

**879 River Road Subdivision -
Preliminary Noise Assessment**

Project #160401394



Prepared for:
Richcraft Group of Companies
Prepared by:
Stantec Consulting Ltd.

April 6, 2018

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879 RIVER ROAD SUBDIVISION - PRELIMINARY NOISE ASSESSMENT

Introduction
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1.0 INTRODUCTION

1.1 PURPOSE OF REPORT

Richcraft Group of Companies have retained Stantec Consulting Ltd. to prepare a preliminary environmental noise assessment for the 879 River Road Subdivision. The subject property is located northeast of the intersection of River Road and Nicolls Island Road within the Riverside South Community (RSC). A draft plan application has been submitted and a Phase 1 Noise Control Feasibility Study is required to address City policy regarding residential development adjacent to arterial and collector roads.

The purpose of this report is to:

- outline the Ministry's guidelines and criteria for noise levels and residential land use;
- apply the noise level standards of the Ontario Ministry of the Environment and Climate Change to the site in conjunction with the City of Ottawa document "Environmental Noise Control Guidelines";
- determine the extent to which noise level contours will be of concern to future residents of the proposed development, using the computerized version (STAMSON 5.03) of the MOECC's noise model;
- outline potential locations for noise attenuation, as necessary, to achieve acceptable noise levels for future residents of the proposed development.

1.2 LOCATION & SITE PLAN CONCEPTS

The site is bound by River Road to the west, proposed residential development (RSDC Phase 15) to the north, existing residential to the southwest and undeveloped land for future residential land use to the east and south of the site. The property outline and location is illustrated in . The proposed development consists of approximately 3.93ha of land and contains townhome blocks. This report will focus on the noise contours that are expected to be generated by exposure to River Road and the proposed Street 7, a part of the proposed RSDC Phase 15 development, that fall within 100m of the site, a limit proposed by the City of Ottawa's Environmental Noise Control Guidelines.

Surrounding land uses are as follows:

- north – undeveloped/ future residential/ institutional (Firehall);
- east – undeveloped/ future residential;
- south – existing/ future residential;
- west – undeveloped/ future residential.

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Figure 1 - 879 River Road Subdivision Development



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Noise Level Criteria
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2.0 NOISE LEVEL CRITERIA

2.1 GUIDELINES

The Ontario Ministry of Environment and Climate Change (MOECC) has produced guidelines for noise levels for use in noise assessment and land use planning. Noise level criteria for residential land use are summarized in **Table 1** below. Noise levels in excess of the guidelines presented are acceptable under certain conditions and with certain provisions.

Table 1 Noise Criteria for Residential Land Use

Location	7 a.m. - 11 p.m.	11 p.m. - 7 a.m.
Outdoor Living Areas	55 dBA	N/A
Indoor Living Areas	55 dBA at plane of living room windows	50 dBA at plane of bedroom windows

Table 2 and **Table 3** set out noise levels in excess of the criteria and the required provisions to allow residential activity in locations where noise level criteria exceedances are expected.

**Table 2 Combination of Road and Rail Noise
Day-Time Outdoor, Ventilation and Warning Clause Requirements**

Location	Leq (16 hr) (dBA)	Ventilation Requirements	Outdoor Control Measures	Warning Clause
Outdoor Living Area	Leq16hr less than or equal to 55 dBA	N/A	None required	Not required
	Leq16hr 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 Leq exceeds 55 dBA Clause GO
	Leq16hr greater than 60 dBA	N/A	Control measures (barriers) required to reduce the Leq to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible	Required if resultant Leq exceeds 60 dBA Clause MO

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Plane of Living Room Window	Leq16hr less than or equal to 55 dBA	None required	N/A	Not required
	Leq16hr greater than 55 dBA to less than or equal to 65 dBA	Forced air heating with provision for central air conditioning	N/A	Required Clause G1
	Leq16hr greater than 65 dBA	Central air conditioning	N/A	Required Clause M1

(Source: Ministry of the Environment and Climate Change, Environmental Noise Guideline – Stationary and Transportation Sources- Approval and Planning – Publication NPC-300, August 2013 and City of Ottawa, Environmental Noise Control Guidelines, January 2016)

