NOISE IMPACT ASSESSMENT

AQUAVIL
TOWN OF THE BLUE MOUNTAINS

PREPARED FOR:
ROYALTON HOMES INC.

PREPARED BY:

CROZIER CONSULTING ENGINEERS
40 HURON STREET, SUITE 301
COLLINGWOOD, ON L9Y4R3

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CFCA FILE NO. 876-4866

CROZIER
CONSULTING ENGINEERS

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1.0 Introduction

Crozier Consulting Engineers (Crozier) was retained Royalton Homes Inc. (the client) to undertake a Noise Impact Assessment (NIA) in support of the Redline Draft Plan Application and the associated Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) Applications for the AquaVil development (the site). The site is located on the north side of Highway 26, between Blue Mountain Drive and Long Point Road in the Town of The Blue Mountains, County of Grey.

The objective of this study was to assess the projected impact of Highway 26 transportation noise on Phase 1 (West Lands) of the development and determine, if necessary, appropriate noise control measures to satisfy requirements of the Ministry of Environment (MOE), as documented in Guideline NPC-300, Environmental Noise Guidelines – Stationary and Transportation Sources – Approval and Planning.

2.0 Site Description

The site is divided by Brophy's Lane, with 15.0 hectares of land to the west, and 10.8 hectares of land to the east. The site is bounded by Blue Mountain Drive to the west, Long Point Road to the east, existing residential dwellings and Georgian Bay to the north and Highway 26 to the south. The Redline Draft Plan Application and associated Official Plan Amendment (OPA) and Zoning By-law Amendment (ZBA) applications propose the following:

Phase 1 – West Lands (2022 Build-out)

- 176 Condo Units
- 36 Townhouse Units
- 20 Semi-Detached Units
- 2 Single-Detached Units
- Closure of Blue Mountain Drive
- New public road (Street "A") to connect to Highway 26 opposite Hope Street

Phase 2 – East Lands (2025 Build-out)

- 100 Apartment Units
- 100 Retirement/Seniors Units
- 9,100 Square Metres Commercial GFA
- 50 Residential Units Mixed with Commercial
- Closure of Brophy's Lane
- Brophy's Lane will be realigned (Street "B") and will connect with Highway 26 where Long Point Road was previously connected. Long Point Road will form a new T-intersection with Street "B"

While the Draft Plan encompasses both the East and West Lands, this assessment is being prepared to support development applications specific to the West Lands. A second study would be completed in the future to support development applications for the East Lands when they are being prepared.

The location of the site is reflected on the development Site Location Plan included as **Figure 1**. The Draft Plan has been included as **Figure 2**.

3.0 Ministry of the Environment Road Noise Criteria

3.1 Outdoor Living Area

MOE guidelines for Outdoor Living Areas (OLA) state a criterion of 55 dBA during the daytime hours of 07:00 to 23:00. If the one-hour equivalent sound level (L_{eq} (16)) exceeds 55 dBA by 5 dBA or less, physical control measures may be applied to achieve the required reduction, or a warning clause (Type A) shall be provided to prospective purchasers or tenants. The required wording of warning clauses has been provided in **Appendix A**.

If the sound level exceeds 60 dBA, noise control measures should be implemented to reduce the level to 55 dBA. Only in cases where the required noise control measures are not feasible would an excess between 55 and 60 dBA be acceptable with a warning clause (Type B).

3.2 Daytime Exterior Building Façade

MOE guidelines for the plane of a bedroom or living/dining room window states that noise control measures are required if the daytime (07:00-23:00) sound level (L_{eq} (16)) at the plane of the window is between 55 – 65 dBA, in the form of forced air heating with a provision for the future installation of central air conditioning, as well as a warning clause (Type C).

If the daytime sound level exceeds 65 dBA at the plane of a bedroom or living/dining room window, installation of central air conditioning is required with a warning clause (Type D). Furthermore, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels are reduced to 45 dBA.

3.3 Nighttime Exterior Building Façade

MOE guidelines for the plane of a bedroom or living/dining room window states that noise control measures are required if nighttime (23:00-07:00) sound level (L_{eq} (8)) at the plane of the window is between 50 – 60 dBA, in the form of forced air heating with a provision for the future installation of central air conditioning, as well as a warning clause (Type C).

If the nighttime sound level is greater than 60 dBA, installation of central air conditioning is required with a warning clause (Type D). Furthermore, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels are reduced to 40 dBA.

4.0 Highway 26 Traffic Data

The MTO's "Provincial Highways Traffic Volumes 1988-2016" document was reviewed to analyze historical traffic volumes on Highway 26 in the Town of Blue Mountain. Specifically, the Annual Average Daily Traffic (AADT) and Summer Average Daily Traffic (SADT) between 2012 and 2016 were analyzed for the segment of Highway 26 at Grey Road 21 (S)/Long Point Road (N).

Growth rates of 1.18 percent and 1.66 percent compounded annually was calculated for the AADT and SADT, respectively, between 2012 and 2016 on Highway 26 at Grey Road 21 (S)/Long Point Road (N). Accordingly, a growth rate of 1.5 percent compounded annually was applied to forecast the 2029 traffic volumes. MTO data and growth rate calculations have been included in **Appendix B**.

The MTO data recorded a SADT of 10,600 vehicles in the year 2016. The 2029 traffic volume projections and characteristics are provided in **Table 1**.

Table 1: 2029 Traffic Volume Projection and Characteristics

Roadway	SADT	Truck Percentages		Day/Night Split	Speed Limit	Road Grade
		Medium	Heavy			
Highway 26	12,864	3%	1%	85/15	60 km/h	0%

Truck percentages were established from turning movement counts obtained on Highway 26 at Hope Street on Friday, July 5, 2019. Typical hourly counts from the AADT data were not available, therefore, an industry standard 85/15 day/night split was assumed.

