Area % of Floor Area		
	Width	Height	Area
Exterior Wall (front)	3.2	2.8	8.69
Exterior Wall (side)	2.9	2.8	7.89
			5.95
			7.89
			13.84
			144.36%
	Total Exterior Wall Area % of Floor Area		

Bedroom 3

Floor Area (sq.m)	12.2		
	Width	Height	Area
Window 1 (side)	1.6	1.2	1.94
			1.94
			15.93%
	Total Window Area % of Floor Area		
	Width	Height	Area
Exterior Door	0	0	0
			0
			0.00%
	Total Door Area % of Floor Area		
	Width	Height	Area
Exterior Wall (side)	3.9	2.5	9.59
			7.64
			62.66%
	Total Exterior Wall Area % of Floor Area		

Master Bedroom

Floor Area (sq.m)	21.8		
	Width	Height	Area
Window 1 (rear)	2.4	1.4	3.36
			3.36
			15.42%
	Total Window Area % of Floor Area		
	Width	Height	Area
Exterior Door	0	0	0
			0
			0.00%
	Total Door Area % of Floor Area		
	Width	Height	Area
Exterior Wall (rear)	5.0	2.5	12.44
			9.08
			41.63%
	Total Exterior Wall Area % of Floor Area		

Bedroom 2

Floor Area (sq.m)	12.6		
	Width	Height	Area
Window 1 (side)	1.6	1.2	1.95
			1.95
			15.49%
	Total Window Area % of Floor Area		
	Width	Height	Area
Exterior Door	0	0	0
			0
			0.00%
	Total Door Area % of Floor Area		
	Width	Height	Area
Exterior Wall (front)	3.0	2.5	7.30
Exterior Wall (side)	4.6	2.5	11.33
			9.37
			16.67
			132.31%
	Total Exterior Wall Area % of Floor Area		

Bedroom 4

Floor Area (sq.m)	12.2		
	Width	Height	Area
Window 1 (front)	1.6	1.2	1.95
			1.95
			16.00%
	Total Window Area % of Floor Area		
	Width	Height	Area
Exterior Door	0	0	0
			0
			0.00%
	Total Door Area % of Floor Area		
	Width	Height	Area
Exterior Wall (side)	3.5	2.5	8.57
Exterior wall (front)	3.8	2.5	9.24
			7.29
			15.86
			129.98%
	Total Exterior Wall Area % of Floor Area		

Architect:
Location:
Building Type:
Lot Number:
Front Façade Noise Level (dBA)

Quinn's Pointe Stages 6, 7, 8
Single Unit (Jasper)
1 to 448
67

JLR No:
Prepared by:
Checked by:

26610-006
Thomas Blais
Lee Jablonski

ROOM	# OF COMPONENTS	ROOM FLOOR AREA (M ²)	WINDOW AREA (M ²)	W/RFA %	DOOR AREA (M ²)	D/RFA %	EXT. WALL AREA (M ²)	EW/RFA %	REQUIRED AIF*	WINDOW		EXT. DOOR		EXT. WALL		CEILING/ROOF	
										Type	AIF**	Type	AIF***	Type	AIF****	Type	AIF*****
Master Bedroom	2	21.8	3.4	15%	-	-	9.1	42%	32	3(13)3	32	-	-	EW1	34	-	-
Kitchen / Breakfast / Great Room / Dining Room	4	62.8	12.5	20%	-	-	33.2	53%	30	3(6)3	30	-	-	EW1	33	-	-
Bedroom 2	3	12.6	2.0	15%	-	-	16.7	132%	34	3(20)3	34	-	-	EW3	34	-	-
Bedroom 3	2	12.2	1.9	16%	-	-	7.6	63%	32	3(13)3	32	-	-	EW1	33	-	-
Bedroom 4	2	12.2	2.0	16%	-	-	15.9	130%	32	3(13)3	32	-	-	EW3	34		
Den	3	9.6	2.7	29%	-	-	13.8	144%	29	3(13)3	29	-	-	EW1	29	-	-

* Taken from Table 10.5: AIF required for Road and Rail Traffic Noise Cases

** Taken from Table 10.6: Acoustic Insulation Factor for various types of windows (example: 2(100)2 denotes 2 mm glass (100 mm space) 2 mm glass).