**Table 3 Combination of Road and Rail Noise,
Night-Time Ventilation and Warning Clause Requirements**

Location	Leq (8 hr) (dBA)	Ventilation Requirements	Outdoor Control Measures	Warning Clause
Plane of Bedroom Window	Leq8hr greater than 50 dBA to less or equal to 60 dBA	Forced air heating with provision for central air conditioning	N/A	Required Clause G1
	Leq8hr greater than 60 dBA	Central air conditioning	N/A	Required Clause M1

(Source: Ministry of the Environment and Climate Change, Environmental Noise Guideline – Stationary and Transportation Sources- Approval and Planning – Publication NPC-300, August 2013 and City of Ottawa, Environmental Noise Control Guidelines, January 2016)

The MOECC also specifies building component requirements when indoor noise levels exceed the criteria by certain levels. These requirements are summarized in **Table 4**.

Table 4 Road and Rail Noise – Building Component Requirements

Location	Leq (16 hr) (dBA)		Building Component Requirements
Plane of Living Room Window – Daytime	Road	Less than or equal to 65 dBA	Building compliant with the Ontario Building Code
		Greater than 65 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
	Rail	Less than or equal to 60 dBA	Building compliant with the Ontario Building Code
		Greater than 60 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria

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Observations and Calculations
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Plane of Bedroom Window - Nighttime	Road	Less than or equal to 60 dBA	Building compliant with the Ontario Building Code
		Greater than 60 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria
	Rail	Less than or equal to 55 dBA	Building compliant with the Ontario Building Code
		Greater than 55 dBA	Building components (walls, windows, etc.) must be designed to achieve indoor sound level criteria

(Source: Ministry of the Environment and Climate Change, Environmental Noise Guideline – Stationary and Transportation Sources- Approval and Planning – Publication NPC-300, August 2013 and City of Ottawa, Environmental Noise Control Guidelines, January 2016)

3.0 OBSERVATIONS AND CALCULATIONS

3.1 NOISE LEVEL PREDICTIONS

Noise predictions in this report were completed using the computerized version (STAMSON 5.03) of the MOECC noise model, ORNAMENT to calculate noise levels from various sources. The program accepts variables related to noise sources and receivers, road traffic volumes and the nature and extent of noise attenuation barriers, if required.

3.2 ROAD TRAFFIC VOLUMES

Traffic volume data for River Road and Street 7 was provided by the City of Ottawa document "Environmental Noise Control Guidelines". The document indicates that the average annual daily traffic volume for River Road will be 35,000 vehicles per day for a 4-lane undivided major arterial road and Street 7 will be 8,000 vehicles per day for a 2-lane major urban collector. Additional information regarding applicable assumptions and ratios for day/night traffic and car/ truck traffic is summarized as follows:

- heavy truck traffic for this segment is estimated to be 5% of total traffic volume
- medium truck traffic for this segment is estimated to be 7% of total traffic volume; the rest is assumed to be car traffic
- daytime (7 am – 11 pm) traffic is assumed to be 92%, with the remaining 8% at night (11 pm – 7 am)
- River Road is currently an 80 km/hr - 2 Lane undivided major arterial road. However, due to the proposed future widening of River Road it was classified as a 4 – Lane Divided Major Arterial Road. Also, due the projected urbanization of the adjacent area the speed limit was assumed to be 60 km/hr.

Table 5, Table 6, and **Table 7** summarize the traffic volumes used for calculations in this report.

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Table 5 Traffic Volumes – River Road, 4-Lane Major Arterial – Divided

	Day	Night	Total
Car	28,336	2,464	30,800
Medium Truck	2,254	196	2,450
Heavy Truck	1,610	140	1,750
TOTAL	32,200	2,800	35,000
Speed Limit	60 km/h		
Gradient	1%		
Surface	Asphalt		

Table 6 Traffic Volumes – Street 7, 2-Lane Urban Collector

	Day	Night	Total
Car	6,477	563	7,040
Medium Truck	515	45	560
Heavy Truck	368	32	400
TOTAL	7,360	640	8,000
Speed Limit	50 km/h		
Gradient	1%		
Surface	Asphalt		

3.3 PROJECTED NOISE LEVELS

Using the MOECC noise model ORNAMENT, noise level contours were calculated for daytime and nighttime conditions at the point representing the current centerline of River Road and the proposed centerline of Street 7 based on the preliminary draft plan prepared by Annis, O'Sullivan, Vollebakk Ltd. The resulting noise contours, clause ranges and potential attenuation locations are illustrated in **Figure 2**, **Figure 3**, **Figure 4** and **Figure 5**.