5.0 Projected Sound Levels

Exterior building façade and outdoor living area sound levels were calculated for both the daytime and nighttime using the MOE ORNAMENT method and the STAMSON, V.5.03 program. Receptor locations are illustrated in **Figure 3**.

The following modeling assumptions were made in order to complete this assessment:

- Receptor locations were modeled at the centre of the most exposed façade of the proposed residential dwelling;
- Daytime exterior building façade was modeled on the first floor of the proposed residential dwellings;
- Nighttime exterior building façade was modeled on the second floor of the proposed residential dwellings;
- Outdoor living area was modeled three metres offset from the rear of the residential dwelling at the midpoint of the unit;
- Receptor locations were modeled based on the most current Draft Plan at the time of preparation of this report. Any material changes to the Draft Plan should be accompanied by updates to the noise impact model.
- The selected receptor location at Unit T1 is representative of Units T1 to T8 for exterior building façade levels.
- The selected receptor location at Unit T20 is representative of Units T9 to T20 for both exterior building façade and outdoor living area sound levels.
- The selected receptor location at Unit T23 is representative of Units T21 to T23 for the exterior building façade sound levels.
- The selected receptor location at Unit T24 is representative of Units T21 to T24 for outdoor living area sound levels, and representative of the sound levels at the T24 building façade only.
- The selected receptor location at Unit T25 is representative of Units T26 to T36 for both exterior building façade and outdoor living area sound levels.
- In addition, the outdoor living area sound levels of Unit T25 is representative of the outdoor living area sound level for Units T1-T8.
- The selected receptor locations at Units S21 and S22 are representative of the sound levels at their respective locations.

Figure 3 illustrates the unit numbers as well as their respective receptor locations. **Table 2** provides the calculated unattenuated sound levels modeled at various receptor locations in the proposed development. Detailed worksheets are provided in **Appendix C**.

Table 2: Unattenuated Projected Sound Levels

Unit #	Receptor Location		
	Outdoor Living Area level (L_{eq} (16)) dBA	Daytime Exterior Building Façade level (L_{eq} (16)) dBA	Nighttime Exterior Building Façade level (L_{eq} (8)) dBA
T1	-	47.50	43.68
T20	46.32	46.04	42.03
T23	-	49.41	45.37
T24	46.63	54.10	50.08
T25	43.90	55.37	51.34
S21	53.28	52.75	48.73
S22	55.04	56.61	52.49

6.0 Mitigation Requirements

The outdoor living area sound levels of Units T1, T20, T23 to T25, S21 and S22 did not exceed the MOE guidelines of 60 dBA, and thus do not require mitigation measures, such as a sound barrier wall. It is however noted that the outdoor living area sound level for S22 is between 55 dBA and 60 dBA. As such, a Warning Clause Type "A" would be required for this unit. Details relating to Warning Clause requirements are included in the subsequent section.

As noted previously, the outdoor living area of Unit T25 is representative of the outdoor sound levels for Units T1 to T8, and T25 to T36, the outdoor living area of Unit T20 is representative of Units T9 to T20 and the outdoor living area of Unit T24 is representative of Units T21 to T24. As the sound levels at Units T 20, T24 and T25 do not exceed 55 dBA, the same can be said for the remaining units.

7.0 Warning Clauses

Table 3 summarizes the warning clause requirements for each of the proposed units.

Table 3: Warning Clause Requirements

Unit #	No Warning Clause Required	Type 'A' Un-Mitigated OLA (55-60 dBA)	Type 'B' Mitigated OLA (55-60 dBA)	Type 'C' Daytime/Nighttime EBF (Day: 55-65 dBA; Night: 50-60 dBA)	Type 'D' Daytime/Nighttime EBF (Day: >65 dBA; Night: >60 dBA)
T1-T8	X				
T9-T20	X				
T21-T23	X				
T24				X	
T25-T36				X	
S21	X				
S22		X		X	

Sound levels at Units T1 to T23 and S21 meet all MOE guidelines for sound levels and as such will require no further mitigation or warning clauses.

Unit S22 experiences outdoor living area sound levels between 55 dBA and 60 dBA. Therefore, it exceeds the MOE criteria for outdoor living area sound levels and requires a Type 'A' warning clause in the absence of providing a sound barrier.

Units T24 to T36 and S22 experience sound levels between 55 and 65 during the daytime, and between 50 and 60 during the nighttime. Therefore, they exceed the MOE criteria for interior sound levels and will require a Type 'C' warning clause to be included in any purchase and sale or lease agreement. Furthermore, units will require the installation of forced air heating with provisions for the future installation of central air conditioning.

8.0 Conclusions and Recommendations

Sound levels from Highway 26 traffic volumes will result in exterior building façade sound levels for select units to be moderately above MOE noise criteria. Some units experience outdoor living area sound levels between 55 and 60 dBA, with the remainder of units experience outdoor sound levels less than 50 dBA. Sound levels were assessed utilizing the MOE ORNAMENT method and the STAMSON, V.5.03 program. Mitigation in the form of a sound barrier wall as per **Section 6.0** is **not** required to reduce outdoor living area sound levels to MOE requirements, however, warning clauses per **Section 7.0** are required for select units. Should any revisions to the draft plan be made, projected sound levels should be re-modeled to ensure the recommendations are valid.

The Redline Draft Plan Application and the associated OPA and ZBA Applications pertaining to the proposed residential development can be supported from a noise impact perspective.

