

MINTO COMMUNITIES INC.



NOISE CONTROL STUDY

EAST URBAN COMMUNITY

AQUAVIEW

CITY OF OTTAWA

APRIL 19, 2018



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Prepared by:

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PROJECT NO. 171203

APRIL 19, 2018

ENVIRONMENTAL NOISE IMPACT ASSESSMENT

MINTO COMMUNITIES INC.

EAST URBAN COMMUNITY
AQUAVIEW

CITY OF OTTAWA

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1.0 **INTRODUCTION**

On behalf of our client, Minto Communities Inc., a study has been conducted, in support of the Draft Plan of Subdivision Application, to determine the noise impact on the proposed Aquaview residential development resulting from roadway traffic. The proposed development consist of two (2) stages. Stage 1 is located at the southeast quadrant of Aquaview Drive and Lakepointe Drive and Stage 2 is located northeast of Tenthline Road and Lakepointe Drive (see Location Map, Appendix 'A').

The attached drawings 171203-N1 in Appendix 'D' and 171203-SK2 in Appendix 'E' shows the type of development, the location and the topography. It is to be noted that this study will need to be revised with a detailed grading plan with dwelling. The intent of this study is to demonstrate that noise mitigation measures can be implemented to support the draft plan of subdivision application.

2.0 **SOUND LEVEL CRITERIA**

2.1 **Sound Level Criterion for Outdoor Living Areas**

The Ontario Ministry of the Environment (MOE) recommended outdoor area noise level is:

16 hr, 07:00 to 23:00, 55 dBA Leq

Leq is defined as the energy equivalent sound level during an hour.

If the Leq sound level limits are met, then no further action is required of the developer. If the sound levels are over the criteria, the developer normally has two recommended options:

- a) physical attenuation, and/or
- b) include a noise warning clause on the deeds of the lots concerned.

2.2 **Indoor Sound Level Criteria**

The recommended indoors sound level limits for dwellings given by the City of Ottawa / MOE's Noise Control Guidelines are as follows:

Type of Space	Equivalent Sound Level (Leq), dBA
General offices, reception areas, retails stores, etc. (Time period: 16 hr, 07:00 - 23:00)	50
Living/dining areas of residences, hospitals, schools, nursing/retirement homes, day-care centres, theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms, etc. (Time period: 16 hr, 07:00 - 23:00)	45
Sleeping quarters of hotels/motels (Time period: 8 hr, 23:00 - 07:00)	

	45
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc. (Time period: 8 hr, 23:00 - 07:00)	40

2.3 Outdoor, Ventilation and Warning Clause Requirements

Assessment Location	L_{eq} (8 or 16 hrs as noted) (dBA)	Ventilation Requirements	Outdoor Control Measures	Warning Clause
OUTDOOR LIVING AREA (OLA)	$L_{eq 16 hr}$ Less than or equal to 55 dBA	N/A	None required	Not required
	$L_{eq 16 hr}$ Greater than 55 dBA to less than or equal to 60 dBA	N/A	Control measures (barriers) may not be required but should be considered	Required if resultant L_{eq} exceeds 55 dBA Type A
	$L_{eq 16 hr}$ Greater than 60 dBA	N/A	Control measures (barriers) required to reduce the L_{eq} to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible	Required if resultant L_{eq} exceeds 55 dBA Type B
PLANE OF LIVING ROOM WINDOW	$L_{eq 16 hr}$ Less than or equal to 55 dBA	None required	N/A	Not required
	$L_{eq 16 hr}$ Greater than 55 dBA to less than or equal to 65 dBA	Forced air heating with provision for central air conditioning	N/A	Required Type C
	$L_{eq 16 hr}$ Greater than 65 dBA	Central air Conditioning	N/A	Required Type D
PLANE OF BEDROOM WINDOW	$L_{eq 8 hr}$ Greater than 50 dBA to less than or equal to 60 dBA	Forced air heating with provision for central air conditioning	N/A	Required Type C
	$L_{eq 8 hr}$ Greater than 60 dBA	Central air conditioning	N/A	Required Type D

2.4 Relevant Warning Clauses

TYPE	WARNING CLAUSE
Type A	"Purchasers/tenants are advised that sound levels due to increasing (road) (Transitway) (rail) (air) traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the City's and the Ministry of the Environment's noise criteria."
Type B	"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing (road) (Transitway) (rail) (air) traffic may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the City's and the Ministry of the Environment's noise criteria."
Type C	"This dwelling unit has been fitted with a forced air heating system and the ducting, etc. was sized to accommodate central air conditioning. Installation of central air conditioning by the occupant will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the City's and the Ministry of the Environment's noise criteria. (Note: The location and installation of the outdoor air conditioning device should be done so as to comply with noise criteria of MOE Publication NPC-216, Residential Air Conditioning Devices and thus minimize the noise impacts both on and in the immediate vicinity of the subject property."
Type D	"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the City's and the Ministry of the Environment's noise criteria."

3.0 ANALYSIS

The only significant known sources of noise in the proximity to this project will be the traffic travelling along Brian Coburn Boulevard, Aquaview Drive, Lakepointe Drive, Tenth Line Road and the Future Transit Way.

The forecast traffic volume (see Table 1, Appendix 'B') for Brian Coburn Boulevard is 35,000 vehicles per day as per the City of Ottawa environmental noise control guidelines. The posted speed limit on Brian Coburn Boulevard is 60km/hr and the road gradient is 0.1%.

The forecast traffic volume (see Table 1, Appendix 'B') for Aquaview Drive is 8,000 vehicles per day as per the City of Ottawa environmental noise control guidelines. The posted speed limit on Aquaview Drive is 50km/hr and the road gradient is 0.1%.

The forecast traffic volume (see Table 1, Appendix 'B') for Lakepointe Drive is 8,000 vehicles per day as per the City of Ottawa environmental noise control guidelines. The posted speed limit on Lakepointe Drive is 50km/hr and the road gradient is 0.1%.

The forecast traffic volume (see Table 1, Appendix 'B') for Tenth Line Road is 35,000 vehicles per day as per the City of Ottawa environmental noise control guidelines. The posted speed limit on Tenth Line Road is 60km/hr and the road gradient is 0.1%.

The forecast traffic volume (see Table 1, Appendix 'B') for the Transitway was obtained from a report undertaken by Daley Ferraro Associates for Delcan, April 1999, on behalf of the RMOC entitled "Cumberland Transitway & Blackburn Hamlet Bypass Extension – Environmental assessment Studies". The Transitways's forecast traffic volume is 500 buses per 16 hour period, 50 buses at night. The posted speed limit on the Transitway will be 80 km/hr and the road gradient will be less than 2%.

The noise analysis was undertaken using the Stamson (version 5.03) program as supplied by the Ontario Ministry of the Environment.

The results of this noise study were calculated using a 2.44m high noise barrier at the following locations:

- along the rear yards of the townhouses backing on the Future Transit Way from Serrano Street to Tenth Line Road
- along the sides of the townhouse corner units of both Street 2 and Street 3
- along the sides of townhouses along Aquaview Drive.
- along both sides and backs of the corner single of Street 5 and Aquaview Drive

Refer to drawing 171203-N1 in Appendix 'D' for noise barrier location.

Tables 2a, 2b, 2c and 2d (Appendix 'B') summarize the noise impact of Brian Coburn Boulevard, Aquaview Drive, Lakepointe Drive, Tenth Line Road and the Future Transit Way at various points along the site. Sample noise calculations are included in Appendix 'C'.

4.0 SUMMARY AND CONCLUSION

4.1 Overall Site

The noise barriers shall have a surface mass of 20kg/m² or more and contain no holes, gaps or cracks with wrap around locations for the barriers and shall be installed as shown on plan 171203-N1. The noise barriers shown on plan 171203-N1 were found necessary but will need to be re-evaluated and confirmed with a detailed grading plan with dwellings. All dwellings with satisfactory noise levels and dwellings with noise clauses are to be confirmed and re-evaluated with a detailed grading plan with dwellings.

4.2 Dwellings with Satisfactory Noise Levels

All the townhouses, single dwellings, back-to-backs and rear lane townhouses, except those mentioned in sections 5.3 to 5.6, have satisfactory noise levels.

4.3 All navy blue dwellings as per the Noise Study Clauses Sketch 171203-SK3 in Appendix 'E'

"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) (Transitway) (rail) (air) traffic may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the City's and the Ministry of the Environment's noise criteria."

"This dwelling unit has been fitted with a forced air heating system and the ducting, etc. was sized to accommodate central air conditioning. Installation of central air conditioning by the occupant will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the City's and the Ministry of the Environment's noise criteria. (Note: The location and installation of the outdoor air conditioning device should be done so as to comply with noise criteria of MOE Publication NPC-216, Residential Air Conditioning Devices and thus minimize the noise impacts both on and in the immediate vicinity of the subject property."

The Transferee covenants with the Transferor that the above clause, verbatim, shall be included in all subsequent Agreements of Purchase and Sale and Deeds conveying the lands described herein, which covenant shall run with the said lands and is for the benefit of the subsequent owners of the said lands and the owner of the adjacent road."

In addition to the above clause, we are recommending to the builder to choose the windows, walls and doors in such a way as to meet the provincial noise standards. Tables 2a, 2b, 2c and 2d of this report can be used to do such selection. It should be noted that our client is currently using a D4 door, a 3(13)3 window and an EW5 for front wall as a minimum standard.

4.4 All green dwellings as per the Noise Study Clauses Sketch 171203-SK3 in Appendix 'E'

"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) (Transitway) (rail) (air) traffic may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the City's and the Ministry of the Environment's noise criteria."

"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the City's and the Ministry of the Environment's noise criteria."

The Transferee covenants with the Transferor that the above clause, verbatim, shall be included in all subsequent Agreements of Purchase and Sale and Deeds conveying the

lands described herein, which covenant shall run with the said lands and is for the benefit of the subsequent owners of the said lands and the owner of the adjacent road.”

In addition to the above clause, we are recommending to the builder to choose the windows, walls and doors in such a way as to meet the provincial noise standards. Tables 2a, 2b, 2c and 2d of this report can be used to do such selection. It should be noted that our client is currently using a D4 door, a 3(13)3 window and an EW5 for front wall as a minimum standard.

4.5 All yellow dwellings as per the Noise Study Clauses Sketch 171203-SK3 in Appendix ‘E’

"This dwelling unit has been fitted with a forced air heating system and the ducting, etc. was sized to accommodate central air conditioning. Installation of central air conditioning by the occupant will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the City's and the Ministry of the Environment's noise criteria. (Note: The location and installation of the outdoor air conditioning device should be done so as to comply with noise criteria of MOE Publication NPC-216, Residential Air Conditioning Devices and thus minimize the noise impacts both on and in the immediate vicinity of the subject property."

The Transferee covenants with the Transferor that the above clause, verbatim, shall be included in all subsequent Agreements of Purchase and Sale and Deeds conveying the lands described herein, which covenant shall run with the said lands and is for the benefit of the subsequent owners of the said lands and the owner of the adjacent road.”

In addition to the above clause, we are recommending to the builder to choose the windows, walls and doors in such a way as to meet the provincial noise standards. Tables 2a, 2b, 2c and 2d of this report can be used to do such selection. It should be noted that our client is currently using a D4 door, a 3(13)3 window and an EW5 for front wall as a minimum standard.

4.6 All orange dwellings as per the Noise Study Clauses Sketch 171203-SK3 in Appendix 'E'

"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the City's and the Ministry of the Environment's noise criteria."

The Transferee covenants with the Transferor that the above clause, verbatim, shall be included in all subsequent Agreements of Purchase and Sale and Deeds conveying the lands described herein, which covenant shall run with the said lands and is for the benefit of the subsequent owners of the said lands and the owner of the adjacent road."

In addition to the above clause, we are recommending to the builder to choose the windows, walls and doors in such a way as to meet the provincial noise standards. Tables 2a, 2b, 2c and 2d of this report can be used to do such selection. It should be noted that our client is currently using a D4 door, a 3(13)3 window and an EW5 for front wall as a minimum standard.