The receiver heights for indoor daytime and nighttime noise level calculations for the future buildings were completed with the nighttime receiver height of 4.5 meters above road grade considering most bedrooms would be on the second floor and therefore the results take this into consideration. The indoor daytime and outdoor living areas were both assumed at 1.5 m above road grade. The outdoor living areas were based on the daytime traffic volumes to calculate

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Observations and Calculations
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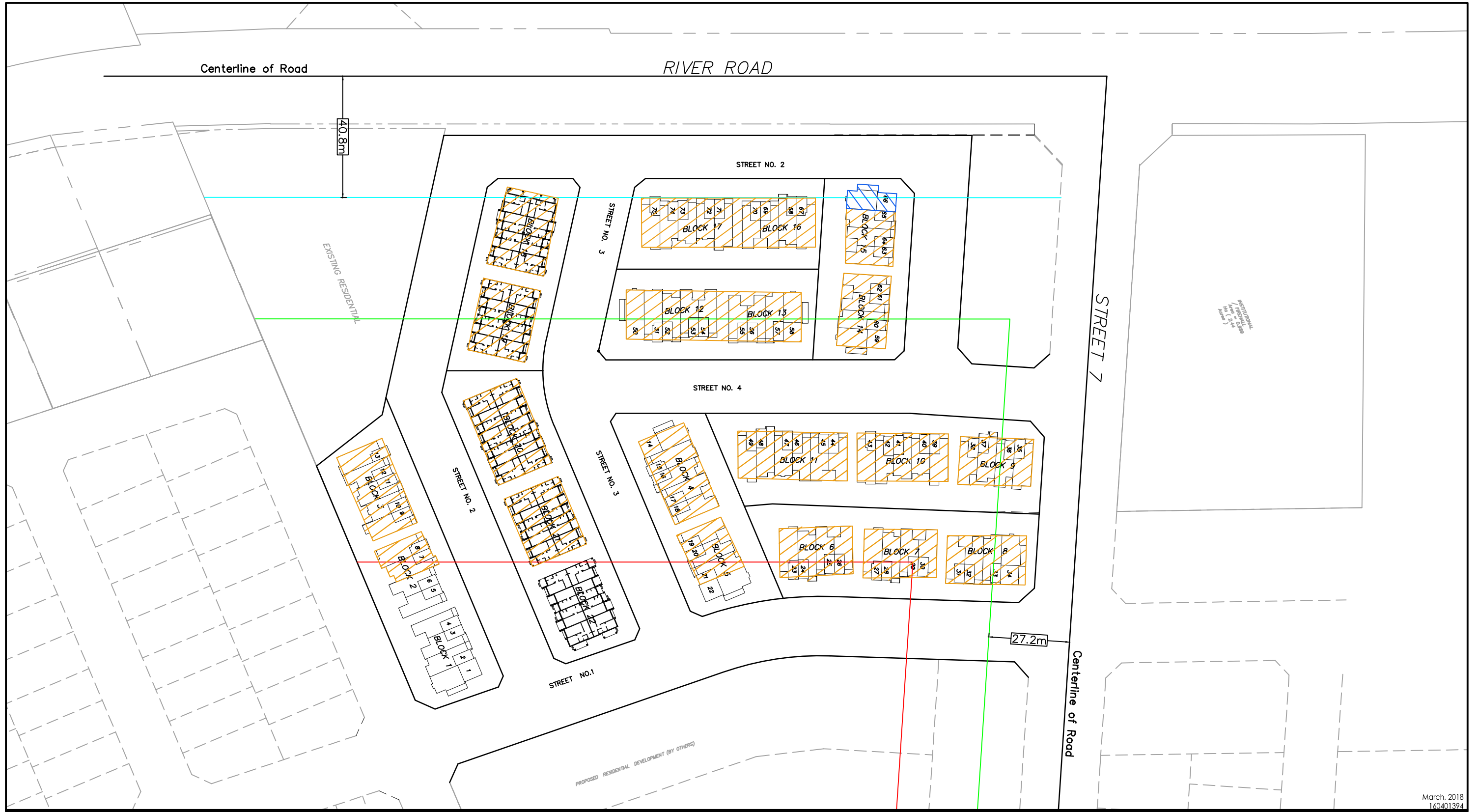
the noise contours. This is under the assumption that an outdoor amenity area would be predominantly used in the daytime hours.