*** Taken from Table 10.9: Acoustic Insulation Factor for various types of exterior doors

**** Taken from Table 10.7: Acoustic Insulation Factor for various types of exterior walls

***** Taken from Table 10.8: Acoustic Insulation Factor for various ceiling-roof combinations (only for aircraft noise)

Exterior Door Details

All prime doors should be fully weatherstripped. Except as noted specifically below, doors shall not have inset glazing:

D1 denotes 44 mm hollow-core wood door (up to 20% of area glazed).

D2 denotes 44 mm glass-fibre reinforced plastic door with foam or glass-fibre insulated core (up to 20% area glazed).

D3 denotes 35 mm in solid slab wood door.

D4 denotes 44 mm steel door with foam or glass-fibre insulated core.

D5 denotes 44 mm solid slab door.

sd denotes storm door of wood or aluminum with openable glazed sections.

Exterior Wall Details

The common structure of walls EW1 to EW5 is composed of 12.7 mm gypsum board, vapour barrier, and 38x89 mm studs with 50 mm (or thicker) mineral wool or glass fibre batts in the inter-stud cavities.

EW1 denotes the above plus sheathing, plus wood siding or metal siding and fibre backer board.

EW2 denotes the above plus rigid insulation (25-50mm), and wood siding or metal siding and fibre backer board.

EW2 also denotes exterior wall described in EW1 with the addition of rigid insulation (25-50mm) between the sheathing and the external finish.

EW3 denotes simulated mansard with structure as the above plus sheathing, 38 x 89 mm framing, sheathing and asphalt roofing material.

EW4 denotes the above plus sheathing and 20 mm stucco.

EW5 denotes the above plus sheathing, 25 mm air space, 100 mm brick veneer.

EW6 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50mm), 100 mm back-up block, 100 mm face brick.

EW6 also denotes an exterior wall conforming to rainscreen design principles and composed of same gypsum board and rigid insulation with 100 mm concrete block, 25 mm air space, and 100 mm brick veneer.

EW7 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50mm), 140 mm back-up block, 100 mm face brick.

EW8 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50mm), 200 mm concrete.

R denotes the mounting of the interior gypsum board on resilient clips

Architect:
Location:
Building Type:
Lot Number:
Front Façade Noise Level (dBA)

Quinn's Pointe Stages 6, 7, 8
Executive Town (Rockcliffe 4)
450-496, 502-525, and 532-537
67

JLR No:
Prepared by:
Checked by:

26610-006
Thomas Blais
Lee Jablonski

ROOM	# OF COMPONENTS	ROOM FLOOR AREA (M ²)	WINDOW AREA (M ²)	W/RFA %	DOOR AREA (M ²)	D/RFA %	EXT. WALL AREA (M ²)	EW/RFA %	REQUIRED AIF*	WINDOW		EXT. DOOR		EXT. WALL		CEILING/ROOF	
										Type	AIF**	Type	AIF***	Type	AIF****	Type	AIF*****
Primary Bedroom	2	16.6	2.2	13%	-	-	5.7	34%	32	3(6)3	32	-	-	EW1	35	-	-
Kitchen / Breakfast / Great Room / Dining Room	4	46.5	8.6	19%	-	-	25.0	54%	30	3(6)3	30	-	-	EW1	33	-	-
Bedroom 2	3	9.9	2.5	25%	-	-	13.3	134%	34	3(32)3	34	-	-	EW3	34	-	-
Bedroom 3	2	9.5	2.5	27%	-	-	4.9	51%	32	3(25)3	32	-	-	EW1	33	-	-
Bedroom 4	2	9.2	1.6	17%	-	-	6.8	74%	32	3(16)3	32	-	-	EW1	32		

* Taken from Table 10.5: AIF required for Road and Rail Traffic Noise Cases

** Taken from Table 10.6: Acoustic Insulation Factor for various types of windows (example: 2(100)2 denotes 2 mm glass (100 mm space) 2 mm glass).

*** Taken from Table 10.9: Acoustic Insulation Factor for various types of exterior doors

**** Taken from Table 10.7: Acoustic Insulation Factor for various types of exterior walls

***** Taken from Table 10.8: Acoustic Insulation Factor for various ceiling-roof combinations (only for aircraft noise)

Exterior Door Details

All prime doors should be fully weatherstripped. Except as noted specifically below, doors shall not have inset glazing:

D1 denotes 44 mm hollow-core wood door (up to 20% of area glazed).