Respectfully submitted by:

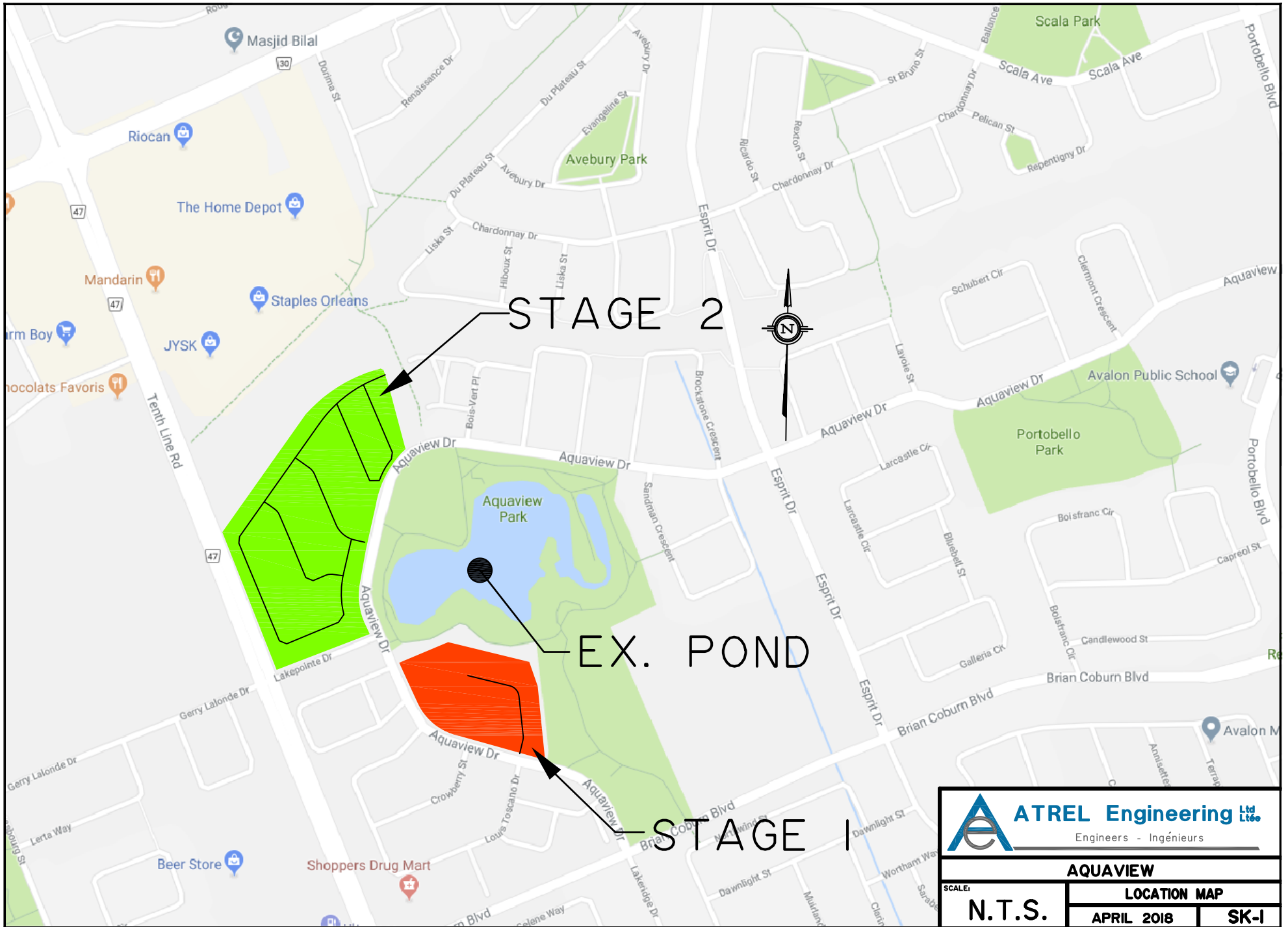
ATREL ENGINEERING LTD



André Sauvé, P. Eng

APPENDIX 'A'

Location Map – 171203-SK1



 ATREL Engineering Ltd. Engineers - Ingénieurs		
AQUAVIEW		
SCALE:	LOCATION MAP	
N.T.S.	APRIL 2018	SK-I

APPENDIX 'B'

Table 1 - Forecast Traffic Volume

Table 2a - Noise Level Calculations (Townhouses)

Table 2b - Noise Level Calculations (Singles)

Table 2c - Noise Level Calculations (Back-To-Backs)

Table 2d - Noise Level Calculations (Rear Lanes)

Forecast Traffic Volume

TABLE 1

ROAD : Brian Coburn Boulevard
TOTAL AADT : 35,000

CALCULATION OF AADT (DAY / NIGHT)

<u>DAY</u>		<u>NIGHT</u>	
TOTAL TRAFFIC:	32200	TOTAL TRAFFIC:	2800
CAR:	28336	CAR:	2464
MEDIUM TRUCK:	2254	MEDIUM TRUCK:	196
HEAVY TRUCK:	1610	HEAVY TRUCK:	140
Total	32200		2800

ROAD : Aquaview Drive
TOTAL AADT : 8,000

CALCULATION OF AADT (DAY / NIGHT)

<u>DAY</u>		<u>NIGHT</u>	
TOTAL TRAFFIC:	7360	TOTAL TRAFFIC:	640
CAR:	6477	CAR:	563
MEDIUM TRUCK:	515	MEDIUM TRUCK:	45
HEAVY TRUCK:	368	HEAVY TRUCK:	32
Total	7360		640

ROAD : Lakepointe Drive
TOTAL AADT : 8,000

CALCULATION OF AADT (DAY / NIGHT)

<u>DAY</u>		<u>NIGHT</u>	
TOTAL TRAFFIC:	7360	TOTAL TRAFFIC:	640
CAR:	6477	CAR:	563
MEDIUM TRUCK:	515	MEDIUM TRUCK:	45
HEAVY TRUCK:	368	HEAVY TRUCK:	32
Total	7360		640

ROAD : Tenth Line Road
TOTAL AADT : 35,000

CALCULATION OF AADT (DAY / NIGHT)

<u>DAY</u>		<u>NIGHT</u>	
TOTAL TRAFFIC:	32200	TOTAL TRAFFIC:	2800
CAR:	28336	CAR:	2464
MEDIUM TRUCK:	2254	MEDIUM TRUCK:	196
HEAVY TRUCK:	1610	HEAVY TRUCK:	140
Total	32200		2800

ROAD : Transit Way
TOTAL AADT : 550

CALCULATION OF AADT (DAY / NIGHT)

<u>DAY</u>		<u>NIGHT</u>	
TOTAL TRAFFIC:	550	TOTAL TRAFFIC:	50

PROJECT NUMBER: 171203										DATE: April 2018										TABLE 2B (SINGLES)																	
PROJECT NAME: AQUAVIEW - NOISE STUDY																																					
No.	DISTANCE					ELEVATIONS			ROAD ANGLE				NO BARRIER						WITH BARRIER																		
	RECEIVER SOURCE		RECEIVER BARRIER		ELEV	SOURCE	RECEIVER		BARRIER	Outdoor		Living room / Night		DAY		NIGHT	OUTDOOR	CLAUSE		Governing Clause	BARRIER HEIGHT	BARRIER ANGLE				DAY		DAY		NIGHT		Clause		Governing Clause			
	Outdoor	Living/Night	Outdoor	Living/Night	'e'		Outdoor	Living/ Night		Outdoor 1.5 m	Living room 2.5 m	Bedroom 4.5 m	FROM	TO	FROM	TO		dBA	dBA			dBA	Outdoor 1.5 m	Bright Zone	Living room 2.5 m	Bright Zone	Bedroom 4.5 m	Bright Zone	OUTDOOR	LIVING	BEDROOM						
	Outdoor	Living/Night	Outdoor	Living/Night	'e'	Outdoor	Living/ Night	FROM	TO	FROM	TO	dBA	dBA	dBA	OUTDOOR	LIVING	BEDROOM	FROM	TO	FROM	TO	dBA	Zone	dBA	Zone	dBA	Zone	OUTDOOR	LIVING	BEDROOM							
LAKEPOINTE DRIVE (AADT= 8,000)																																					
AU	----	43.5	----	----	----	88.92	----	89.42	----	----	----	-57	-33	----	64.82	57.24	----	Type C	Type C	Type C	----	----	----	----	----	----		----		----		----	----	----	----		
AV	61.5	----	24.0	----	----	88.92	89.85	----	89.10	-60	-49	----	----	53.36	----	----	OK	----	----	OK	----	----	----	----	----	----		----		----		----	----	----	----		
AW	----	64.0	----	26.5	----	88.92	----	89.85	89.10	----	----	-58	-49	----	52.89	45.41	----	OK	OK	OK	----	----	----	----	----	----		----		----		----	----	----	----		
AQUAVIEW DRIVE (AADT=8,000)																																					
AA	20.5	----	7.5	----	----	89.07	89.67	----	89.28	-83	32	----	----	62.58	----	----	Type B	----	----	Type B	2.44	-83	32	----	----	55.68		----		----		Type B	----	----	Type B		
AB	----	20.5	----	7.5	----	89.05	----	89.67	89.28	----	----	-83	0	----	61.21	53.65	----	Type C	Type C	Type C	2.44	----	----	----	-83	0	----		56.52		53.65	*	----	Type C	Type C	Type C	
AC	32.0	----	22.0	----	----	89.07	----	89.67	89.28	-67	8	----	----	60.12	----	----	Type B	----	----	Type B	2.44	-67	8	----	----	53.54		----		----		OK	----	----	OK		
AD	----	35.0	----	22.0	----	89.05	----	89.67	89.28	----	----	-68	-1	----	59.51	51.94	----	Type C	Type C	Type C	2.44	----	----	----	-68	-1	----		56.55		51.94	----	Type C	Type C	Type C		
AE	----	47.5	----	34.5	----	89.03	----	89.67	89.28	----	----	-61	-10	----	57.81	50.27	----	Type C	Type C	Type C	2.44	----	----	----	-61	-10	----		55.45		48.20	----	Type C	OK	Type C		
AF	48.5	----	35.5	----	----	89.06	----	89.67	89.28	-60	-10	----	----	57.72	----	----	Type A	----	----	Type A	2.44	-60	-10	----	----	53.80		----		----		OK	----	----	OK		
AG	----	59.0	----	46.0	----	89.01	----	89.67	89.28	----	----	-58	-19	----	56.43	48.92	----	Type C	OK	Type C	2.44	----	----	----	-42	-19	----		55.39		47.98	----	Type C	OK	Type C		
AH	----	70.0	----	57.0	----	88.98	----	89.67	89.28	----	----	-54	-21	----	55.47	47.96	----	Type C	OK	Type C	2.44	----	----	----	-35	-21	----		54.82		47.38	----	OK	OK	OK		
AI	----	54.5	----	----	----	89.06	----	89.67	----	----	----	-9	32	----	53.72	46.13	----	OK	OK	OK	----	----	----	----	----	----		----		----		----	----	----	----		
AJ	----	44.0	----	----	----	89.02	----	89.67	----	----	----	-5	46	----	55.60	48.01	----	Type C	OK	Type C	----	----	----	----	----	----		----		----		----	----	----	----		
AK	----	33.5	----	----	----	89.02	----	89.67	----	----	----	-1	60	----	57.56	49.97	----	Type C	OK	Type C	----	----	----	----	----	----		----		----		----	----	----	----		
AL	----	20.5	----	----	----	89.01	----	89.67	----	----	----	0	81	----	60.93	53.33	----	Type C	Type C	Type C	----	----	----	----	----	----		----		----		----	----	----	----		
AM	----	20.5	----	----	----	89.20	----	89.67	----	----	----	-81	0	----	60.93	53.33	----	Type C	Type C	Type C	----	----	----	----	----	----		----		----		----	----	----	----		
AN	----	37.5	----	----	----	89.21	----	89.67	----	----	----	-56	-4	----	56.38	48.78	----	Type C	OK	Type C	----	----	----	----	----	----		----		----		----	----	----	----		
AO	----	49.5	----	----	----	89.17	----	89.67	----	----	----	-48	-20	----	52.48	44.89	----	OK	OK	OK	----	----	----	----	----	----		----		----		----	----	----	----		
AP	----	33.5	----	20.5	----	89.09	----	89.67	89.23	----	----	-5	35	----	55.73	48.14	----	Type C	OK	Type C	2.44	----	----	----	-5	35	----		50.07		48.14	----	OK	OK	OK		
AQ	33.0	----	20.0	----	----	89.08	89.67	----	89.23	-5	27	----	----	54.82	----	----	OK	----	----	OK	2.44	-5	27	----	----	47.80		----		----		OK	----	----	OK		
AR	20.5	----	7.5	----	----	89.08	89.67	----	89.23	-32	81	----	----	62.37	----	----	Type B	----	----	Type B	2.44	-32	81	----	----	55.55		----		----		Type B	----	----	Type B		
AS	----	20.5	----	7.5	----	89.11	----	89.67	89.23	----	----	0	83	----	61.03	53.44	----	----	Type C	Type C	Type C	2.44	----	----	----	0	83	----		56.01		53.44	*	----	Type C	Type C	Type C
AT	----	19.0	----	7.5	----	88.99	----	89.67	89.23	----	----	-78	90	----	64.42	56.83	----	----	Type C	Type C	Type C	2.44	----	----	----	-78	-51	----		63.91		56.83	*	----	Type C	Type C	Type C
AU	----	19.0	----	----	----	89.02	----	89.42	----	----	----	-90	90	----	64.82	57.24	----	Type C	Type C	Type C	----	----	----	----	----	----		----		----		----	----	----	----		
AV	70.0	----	36.5	----	----	88.96	89.85	----	89.10	32	62	----	----	53.36	----	----	OK	----	----	OK	----	----	----	----	----	----		----		----		----	----	----	----		
AV	131.5	----	41.5	----	----	89.27	89.85	----	89.10	25	72	----	----	53.36	----	----	OK	----	----	OK	----	----	----	----	----	----		----		----		----	----	----	----		
AV	304.0	----	----	----	----	89.19	89.85	----	----	-12	36	----	----	53.36	----	----	OK	----	----	OK	----	----	----	----	----	----		----		----		----	----	----	----		
AW	----	71.5	----	38.0	----	88.95	----	89.85	89.10	----	----	34	62	----	52.89	45.41	----	OK	OK	OK	----	----	----	----	----	----		----		----		----	----	----	----		
AW	----	134.0	----	46.0	----	89.27	----	89.85	89.10	----	----	25	72	----	52.89	45.41	----	OK	OK	OK	----	----	----	----	----	----		----		----		----	----	----	----		
AW	----	305.5	----	----	----	89.21	----	89.85	----	----	----	-12	36	----	52.89	45.41	----	OK	OK	OK	----	----	----	----	----	----		----		----		----	----	----	----		
BRIAN COBURN BOULEVARD (AADT=35,000)																																					
AA	182.0	----	9.5	----	----	89.36	89.67	----	89.28	-45	-16	----	----	62.58	----	----	Type B	----	----	Type B	2.44	-45	-16	----	----	55.68		----		----		Type B	----	----	Type B		
AB	----	184.0	----	9.5	----	89.37	----	89.67	89.28	----	----	-45	-17	----	61.21	53.65	----	----	Type C	Type C	Type C	2.44	----	----	----	-45	-17	----		56.52		53.65	*	----	Type C	Type C	Type C
AC	194.0	----	26.5	----	----	89.30	89.67	----	89.28	-35	-8	----	----	60.12	----	----	Type B	----	----	Type B	2.44	-35	-8	----	----	53.54		----		----		OK	----	----	OK		
AC	194.0	----	26.5	----	----	89.30	89.67	----	89.28	-68	-48	----	----	60.12	----	----	Type B	----	----	Type B	2.44	-68	-48	----	----	53.54		----		----		OK	----	----	OK		
AD	----	195.5	----	28.0	----	89.32	----	89.67	89.28	----	----	-36	-9	----	59.51	51.94	----	----	Type C	Type C	Type C	2.44	----	----	----	-36	-9	----		56.55		51.94	*	----	Type C	Type C	Type C
AD	----	195.5	----	28.0	----	89.32	----	89.67	89.28	----	----	-68	-49	----	59.51	51.94	----	----	Type C	Type C	Type C	2.44	----	----	----	-68	-49	----		56.55		51.94	*	----	Type C	Type C	Type C
AE	----	207.0	----	28.5	----	89.27	----	89.67	89.28	----	----	-29	-4	----	57.81	50.27	----	----	Type C	Type C	Type C	2.44	----	----	----	-29	-4	----		55.45		48.20	----	Type C	OK	Type C	
AE	----	207.0	----	28.5	----	89.27	----	89.67	89.28	----	----	-66	-40	----	57.81	50.27	----	----	Type C	Type C	Type C	----	----	----	----	----	----		55.45		48.20	----	Type C	OK	Type C		
AF	205.5	----	19.5	----	----	89.28	89.67	----	89.28	-29	-4	----	----	57.72	----	----	Type A	----	----	Type A	2.44	-18	-4	----	----	53.80		----		----		OK	----	----	OK		
AF	205.5	----	19.5	----	----	89.28	89.67	----	89.28	-67	-40	----	----	57.7																							