Prepared by,

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APPENDIX A

Warning Clauses

TYPE "A":

"Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

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 traffic may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment"

TYPE "C":

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

TYPE "D":

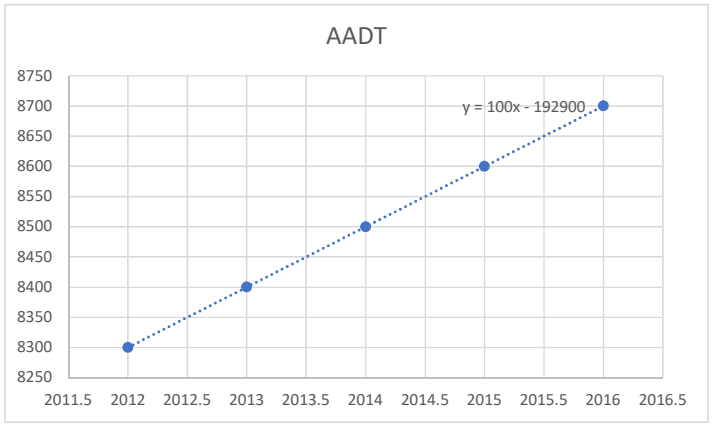
"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment"

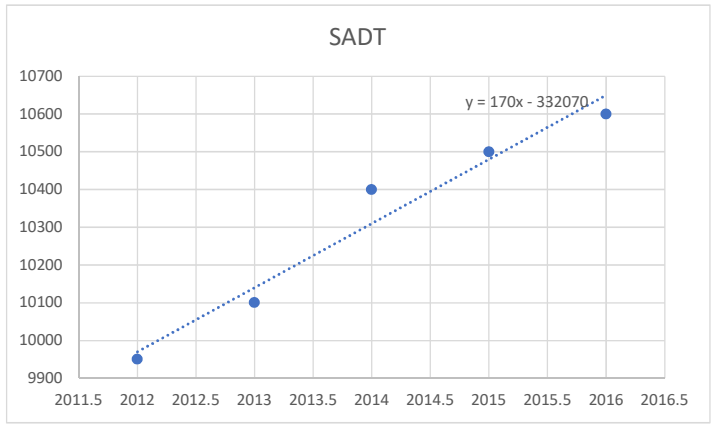
APPENDIX B

Growth Rate Calculations

Highway 26 @ Grey Road 21/Long Point Road

Year	AADT	SADT
2012	8300	9950
2013	8400	10100
2014	8500	10400
2015	8600	10500
2016	8700	10600





Year	AADT
2012	8300
2016	8700

1.18%

Year	AADT
2012	9970
2016	10650

1.66%

APPENDIX C

Worksheets

STAMSON 5.0 NORMAL REPORT Date: 06-12-2019 11:39:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: t1_ebf.te Time Period: Day/Night 16/8 hours
Description: Unit T1 - Exterior Building Facade

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

Car traffic volume	: 10497/1852	veh/TimePeriod *
Medium truck volume	: 328/58	veh/TimePeriod *
Heavy truck volume	: 109/19	veh/TimePeriod *
Posted speed limit	: 60	km/h
Road gradient	: 0	%
Road pavement	: 1	(Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT)	:	10600
Percentage of Annual Growth	:	1.50
Number of Years of Growth	:	13.00
Medium Truck % of Total Volume	:	3.00
Heavy Truck % of Total Volume	:	1.00
Day (16 hrs) % of Total Volume	:	85.00

Data for Segment # 1: (day/night)

Angle1 Angle2	: 25.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 72.00 / 72.00	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 = 1.00 m

ROAD (0.00 + 47.50 + 0.00) = 47.50 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
25	90	0.66	65.36	0.00	-11.31	-6.55	0.00	0.00	0.00	47.50

Segment Leq : 47.50 dBA

Total Leq All Segments: 47.50 dBA

Results segment # 1: (night)

Source height = 1.00 m

ROAD (0.00 + 43.68 + 0.00) = 43.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
25	90	0.59	60.82	0.00	-10.80	-6.35	0.00	0.00	0.00	43.68

Segment Leq : 43.68 dBA

Total Leq All Segments: 43.68 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 47.50
(NIGHT): 43.68

STAMSON 5.0 NORMAL REPORT Date: 06-12-2019 11:40:32
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: t20_ebf.te Time Period: Day/Night 16/8 hours
Description: Unit T20 - Exterior Building Facade

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

Car traffic volume	: 10497/1852	veh/TimePeriod *
Medium truck volume	: 328/58	veh/TimePeriod *
Heavy truck volume	: 109/19	veh/TimePeriod *
Posted speed limit	: 60	km/h
Road gradient	: 0	%
Road pavement	: 1	(Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT)	10600
Percentage of Annual Growth	1.50
Number of Years of Growth	13.00
Medium Truck % of Total Volume	3.00
Heavy Truck % of Total Volume	1.00
Day (16 hrs) % of Total Volume	85.00

Data for Segment # 1: (day/night)

Angle1 Angle2	: -17.00 deg	18.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 81.00 / 81.00	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 = 1.00 m

ROAD (0.00 + 46.04 + 0.00) = 46.04 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-17	18	0.66	65.36	0.00	-12.16	-7.16	0.00	0.00	0.00	46.04

Segment Leq : 46.04 dBA

Total Leq All Segments: 46.04 dBA

Results segment # 1: (night)

Source height = 1.00 m

ROAD (0.00 + 42.06 + 0.00) = 42.06 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-17	18	0.59	60.82	0.00	-11.61	-7.15	0.00	0.00	0.00	42.06

Segment Leq : 42.06 dBA

Total Leq All Segments: 42.06 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 46.04
(NIGHT): 42.06

STAMSON 5.0 NORMAL REPORT Date: 06-12-2019 11:41:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: t20_ola.te Time Period: Day/Night 16/8 hours
Description: Unit T20 - Outdoor Living Area

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

Car traffic volume : 10497/1852 veh/TimePeriod *
Medium truck volume : 328/58 veh/TimePeriod *
Heavy truck volume : 109/19 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 10600
Percentage of Annual Growth : 1.50
Number of Years of Growth : 13.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 1.00
Day (16 hrs) % of Total Volume : 85.00