Unattenuated noise level contours are provided in **Table 7** for daytime and nighttime building face noise contours, as well as, outdoor living area noise contours and have been summarized below.

Table 7 Summary of Projected Unattenuated Noise Contours

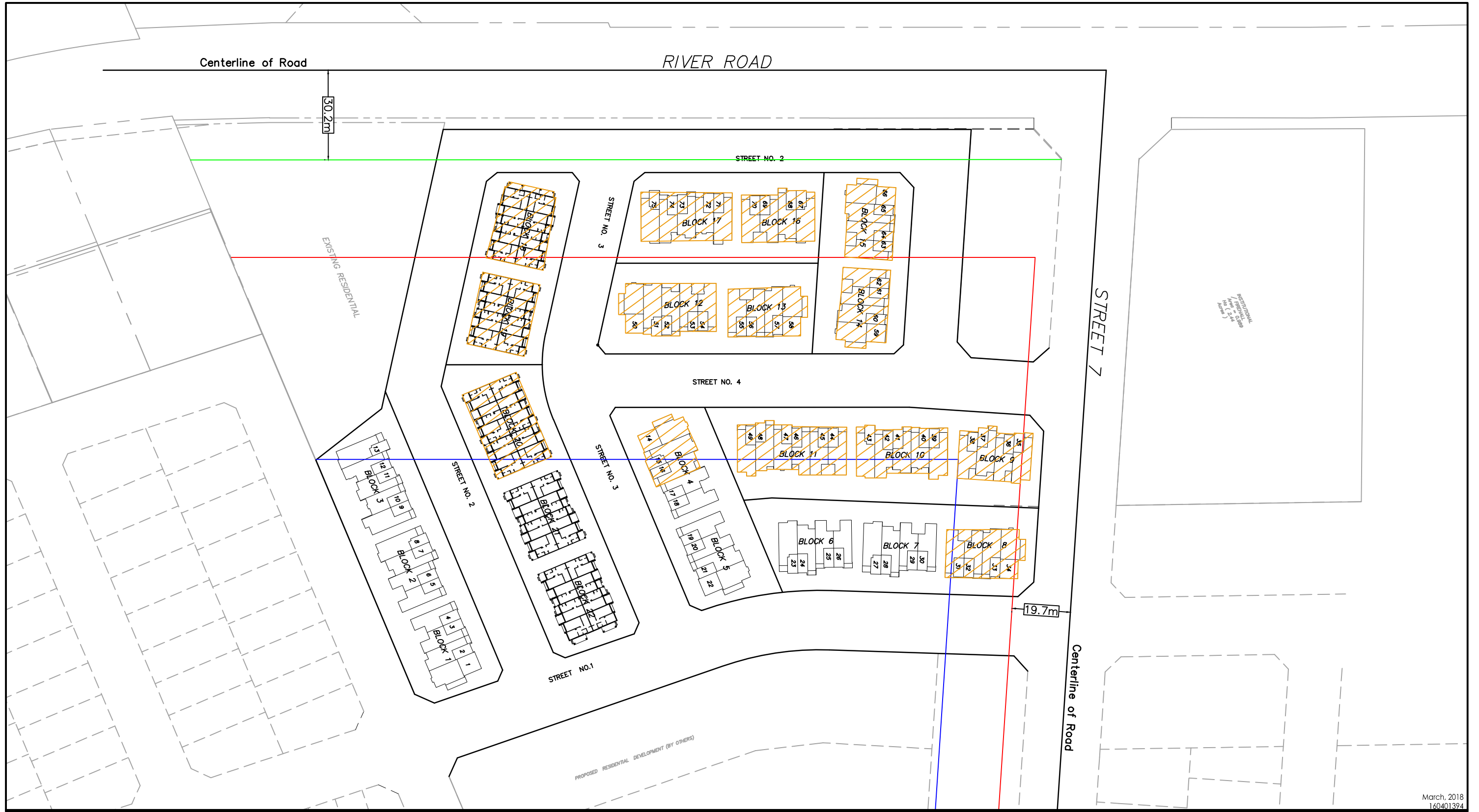
Road	Contour (dBa)	Daytime- Building Face Distance (m)	Nighttime- Building Face Distance (m)	Outdoor living area distance (m)
River Road	50	327.1	131	327.1
	55	163.5	63	163.5
	60	81.7	30.2	81.7
	65	40.8	-	40.8
Street 7	50	108.9	41	108.9
	55	54.4	19.7	54.4
	60	27.2	-	27.2
	65	-	-	-