PROJECT NUMBER: 171203 PROJECT NAME: AQUAVIEW - NOISE STUDY														DATE: April 2018														TABLE 2C (BACK-TO-BACK)								
No.	DISTANCE					SOURCE	ELEVATIONS		BARRIER	ROAD ANGLE				NO BARRIER							WITH BARRIER															
	RECEIVER SOURCE		RECEIVER BARRIER		ELEV		RECEIVER			Outdoor		Living room / Night		DAY		NIGHT	OUTDOOR	CLAUSE		Governing Clause	BARRIER HEIGHT	BARRIER ANGLE		DAY		Bright Zone	DAY		Bright Zone	NIGHT		Bright Zone	Clause			Governing Clause
	Outdoor	Living/Night	Outdoor	Living/Night	'e'		Outdoor	Living/ Night		FROM	TO	FROM	TO	1.5 m	4.5m	6.5m		LIVING	BEDROOM			Outdoor 1.5 m	Living room/ Night	Outdoor 1.5 m	Living room 4.5m		Bedroom 6.5m	Living room 4.5m		Bedroom 6.5m	OUTDOOR		LIVING	BEDROOM		
	Outdoor	Living/Night	Outdoor	Living/Night	'e'			Night			FROM	TO	FROM	TO	dBA	dBA		dBA						m	FROM		TO	FROM		TO	dBA			dBA		
AQUAVIEW DRIVE (AADT=8,000)																																				
BD	----	120.0	----	----	----	89.21	----	90.20	----	----	----	-13	3	----	49.60	42.59	----	OK	OK	OK	----	----	----	----	----	----		49.26		42.27		----	OK	OK	OK	
BE	----	54.0	----	----	----	89.20	----	90.10	----	----	----	-36	5	----	54.21	46.69	----	OK	OK	OK	----	----	----	----	----	----		54.15		46.62		----	OK	OK	OK	
BF	----	20.0	----	----	----	89.18	----	90.10	----	----	----	-56	55	----	62.41	54.82	----	Type C	Type C	Type C	----	----	----	----	----	----		----		----		----	----	----	----	
BG	----	22.5	----	----	----	89.25	----	90.10	----	----	----	-49	60	----	61.81	54.22	----	Type C	Type C	Type C	----	----	----	----	----	----		----		----		----	----	----	----	
BH	----	34.5	----	22.0	----	89.45	----	89.85	89.39	----	----	-57	61	----	60.30	52.71	----	Type C	Type C	Type C	2.44	----	----	----	57	61	----	60.30	*	52.71	*	----	Type C	Type C	Type C	
BI	----	65.0	----	----	----	89.36	----	89.95	----	----	----	-19	24	----	53.16	45.57	----	OK	OK	OK	----	----	----	----	----	----		----		----		----	----	----	----	
TRANSIT WAY (AADT=550)																																				
BD	----	72.0	----	45.5	----	88.19	----	90.20	89.68	----	----	-4	47	----	49.60	42.59	----	OK	OK	OK	2.44	----	----	----	-4	5	----	49.26		42.27		----	OK	OK	OK	
BE	----	138.0	----	118.5	----	88.25	----	90.10	89.68	----	----	-7	12	----	54.21	46.69	----	OK	OK	OK	2.44	----	----	----	-7	-4	----	54.15		46.62		----	OK	OK	OK	
BF	----	191.5	----	----	----	88.34	----	90.10	----	----	----	-12	0	----	62.41	54.82	----	Type C	Type C	Type C	----	----	----	----	----	----		----		----		----	----	----	----	
Legend: Overridden by barrier values																																				

APPENDIX 'C'

Sample Calculations

Filename: AB.te
Description:

Time Period: Day/Night 16/8 hours

POINT "AB"

Road data, segment # 1: BRIAN COBURN (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 : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: BRIAN COBURN (day/night)

Angle1 Angle2 : -45.00 deg -17.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 184.00 / 184.00 m
Receiver height : 2.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -45.00 deg Angle2 : -17.00 deg
Barrier height : 2.44 m
Barrier receiver distance : 9.50 / 9.50 m
Source elevation : 89.37 m
Receiver elevation : 89.67 m
Barrier elevation : 89.28 m
Reference angle : 0.00

Road data, segment # 2: AQUAVIEW (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)

Data for Segment # 2: AQUAVIEW (day/night)

Angle1 Angle2 : -83.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 20.50 / 20.50 m
Receiver height : 2.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -83.00 deg Angle2 : 0.00 deg
Barrier height : 2.44 m
Barrier receiver distance : 7.50 / 7.50 m
Source elevation : 89.05 m
Receiver elevation : 89.67 m
Barrier elevation : 89.28 m
Reference angle : 0.00

Results segment # 1: BRIAN COBURN (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	!	2.50	!	2.82	!	92.10	

ROAD (0.00 + 47.39 + 0.00) = 47.39 dBA										
Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-45	-17	0.48	73.68	0.00	-16.15	-8.43	0.00	0.00	-4.62	44.47*
-45	-17	0.63	73.68	0.00	-17.75	-8.53	0.00	0.00	0.00	47.39

* Bright Zone !

Segment Leq : 47.39 dBA

Results segment # 2: AQUAVIEW (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	!	2.50	!	2.30	!	91.58	

ROAD (0.00 + 55.95 + 0.00) = 55.95 dBA										
Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-83	0	0.00	65.75	0.00	-1.36	-3.36	0.00	0.00	-5.08	55.95

Segment Leq : 55.95 dBA

Total Leq All Segments: 56.52 dBA

Results segment # 1: BRIAN COBURN (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	!	4.72	!	94.00	

ROAD (0.00 + 40.49 + 0.00) = 40.49 dBA										
Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-45	-17	0.42	66.08	0.00	-15.50	-8.39	0.00	0.00	0.00	42.19*
-45	-17	0.57	66.08	0.00	-17.09	-8.49	0.00	0.00	0.00	40.49

* Bright Zone !

Segment Leq : 40.49 dBA

Results segment # 2: AQUAVIEW (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	3.56	92.84

ROAD (0.00 + 53.44 + 0.00) = 53.44 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-83	0	0.00	58.16	0.00	-1.36	-3.36	0.00	0.00	-0.52	52.92*
-83	0	0.00	58.16	0.00	-1.36	-3.36	0.00	0.00	0.00	53.44

* Bright Zone !