Data for Segment # 1: (day/night)

Angle1 Angle2 : -17.00 deg 18.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 78.00 / 78.00 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 = 1.00 m

ROAD (0.00 + 46.32 + 0.00) = 46.32 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-17	18	0.66	65.36	0.00	-11.89	-7.16	0.00	0.00	0.00	46.32

Segment Leq : 46.32 dBA

Total Leq All Segments: 46.32 dBA

Results segment # 1: (night)

Source height = 1.00 m

ROAD (0.00 + 42.32 + 0.00) = 42.32 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-17	18	0.59	60.82	0.00	-11.35	-7.15	0.00	0.00	0.00	42.32

Segment Leq : 42.32 dBA

Total Leq All Segments: 42.32 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 46.32
(NIGHT): 42.32

STAMSON 5.0 NORMAL REPORT Date: 06-12-2019 11:46:02
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: t23_ebf.te Time Period: Day/Night 16/8 hours
Description: Unit T23 - Exterior Building Facade

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

Car traffic volume	: 10497/1852	veh/TimePeriod *
Medium truck volume	: 328/58	veh/TimePeriod *
Heavy truck volume	: 109/19	veh/TimePeriod *
Posted speed limit	: 60	km/h
Road gradient	: 0	%
Road pavement	: 1	(Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT)	10600
Percentage of Annual Growth	1.50
Number of Years of Growth	13.00
Medium Truck % of Total Volume	3.00
Heavy Truck % of Total Volume	1.00
Day (16 hrs) % of Total Volume	85.00

Data for Segment # 1: (day/night)

Angle1 Angle2	: -30.00 deg	25.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 66.00 / 66.00	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 = 1.00 m

ROAD (0.00 + 49.41 + 0.00) = 49.41 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-30	25	0.66	65.36	0.00	-10.68	-5.26	0.00	0.00	0.00	49.41

Segment Leq : 49.41 dBA

Total Leq All Segments: 49.41 dBA

Results segment # 1: (night)

Source height = 1.00 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
-30	25	0.59	60.82	0.00	-10.20	-5.25	0.00	0.00	0.00	45.37

Segment Leq : 45.37 dBA

Total Leq All Segments: 45.37 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 49.41
(NIGHT): 45.37

STAMSON 5.0 NORMAL REPORT Date: 06-12-2019 11:46:40
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: t24_ebf.te Time Period: Day/Night 16/8 hours
Description: Unit T24 - Exterior Building Facade

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

Car traffic volume	: 10497/1852	veh/TimePeriod *
Medium truck volume	: 328/58	veh/TimePeriod *
Heavy truck volume	: 109/19	veh/TimePeriod *
Posted speed limit	: 60	km/h
Road gradient	: 0	%
Road pavement	: 1	(Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT)	: 10600
Percentage of Annual Growth	: 1.50
Number of Years of Growth	: 13.00
Medium Truck % of Total Volume	: 3.00
Heavy Truck % of Total Volume	: 1.00
Day (16 hrs) % of Total Volume	: 85.00

Data for Segment # 1: (day/night)

Angle1 Angle2	: -64.00 deg	77.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 55.00 / 55.00	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 = 1.00 m

ROAD (0.00 + 54.10 + 0.00) = 54.10 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-64	77	0.66	65.36	0.00	-9.37	-1.89	0.00	0.00	0.00	54.10

Segment Leq : 54.10 dBA

Total Leq All Segments: 54.10 dBA

Results segment # 1: (night)

Source height = 1.00 m

ROAD (0.00 + 50.08 + 0.00) = 50.08 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-64	77	0.59	60.82	0.00	-8.94	-1.80	0.00	0.00	0.00	50.08

Segment Leq : 50.08 dBA

Total Leq All Segments: 50.08 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 54.10
(NIGHT): 50.08

STAMSON 5.0 NORMAL REPORT Date: 06-12-2019 11:42:50
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: t24_ola.te Time Period: Day/Night 16/8 hours
Description: Unit T24 - Outdoor Living Area

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

Car traffic volume : 10497/1852 veh/TimePeriod *
Medium truck volume : 328/58 veh/TimePeriod *
Heavy truck volume : 109/19 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 10600
Percentage of Annual Growth : 1.50
Number of Years of Growth : 13.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 1.00
Day (16 hrs) % of Total Volume : 85.00

Data for Segment # 1: (day/night)

Angle1 Angle2 : 20.00 deg 51.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 64.00 / 64.00 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 = 1.00 m

ROAD (0.00 + 46.63 + 0.00) = 46.63 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
20	51	0.66	65.36	0.00	-10.46	-8.27	0.00	0.00	0.00	46.63

Segment Leq : 46.63 dBA

Total Leq All Segments: 46.63 dBA

Results segment # 1: (night)

Source height = 1.00 m

ROAD (0.00 + 42.64 + 0.00) = 42.64 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
20	51	0.59	60.82	0.00	-9.99	-8.20	0.00	0.00	0.00	42.64

Segment Leq : 42.64 dBA

Total Leq All Segments: 42.64 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 46.63
(NIGHT): 42.64

STAMSON 5.0 NORMAL REPORT Date: 06-12-2019 11:47:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: t25_ebf.te Time Period: Day/Night 16/8 hours
Description: Unit T25 - Exterior Building Facade

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

Car traffic volume	: 10497/1852	veh/TimePeriod *
Medium truck volume	: 328/58	veh/TimePeriod *
Heavy truck volume	: 109/19	veh/TimePeriod *
Posted speed limit	: 60	km/h
Road gradient	: 0	%
Road pavement	: 1	(Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT)	10600
Percentage of Annual Growth	1.50
Number of Years of Growth	13.00
Medium Truck % of Total Volume	3.00
Heavy Truck % of Total Volume	1.00
Day (16 hrs) % of Total Volume	85.00