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2018/04/06 10:03 AM By: Odam, Cameron



March, 2018
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2018/04/06 10:03 AM By: Odam, Cameron



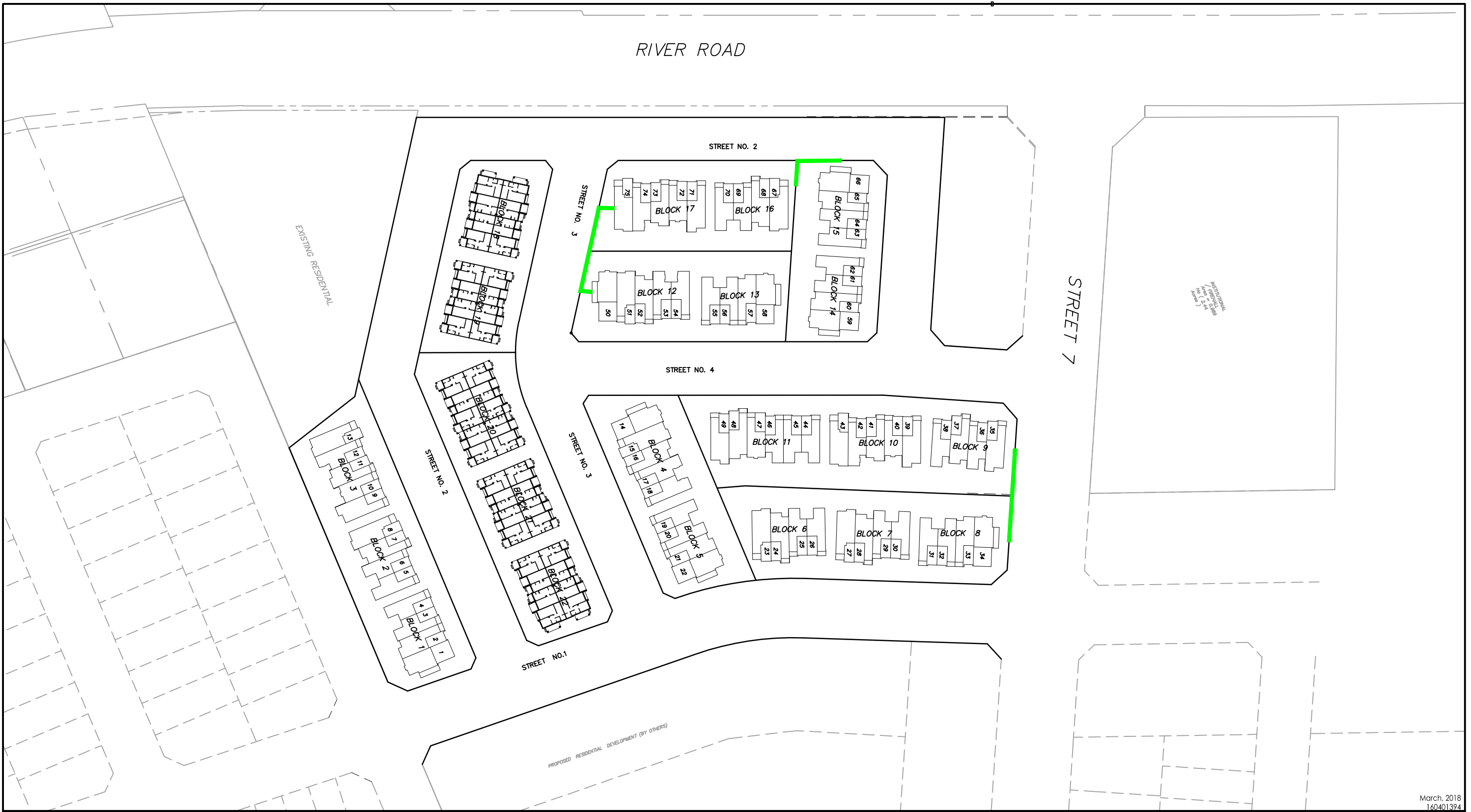
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March, 2018
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2018/04/06 10:05 AM By: Odam, Cameron