Segment Leq : 53.44 dBA

Total Leq All Segments: 53.65 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.52
(NIGHT): 53.65

Filename: AC.te
Description:

Time Period: Day/Night 16/8 hours

POINT "AC"

Road data, segment # 1: AQUAVIEW (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)

Data for Segment # 1: AQUAVIEW (day/~~night~~)

Angle1 Angle2 : -67.00 deg 8.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / ~~0~~
Surface : 2 (Reflective ground surface)
Receiver source distance : 32.00 / ~~32.00~~ m
Receiver height : 1.50 / ~~4.50~~ m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -67.00 deg Angle2 : 8.00 deg
Barrier height : 2.44 m
Barrier receiver distance : 22.00 / ~~22.00~~ m
Source elevation : 89.07 m
Receiver elevation : 89.67 m
Barrier elevation : 89.28 m
Reference angle : 0.00

Road data, segment # 2: BRIAN COBURN (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 : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: BRIAN COBURN (day/~~night~~)

Angle1 Angle2 : -35.00 deg -8.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / ~~0~~
Surface : 2 (Reflective ground surface)
Receiver source distance : 194.00 / ~~194.00~~ m
Receiver height : 1.50 / ~~4.50~~ m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -35.00 deg Angle2 : -8.00 deg
Barrier height : 2.44 m
Barrier receiver distance : 26.50 / ~~26.50~~ m
Source elevation : 89.30 m
Receiver elevation : 89.67 m
Barrier elevation : 89.28 m
Reference angle : 0.00

Road data, segment # 3: BRIAN COBURN (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 : 60 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: BRIAN COBURN (day/night)

 Angle1 Angle2 : -68.00 deg -48.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 194.00 / 194.00 m
 Receiver height : 1.50 / 4.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -68.00 deg Angle2 : -48.00 deg
 Barrier height : 2.44 m
 Barrier receiver distance : 26.50 / 26.50 m
 Source elevation : 89.30 m
 Receiver elevation : 89.67 m
 Barrier elevation : 89.28 m
 Reference angle : 0.00

Results segment # 1: AQUAVIEW (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	1.47	90.75

ROAD (0.00 + 51.33 + 0.00) = 51.33 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-67	8	0.00	65.75	0.00	-3.29	-3.80	0.00	0.00	-7.33	51.33

Segment Leq : 51.33 dBA

Results segment # 2: BRIAN COBURN (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	1.84	91.12

ROAD (0.00 + 48.95 + 0.00) = 48.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-35	-8	0.00	73.68	0.00	-11.12	-8.24	0.00	0.00	-5.37	48.95

Segment Leq : 48.95 dBA

Results segment # 3: BRIAN COBURN (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	!	1.84	!	91.12	

ROAD (0.00 + 40.65 + 0.00) = 40.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-68	-48	0.51	73.68	0.00	-16.83	-10.99	0.00	0.00	-5.22	40.65

Segment Leq : 40.65 dBA

Total Leq All Segments: 53.54 dBA

~~Results segment # 1: AQUAVIEW (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	!	2.41	!	91.69	

~~ROAD (0.00 + 46.06 + 0.00) = 46.06 dBA~~

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-67	8	0.00	58.16	0.00	-3.29	-3.80	0.00	0.00	-5.00	46.06

~~Segment Leq : 46.06 dBA~~

~~Results segment # 2: BRIAN COBURN (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	!	4.43	!	93.71	

~~ROAD (0.00 + 46.72 + 0.00) = 46.72 dBA~~

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-35	-8	0.00	66.08	0.00	-11.12	-8.24	0.00	0.00	0.00	46.72*
-35	-8	0.00	66.08	0.00	-11.12	-8.24	0.00	0.00	0.00	46.72

~~* Bright Zone !~~

~~Segment Leq : 46.72 dBA~~

~~Results segment # 3: BRIAN COBURN (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	4.43	93.71

~~ROAD (0.00 + 37.48 + 0.00) = 37.48 dBA~~

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-68	-48	0.42	66.08	0.00	-15.83	-10.73	0.00	0.00	-1.90	37.62*
-68	-48	0.57	66.08	0.00	-17.46	-11.14	0.00	0.00	0.00	37.48

~~* Bright Zone !~~

~~Segment Leq : 37.48 dBA~~

~~Total Leq All Segments: 49.68 dBA~~

~~TOTAL Leq FROM ALL SOURCES (DAY): 53.54~~
~~(NIGHT): 49.68~~

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

POINT "AR"

Road data, segment # 1: AQUAVIEW (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)

Data for Segment # 1: AQUAVIEW (day/~~night~~)

 Angle1 Angle2 : -32.00 deg 81.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / ~~0~~
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 20.50 / ~~20.50~~ m
 Receiver height : 1.50 / ~~4.50~~ m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -32.00 deg Angle2 : 81.00 deg
 Barrier height : 2.44 m
 Barrier receiver distance : 7.50 / ~~7.50~~ m
 Source elevation : 89.08 m
 Receiver elevation : 89.67 m
 Barrier elevation : 89.23 m
 Reference angle : 0.00

Results segment # 1: AQUAVIEW (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 !	1.72 !	90.95

ROAD (0.00 + 55.55 + 0.00) = 55.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-32	81	0.00	65.75	0.00	-1.36	-2.02	0.00	0.00	-6.82	55.55

Segment Leq : 55.55 dBA

Total Leq All Segments: 55.55 dBA

~~Results segment # 1: AQUAVIEW (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	!	3.62	!	92.85

ROAD (0.00 + 54.78 + 0.00) = 54.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-32	81	0.00	58.16	0.00	-1.36	-2.02	0.00	0.00	-0.27	54.51*
-32	81	0.00	58.16	0.00	-1.36	-2.02	0.00	0.00	0.00	54.78

* Bright Zone !

Segment Leq : 54.78 dBA

Total Leq All Segments: 54.78 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.55
(NIGHT): 54.78

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

POINT "AT"

Road data, segment # 1: AQUAVIEW (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)

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

 Angle1 Angle2 : -78.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 19.00 / 19.00 m
 Receiver height : 2.50 / 4.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -78.00 deg Angle2 : -51.00 deg
 Barrier height : 2.44 m
 Barrier receiver distance : 7.50 / 7.50 m
 Source elevation : 88.99 m
 Receiver elevation : 89.67 m
 Barrier elevation : 89.23 m
 Reference angle : 0.00

Results segment # 1: AQUAVIEW (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	2.50	2.27	91.51

ROAD (0.00 + 51.42 + 63.66) = 63.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-78	-51	0.00	65.75	0.00	-1.03	-8.24	0.00	0.00	-5.07	51.42
-51	90	0.00	65.75	0.00	-1.03	-1.06	0.00	0.00	0.00	63.66

Segment Leq : 63.91 dBA

Total Leq All Segments: 63.91 dBA

Results segment # 1: AQUAVIEW (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	3.49	92.72

ROAD (0.00 + 48.89 + 56.07) = 56.83 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-78	-51	0.00	58.16	0.00	-1.03	-8.24	0.00	0.00	-1.53	47.36*
-78	-51	0.00	58.16	0.00	-1.03	-8.24	0.00	0.00	0.00	48.89
-51	90	0.00	58.16	0.00	-1.03	-1.06	0.00	0.00	0.00	56.07

* Bright Zone !

Segment Leq : 56.83 dBA

Total Leq All Segments: 56.83 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.91
(NIGHT): 56.83

Filename: AV.te
Description:

Time Period: Day/Night 16/8 hours

POINT "AV"

Road data, segment # 1: LAKEPOINTE (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)

Data for Segment # 1: LAKEPOINTE (day/~~night~~)

Angle1 Angle2 : -60.00 deg -49.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / ~~0~~
Surface : 2 (Reflective ground surface)
Receiver source distance : 61.50 / ~~61.50~~ m
Receiver height : 1.50 / ~~4.50~~ m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: AQUAVIEW (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)

Data for Segment # 2: AQUAVIEW (day/~~night~~)

Angle1 Angle2 : 32.00 deg 62.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / ~~0~~
Surface : 2 (Reflective ground surface)
Receiver source distance : 70.00 / ~~70.00~~ m
Receiver height : 1.50 / ~~4.50~~ m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: AQUAVIEW (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)

Data for Segment # 3: AQUAVIEW (day/~~night~~)

Angle1 Angle2 : 25.00 deg 72.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / ~~0~~
Surface : 1 (Absorptive ground surface)

Receiver source distance : 131.50 / ~~131.50~~ m
 Receiver height : 1.50 / ~~4.50~~ m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Road data, segment # 4: AQUAVIEW (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)

Data for Segment # 4: AQUAVIEW (day/~~night~~)

Angle1 Angle2 : -12.00 deg 36.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / ~~0~~
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 304.00 / ~~304.00~~ m
 Receiver height : 1.50 / ~~4.50~~ m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: LAKEPOINTE (day)

Source height = 1.50 m

ROAD (0.00 + 47.48 + 0.00) = 47.48 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-60	-49	0.00	65.75	0.00	-6.13	-12.14	0.00	0.00	0.00	47.48

Segment Leq : 47.48 dBA

Results segment # 2: AQUAVIEW (day)

Source height = 1.50 m

ROAD (0.00 + 51.28 + 0.00) = 51.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
32	62	0.00	65.75	0.00	-6.69	-7.78	0.00	0.00	0.00	51.28

Segment Leq : 51.28 dBA

Results segment # 3: AQUAVIEW (day)

Source height = 1.50 m

ROAD (0.00 + 42.97 + 0.00) = 42.97 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
25	72	0.66	65.75	0.00	-15.65	-7.13	0.00	0.00	0.00	42.97

Segment Leq : 42.97 dBA

Results segment # 4: AQUAVIEW (day)

Source height = 1.50 m

ROAD (0.00 + 38.17 + 0.00) = 38.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-12	36	0.66	65.75	0.00	-21.69	-5.89	0.00	0.00	0.00	38.17

Segment Leq : 38.17 dBA

Total Leq All Segments: 53.36 dBA

~~Results segment # 1: LAKEPOINTE (night)~~

~~Source height = 1.50 m~~

~~ROAD (0.00 + 39.89 + 0.00) = 39.89 dBA~~

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-60	-49	0.00	58.16	0.00	-6.13	-12.14	0.00	0.00	0.00	39.89

~~Segment Leq : 39.89 dBA~~

~~Results segment # 2: AQUAVIEW (night)~~

~~Source height = 1.50 m~~

~~ROAD (0.00 + 43.69 + 0.00) = 43.69 dBA~~

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
32	62	0.00	58.16	0.00	-6.69	-7.78	0.00	0.00	0.00	43.69

~~Segment Leq : 43.69 dBA~~

~~Results segment # 3: AQUAVIEW (night)~~

~~Source height = 1.50 m~~

~~ROAD (0.00 + 36.39 + 0.00) = 36.39 dBA~~

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
25	72	0.57	58.16	0.00	-14.80	-6.96	0.00	0.00	0.00	36.39

~~Segment Leq : 36.39 dBA~~

~~Results segment # 4: AQUAVIEW (night)~~

~~Source height = 1.50 m~~

~~ROAD (0.00 + 31.77 + 0.00) = 31.77 dBA~~

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-12	36	0.57	58.16	0.00	-20.52	-5.87	0.00	0.00	0.00	31.77

~~Segment Leq : 31.77 dBA~~

~~Total Leq All Segments: 45.91 dBA~~

TOTAL Leq FROM ALL SOURCES (DAY): 53.36
(NIGHT): ~~45.91~~

Filename: AY.te
Description:

Time Period: Day/Night 16/8 hours

POINT "AY"

Road data, segment # 1: AQUAVIEW (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)

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

Angle1 Angle2 : 2.00 deg 18.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 145.50 / 145.50 m
Receiver height : 4.50 / 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: LAKEPOINTE (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)

Data for Segment # 2: LAKEPOINTE (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 19.00 / 15.00 m
Receiver height : 4.50 / 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 3: TENTH LINE (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 : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 3: TENTH LINE (day/night)

Angle1 Angle2 : -90.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)

Receiver source distance : 24.50 / 24.50 m
Receiver height : 4.50 / 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: AQUAVIEW (day)

Source height = 1.50 m

ROAD (0.00 + 45.37 + 0.00) = 45.37 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
2	18	0.00	65.75	0.00	-9.87	-10.51	0.00	0.00	0.00	45.37

Segment Leq : 45.37 dBA

Results segment # 2: LAKEPOINTE (day)