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	: 49.00 / 49.00	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 = 1.00 m

ROAD (0.00 + 55.37 + 0.00) = 55.37 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.36	0.00	-8.53	-1.46	0.00	0.00	0.00	55.37

Segment Leq : 55.37 dBA

Total Leq All Segments: 55.37 dBA

Results segment # 1: (night)

Source height = 1.00 m

ROAD (0.00 + 51.34 + 0.00) = 51.34 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.59	60.82	0.00	-8.15	-1.33	0.00	0.00	0.00	51.34

Segment Leq : 51.34 dBA

Total Leq All Segments: 51.34 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.37
(NIGHT): 51.34

STAMSON 5.0 NORMAL REPORT Date: 06-12-2019 11:43:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: t25_ola.te Time Period: Day/Night 16/8 hours
Description: Unit T25 - Outdoor Living Area

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

Car traffic volume : 10497/1852 veh/TimePeriod *
Medium truck volume : 328/58 veh/TimePeriod *
Heavy truck volume : 109/19 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT)	10600
Percentage of Annual Growth	1.50
Number of Years of Growth	13.00
Medium Truck % of Total Volume	3.00
Heavy Truck % of Total Volume	1.00
Day (16 hrs) % of Total Volume	85.00

Data for Segment # 1: (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 66.00 / 66.00 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 = 1.00 m

ROAD (0.00 + 43.90 + 0.00) = 43.90 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.66	65.36	0.00	-10.68	-1.46	0.00	-9.32	0.00	43.90

Segment Leq : 43.90 dBA

Total Leq All Segments: 43.90 dBA

Results segment # 1: (night)

Source height = 1.00 m

ROAD (0.00 + 49.29 + 0.00) = 49.29 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.59	60.82	0.00	-10.20	-1.33	0.00	0.00	0.00	49.29

Segment Leq : 49.29 dBA

Total Leq All Segments: 49.29 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 43.90
(NIGHT): 49.29

STAMSON 5.0 NORMAL REPORT Date: 06-12-2019 11:48:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: s21_ebf.te Time Period: Day/Night 16/8 hours
Description: Unit S21 - Exterior Building Facade

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

Car traffic volume	: 10497/1852	veh/TimePeriod *
Medium truck volume	: 328/58	veh/TimePeriod *
Heavy truck volume	: 109/19	veh/TimePeriod *
Posted speed limit	: 60	km/h
Road gradient	: 0	%
Road pavement	: 1	(Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT)	: 10600
Percentage of Annual Growth	: 1.50
Number of Years of Growth	: 13.00
Medium Truck % of Total Volume	: 3.00
Heavy Truck % of Total Volume	: 1.00
Day (16 hrs) % of Total Volume	: 85.00

Data for Segment # 1: (day/night)

Angle1 Angle2	: -90.00 deg	16.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 53.00 / 53.00	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 = 1.00 m

ROAD (0.00 + 52.75 + 0.00) = 52.75 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	16	0.66	65.36	0.00	-9.10	-3.51	0.00	0.00	0.00	52.75

Segment Leq : 52.75 dBA

Total Leq All Segments: 52.75 dBA

Results segment # 1: (night)

Source height = 1.00 m

ROAD (0.00 + 48.73 + 0.00) = 48.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	16	0.59	60.82	0.00	-8.69	-3.41	0.00	0.00	0.00	48.73

Segment Leq : 48.73 dBA

Total Leq All Segments: 48.73 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 52.75
(NIGHT): 48.73

STAMSON 5.0 NORMAL REPORT Date: 06-12-2019 11:44:30
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: s21_ola.te Time Period: Day/Night 16/8 hours
Description: Unit S21 - Outdoor Living Area

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

Car traffic volume : 10497/1852 veh/TimePeriod *
Medium truck volume : 328/58 veh/TimePeriod *
Heavy truck volume : 109/19 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 10600
Percentage of Annual Growth : 1.50
Number of Years of Growth : 13.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 1.00
Day (16 hrs) % of Total Volume : 85.00

Data for Segment # 1: (day/night)

Angle1 Angle2 : -90.00 deg 24.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 52.00 / 52.00 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 = 1.00 m

ROAD (0.00 + 53.28 + 0.00) = 53.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	24	0.66	65.36	0.00	-8.96	-3.11	0.00	0.00	0.00	53.28

Segment Leq : 53.28 dBA

Total Leq All Segments: 53.28 dBA

Results segment # 1: (night)

Source height = 1.00 m

ROAD (0.00 + 49.25 + 0.00) = 49.25 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	24	0.59	60.82	0.00	-8.56	-3.02	0.00	0.00	0.00	49.25

Segment Leq : 49.25 dBA

Total Leq All Segments: 49.25 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 53.28
(NIGHT): 49.25

STAMSON 5.0 NORMAL REPORT Date: 06-12-2019 11:49:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: s22_ebf.te Time Period: Day/Night 16/8 hours
Description: Unit S22 - Exterior Building Facade

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

Car traffic volume	: 10497/1852	veh/TimePeriod *
Medium truck volume	: 328/58	veh/TimePeriod *
Heavy truck volume	: 109/19	veh/TimePeriod *
Posted speed limit	: 60	km/h
Road gradient	: 0	%
Road pavement	: 1	(Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT)	10600
Percentage of Annual Growth	1.50
Number of Years of Growth	13.00
Medium Truck % of Total Volume	3.00
Heavy Truck % of Total Volume	1.00
Day (16 hrs) % of Total Volume	85.00

Data for Segment # 1: (day/night)

Angle1 Angle2	: -69.00 deg	90.00 deg
Wood depth	: 0	(No woods.)
No of house rows	: 0 / 0	
Surface	: 1	(Absorptive ground surface)
Receiver source distance	: 40.00 / 40.00	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 = 1.00 m