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160401394



Stantec Consulting Ltd.
400 - 1331 Clyde Avenue
Ottawa ON
Tel. 613.722.4420
www.stantec.com

 Potential Noise Wall Location

Client/Project
RICHCRAFT GROUP OF COMPANIES
879 RIVER ROAD SUBDIVISION
NOISE ASSESSMENT
Figure No. 5.0
Title
POTENTIAL NOISE WALL LOCATIONS

4.0 CONCLUSIONS AND RECOMMENDATIONS

4.1 CONCLUSIONS

Predicted noise level contours are expected to be above City of Ottawa and MOECC criteria at the daytime building face, the nighttime building face and outdoor living area for potential units facing River Road and Street 7.

The following summarizes the measures required by the City of Ottawa and MOECC criteria for the development to occur within accepted standards:

- Blocks 12, 13, 15, 16, 17 and 18, Block 8 unit 33 and 35, Block 9 units 35 and 36, Block 14 units 60, 61 and 62 and part of Block 19 may be subject to Noise Warning Clause MO, requiring noise wall mitigation.
- Blocks 3, 4, 6, 7, 10, 11, 20 and 21, Block 5 units 19, 20 and 21, Block 8 unit 31 and 32, Block 9 units 37 and 38, Block 14 unit 59 and part of Block 19 may be subject to Noise Warning Clause GO, requiring a notice that noise wall mitigation may be required.
- The potential noise wall locations are identified in **Figure 5**. A detailed noise assessment report would be required to determine the barrier heights and limits to mitigate the outdoor living area as per the MOECC criteria.
- Block 15 unit 66 may be subject to Noise Warning Clause GI, requiring provisions for central air conditioning.
- Blocks 3, 4, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20 and 21, Block 2 units 7 and 8, Block 5 units 19, 20 and 21 and Block 15 units 63, 64 and 65 may be subject to Noise Warning Clause MI, requiring central air conditioning and a building component review.

Noise warning clauses are provided in **Appendix B**.

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Conclusions and Recommendations
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The consideration of these measures will allow the residential development to proceed in accordance with City of Ottawa's planning approval process and form the basis for meeting the MOECC criteria with respect to environmental noise.

Respectfully Submitted By:

Dustin Thiffault, P.Eng.,
Project Engineer

Cameron Odam, B.Eng.,
Engineering Intern

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Appendix A Noise Level Calculations
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Appendix A **NOISE LEVEL CALCULATIONS**

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Appendix A Noise Level Calculations
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A.1 INDOOR/OUTDOOR RECEIVER STAMSON REPORTS

STAMSON 5.0 NORMAL REPORT Date: 07-03-2018 11:59:04
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: RR50.te Time Period: Day/Night 16/8 hours
Description: River Road 50dBA Contour

Road data, segment # 1: River Road (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 : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: River Road (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 : 327.10 / 131.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: River Road (day)

Source height = 1.50 m

ROAD (0.00 + 50.00 + 0.00) = 50.00 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.66 73.68 0.00 -22.22 -1.46 0.00 0.00 0.00
50.00

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

Results segment # 1: River Road (night)

Source height = 1.50 m

ROAD (0.00 + 50.00 + 0.00) = 50.00 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.57 66.08 0.00 -14.78 -1.30 0.00 0.00 0.00
50.00

