# Conservation Meadows Subdivision, Phase 2 – Noise Assessment Report



Prepared for:
Activa Holdings Inc.
55 Columbia Street East,
Waterloo ON  N2J 4N7

Prepared by:
Stantec Consulting Ltd.

Project #603-08671

July 2017
Revised June 16, 2020

**OWNER/AUTHORIZED AGENT STATEMENT**

I am the owner of the property, or the owner's agent, and that I understand and agree with the noise attenuation measures proposed in the study entitled Conservation Meadows, Phase 2 – Noise Assessment Report, dated June 16, 2020

The application has been designed to avoid the use of berms or walls as noise attenuation features where feasible. Where berms or walls are recommended, the Noise Study provides economic, planning and engineering justification.

If the application is changed in a way that may affect the noise level calculations, I will have a revised noise study submitted to the Region.

Mr. Peter Armbruster
Activa Holdings Inc.

VP - COMMUNITY DEVELOPMENT
Title

19-JUNE-2020
Date

CONSULTANT STATUTORY DECLARATION

| | | |
|---|---|---|
| CANADA | ) | In the Matter of the |
| | ) | Environmental Protection |
| PROVINCE OF ONTARIO | ) | Act and the Planning Act |
| | ) | |
| Activa Holdings Inc. | ) | |
| | ) | |
| | ) | And in the matter of Part of Part 2, Part 3 and Part 4 of Plan 58R-18664, German Company Tract. |
| City of Waterloo | ) | in the City of Waterloo, in the Regional |
| | ) | Municipality of Waterloo |

I, Kevin Fergin, of the Municipality of the City of Kitchener in the Region of Waterloo, SOLEMNLY DECLARE THAT:

1. I am a Professional Engineer employed by Stantec Consulting Ltd. which holds a Certificate of Authorization and have personal knowledge of the matters set out below.

2. I was retained or employed as the principal consultant to undertake the assessment of transportation noise impacts and recommendation of transportation noise mitigation measures for the property described as Conservation Meadows – Phase 2, Kitchener.

3. I had the expertise required to perform these services. Any assessment activities or recommendations requiring the application of engineering principles have been undertaken or supervised by an engineer qualified to perform such services.

4. The information used in the study entitled Conservation Meadows Subdivision, Phase 2 – Noise Assessment Report, dated June 16, 2020, is the best available information as of the date of the study.

5. The noise level calculations, the interpretation of noise attenuation requirements and the recommended measures are in accordance with Ministry of Environment and Energy Guidelines, Region of Waterloo policies, and any applicable policy or guidelines of the Area Municipality, and any other applicable policy and guideline.

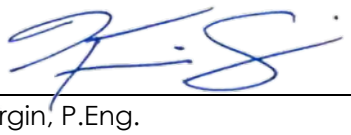
6. The physical noise attenuation measures proposed in this study are feasible to implement and will provide the level of attenuation indicated in the study.

7. I acknowledge that this study may be subject to peer review conducted at the cost of Stantec Consulting Ltd.

8. I acknowledge that public authorities and future owners, occupants and others may rely on this statement.

AND I make this solemn Declaration conscientiously believing it to be true, and knowing that it is of the same force and effect as if made under oath.

DECLARED before me at the City of Kitchener, in the Regional Municipality of Waterloo this 18 day of June 2020



Kevin Fergin, P.Eng.

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# 1.0 INTRODUCTION

## 1.1 PURPOSE OF REPORT

Activa Holdings Incorporated has retained Stantec Consulting Ltd. to prepare a preliminary environmental noise assessment for the Conservation Meadows Subdivision, Phase 2. The subject property is located northeast of the intersection of Conservation Drive and Beaver Creek Road in the City of Waterloo. This report is provided in support of the Draft Plan of Subdivision submission. **This report has been revised from the original 2017 report to include updated traffic volumes for Conservation Drive.**

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 Conservation and Parks to the site in conjunction with the Regional Municipality of Waterloo Implementation Guidelines for Noise Reports;
- 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 MECP's noise model;
- Outline potential locations for noise attenuation and noise mitigation techniques, as necessary, to achieve acceptable noise levels for future residents of the proposed development.

## 1.2 LOCATION & SITE PLAN CONCEPTS

The site is directly bound by Conservation Drive to the South, Rideau River Street to the east, existing residential properties to the north and Roy Schmidt Road to the west. The property location is illustrated in Figure 1. The proposed development consists of approximately 8 ha of land, and contains a mixture of multiple residential, townhome and single detached units. This report will focus on the road traffic noise impact on the subject property that are expected to be generated by exposure to Conservation Drive.




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2020/06/16 5:01 PM By: Mochonin, Sarah

JUNE 2020
60308671

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1:10000 0 100 300 500m

Client/Project
ACTIVA HOLDINGS INC.
CONSERVATION MEADOWS SUBDIVISION - PHASE 2
Waterloo, ON.

Figure No.
1

Title
SITE LOCATION PLAN

# 2.0 NOISE LEVEL CRITERIA

## 2.1 GUIDELINES

The Ontario Ministry of Environment Conservation and Parks (MECP) 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 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<br>Type A |
| | 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 55 dBA<br>Type B |
| 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<br>Type C |
| | Leq16hr greater than 65 dBA | Central air conditioning | N/A | Required<br>Type D |

(Source: Ministry of the Environment, Noise Assessment Criteria in Land Use Planning: Requirements, Procedures and Implementation, October 1997)

### 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 Type C |
| | Leq8hr greater than 60 dBA | Central air conditioning | N/A | Required Type D |

(Source: Ministry of the Environment, Noise Assessment Criteria in Land Use Planning: Requirements, Procedures and Implementation, October 1997)

The MECP 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 |
| 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, Noise Assessment Criteria in Land Use Planning: Requirements, Procedures and Implementation, October 1997)

# 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 MECP 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

Conservation Drive has been identified as the only road traffic noise source of concern for this development. Traffic volume data for Conservation Drive was provided by the City of Waterloo with a 2035 forecasted average annual daily traffic volume of 11,000 vehicles per day. Traffic data correspondence from the City of Waterloo is included in **Appendix A.** 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 2% of total traffic volume
- Medium truck traffic for this segment is estimated to be 1.6% of total traffic volume; the rest is assumed to be car traffic
- Daytime (7 am – 11 pm) traffic is assumed to be 90%, with the remaining 10% at night (11 pm – 7 am)
- Speed limit for Conservation Drive is 50 km/hour.