Source height = 1.50 m

ROAD (0.00 + 64.72 + 0.00) = 64.72 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	65.75	0.00	-1.03	0.00	0.00	0.00	0.00	64.72

Segment Leq : 64.72 dBA

Results segment # 3: TENTH LINE (day)

Source height = 1.50 m

ROAD (0.00 + 68.53 + 0.00) = 68.53 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	73.68	0.00	-2.13	-3.01	0.00	0.00	0.00	68.53

Segment Leq : 68.53 dBA

Total Leq All Segments: 70.06 dBA

Results segment # 1: AQUAVIEW (night)

Source height = 1.50 m

ROAD (0.00 + 37.78 + 0.00) = 37.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
2	18	0.00	58.16	0.00	-9.87	-10.51	0.00	0.00	0.00	37.78

Segment Leq : 37.78 dBA

Results segment # 2: LAKEPOINTE (night)

Source height = 1.50 m

ROAD (0.00 + 58.16 + 0.00) = 58.16 dBA

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

Segment Leq : 58.16 dBA

Results segment # 3: TENTH LINE (night)

Source height = 1.50 m

ROAD (0.00 + 60.94 + 0.00) = 60.94 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.00	66.08	0.00	-2.13	-3.01	0.00	0.00	0.00	60.94

Segment Leq : 60.94 dBA

Total Leq All Segments: 62.79 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 70.06
(NIGHT): 62.79

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

POINT "BA"

Road data, segment # 1: AQUAVIEW (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)

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

 Angle1 Angle2 : -58.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 17.50 / 17.50 m
 Receiver height : 4.50 / 6.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Road data, segment # 2: LAKEPOINTE (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)

Data for Segment # 2: LAKEPOINTE (day/night)

 Angle1 Angle2 : -34.00 deg 45.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 35.50 / 35.50 m
 Receiver height : 4.50 / 6.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: AQUAVIEW (day)

 Source height = 1.50 m

ROAD (0.00 + 64.23 + 0.00) = 64.23 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-58	90	0.00	65.75	0.00	-0.67	-0.85	0.00	0.00	0.00	64.23

Segment Leq : 64.23 dBA

Results segment # 2: LAKEPOINTE (day)

Source height = 1.50 m

ROAD (0.00 + 58.43 + 0.00) = 58.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-34	45	0.00	65.75	0.00	-3.74	-3.58	0.00	0.00	0.00	58.43

Segment Leq : 58.43 dBA

Total Leq All Segments: 65.24 dBA

Results segment # 1: AQUAVIEW (night)

Source height = 1.50 m

ROAD (0.00 + 56.64 + 0.00) = 56.64 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-58	90	0.00	58.16	0.00	-0.67	-0.85	0.00	0.00	0.00	56.64

Segment Leq : 56.64 dBA

Results segment # 2: LAKEPOINTE (night)

Source height = 1.50 m

ROAD (0.00 + 50.84 + 0.00) = 50.84 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-34	45	0.00	58.16	0.00	-3.74	-3.58	0.00	0.00	0.00	50.84

Segment Leq : 50.84 dBA

Total Leq All Segments: 57.65 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.24
(NIGHT): 57.65

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

POINT "BE"

Road data, segment # 1: AQUAVIEW (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)

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

 Angle1 Angle2 : -36.00 deg 5.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 54.00 / 54.00 m
 Receiver height : 4.50 / 6.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: AQUAVIEW (day)

 Source height = 1.50 m

ROAD (0.00 + 53.76 + 0.00) = 53.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-36	5	0.00	65.75	0.00	-5.56	-6.42	0.00	0.00	0.00	53.76

Segment Leq : 53.76 dBA

Total Leq All Segments: 53.76 dBA

Results segment # 1: AQUAVIEW (night)

 Source height = 1.50 m

ROAD (0.00 + 46.17 + 0.00) = 46.17 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-36	5	0.00	58.16	0.00	-5.56	-6.42	0.00	0.00	0.00	46.17

Segment Leq : 46.17 dBA

Total Leq All Segments: 46.17 dBA

RT/Custom data, segment # 1: TRANSIT WAY (day/night)

 1 - Bus:
 Traffic volume : 500/50 veh/TimePeriod
 Speed : 80 km/h

Data for Segment # 1: TRANSIT WAY (day/night)

```

-----
Angle1   Angle2       :   -7.00 deg   12.00 deg
Wood depth      :           0       (No woods.)
No of house rows :           0 / 0
Surface         :           2       (Reflective ground surface)
Receiver source distance : 138.00 / 138.00 m
Receiver height  :           4.50 / 6.50 m
Topography      :           2       (Flat/gentle slope; with barrier)
Barrier angle1   :   -7.00 deg   Angle2 : -4.00 deg
Barrier height   :           2.44 m
Barrier receiver distance : 118.50 / 118.50 m
Source elevation :           88.25 m
Receiver elevation :           90.10 m
Barrier elevation :           89.68 m
Reference angle  :           0.00
-----

```

Results segment # 1: TRANSIT WAY (day)

Source height = 0.50 m

Barrier height for grazing incidence

```

-----
Source      ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          0.50 !          4.50 !          -0.10 !          89.58
-----

```

RT/Custom (0.00 + 25.34 + 43.44) = 43.51 dBA

```

-----
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
   -7    -4   0.00  63.59  -9.64 -17.78   0.00   0.00 -10.84  25.34
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
   -4    12   0.00  63.59  -9.64 -10.51   0.00   0.00   0.00  43.44
-----

```

Segment Leq : 43.51 dBA

Total Leq All Segments: 43.51 dBA

Results segment # 1: TRANSIT WAY (night)

Source height = 0.50 m

Barrier height for grazing incidence

```

-----
Source      ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          0.50 !          6.50 !          0.18 !          89.86
-----

```

RT/Custom (0.00 + 19.17 + 36.45) = 36.53 dBA

```

-----
Angle1 Angle2 Alpha RefLeq D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
   -7    -4   0.00  56.60  -9.64 -17.78   0.00   0.00 -10.02  19.17
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
   -4    12   0.00  56.60  -9.64 -10.51   0.00   0.00   0.00  36.45
-----

```

Segment Leq : 36.53 dBA

Total Leq All Segments: 36.53 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.15
(NIGHT): 46.62

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

POINT "BF"

Road data, segment # 1: AQUAVIEW (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)

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

 Angle1 Angle2 : -56.00 deg 55.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 20.00 / 20.00 m
 Receiver height : 4.50 / 6.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: AQUAVIEW (day)

 Source height = 1.50 m

ROAD (0.00 + 62.40 + 0.00) = 62.40 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-56	55	0.00	65.75	0.00	-1.25	-2.10	0.00	0.00	0.00	62.40

Segment Leq : 62.40 dBA

Total Leq All Segments: 62.40 dBA

Results segment # 1: AQUAVIEW (night)

 Source height = 1.50 m

ROAD (0.00 + 54.81 + 0.00) = 54.81 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-56	55	0.00	58.16	0.00	-1.25	-2.10	0.00	0.00	0.00	54.81

Segment Leq : 54.81 dBA

Total Leq All Segments: 54.81 dBA

RT/Custom data, segment # 1: TRANSIT WAY (day/night)

 1 - Bus:
 Traffic volume : 500/50 veh/TimePeriod
 Speed : 80 km/h

Data for Segment # 1: TRANSIT WAY (day/night)

```

-----
Angle1   Angle2       : -12.00 deg   0.00 deg
Wood depth      :      0      (No woods.)
No of house rows :      0 / 0
Surface         :      1      (Absorptive ground surface)
Receiver source distance : 191.50 / 191.50 m
Receiver height :      4.50 / 6.50 m
Topography      :      1      (Flat/gentle slope; no barrier)
Reference angle :      0.00
  
```

Results segment # 1: TRANSIT WAY (day)

Source height = 0.50 m

RT/Custom (0.00 + 34.12 + 0.00) = 34.12 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-12	0	0.60	63.59	-17.70	-11.78	0.00	0.00	0.00	34.12

Segment Leq : 34.12 dBA

Total Leq All Segments: 34.12 dBA

Results segment # 1: TRANSIT WAY (night)

Source height = 0.50 m

RT/Custom (0.00 + 27.79 + 0.00) = 27.79 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-12	0	0.54	56.60	-17.03	-11.78	0.00	0.00	0.00	27.79

Segment Leq : 27.79 dBA

Total Leq All Segments: 27.79 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.41
(NIGHT): 54.82

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

POINT "BH"

Road data, segment # 1: AQUAVIEW (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)

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

 Angle1 Angle2 : -57.00 deg 61.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 34.50 / 34.50 m
 Receiver height : 4.50 / 6.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : 57.00 deg Angle2 : 61.00 deg
 Barrier height : 2.44 m
 Barrier receiver distance : 22.00 / 22.00 m
 Source elevation : 89.45 m
 Receiver elevation : 89.85 m
 Barrier elevation : 89.39 m
 Reference angle : 0.00

Results segment # 1: AQUAVIEW (day)

 Source height = 1.50 m

Barrier height for grazing incidence

Source	! Receiver	! Barrier	! Elevation of
Height (m)	! Height (m)	! Height (m)	! Barrier Top (m)
-----	-----	-----	-----
1.50 !	4.50 !	2.79 !	92.18

ROAD (60.15 + 45.60 + 0.00) = 60.30 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-57	57	0.00	65.75	0.00	-3.62	-1.98	0.00	0.00	0.00	60.15
57	61	0.00	65.75	0.00	-3.62	-16.53	0.00	0.00	-4.79	40.81*
57	61	0.00	65.75	0.00	-3.62	-16.53	0.00	0.00	0.00	45.60

* Bright Zone !

Segment Leq : 60.30 dBA

Total Leq All Segments: 60.30 dBA

Results segment # 1: AQUAVIEW (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	!	6.50	!	3.51	!	92.90

ROAD (52.56 + 38.01 + 0.00) = 52.71 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-57	57	0.00	58.16	0.00	-3.62	-1.98	0.00	0.00	0.00	52.56
57	61	0.00	58.16	0.00	-3.62	-16.53	0.00	0.00	-2.72	35.28*
57	61	0.00	58.16	0.00	-3.62	-16.53	0.00	0.00	0.00	38.01

* Bright Zone !

Segment Leq : 52.71 dBA

Total Leq All Segments: 52.71 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.30
(NIGHT): 52.71

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

POINT "BJ"

RT/Custom data, segment # 1: TRANSIT WAY (day/night)

1 - Bus:
 Traffic volume : 500/50 veh/TimePeriod
 Speed : 80 km/h

Data for Segment # 1: TRANSIT WAY (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 : 26.50 / 26.50 m
 Receiver height : 2.50 / 4.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
 Barrier height : 2.44 m
 Barrier receiver distance : 7.50 / 7.50 m
 Source elevation : 90.90 m
 Receiver elevation : 90.08 m
 Barrier elevation : 89.68 m
 Reference angle : 0.00

Results segment # 1: TRANSIT WAY (day)

Source height = 0.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.50	2.50	2.57	92.25

RT/Custom (0.00 + 58.03 + 0.00) = 58.03 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	63.59	-3.74	-1.20	0.00	0.00	-4.95	53.70*
-90	90	0.66	63.59	-4.10	-1.46	0.00	0.00	0.00	58.03

* Bright Zone !

Segment Leq : 58.03 dBA

Total Leq All Segments: 58.03 dBA

Results segment # 1: TRANSIT WAY (night)

Source height = 0.50 m

Barrier height for grazing incidence

Source	!	Receiver	!	Barrier	!	Elevation of
Height (m)	!	Height (m)	!	Height (m)	!	Barrier Top (m)
-----	+	-----	+	-----	+	-----
0.50	!	4.50	!	4.00	!	93.68

RT/Custom (0.00 + 51.29 + 0.00) = 51.29 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-90	90	0.45	56.60	-3.59	-1.09	0.00	0.00	-0.40	51.53*
-90	90	0.60	56.60	-3.95	-1.35	0.00	0.00	0.00	51.29
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

* Bright Zone !