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 50.00
(NIGHT): 50.00

STAMSON 5.0 NORMAL REPORT Date: 07-03-2018 11:56:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: RR55.te Time Period: Day/Night 16/8 hours
Description: River Road 55dBA Contour

Road data, segment # 1: River Road (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 : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT) : 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: River Road (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 : 163.50 / 63.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: River Road (day)

Source height = 1.50 m

ROAD (0.00 + 55.00 + 0.00) = 55.00 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.66 73.68 0.00 -17.22 -1.46 0.00 0.00 0.00

55.00

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

Results segment # 1: River Road (night)

Source height = 1.50 m

ROAD (0.00 + 54.99 + 0.00) = 54.99 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.57 66.08 0.00 -9.79 -1.30 0.00 0.00 0.00

54.99

Segment Leq : 54.99 dBA

Total Leq All Segments: 54.99 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 55.00
(NIGHT) : 54.99

STAMSON 5.0 NORMAL REPORT Date: 07-03-2018 11:55:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: RR60.te Time Period: Day/Night 16/8 hours
Description: River Road 60dBA Contour

Road data, segment # 1: River Road (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 : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT) : 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: River Road (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 : 81.70 / 30.20 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: River Road (day)

Source height = 1.50 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.66 73.68 0.00 -12.22 -1.46 0.00 0.00 0.00
60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

Results segment # 1: River Road (night)

Source height = 1.50 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.57 66.08 0.00 -4.77 -1.30 0.00 0.00 0.00
60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 60.00
(NIGHT) : 60.00

STAMSON 5.0 NORMAL REPORT Date: 07-03-2018 11:53:11
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: RR65.te Time Period: Day/Night 16/8 hours
Description: River Road 65dBA Contour

Road data, segment # 1: River Road (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 : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: River Road (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 : 40.80 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: River Road (day)

Source height = 1.50 m

ROAD (0.00 + 65.01 + 0.00) = 65.01 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.66 73.68 0.00 -7.21 -1.46 0.00 0.00 0.00
65.01

Segment Leq : 65.01 dBA

Total Leq All Segments: 65.01 dBA

Results segment # 1: River Road (night)

Source height = 1.50 m

ROAD (0.00 + 64.78 + 0.00) = 64.78 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.57 66.08 0.00 0.00 -1.30 0.00 0.00 0.00
64.78

Segment Leq : 64.78 dBA

Total Leq All Segments: 64.78 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 65.01
(NIGHT) : 64.78

STAMSON 5.0 NORMAL REPORT Date: 07-03-2018 12:08:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: ST50.te Time Period: Day/Night 16/8 hours
Description: Street 7 50dBA Contour

Road data, segment # 1: Street 7 (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT) : 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Street 7 (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 : 108.90 / 41.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Street 7 (day)

Source height = 1.50 m

ROAD (0.00 + 50.00 + 0.00) = 50.00 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.66 65.75 0.00 -14.29 -1.46 0.00 0.00 0.00

50.00

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

Results segment # 1: Street 7 (night)

Source height = 1.50 m

ROAD (0.00 + 50.00 + 0.00) = 50.00 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.57 58.16 0.00 -6.86 -1.30 0.00 0.00 0.00

50.00

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 50.00
(NIGHT) : 50.00

STAMSON 5.0 NORMAL REPORT Date: 07-03-2018 12:10:07
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: ST55.te Time Period: Day/Night 16/8 hours
Description: Street 7 55dBA Contour

Road data, segment # 1: Street 7 (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT) : 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Street 7 (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 : 54.40 / 19.70 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Street 7 (day)

Source height = 1.50 m

ROAD (0.00 + 55.01 + 0.00) = 55.01 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.66 65.75 0.00 -9.29 -1.46 0.00 0.00 0.00
55.01

Segment Leq : 55.01 dBA

Total Leq All Segments: 55.01 dBA

Results segment # 1: Street 7 (night)

Source height = 1.50 m

ROAD (0.00 + 55.00 + 0.00) = 55.00 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.57 58.16 0.00 -1.86 -1.30 0.00 0.00 0.00
55.00