D2 denotes 44 mm glass-fibre reinforced plastic door with foam or glass-fibre insulated core (up to 20% area glazed).

D3 denotes 35 mm in solid slab wood door.

D4 denotes 44 mm steel door with foam or glass-fibre insulated core.

D5 denotes 44 mm solid slab door.

sd denotes storm door of wood or aluminum with openable glazed sections.

Exterior Wall Details

The common structure of walls EW1 to EW5 is composed of 12.7 mm gypsum board, vapour barrier, and 38x89 mm studs with 50 mm (or thicker) mineral wool or glass fibre batts in the inter-stud cavities.

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EW7 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50mm), 140 mm back-up block, 100 mm face brick.

EW8 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50mm), 200 mm concrete.

R denotes the mounting of the interior gypsum board on resilient clips

TABLE 13: BUILDING COMPONENT TEMPLATE

Architect:
Location: Quinn's Pointe Stages 6, 7, 8
Building Type: Avenue Town
Block Number: Blocks 497-501, 526-531
Front Façade Noise Level (dBA) 67

JLR No: 26610-006
Prepared by: Thomas Blais
Checked by: Lee Jablonski

ROOM	# OF COMPONENTS	ROOM FLOOR AREA (M ²)	WINDOW AREA (M ²)	W/RFA %	DOOR AREA (M ²)	D/RFA %	EXT. WALL AREA (M ²)	EW/RFA %	REQUIRED AIF*	WINDOW		EXT. DOOR		EXT. WALL		CEILING/ROOF	
										Type	AIF**	Type	AIF***	Type	AIF****	Type	AIF*****
Primary Bedroom	4	17.1	2.6	15%	-	-	6.0	35%	35	3(25)3	35	-	-	EW1	35	-	-
Bedroom 2	2	11.9	2.7	23%	-	-	4.6	38%	32	3(20)3	32	-	-	EW1	35	-	-
Kitchen / Breakfast / Living / Dining Room	4	46.7	8.9	19%	-	-	11.1	24%	30	3(6)3	30	-	-	EW1	38	-	-

* Taken from Table 10.5: AIF required for Road and Rail Traffic Noise Cases
** Taken from Table 10.6: Acoustic Insulation Factor for various types of windows (example: 2(100)2 denotes 2 mm glass (100 mm space) 2 mm glass).
*** Taken from Table 10.9: Acoustic Insulation Factor for various types of exterior doors
**** Taken from Table 10.7: Acoustic Insulation Factor for various types of exterior walls
***** Taken from Table 10.8: Acoustic Insulation Factor for various ceiling-roof combinations (only for aircraft noise)

Exterior Door Details

All prime doors should be fully weatherstripped. Except as noted specifically below, doors shall not have inset glazing:
D1 denotes 44 mm hollow-core wood door (up to 20% of area glazed).
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D5 denotes 44 mm solid slab door.
sd denotes storm door of wood or aluminum with openable glazed sections.

Exterior Wall Details

The common structure of walls EW1 to EW5 is composed of 12.7 mm gypsum board, vapour barrier, and 38x89 mm studs with 50 mm (or thicker) mineral wool or glass fibre batts in the inter-stud cavities.
EW1 denotes the above plus sheathing, plus wood siding or metal siding and fibre backer board.
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EW2 also denotes exterior wall described in EW1 with the addition of rigid insulation (25-50mm) between the sheathing and the external finish.
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EW4 denotes the above plus sheathing and 20 mm stucco.
EW5 denotes the above plus sheathing, 25 mm air space, 100 mm brick veneer.
EW6 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50mm), 100 mm back-up block, 100 mm face brick.
EW6 also denotes an exterior wall conforming to rainscreen design principles and composed of same gypsum board and rigid insulation with 100 mm concrete block, 25 mm air space, and 100 mm brick veneer.
EW7 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50mm), 140 mm back-up block, 100 mm face brick.
EW8 denotes exterior wall composed of 12.7 mm gypsum board, rigid insulation (25-50mm), 200 mm concrete.
R denotes the mounting of the interior gypsum board on resilient clips