**Table 5** summarizes the traffic volumes used for calculations in this report.

**Table 5 Traffic Volumes – Conservation Drive**

| | **Day** | **Night** | **Total** |
|---|---|---|---|
| Car | 9,544 | 1,060 | 10,604 |
| Medium Truck | 158 | 18 | 176 |
| Heavy Truck | 198 | 22 | 220 |
| **TOTAL** | **9,900** | **1,100** | **11,000** |
| Speed Limit | 50 km/hr | | |
| Gradient | 1.1% | | |
| Surface | Asphalt | | |

## 3.3 PROJECTED NOISE LEVELS

Using the MECP noise model, ORNAMENT, noise level contours were calculated for daytime and nighttime conditions at the point representing the anticipated centerline of Conservation Drive based on the Draft Plan concept prepared by MHBC dated November 26, 2019. A copy of the Draft Plan has been enclosed in **Appendix B.** The resulting noise contours and clause ranges are illustrated in **Figure 2**, **Figure 3**, and **Figure 4**. Noise level calculations are enclosed in **Appendix C.**

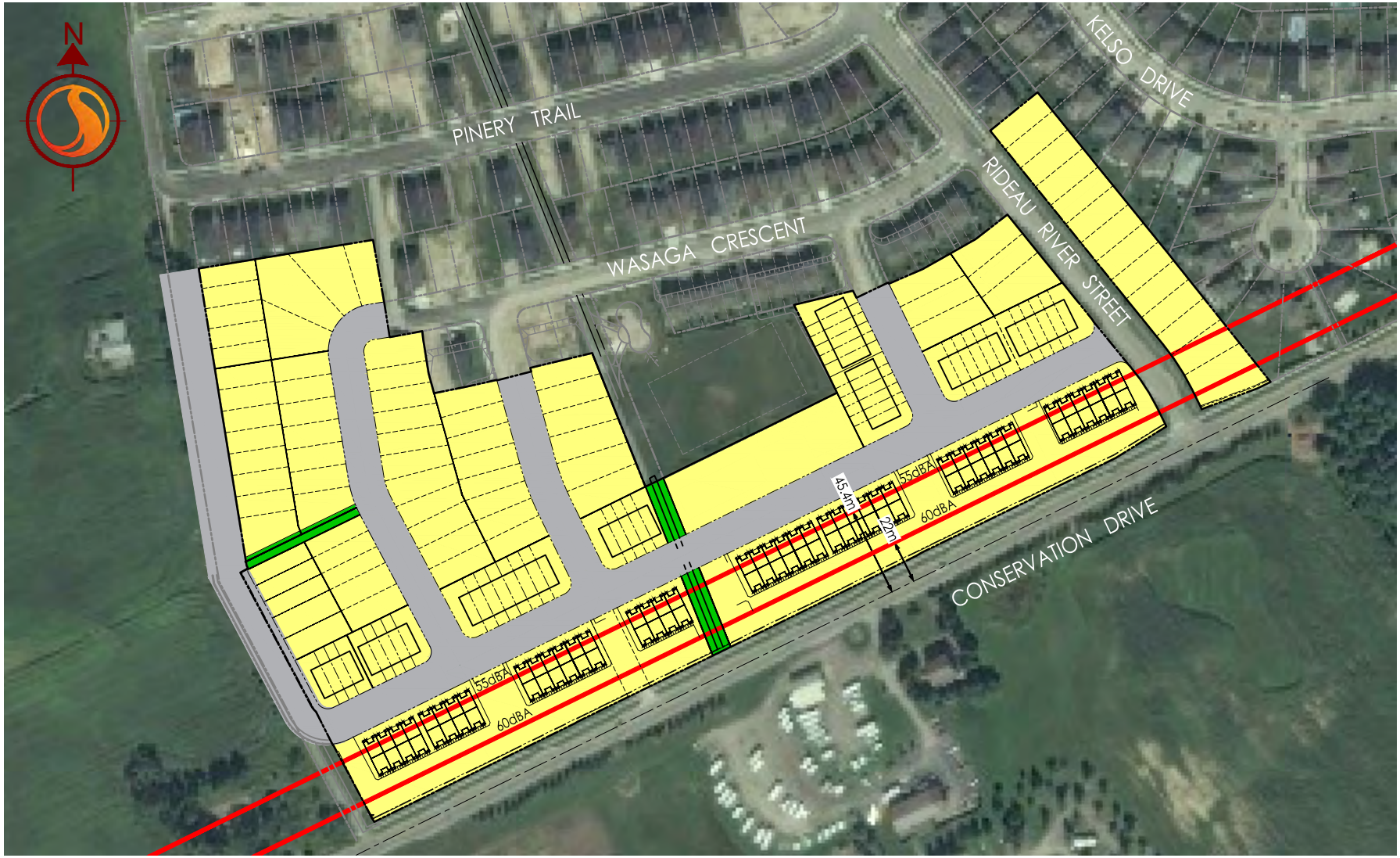
The receiver heights for indoor daytime and nighttime noise level calculations for the future buildings were completed at an assumed ground level (2.5m above road grade) and at the second level (4.5m above road grade). The outdoor living areas were assumed at 1.5 m above road grade. Outdoor living areas and building elevations were considered as elevated 2.0 m above Conservation Drive per current preliminary grading concept of the site. A copy of the preliminary grading plan prepared by Stantec Consulting Ltd. is enclosed in **Appendix D.**

Blocks 10, 18 and 19 fronting/siding onto Conservation Drive were analyzed to determine the unattenuated noise levels generated by Conservation Drive.