ROAD (0.00 + 56.61 + 0.00) = 56.61 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-69	90	0.66	65.36	0.00	-7.07	-1.68	0.00	0.00	0.00	56.61

Segment Leq : 56.61 dBA

Total Leq All Segments: 56.61 dBA

Results segment # 1: (night)

Source height = 1.00 m

ROAD (0.00 + 52.49 + 0.00) = 52.49 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-69	90	0.59	60.82	0.00	-6.75	-1.58	0.00	0.00	0.00	52.49

Segment Leq : 52.49 dBA

Total Leq All Segments: 52.49 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.61
(NIGHT): 52.49

STAMSON 5.0 NORMAL REPORT Date: 06-12-2019 11:45:08
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: s22_ola.te Time Period: Day/Night 16/8 hours
Description: Unit S22 - Outdoor Living Area

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

Car traffic volume : 10497/1852 veh/TimePeriod *
Medium truck volume : 328/58 veh/TimePeriod *
Heavy truck volume : 109/19 veh/TimePeriod *
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 10600
Percentage of Annual Growth : 1.50
Number of Years of Growth : 13.00
Medium Truck % of Total Volume : 3.00
Heavy Truck % of Total Volume : 1.00
Day (16 hrs) % of Total Volume : 85.00

Data for Segment # 1: (day/night)

Angle1 Angle2 : -90.00 deg 33.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 43.00 / 43.00 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 = 1.00 m

ROAD (0.00 + 55.04 + 0.00) = 55.04 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	33	0.66	65.36	0.00	-7.59	-2.72	0.00	0.00	0.00	55.04

Segment Leq : 55.04 dBA

Total Leq All Segments: 55.04 dBA

Results segment # 1: (night)

Source height = 1.00 m

ROAD (0.00 + 50.94 + 0.00) = 50.94 dBA

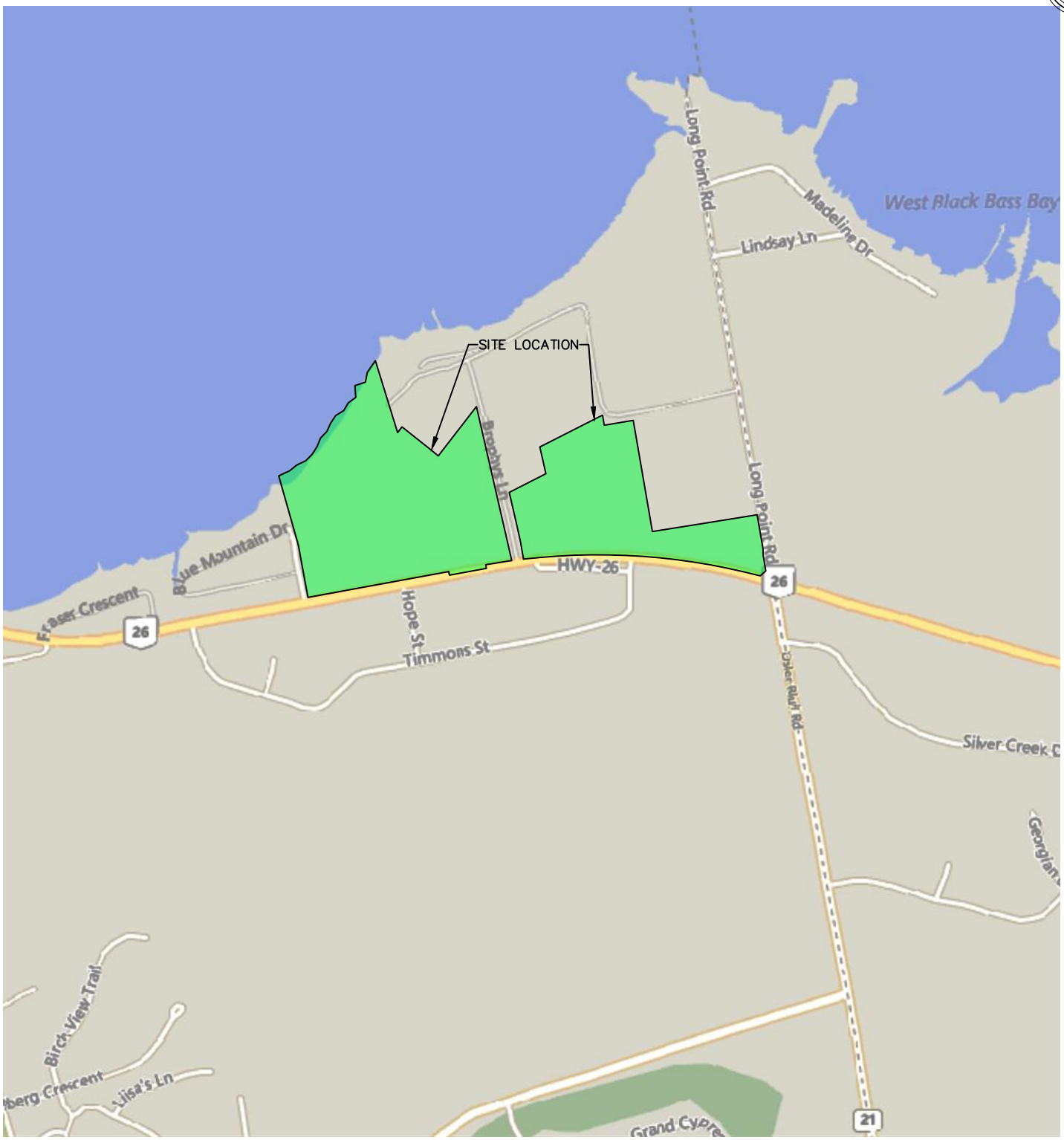
Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	33	0.59	60.82	0.00	-7.25	-2.63	0.00	0.00	0.00	50.94