Segment Leq : 51.29 dBA

Total Leq All Segments: 51.29 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.03
(NIGHT): 51.29

Filename: BK.te
 Description:

Time Period: Day/Night 16/8 hours

POINT "BK"

RT/Custom data, segment # 1: TRANSIT WAY (day/~~night~~)

1 - Bus:
 Traffic volume : 500/~~50~~ veh/TimePeriod
 Speed : 80 km/h

Data for Segment # 1: TRANSIT WAY (day/~~night~~)

Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / ~~0~~
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 23.50 / ~~23.50~~ 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 : 2.44 m
 Barrier receiver distance : 4.50 / ~~7.50~~ m
 Source elevation : 90.90 m
 Receiver elevation : 90.08 m
 Barrier elevation : 89.68 m
 Reference angle : 0.00

Results segment # 1: TRANSIT WAY (day)

Source height = 0.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.50	1.50	1.87	91.55

RT/Custom (0.00 + 53.04 + 0.00) = 53.04 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.54	63.59	-3.01	-1.26	0.00	0.00	-6.29	53.04

Segment Leq : 53.04 dBA

Total Leq All Segments: 53.04 dBA

~~Results segment # 1: TRANSIT WAY (night)~~

~~Source height = 0.50 m~~

~~Barrier height for grazing incidence~~

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.50	1.50	1.87	91.55

0.50	4.50	3.89	93.57
-----------------	-----------------	-----------------	------------------

~~RT/Custom (0.00 + 52.13 + 0.00) = 52.13 dBA~~

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.45	56.60	-2.83	-1.09	0.00	0.00	-0.44	52.24*
-90	90	0.60	56.60	-3.12	-1.35	0.00	0.00	0.00	52.13

~~* Bright Zone !~~

~~Segment Leq : 52.13 dBA~~

~~Total Leq All Segments: 52.13 dBA~~

~~TOTAL Leq FROM ALL SOURCES (DAY): 53.04~~
~~(NIGHT): 52.13~~

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

POINT "BP"

Road data, segment # 1: TENTH LINE (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 : 60 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: TENTH LINE (day/~~night~~)

 Angle1 Angle2 : -34.00 deg -7.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / ~~0~~
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 99.00 / ~~99.00~~ m
 Receiver height : 1.50 / ~~4.50~~ m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -34.00 deg Angle2 : -7.00 deg
 Barrier height : 2.44 m
 Barrier receiver distance : 6.50 / ~~6.50~~ m
 Source elevation : 89.14 m
 Receiver elevation : 90.04 m
 Barrier elevation : 89.64 m
 Reference angle : 0.00

Results segment # 1: TENTH LINE (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 !	1.84 !	91.48

ROAD (0.00 + 50.94 + 0.00) = 50.94 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-34	-7	0.00	73.68	0.00	-8.20	-8.24	0.00	0.00	-6.30	50.94

 Segment Leq : 50.94 dBA

Total Leq All Segments: 50.94 dBA

~~Results segment # 1: TENTH LINE (night)~~

~~-----
 Source height = 1.50 m~~

~~Barrier height for grazing incidence~~

Source Height	! Receiver (m) ! Height	! Barrier (m) ! Height	! Elevation of Barrier Top (m)
1.50	4.50	4.64	94.28

ROAD (0.00 + 49.64 + 0.00) = 49.64 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-34	-7	0.00	66.08	0.00	-8.20	-8.24	0.00	0.00	0.00	49.64*
-34	-7	0.00	66.08	0.00	-8.20	-8.24	0.00	0.00	0.00	49.64

* Bright Zone !

Segment Leq : 49.64 dBA

Total Leq All Segments: 49.64 dBA

RT/Custom data, segment # 1: TRANSIT WAY (day/night)

1 - Bus:

Traffic volume : 500/50 veh/TimePeriod
Speed : 80 km/h

Data for Segment # 1: TRANSIT WAY (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 39.50 / 49.00 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 : 2.44 m
Barrier receiver distance : 3.50 / 6.50 m
Source elevation : 95.45 m
Receiver elevation : 90.04 m
Barrier elevation : 89.64 m
Reference angle : 0.00

Results segment # 1: TRANSIT WAY (day)

Source height = 0.50 m

Barrier height for grazing incidence

Source Height	! Receiver (m) ! Height	! Barrier (m) ! Height	! Elevation of Barrier Top (m)
0.50	1.50	2.29	91.93

RT/Custom (0.00 + 50.73 + 0.00) = 50.73 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.54	63.59	-6.49	-1.26	0.00	0.00	-5.11	50.73

Segment Leq : 50.73 dBA

Total Leq All Segments: 50.73 dBA

Results segment # 1: TRANSIT WAY (night)

~~Source height = 0.50 m~~

~~Barrier height for grazing incidence~~

Source	Receiver	Barrier	Elevation of
Height (m)	Height (m)	Height (m)	Barrier Top (m)
0.50	4.50	5.09	94.73

~~RT/Custom (0.00 + 47.02 + 0.00) = 47.02 dBA~~

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.45	56.60	-7.47	-1.09	0.00	0.00	-0.14	47.91*
-90	90	0.60	56.60	-8.23	-1.35	0.00	0.00	0.00	47.02

~~* Bright Zone !~~

~~Segment Leq : 47.02 dBA~~

~~Total Leq All Segments: 47.02 dBA~~

~~TOTAL Leq FROM ALL SOURCES (DAY): 53.85~~
~~(NIGHT): 51.53~~

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

POINT "BR"

Road data, segment # 1: TENTH LINE (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 : 60 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: TENTH LINE (day/night)

 Angle1 Angle2 : -32.00 deg 16.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 66.50 / 66.50 m
 Receiver height : 2.50 / 4.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -32.00 deg Angle2 : 16.00 deg
 Barrier height : 2.44 m
 Barrier receiver distance : 12.00 / 12.00 m
 Source elevation : 89.14 m
 Receiver elevation : 90.04 m
 Barrier elevation : 89.64 m
 Reference angle : 0.00

Results segment # 1: TENTH LINE (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	2.50	2.56	92.20

ROAD (0.00 + 61.47 + 0.00) = 61.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-32	16	0.00	73.68	0.00	-6.47	-5.74	0.00	0.00	-4.96	56.50*
-32	16	0.00	73.68	0.00	-6.47	-5.74	0.00	0.00	0.00	61.47

* Bright Zone !

Segment Leq : 61.47 dBA

Total Leq All Segments: 61.47 dBA

Results segment # 1: TENTH LINE (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	4.20	93.84

ROAD (0.00 + 53.87 + 0.00) = 53.87 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-32	16	0.00	66.08	0.00	-6.47	-5.74	0.00	0.00	0.00	53.87*
-32	16	0.00	66.08	0.00	-6.47	-5.74	0.00	0.00	0.00	53.87

* Bright Zone !

Segment Leq : 53.87 dBA

Total Leq All Segments: 53.87 dBA

RT/Custom data, segment # 1: TRANSIT WAY (day/night)

1 - Bus:
Traffic volume : 500/50 veh/TimePeriod
Speed : 80 km/h

Data for Segment # 1: TRANSIT WAY (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 : 49.00 / 49.00 m
Receiver height : 2.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.44 m
Barrier receiver distance : 6.50 / 6.50 m
Source elevation : 95.60 m
Receiver elevation : 90.04 m
Barrier elevation : 89.00 m
Reference angle : 0.00

Results segment # 1: TRANSIT WAY (day)

Source height = 0.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.50	2.50	4.01	93.01

RT/Custom (0.00 + 53.60 + 0.00) = 53.60 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	63.59	-7.78	-1.20	0.00	0.00	-0.39	54.22*
-90	90	0.66	63.59	-8.53	-1.46	0.00	0.00	0.00	53.60

* Bright Zone !

Segment Leq : 53.60 dBA

Total Leq All Segments: 53.60 dBA

Results segment # 1: TRANSIT WAY (night)

Source height = 0.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.50	4.50	5.75	94.75

RT/Custom (0.00 + 47.02 + 0.00) = 47.02 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.45	56.60	-7.47	-1.09	0.00	0.00	-0.09	47.96*
-90	90	0.60	56.60	-8.23	-1.35	0.00	0.00	0.00	47.02

* Bright Zone !

Segment Leq : 47.02 dBA

Total Leq All Segments: 47.02 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 62.13
(NIGHT): 54.69

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

POINT "BS"

Road data, segment # 1: TENTH LINE (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 : 60 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: TENTH LINE (day/night)

 Angle1 Angle2 : -32.00 deg 78.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 26.50 / 26.50 m
 Receiver height : 2.50 / 4.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -32.00 deg Angle2 : 78.00 deg
 Barrier height : 2.44 m
 Barrier receiver distance : 8.50 / 8.50 m
 Source elevation : 89.14 m
 Receiver elevation : 90.04 m
 Barrier elevation : 89.00 m
 Reference angle : 0.00

Results segment # 1: TENTH LINE (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 !	2.50 !	2.93 !	91.93

ROAD (0.00 + 69.07 + 0.00) = 69.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-32	78	0.00	73.68	0.00	-2.47	-2.14	0.00	0.00	-4.07	65.00*
-32	78	0.00	73.68	0.00	-2.47	-2.14	0.00	0.00	0.00	69.07

* Bright Zone !

Segment Leq : 69.07 dBA

Total Leq All Segments: 69.07 dBA

Results segment # 1: TENTH LINE (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	4.29	93.29

ROAD (0.00 + 61.47 + 0.00) = 61.47 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-32	78	0.00	66.08	0.00	-2.47	-2.14	0.00	0.00	-0.01	61.46*
-32	78	0.00	66.08	0.00	-2.47	-2.14	0.00	0.00	0.00	61.47

* Bright Zone !

Segment Leq : 61.47 dBA

Total Leq All Segments: 61.47 dBA

RT/Custom data, segment # 1: TRANSIT WAY (day/night)

1 - Bus:
Traffic volume : 500/50 veh/TimePeriod
Speed : 80 km/h

Data for Segment # 1: TRANSIT WAY (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 : 59.50 / 59.50 m
Receiver height : 2.50 / 4.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 2.44 m
Barrier receiver distance : 6.50 / 6.50 m
Source elevation : 95.85 m
Receiver elevation : 90.04 m
Barrier elevation : 89.00 m
Reference angle : 0.00

Results segment # 1: TRANSIT WAY (day)

Source height = 0.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.50	2.50	3.96	92.96

RT/Custom (0.00 + 52.20 + 0.00) = 52.20 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.51	63.59	-9.06	-1.20	0.00	0.00	-0.44	52.90*
-90	90	0.66	63.59	-9.93	-1.46	0.00	0.00	0.00	52.20

* Bright Zone !

Segment Leq : 52.20 dBA

Total Leq All Segments: 52.20 dBA

Results segment # 1: TRANSIT WAY (night)

Source height = 0.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
0.50	4.50	5.74	94.74

RT/Custom (0.00 + 45.67 + 0.00) = 45.67 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.45	56.60	-8.70	-1.09	0.00	0.00	-0.09	46.73*
-90	90	0.60	56.60	-9.57	-1.35	0.00	0.00	0.00	45.67

* Bright Zone !

Segment Leq : 45.67 dBA

Total Leq All Segments: 45.67 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 69.16
(NIGHT): 61.58

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

POINT "BX"

Road data, segment # 1: TENTH LINE (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 : 60 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: TENTH LINE (day/night)

 Angle1 Angle2 : -31.00 deg -14.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 125.00 / 125.00 m
 Receiver height : 2.50 / 4.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -31.00 deg Angle2 : -24.00 deg
 Barrier height : 2.44 m
 Barrier receiver distance : 60.50 / 60.50 m
 Source elevation : 89.14 m
 Receiver elevation : 90.04 m
 Barrier elevation : 89.64 m
 Reference angle : 0.00

Results segment # 1: TENTH LINE (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 !	2.50 !	1.98 !	91.62

ROAD (0.00 + 45.21 + 51.92) = 52.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-31	-24	0.00	73.68	0.00	-9.21	-14.10	0.00	0.00	-5.16	45.21
-24	-14	0.00	73.68	0.00	-9.21	-12.55	0.00	0.00	0.00	51.92

Segment Leq : 52.76 dBA

Total Leq All Segments: 52.76 dBA

Results segment # 1: TENTH LINE (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	3.01	92.65

ROAD (0.00 + 42.77 + 44.32) = 46.62 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-31	-24	0.00	66.08	0.00	-9.21	-14.10	0.00	0.00	-4.75	38.02*
-31	-24	0.00	66.08	0.00	-9.21	-14.10	0.00	0.00	0.00	42.77
-24	-14	0.00	66.08	0.00	-9.21	-12.55	0.00	0.00	0.00	44.32

* Bright Zone !