Unattenuated noise level calculations are provided in **Table 6** for daytime and nighttime building face noise levels, as well as, outdoor living area noise levels and have been summarized below.

**Table 6 Summary of Projected Unattenuated Noise Contours**

| Road(s) | Contour (dBA) | Daytime-Building Face Distance (m) | Nighttime-Building Face Distance (m) | Outdoor Living Area Distance (m) |
|---|---|---|---|---|
| Conservation Drive | 50 | 94 | 38.5 | 90 |
| | 55 | 45.5 | 18 | 44 |
| | 60 | 22 | -- | 21.5 |




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JUNE 2020
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Stantec

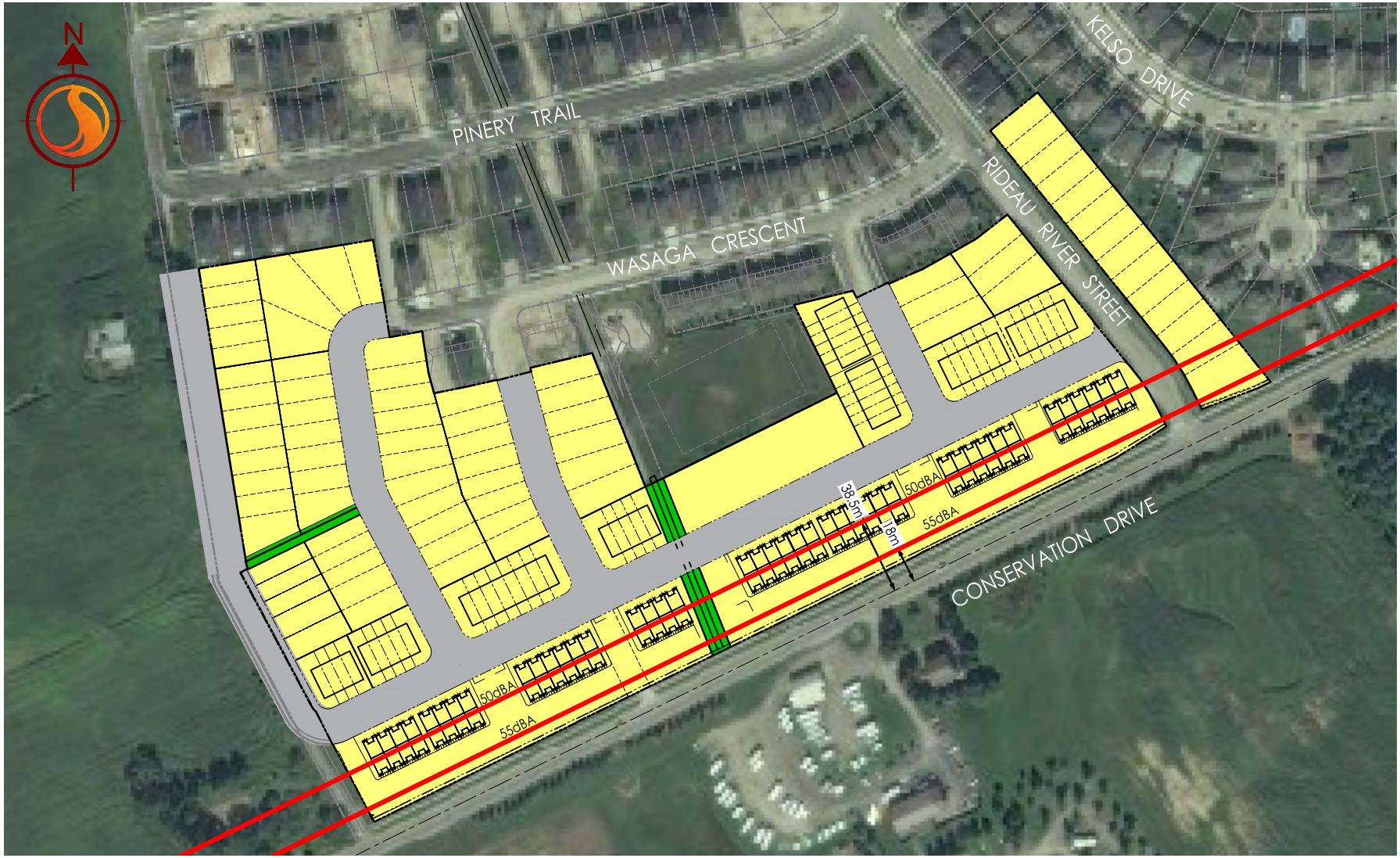
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WATERLOO, ON.