Segment Leq : 50.94 dBA

Total Leq All Segments: 50.94 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.04
(NIGHT): 50.94

LIST OF FIGURES



200 0m 200 400 600 800

SCALE: 1:10000

Project

AQUAVIL
TOWN OF THE BLUE MOUNTAINS

Drawing

SITE LOCATION

CROZIER CONSULTING ENGINEERS
8 Market Street
Suite 600
Toronto, ON M5E 1M6
416-477-3392 T
www.cfcrozier.ca

Drawn By	Design By	Project
M.V.R.	M.V.R.	876–4866

Scale	Date	Check By	Drawing
1:12500	SEP/27/2019	B.H.	FIG 1

J:\800\876 - Royalton\4866-Craigleith Village\CAD\Civil_Sheets\Working\4866-701.dwg, Fig 1, 2019-09-26 5:28:17 PM, mrichardson

DRAFT PLAN OF SUBDIVISION OF
LOTS 59, 110, 111 AND 112
PART OF LOTS 86, 87, 88, 89, 113 AND 114
PART OF BLOCK D (CLOSED BY BY-LAW)
REGISTERED PLAN 529
(FORMERLY TOWNSHIP OF COLLINGWOOD)
TOWN OF THE BLUE MOUNTAINS
COUNTY OF GREY

SCALE 1 : 1000

20 10 0 20 40 60 Metres

LLOYD & PURCELL A DIVISION OF SCHAEFFER DZALDOV BENNETT LTD.

LAND USE STATISTICS

	AREA
TOWNHOMES (BLOCK 1)	1.24 ha.
SINGLE FAMILY DWELLINGS (BLOCKS 17 AND 18)	0.41 ha.
SEMI DETACHED HOMES (BLOCKS 3 AND 4)	0.97 ha.
CONDOMINIUMS (BLOCKS 5 AND 11)	2.78 ha.
MIX-USE RESIDENTIAL/COMMERCIAL (BLOCKS 19 AND 24)	1.15 ha.
COMMERCIAL (BLOCKS 21 AND 25)	3.15 ha.
PRIVATE RECREATION (BLOCK 12)	0.23 ha.
INSTITUTIONAL (BLOCKS 15 AND 23)	0.65 ha.
OPEN SPACE/ ENVIRONMENTAL PROTECTION (BLOCKS 2, 6, 16, 20 AND 22)	10.79 ha.
STORM WATER MANAGEMENT (BLOCKS 7, 10 AND 13)	1.01 ha.
BLOCK USE TOTAL	223,808.1 m2 (22.38 ha.)
STREETS A, AND B	1.75 ha.
ROADS/ ROAD WIDENING/ DAY LIGHT TRIANGLE (BLOCKS 8, 9, 14, 26, 28, 29 AND 32 TO 35)	1.27 ha.
MTO SETBACK (BLOCK 27 AND 31)	0.40 ha.
ROAD SYSTEM TOTAL	34,198.5 m2 (3.42 ha.)
TOTAL SITE	258,006.6 m2 (25.80 ha.)
TOTAL OPEN SPACE	121,990.0 m2 (47.28%)

PLANNING ACT, SECTION 51(17)

(a) AS SHOWN ON DRAFT PLAN
(b) AS SHOWN ON DRAFT PLAN
(c) AS SHOWN ON DRAFT PLAN
(d) SEE SCHEDULE OF LAND USE
(e)
(f) AS SHOWN ON DRAFT PLAN
(g) AS SHOWN ON DRAFT PLAN
(h) MUNICIPAL PIPED WATER AT THE TIME OF DEVELOPMENT
(i) SANDY LOAM
(j) AS SHOWN ON DRAFT PLAN
(k) AVAILABLE
(l) AS SHOWN ON DRAFT PLAN

SURVEYOR'S CERTIFICATE:

I HEREBY CERTIFY THAT THE BOUNDARIES OF THE LANDS TO BE SUBDIVIDED AND THEIR RELATIONSHIP TO THE ADJACENT LANDS ARE ACCURATELY AND CORRECTLY SHOWN ON THIS PLAN.

.... DAY OF .... 2019.

....
T. M. PURCELL
ONTARIO LAND SURVEYOR

OWNER'S CERTIFICATE:

AS OF THE DATE ON THIS PLAN THE UNDERSIGNED BEING THE REGISTERED OWNERS OF THE SUBJECT LANDS HEREBY AUTHORIZE LLOYD & PURCELL A DIVISION OF SCHAEFFER DZALDOV BENNETT LTD., HENSEL DESIGN GROUP INC. TO PREPARE AND SUBMIT THIS DRAFT PLAN OF SUBDIVISION AND TO MAKE APPLICATION TO THE COUNTY OF GREY FOR APPROVAL THEREOF.

DATED THE DAY OF , 2019.