Appendix G

Canada Mortgage and
Housing (CMHC) Table A2
and A3

- Approximate Conversion
from STC to AIF for Windows
and Doors
- Approximate Conversion
from STC to AIF for Exterior
Walls and Ceiling-Roof
System

Table A1: Standard source spectrum for calculating Acoustic Insulation Factor (AIF)

Frequency (Hz)	Source Sound Pressure Level	A-weighted Source Sound Pressure Level
100	66.1	47
125	69.1	53
160	71.4	58
200	71.9	61
250	71.6	63
315	71.6	65
400	71.8	67
500	71.2	68
630	70.9	69
800	70.8	70
1000	70.0	70
1250	69.4	70
1600	69.0	70
2000	68.8	70
2500	68.7	70
3150	67.8	69
4000	67.0	68
5000	65.5	66

Note: Values in the second and third columns of this table are $\frac{1}{3}$ -octave band sound pressure levels expressed in dB.

Table A2: Approximate conversion from STC to AIF for windows and doors

Window (or door) Area Expressed as Percentage of Room Floor Area	Acoustic Insulation Factor (AIF)
80.0	STC-5
63.0	STC-4
50.0	STC-3
40.0	STC-2
32.0	STC-1
25.0	STC
20.0	STC+1
16.0	STC+2
12.5	STC+3
10.0	STC+4
8.0	STC+5
6.3	STC+6
5.0	STC+7
4.0	STC+8

Note: For area percentages not listed in the table, use the nearest listed value.

Examples: For a window whose area = 20% of the room floor area and STC = 32, the AIF is $32 + 1 = 33$.
For a window whose area = 60% of the room floor area and STC = 29, the AIF is $29 - 4 = 25$.

Table A3: Approximate conversion from STC to AIF for exterior walls and ceiling-roof systems.

Exterior Wall Area Expressed as Percentage of Room Floor Area	Acoustic Insulation Factor (AIF)
200.0	STC-10
160.0	STC-9
125.0	STC-8
100.0	STC-7
80.0	STC-6
63.0	STC-5
50.0	STC-4
40.0	STC-3
32.0	STC-2
25.0	STC-1
20.0	STC
16.0	STC+1
12.5	STC+2
10.0	STC+3
8.0	STC+4

Note: For area percentages not listed in the table, use the nearest listed value.

Example: For a wall whose area = 120% of room floor area and STC = 48, the AIF is $48 - 8 = 40$.

Note: For ceiling-roof systems, $AIF = STC - 7$.

Figure A1: Worksheet for Calculating AIF from Transmission Loss Data

Frequency (Hz)	A-weighted Source Sound Pressure Level (dB)	Sound Transmission Loss (dB)	A-weighted Indoor Sound Pressure Level (dB)	Energy Equivalent of Indoor SPL
	(A)	(B)	(C = A-B)	(D = $10^{C/10}$)
100	47	24	23	200
125	53	26	27	501
160	58	19	39	7 943
200	61	21	40	10 000
250	63	20	43	19 953
315	65	20	45	31 623
400	67	25	42	15 849
500	68	30	38	6 310
630	69	33	36	3 981
800	70	37	33	1 995
1000	70	39	31	1 259
1250	70	41	29	794
1600	70	43	27	501
2000	70	44	26	398
2500	70	45	25	316
3150	69	43	26	398
4000	68	37	31	1 259
5000	66	35	31	1 259
Sum of values in column D:				104 539=E

Calculated indoor A-weighted sound level: $10 \log_{10} (E) = 50.2 = F$

AIF (component area = 80% of floor area): $(77 - F) = 26.8 = G$

Component Area as a Percentage of Room Floor Area	Acoustic Insulation Factor (AIF)
6.3	(G + 11) = 38
8.0	(G + 10) = 37
10.0	(G + 9) = 36
12.5	(G + 8) = 35
16.0	(G + 7) = 34
20.0	(G + 6) = 33
25.0	(G + 5) = 32
32.0	(G + 4) = 31
40.0	(G + 3) = 30
50.0	(G + 2) = 29
63.0	(G + 1) = 28
80.0	(G) = 27
100.0	(G - 1) = 26
125.0	(G - 2) = 25
160.0	(G - 3) = 24

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