Figure No.
2

Title
INDOOR DAYTIME
NOISE CONTOURS




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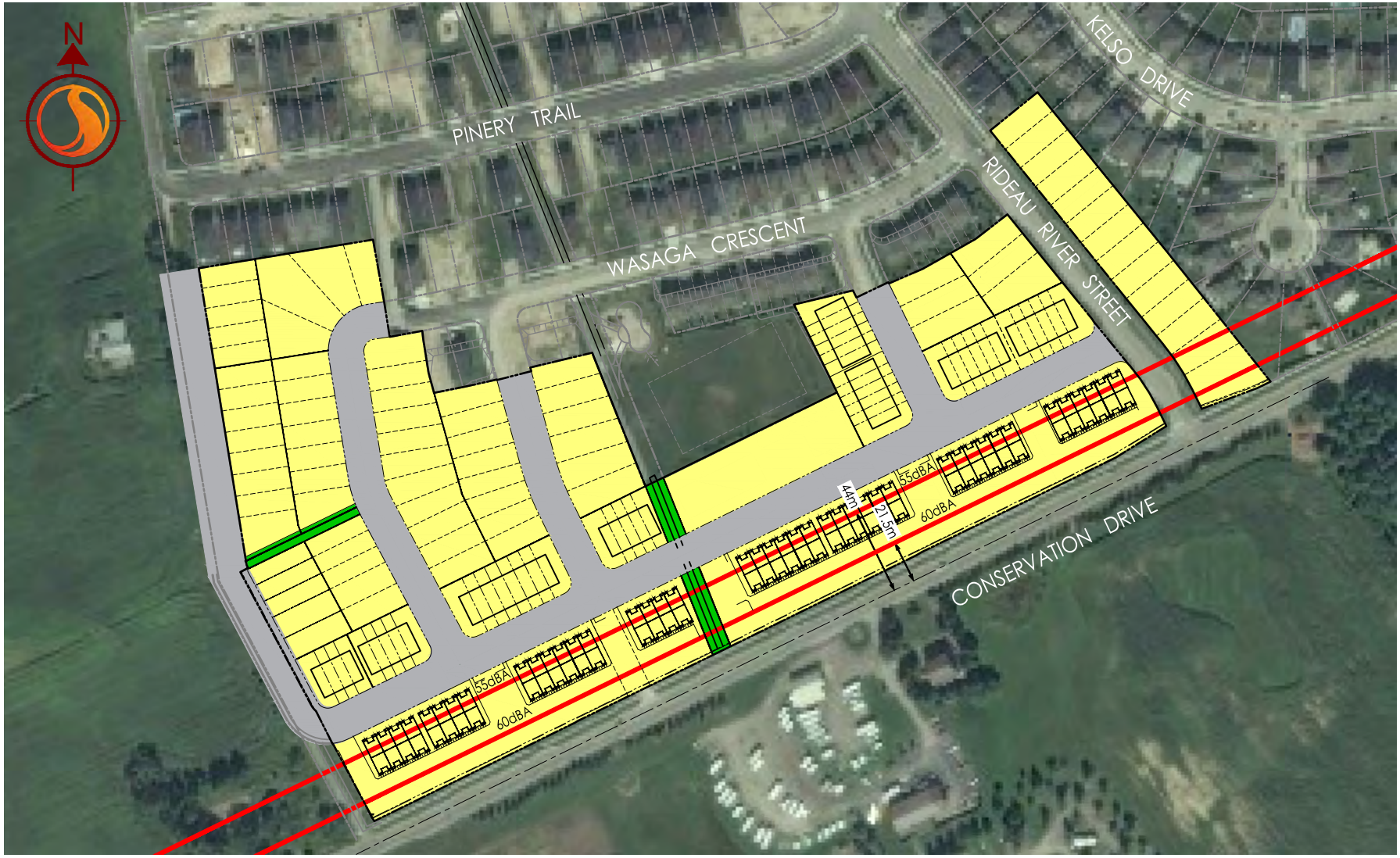
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Figure No.
3

Title
INDOOR NIGHTIME
NOISE CONTOURS




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WATERLOO, ON.

Figure No.
4

Title
OUTDOOR
NOISE CONTOURS

# 4.0 CONCLUSIONS AND RECOMMENDATIONS

## 4.1 CONCLUSIONS

For the residential units fronting/siding onto Conservation Drive, part of Block 10, Block 18 and 19, predicted noise levels are expected to be between 55-60 dBA for the outdoor living areas, 55-60 dBA for the indoor living areas at the outside plane of the living room window(s) and 50-55 dBA for the indoor nighttime areas at the outside plane of the bedroom window(s).

Consideration must be given by the homebuilder when determining the final lot layout and building separation distance from Conversation Drive. Dwellings located within 45.5 m of Conservation Drive centerline require Noise Warning Clause C and provisions for forced air heating/central air conditions. Any dwelling having an outdoor amenity area within 44 m of the centerline of Conservation Drive will require Noise Warning Clause A. It is anticipated that building construction per OBC is sufficient for the above-mentioned blocks.

In order to avoid the use of noise barriers, outdoor amenity areas must have a setback of at least 21.5 m from the Conservation Drive centerline. Any outdoor amenity area closer than 21.5 m from the centerline of Conservation Drive will require a noise barrier or landscape buffer to reduce the noise levels below the MECP and Region of Waterloo maximum allowable outdoor noise level of 60 dBA. Consideration for noise mitigation measures must be given at the detailed design stage to the outdoor amenity area provided for the lot in Block 10 located at the northeast corner of the Conservation Drive and Rideau River Street intersection as this could be located within 21.5 m of the Conservation Drive centerline.

It is understood that as there are no rear yard landscaped areas, or balconies extending 4.0m from the building face, the outdoor amenity area (OLA) for Blocks 18 and 19 is provided by the park block which is located approximately 70 m from the centerline of Conservation Drive, satisfying the above noted noise level conditions.

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

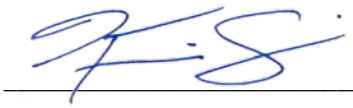
The consideration of these measures will allow the residential development to proceed in accordance with City of Waterloo's planning approval process and form the basis for meeting the MECP criteria with respect to environmental noise.

Respectfully Submitted By:



Sergio Zaga, M.Eng.,

Project Manager



Kevin Fergin, P.Eng.,

Vice President, Community Development

# Appendix A CITY OF WATERLOO CORRESPONDENCE

## Zaga, Sergio

**From:** Zaga, Sergio
**Sent:** Tuesday, June 16, 2020 11:24 AM
**To:** Zaga, Sergio
**Subject:** RE: Traffic Forecast - Conservation Drive - Updated Noise Study Required with Update Traffic Numbers

---

**From:** Jenny Setterfield <Jenny.Setterfield@waterloo.ca>
**Sent:** Tuesday, May 26, 2020 11:44 AM
**To:** Grubb, Joe <joe.grubb@stantec.com>
**Cc:** Chris Dedman <Chris.Dedman@waterloo.ca>; Christine Koehler <Christine.Koehler@waterloo.ca>; Chris Hodgson <Christopher.Hodgson@waterloo.ca>
**Subject:** RE: Traffic Forecast - Conservsation Drive

Good Morning Joe,

Looking through the data and reports for this area, we need to increase the future forecast AADT to 11,000 on Conservation Drive. This would closer represent the 2035 ultimate traffic projections for the area. The truck percentages are still valid at 1.6% for medium and 2%for heavy.