2590019 ONTARIO INC.

ROYALTON HOMES
10114 HWY 26, UNIT 4
COLLINGWOOD, ONTARIO
L9Y 3Z1

....
PERSON, TITLE
I HAVE THE AUTHORITY TO BIND THE CORPORATION

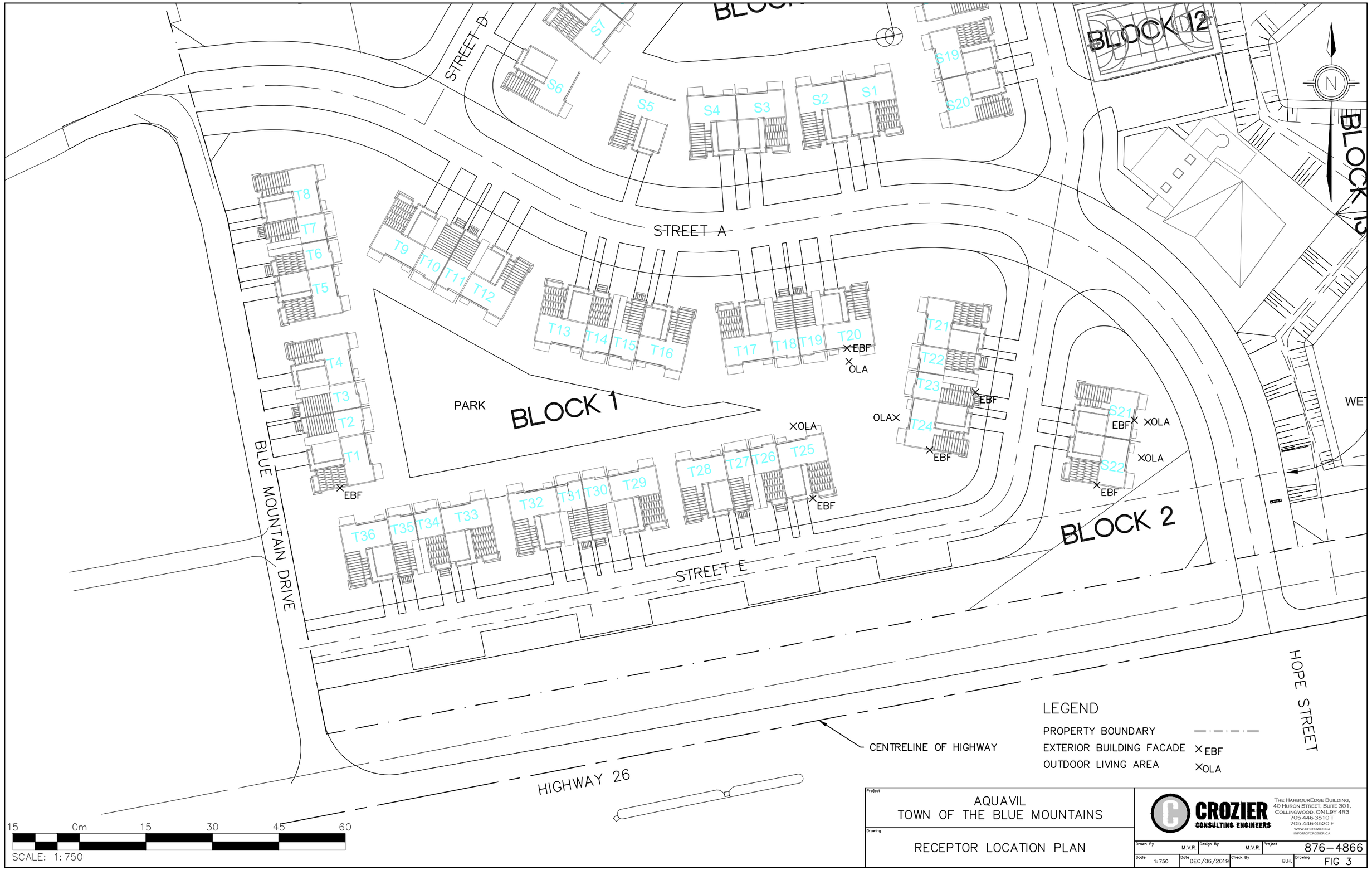
No.	Date	
12	Aug 16 2019	Revised Land Use Statistics, Streets and Block Layout
11	Apr 29 2014	Revised Land Use Statistics, Streets: Remove F, added E
10	Oct 31 2013	block 22 removed, block 26 renamed block 22, block 21 area increase by 0.2ha
9	15/08/12	Revised alignment street c, d e; remove block 25;add wave uprush line
8	28/06/12	Removed Wet Land Area Between Blocks 21 and 22 Extending into Street B.
7	26/06/12	Added Land use Statistics and Areas to Face of Plan
6	30/05/12	Add Dimnsions to Proposed Block Fabric.
5	29/05/12	Add contours and spot elevations
4	01/05/12	revised storm water blocks;added wetland/topo;change some lots to blocks, etc
3	04/04/12	RESCALED DRAWING FROM 1:2000 TO 1:1000
2	02/04/12	REVISED AS PER CLIENTS
1	30/03/12	ISSUED FOR CLIENT REVIEW.

LLOYD & PURCELL
A DIVISION OF SCHAEFFER DZALDOV BENNETT LTD.
ONTARIO LAND SURVEYORS
1228 GORHAM STREET, UNIT 28, NEWMARKET, ONTARIO, L3Y 8Z1
(905) 895-6416 Fax (905) 853-5837 E-MAIL: l_p@ontariolandsurveyors.ca
TORONTO LINE (905) 479-6500 Fax (905) 479-6515
WWW.ONTARIOLANDSURVEYORS.CA

CAD: BI/CF/DL	PC: ?	JOB: 12–176
CALC: BI	CHK'D: TMP	FILE: PLAN 529 / 1

LLOYD & PURCELL

Plotted : September 17, 2019



Project
AQUAVIL
TOWN OF THE BLUE MOUNTAINS

Drawing
RECEPTOR LOCATION PLAN

CROZIER CONSULTING ENGINEERS
THE HARBOUREDGE BUILDING,
40 HURON STREET, SUITE 301,
COLLINGWOOD, ON L9Y 4R3
705 446-3510 T
705 446-3520 F
WWW.CFCROZIER.CA
INFO@CFCROZIER.CA

Drawn By	Design By	Project
M.V.R.	M.V.R.	876-4866
Scale	Date	Check By	Drawing
1:750	DEC/06/2019	B.H.	FIG 3

J:\800\876 - Royalton\4866-Craigleith Village\CAD\Civil_Sheets\Working\4866_903.dwg, Fig 3, 2019-12-06 12:07:35 PM, mrichardson