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 55.01
(NIGHT) : 55.00

STAMSON 5.0 NORMAL REPORT Date: 07-03-2018 12:11:38
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: ST60.te Time Period: Day/Night 16/8 hours
Description: Street 7 60dBA Contour

Road data, segment # 1: Street 7 (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Street 7 (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 27.20 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Street 7 (day)

Source height = 1.50 m

ROAD (0.00 + 60.00 + 0.00) = 60.00 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.66 65.75 0.00 -4.29 -1.46 0.00 0.00 0.00
60.00

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

Results segment # 1: Street 7 (night)

Source height = 1.50 m

ROAD (0.00 + 56.85 + 0.00) = 56.85 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

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

Segment Leq : 56.85 dBA

Total Leq All Segments: 56.85 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 60.00
(NIGHT) : 56.85

STAMSON 5.0 NORMAL REPORT Date: 07-03-2018 12:12:35
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: ST65.te Time Period: Day/Night 16/8 hours
Description: Street 7 65dBA Contour

Road data, segment # 1: Street 7 (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 1 %
Road pavement : 1 (Typical asphalt or concrete)

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

24 hr Traffic Volume (AADT or SADT): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Street 7 (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 : 15.00 / 15.00 m
Receiver height : 1.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Street 7 (day)

Source height = 1.50 m

ROAD (0.00 + 64.29 + 0.00) = 64.29 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

-90 90 0.66 65.75 0.00 0.00 -1.46 0.00 0.00 0.00
64.29

Segment Leq : 64.29 dBA

Total Leq All Segments: 64.29 dBA

Results segment # 1: Street 7 (night)

Source height = 1.50 m

ROAD (0.00 + 56.85 + 0.00) = 56.85 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj
SubLeq

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

Segment Leq : 56.85 dBA

Total Leq All Segments: 56.85 dBA

TOTAL Leq FROM ALL SOURCES (DAY) : 64.29
(NIGHT) : 56.85

**879 RIVER ROAD SUBDIVISION -
PRELIMINARY NOISE ASSESSMENT**

Appendix B Noise Warning Clauses
April 6, 2018

Appendix B **NOISE WARNING CLAUSES**

879 RIVER ROAD SUBDIVISION - PRELIMINARY NOISE ASSESSMENT

Appendix B Noise Warning Clauses
April 6, 2018

WARNING CLAUSES

The following warning clauses may be used individually or in combination:

Generic Indoor (GI):

Indoor environment - $L_{eq}(16)$ greater than 55 dBA and less than or equal to 65 dBA or $(L_{eq}(8))$ greater than 50dBA and less than or equal to 60 dBA

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

- a setback of buildings from the noise source;
- the provision for adding central air conditioning at the occupant's discretion.

Installation of central air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City of Ottawa and the Ministry of the Environment and Climate Change.

Extensive Mitigation of Indoor Area (MI):

Indoor environment - $L_{eq}(16)$ greater than 65 dBA or $(L_{eq}(8))$ greater than 60dBA

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

- multi-pane glass;
- exterior wall insulation;
- a forced central air conditioning system.

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

This dwelling unit has been supplied with a forced central air conditioning system and other measures which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the City of Ottawa and the Ministry of the Environment and Climate Change.

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Appendix B Noise Warning Clauses
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Extensive Mitigation of Outdoor Amenity Area (GO):

Outdoor amenity areas- $L_{eq}(16)$ in the OLA greater than 55 dBA and less than or equal to 60 dBA.

To help address the need for outdoor sound attenuation occupants are to be informed this development may potentially require the inclusion of:

- an acoustic barrier.

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 occasion, interfere with some activities of the dwelling occupants in their outdoor amenity area as the sound levels exceed the sound level limits of the City of Ottawa and the Ministry of the Environment and Climate Change.

Extensive Mitigation of Outdoor Amenity Area (MO):

Outdoor amenity areas- $L_{eq}(16)$ in the OLA greater than 60 dBA.

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

- an acoustic barrier.

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 occasion, interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the City of Ottawa and the Ministry of the Environment and Climate Change.

Source: City of Ottawa - Environmental Noise Control Guidelines, January 2016 and Ontario Ministry of the Environment and Climate Change, Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning Publication NPC-300, Queen's Printer for Ontario, 2013