Please let me know if you have any questions.
Regards,
Jenny


**Jenny Setterfield, CET**
Manager, Transportation
Integrated Planning & Public Works, City of Waterloo
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Waterloo, ON N2J 4A8
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www.waterloo.ca
www.twitter.com/citywaterloo
www.youtube.com/citywaterloo
www.facebook.com/citywaterloo



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**From:** Grubb, Joe <joe.grubb@stantec.com>
**Sent:** May 14, 2020 11:18 AM
**To:** Christine Koehler <Christine.Koehler@waterloo.ca>
**Subject:** [EXTERNAL] Traffic Forecast - Conservsation Drive

Hi Christine,

Back in 2017 we completed a noise report in support of Draft Plan approval (see the first attachment) for Conservation Meadows Subdivision fronting Conservation Drive. The Draft Plan has been revised to remove 2 road connections to Conservation Drive at the City's recommendation.

We are making a resubmission in support of the revised Draft Plan approval. With respect to the noise report, the recommendations in that report would not change with the revised draft plan, unless perhaps the traffic forecast were increased significantly. I have attached an excerpt in the Appendix of the report (3rd attachment) where you provided traffic forecasts. Can you confirm if these forecasts are still valid?

Please confirm receipt of this email and the timing you expect to be able to respond. Look forward to your reply. Thanks.

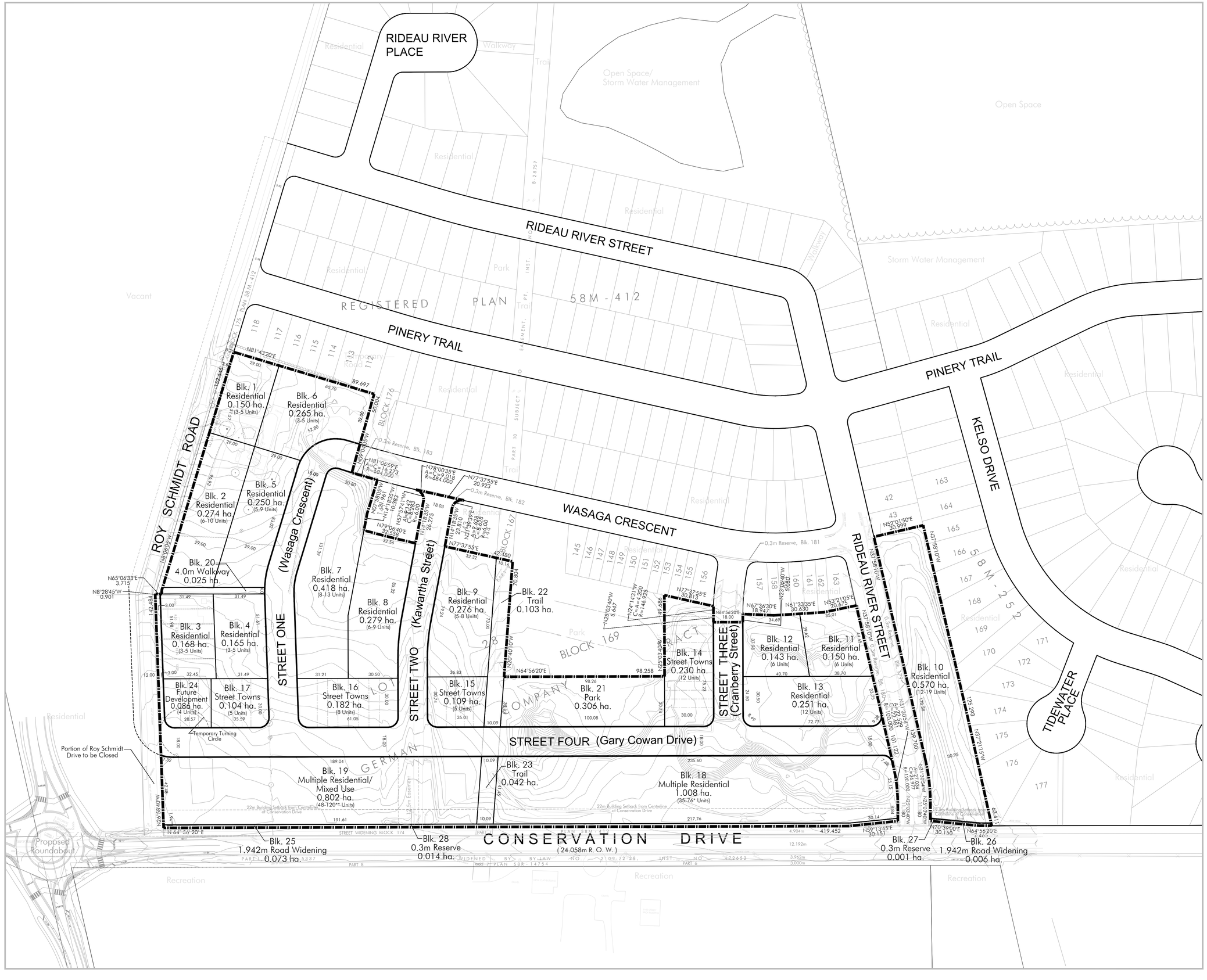
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# Appendix B DRAFT PLAN




## Legal Description

PART OF LOT 28, GERMAN COMPANY TRACT,
(GEOGRAPHIC TOWNSHIP OF WATERLOO),
CITY OF WATERLOO,
REGIONAL MUNICIPALITY OF WATERLOO

## Owner's Certificate

I AUTHORIZE MACNAUGHTON HERMSEN BRITTON CLARKSON PLANNING LIMITED TO SUBMIT THIS PLAN FOR APPROVAL.