Segment Leq : 46.62 dBA

Total Leq All Segments: 46.62 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.76
(NIGHT): 46.62

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

POINT "BZ"

Road data, segment # 1: TENTH LINE (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 : 60 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: TENTH LINE (day/night)

 Angle1 Angle2 : -22.00 deg 24.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 65.50 / 65.50 m
 Receiver height : 2.50 / 4.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -17.00 deg Angle2 : 24.00 deg
 Barrier height : 2.44 m
 Barrier receiver distance : 13.50 / 13.50 m
 Source elevation : 89.14 m
 Receiver elevation : 90.02 m
 Barrier elevation : 89.64 m
 Reference angle : 0.00

Results segment # 1: TENTH LINE (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 !	2.50 !	2.49 !	92.13

ROAD (51.71 + 60.85 + 0.00) = 61.35 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-22	-17	0.00	73.68	0.00	-6.40	-15.56	0.00	0.00	0.00	51.71
-17	24	0.00	73.68	0.00	-6.40	-6.42	0.00	0.00	-4.99	55.86*
-17	24	0.00	73.68	0.00	-6.40	-6.42	0.00	0.00	0.00	60.85

 * Bright Zone !

Segment Leq : 61.35 dBA

Total Leq All Segments: 61.35 dBA

Results segment # 1: TENTH LINE (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	!	4.08	!	93.72

ROAD (44.11 + 53.25 + 0.00) = 53.75 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-22	-17	0.00	66.08	0.00	-6.40	-15.56	0.00	0.00	0.00	44.11
-17	24	0.00	66.08	0.00	-6.40	-6.42	0.00	0.00	0.00	53.25*
-17	24	0.00	66.08	0.00	-6.40	-6.42	0.00	0.00	0.00	53.25

* Bright Zone !

Segment Leq : 53.75 dBA

Total Leq All Segments: 53.75 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 61.35
(NIGHT): 53.75

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

POINT "CA"

Road data, segment # 1: TENTH LINE (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 : 60 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: TENTH LINE (day/~~night~~)

 Angle1 Angle2 : -23.00 deg 26.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / ~~0~~
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 62.00 / ~~62.00~~ m
 Receiver height : 1.50 / ~~4.50~~ m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -23.00 deg Angle2 : 26.00 deg
 Barrier height : 2.44 m
 Barrier receiver distance : 10.00 / ~~10.00~~ m
 Source elevation : 89.14 m
 Receiver elevation : 90.02 m
 Barrier elevation : 89.64 m
 Reference angle : 0.00

Results segment # 1: TENTH LINE (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 !	1.74 !	91.38

ROAD (0.00 + 55.51 + 0.00) = 55.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-23	26	0.00	73.68	0.00	-6.16	-5.65	0.00	0.00	-6.35	55.51

Segment Leq : 55.51 dBA

Total Leq All Segments: 55.51 dBA

~~Results segment # 1: TENTH LINE (night)~~

~~-----~~
~~Source height = 1.50 m~~

~~Barrier height for grazing incidence~~

Source Height	Receiver (m)	Barrier Height	Barrier (m)	Elevation of Barrier Top	(m)
1.50	4.50	4.25	93.89		

ROAD (0.00 + 54.27 + 0.00) = 54.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-23	26	0.00	66.08	0.00	-6.16	-5.65	0.00	0.00	0.00	54.27*
-23	26	0.00	66.08	0.00	-6.16	-5.65	0.00	0.00	0.00	54.27

* Bright Zone !

Segment Leq : 54.27 dBA

Total Leq All Segments: 54.27 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.51
(NIGHT): 54.27

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

POINT "CB"

Road data, segment # 1: TENTH LINE (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 : 60 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: TENTH LINE (day/night)

 Angle1 Angle2 : -83.00 deg 71.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 37.00 / 37.00 m
 Receiver height : 2.50 / 4.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : 65.00 deg Angle2 : 71.00 deg
 Barrier height : 2.44 m
 Barrier receiver distance : 20.00 / 20.00 m
 Source elevation : 89.14 m
 Receiver elevation : 90.04 m
 Barrier elevation : 89.64 m
 Reference angle : 0.00

Results segment # 1: TENTH LINE (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	2.50	1.87	91.51

ROAD (68.90 + 49.64 + 0.00) = 68.96 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-83	65	0.00	73.68	0.00	-3.92	-0.85	0.00	0.00	0.00	68.90
65	71	0.00	73.68	0.00	-3.92	-14.77	0.00	0.00	-5.34	49.64

Segment Leq : 68.96 dBA

Total Leq All Segments: 68.96 dBA

Results segment # 1: TENTH LINE (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	!	2.79	!	92.43

ROAD (61.31 + 47.39 + 0.00) = 61.48 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-83	65	0.00	66.08	0.00	-3.92	-0.85	0.00	0.00	0.00	61.31
65	71	0.00	66.08	0.00	-3.92	-14.77	0.00	0.00	-4.87	42.52*
65	71	0.00	66.08	0.00	-3.92	-14.77	0.00	0.00	0.00	47.39

* Bright Zone !

Segment Leq : 61.48 dBA

Total Leq All Segments: 61.48 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 68.96
(NIGHT): 61.48

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

POINT "CI"

Road data, segment # 1: AQUAVIEW (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)

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

 Angle1 Angle2 : -73.00 deg 0.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 20.00 / 20.00 m
 Receiver height : 2.50 / 4.50 m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -73.00 deg Angle2 : 0.00 deg
 Barrier height : 2.44 m
 Barrier receiver distance : 7.00 / 7.00 m
 Source elevation : 89.31 m
 Receiver elevation : 89.76 m
 Barrier elevation : 89.50 m
 Reference angle : 0.00

Results segment # 1: AQUAVIEW (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	2.50	2.25	91.75

ROAD (0.00 + 55.43 + 0.00) = 55.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-73	0	0.00	65.75	0.00	-1.25	-3.92	0.00	0.00	-5.15	55.43

Segment Leq : 55.43 dBA

Total Leq All Segments: 55.43 dBA

Results segment # 1: AQUAVIEW (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		!	3.55		!	93.05	

ROAD (0.00 + 52.99 + 0.00) = 52.99 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----
-73	0	0.00	58.16	0.00	-1.25	-3.92	0.00	0.00	-0.22	52.77*
-73	0	0.00	58.16	0.00	-1.25	-3.92	0.00	0.00	0.00	52.99
-----	-----	-----	-----	-----	-----	-----	-----	-----	-----	-----

* Bright Zone !

Segment Leq : 52.99 dBA

Total Leq All Segments: 52.99 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.43
(NIGHT): 52.99

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

POINT "CJ"

Road data, segment # 1: AQUAVIEW (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)

Data for Segment # 1: AQUAVIEW (day/~~night~~)

 Angle1 Angle2 : -72.00 deg 63.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 20.00 / ~~20.00~~ m
 Receiver height : 1.50 / ~~4.50~~ m
 Topography : 2 (Flat/gentle slope; with barrier)
 Barrier angle1 : -72.00 deg Angle2 : 63.00 deg
 Barrier height : 2.44 m
 Barrier receiver distance : 7.00 / ~~7.00~~ m
 Source elevation : 89.34 m
 Receiver elevation : 89.76 m
 Barrier elevation : 89.50 m
 Reference angle : 0.00

Results segment # 1: AQUAVIEW (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	1.61	91.11

ROAD (0.00 + 55.79 + 0.00) = 55.79 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	w.Adj	H.Adj	B.Adj	SubLeq
-72	63	0.00	65.75	0.00	-1.25	-1.25	0.00	0.00	-7.46	55.79

Segment Leq : 55.79 dBA

Total Leq All Segments: 55.79 dBA

~~Results segment # 1: AQUAVIEW (night)~~

~~Source height = 1.50 m~~

~~Barrier height for grazing incidence~~

Source Height	! Receiver (m) !	! Barrier Height (m) !	! Elevation of Barrier Top (m) !
1.50	4.50	3.56	93.06

ROAD (0.00 + 55.66 + 0.00) = 55.66 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-72	63	0.00	58.16	0.00	-1.25	-1.25	0.00	0.00	-0.10	55.55*
-72	63	0.00	58.16	0.00	-1.25	-1.25	0.00	0.00	0.00	55.66

* Bright Zone !

Segment Leq : 55.66 dBA

Total Leq All Segments: 55.66 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.79
(NIGHT): 55.66

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

POINT "CO"

Road data, segment # 1: AQUAVIEW (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)

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

 Angle1 Angle2 : -51.00 deg 15.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 39.00 / 39.00 m
 Receiver height : 2.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: AQUAVIEW (day)

 Source height = 1.50 m

ROAD (0.00 + 57.24 + 0.00) = 57.24 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-51	15	0.00	65.75	0.00	-4.15	-4.36	0.00	0.00	0.00	57.24

Segment Leq : 57.24 dBA

Total Leq All Segments: 57.24 dBA

Results segment # 1: AQUAVIEW (night)

 Source height = 1.50 m

ROAD (0.00 + 49.65 + 0.00) = 49.65 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-51	15	0.00	58.16	0.00	-4.15	-4.36	0.00	0.00	0.00	49.65

Segment Leq : 49.65 dBA

Total Leq All Segments: 49.65 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.24
 (NIGHT): 49.65

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

POINT "CQ"

Road data, segment # 1: AQUAVIEW (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)

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

 Angle1 Angle2 : -3.00 deg 28.00 deg
 : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 75.50 / 75.50 m
 Receiver height : 2.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: AQUAVIEW (day)

 Source height = 1.50 m

ROAD (0.00 + 51.09 + 0.00) = 51.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-3	28	0.00	65.75	0.00	-7.02	-7.64	0.00	0.00	0.00	51.09

Segment Leq : 51.09 dBA

Total Leq All Segments: 51.09 dBA

Results segment # 1: AQUAVIEW (night)

 Source height = 1.50 m

ROAD (0.00 + 43.50 + 0.00) = 43.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-3	28	0.00	58.16	0.00	-7.02	-7.64	0.00	0.00	0.00	43.50