DATE: JUNE 27/17

Larry Masseo - Vice President
Planning and Development
Activa Management Corporation

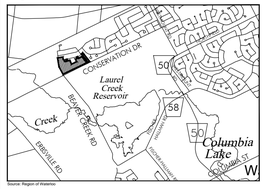
## Surveyor's Certificate

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

DATE: JUNE 27/17

Brian Campbell - OLS,
Stantec Geomatics Ltd.

## Key Plan




Subject Lands

north

Not to Scale

## Additional Information Required Under Section 51(17) of the Planning Act R.S.O. 1990, c.P.13 as Amended

| | | |
|---|---|---|
| A. As Shown | B. As Shown | C. As Shown |
| D. Residential, Trail, Stormwater Management | | |
| E. As Shown | F. As Shown | |
| G. As Shown | H. Municipal Water Supply | I. Sandy Loam |
| J. As Shown | K. All Services As Required | L. As Shown |

## Area Schedule

**30T - 17403**

| DESCRIPTION | STAGE 1 | | | | | TOTAL | | |
|---|---|---|---|---|---|---|---|---|
| | Lots/Blks | Area | Singles [min./max.] | Multiple Residential Street Towns [min.] | Multiple Residential Low Rise Apart's [max.] | Lots/Blks | Area | Total Units [min./max.] |
| Residential (1) | 1-10 | 2.814 | 54-88 | | | 10 | 2.814 | 54-88 |
| Street Towns (2) | 11-17 | 1.250 | | 54 | | 7 | 1.250 | 54 |
| Multiple Residential (2,3) | 18 | 1.008 | | 35 | 76* | 1 | 1.008 | 35-76 |
| Multiple Residential / Mixed Use (2,4) | 19 | 0.802 | | 48 | 120** | 1 | 0.802 | 48-120 |
| Walkways | 20 | 0.025 | | | | 1 | 0.025 | |
| Park | 21 | 0.306 | | | | 1 | 0.306 | |
| Trail | 22,23 | 0.145 | | | | 2 | 0.145 | |
| Future Development | 24 | 0.086 | | 4 | | 1 | 0.086 | 4 |
| Road Widening | 25,26 | 0.079 | | | | 2 | 0.079 | |
| 0.3m Reserves | 27,28 | 0.015 | | | | 2 | 0.015 | |
| Roads | | 1.557 | | | | | 1.557 | |
| **TOTAL** | 28 | 8.006 | 54-88 | 141 | 196 | 28 | 8.006 | 195-342 |

Notes:
(1) Residential Unit Yield based on 13.7m Lots (min) and 9.0m Lots (max).
(2) Street Towns - minimum lot width 5.0m.
(3) Low Rise Apartments calculated at 60 Units per Hectare or 150* Bedrooms per Hectare.
(4) Low Rise Apartments calculated at 100 Units per Hectare or 300** Bedrooms per Hectare.

| No. | Date | Issued / Revision | By |
|---|---|---|---|
| 12 | November 26,2019 | Revise Blocks 11-13. Revise Area Schedule. | LHB |
| 11 | November 4,2019 | Merge Blocks 18-19 & 20-21. Add Future Devlopment Block. Revise Block Numbering, Unit Yields & Area Schedule. | LHB |
| 10 | September 6,2019 | Remove Block 26, Infiltration Gallery. | LHB |
| 9 | August 20,2019 | Revisions per Post Circulation Comments. | LHB |
| 8 | April 15,2019 | Add Infiltration Gallery Block. | LHB |
| 7 | January 30,2019 | Edits to Area Schedule and Park Block. | LHB |
| 6 | October 10,2018 | Remove Street Three Road Stub to Conservation Drive | LHB |
| 5 | July 25,2018 | Remove Street Two Road Stub to Conservation Drive | LHB |
| 4 | May 31,2018 | Redesign Park and Revise Area Schedule | LHB |
| 3 | January 18,2018 | Add Park Blocks. Delete Portion of Street Three. Edits to Area Schedule and Unit Yields | LHB |
| 2 | September 21,2017 | Edits to Area Schedule | LHB |
| 1 | September 11,2017 | Edits to Area Schedule and Units Yields | LHB |


MHBC PLANNING URBAN DESIGN & LANDSCAPE ARCHITECTURE
200-540 BINGEMANS CENTRE DR. KITCHENER, ON. N2B 3X9 | P. 519.576.3650 F. 519.576.0121 | WWW.MHBCPLAN.COM


**Approval Stamp**

**Date**
November 26,2019

**File No.**
8784Y

**Plan Scale**
1:1,000

**Drawn By**
L.H.B.

**Checked By**
P.B. / D.A.

**Client**

**Activa Holdings Inc.**
55 Columbia Street East,
Waterloo, Ontario
N2J 4N7
519.886.9400
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zoom

**File Name**

# DRAFT PLAN OF SUBDIVISION

K:\8784Y_ACTIVA_CONSERVATIONDR\DP\DP NOVEMBER 26 2019.DWG

# Appendix C NOISE LEVEL CALCULATIONS

# C.1 INDOOR RECEIVER STAMSON REPORTS

STAMSON 5.0 NORMAL REPORT Date: 16-06-2020 09:57:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: co_a_i50.te Time Period: Day/Night 16/8 hours
Description: INDOOR 50dBA

Road data, segment # 1: Conservation (day/night)
---
Car traffic volume : 9544/1060 veh/TimePeriod *
Medium truck volume : 158/18 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 5.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.60
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Conservation (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 : 93.98 / 38.27 m
Receiver height : 4.50 / 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Conservation (day)
---

Source height = 1.19 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 | 0.58 | 63.91 | 0.00 | -12.59 | -1.32 | 0.00 | 0.00 | 0.00 | 50.00 |

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

Results segment # 1: Conservation (night)
---

Source height = 1.19 m

ROAD (0.00 + 49.99 + 0.00) = 49.99 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.52 | 57.39 | 0.00 | -6.18 | -1.21 | 0.00 | 0.00 | 0.00 | 49.99 |

Segment Leq : 49.99 dBA

Total Leq All Segments: 49.99 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 50.00
(NIGHT): 49.99

STAMSON 5.0 NORMAL REPORT Date: 16-06-2020 09:54:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: co_a_i55.te Time Period: Day/Night 16/8 hours
Description: INDOOR 55dBA

Road data, segment # 1: Conservation (day/night)
---
Car traffic volume : 9544/1060 veh/TimePeriod *
Medium truck volume : 158/18 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 5.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.60
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Conservation (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 : 45.37 / 17.93 m
Receiver height : 4.50 / 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Conservation (day)
---

Source height = 1.19 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 | 0.58 | 63.91 | 0.00 | -7.59 | -1.32 | 0.00 | 0.00 | 0.00 | 55.00 |

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

Results segment # 1: Conservation (night)
---

Source height = 1.19 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 | 0.52 | 57.39 | 0.00 | -1.18 | -1.21 | 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): 55.00
(NIGHT): 55.00

STAMSON 5.0 NORMAL REPORT Date: 16-06-2020 11:07:38
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: co_a_i60.te Time Period: Day/Night 16/8 hours
Description: INDOOR 60dBA

Road data, segment # 1: Conservation (day/night)
---
Car traffic volume : 9544/1060 veh/TimePeriod *
Medium truck volume : 158/18 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 5.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.60
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Conservation (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 : 21.87 / 15.00 m
Receiver height : 4.50 / 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Conservation (day)
---

Source height = 1.19 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 | 0.58 | 63.91 | 0.00 | -2.59 | -1.32 | 0.00 | 0.00 | 0.00 | 60.00 |

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

Results segment # 1: Conservation (night)
---

Source height = 1.19 m

ROAD (0.00 + 56.18 + 0.00) = 56.18 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.52 | 57.39 | 0.00 | 0.00 | -1.21 | 0.00 | 0.00 | 0.00 | 56.18 |

Segment Leq : 56.18 dBA

Total Leq All Segments: 56.18 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00
(NIGHT): 56.18

# C.2 OUTDOOR RECEIVER STAMSON REPORTS

STAMSON 5.0 NORMAL REPORT Date: 16-06-2020 10:22:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: co_a_o50.te Time Period: Day/Night 16/8 hours
Description: OUTDOOR 50dBA

Road data, segment # 1: Conservation (day/night)
---
Car traffic volume : 9544/1060 veh/TimePeriod *
Medium truck volume : 158/18 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 5.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.60
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Conservation (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 : 90.19 / 15.00 m
Receiver height : 3.50 / 5.25 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Conservation (day)
---

Source height = 1.19 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 | 0.61 | 63.91 | 0.00 | -12.54 | -1.37 | 0.00 | 0.00 | 0.00 | 50.00 |

Segment Leq : 50.00 dBA

Total Leq All Segments: 50.00 dBA

Results segment # 1: Conservation (night)
---

Source height = 1.19 m

ROAD (0.00 + 56.11 + 0.00) = 56.11 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.56 | 57.39 | 0.00 | 0.00 | -1.28 | 0.00 | 0.00 | 0.00 | 56.11 |

Segment Leq : 56.11 dBA

Total Leq All Segments: 56.11 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 50.00

STAMSON 5.0 NORMAL REPORT Date: 16-06-2020 10:20:23
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: co_a_o55.te Time Period: Day/Night 16/8 hours
Description: OUTDOOR 55dBA

Road data, segment # 1: Conservation (day/night)
---
Car traffic volume : 9544/1060 veh/TimePeriod *
Medium truck volume : 158/18 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 5.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.60
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Conservation (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 : 44.13 / 15.00 m
Receiver height : 3.50 / 5.25 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Conservation (day)
---

Source height = 1.19 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 | 0.61 | 63.91 | 0.00 | -7.54 | -1.37 | 0.00 | 0.00 | 0.00 | 55.00 |

Segment Leq : 55.00 dBA

Total Leq All Segments: 55.00 dBA

Results segment # 1: Conservation (night)
---

Source height = 1.19 m

ROAD (0.00 + 56.11 + 0.00) = 56.11 dBA

| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.56 | 57.39 | 0.00 | 0.00 | -1.28 | 0.00 | 0.00 | 0.00 | 56.11 |

Segment Leq : 56.11 dBA

Total Leq All Segments: 56.11 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.00

STAMSON 5.0 NORMAL REPORT Date: 16-06-2020 10:18:55
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: co_a_o60.te Time Period: Day/Night 16/8 hours
Description: OUTDOOR 60dBA

Road data, segment # 1: Conservation (day/night)
---
Car traffic volume : 9544/1060 veh/TimePeriod *
Medium truck volume : 158/18 veh/TimePeriod *
Heavy truck volume : 198/22 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): 11000
Percentage of Annual Growth : 5.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 1.60
Heavy Truck % of Total Volume : 2.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Conservation (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 : 21.57 / 15.00 m
Receiver height : 3.50 / 5.25 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: Conservation (day)
---

Source height = 1.19 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 | 0.61 | 63.91 | 0.00 | -2.54 | -1.37 | 0.00 | 0.00 | 0.00 | 60.00 |