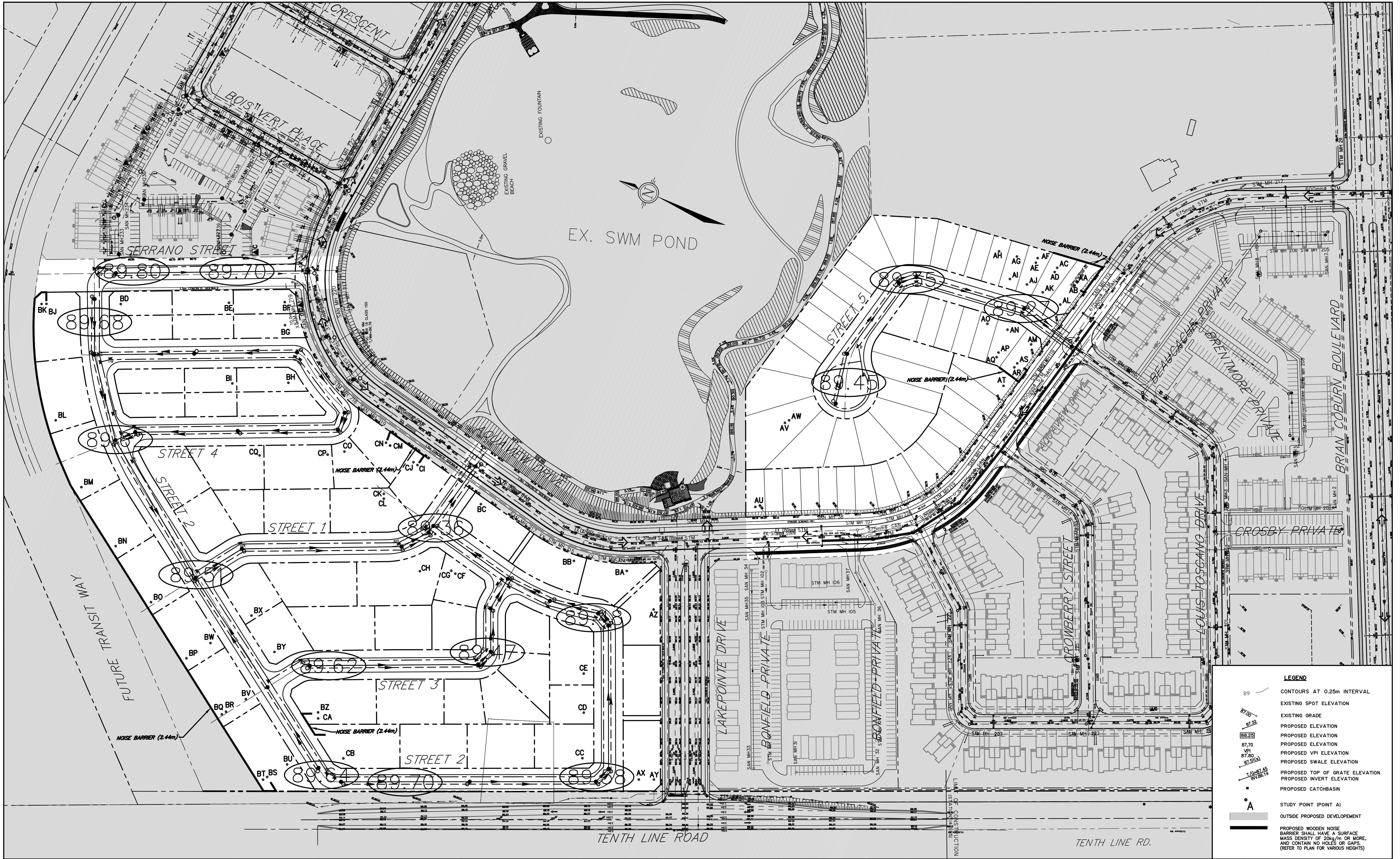
Segment Leq : 43.50 dBA

Total Leq All Segments: 43.50 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 51.09
 (NIGHT): 43.50

APPENDIX 'D'

Noise Study Plan - 171203-N1



THE POSITION OF ALL POLE LINES, CONDUITS, WATERMAINS, SEWERS AND OTHER UNDERGROUND AND OVERGROUND UTILITIES AND STRUCTURES IS NOT NECESSARILY SHOWN ON THE CONTRACT DRAWINGS, AND WHERE SHOWN, THE ACCURACY OF THE POSITION OF SUCH UTILITIES AND STRUCTURES IS NOT GUARANTEED. BEFORE STARTING WORK, DETERMINE THE EXACT LOCATION OF ALL SUCH UTILITIES AND STRUCTURES AND ASSUME ALL LIABILITY FOR DAMAGE TO THEM.

No.	REVISION	APPLIES WHEN DRAWING MODIFIED	DATE	BY

SCALE

1 : 1000

10m 0 10 20 30m

DESIGN

VLL

CHECKED

AGS

DRAWN

VLL

CHECKED

AGS

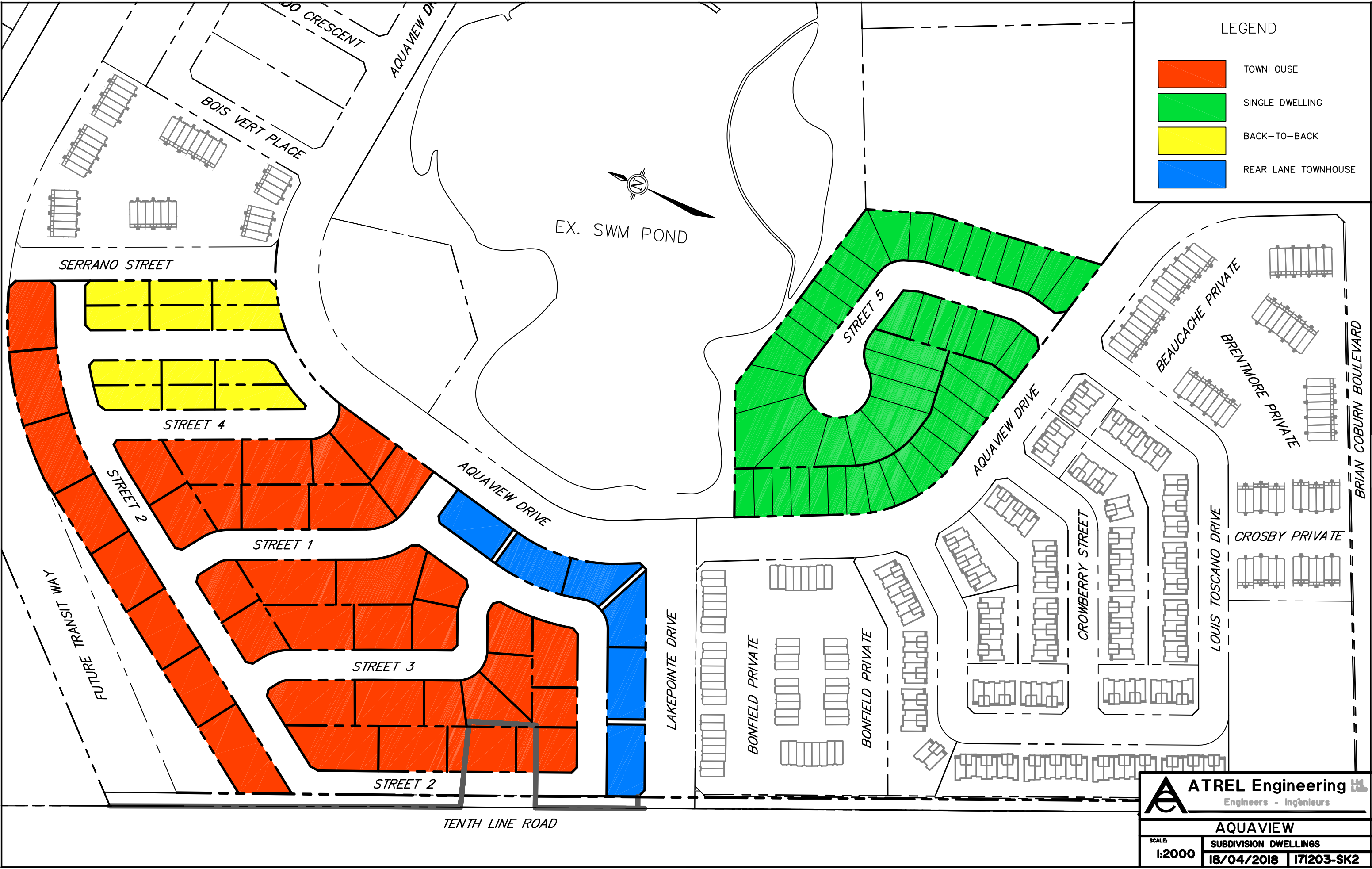
APPROVED

AGS

CITY OF OTTAWA	MINTO COMMUNITIES INC.	CLIENT No.
AQUAVIEW	INC.	148
PLAN	NOISE STUDY (GRADING PLAN)	PROJECT No.
		171203
		DRAWING No.
		171203-NI

APPENDIX 'E'

Subdivision Dwellings - 171203-SK2



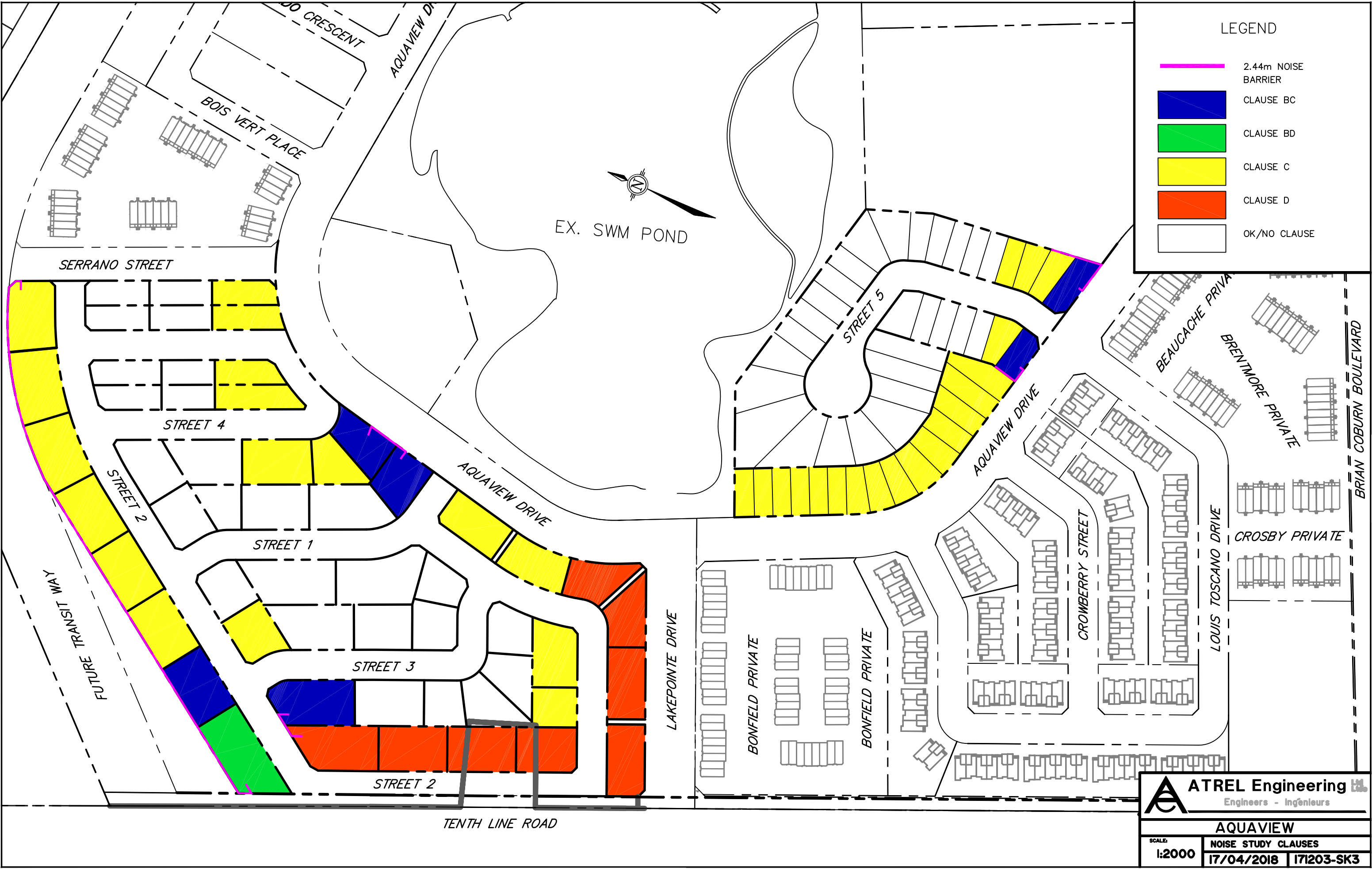
LEGEND

	TOWNHOUSE
	SINGLE DWELLING
	BACK-TO-BACK
	REAR LANE TOWNHOUSE

ATREL Engineering	
Engineers - Ingénieurs	
AQUAVIEW	
SCALE:	SUBDIVISION DWELLINGS
1:2000	18/04/2018 I71203-SK2

APPENDIX 'F'

Noise Study Clauses - 171203-SK3



**ATREL Engineering**
Engineers - Ingénieurs

AQUAVIEW
NOISE STUDY CLAUSES

SCALE:
1:2000

17/04/2018 | **171203-SK3**