Segment Leq : 60.00 dBA

Total Leq All Segments: 60.00 dBA

Results segment # 1: Conservation (night)
---

Source height = 1.19 m

ROAD (0.00 + 56.11 + 0.00) = 56.11 dBA

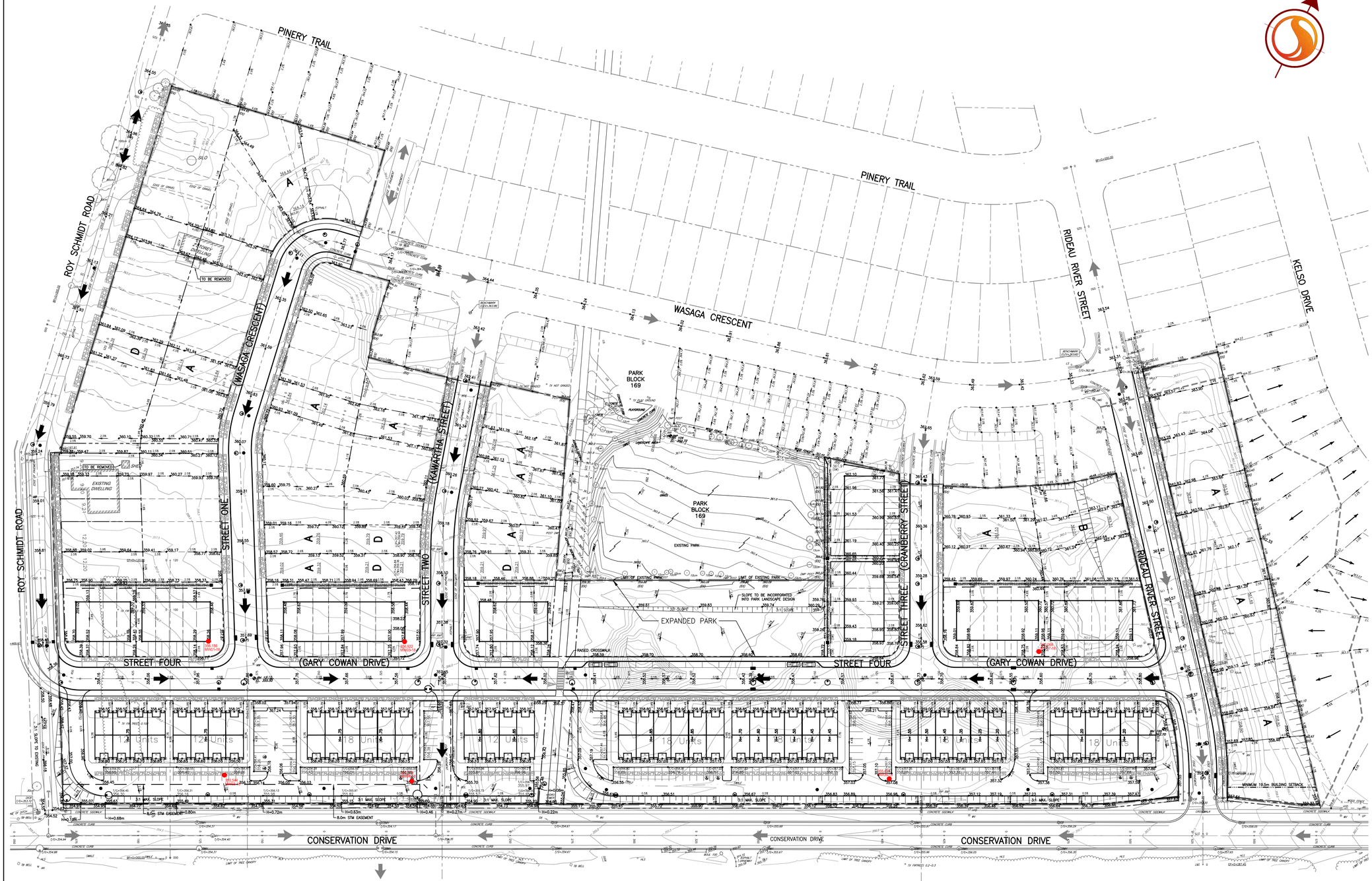
| Angle1 | Angle2 | Alpha | RefLeq | P.Adj | D.Adj | F.Adj | W.Adj | H.Adj | B.Adj | SubLeq |
|---|---|---|---|---|---|---|---|---|---|---|
| -90 | 90 | 0.56 | 57.39 | 0.00 | 0.00 | -1.28 | 0.00 | 0.00 | 0.00 | 56.11 |

Segment Leq : 56.11 dBA

Total Leq All Segments: 56.11 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.00

# Appendix D PRELIMINARY GRADING PLAN


PINERY TRAIL
PINERY TRAIL
ROY SCHMIDT ROAD
WASAGA CRESCENT
WASAGA CRESCENT
KAWARTHA STREET
RIDEAU RIVER STREET
KELSO DRIVE
CRANBERRY STREET
STREET ONE
STREET TWO
STREET THREE
STREET FOUR
STREET FOUR
(GARY COWAN DRIVE)
(GARY COWAN DRIVE)
CONSERVATION DRIVE
CONSERVATION DRIVE
CONSERVATION DRIVE
PARK BLOCK 169
PARK BLOCK 169
PARK BLOCK 169
EXPANDED PARK
EXISTING PARK
EXISTING DWELLING
TO BE REMOVED
EXISTING DWELLING
TO BE REMOVED
SHED
SLOPE TO BE INCORPORATED INTO PARK LANDSCAPE DESIGN
LIMIT OF EXISTING PARK
LIMIT OF EXISTING PARK
RAISED CROSSWALK
MINIMUM 19.5m BUILDING SETBACK
8.0m STM EASEMENT
8.0m STM EASEMENT
3:1 MAX. SLOPE
3:1 MAX. SLOPE
3:1 MAX. SLOPE
3:1 MAX. SLOPE
3:1 MAX. SLOPE
12 Units
18 Units
12 Units
18 Units
18 Units
18 Units
12 Units
18 Units
18 Units
18

# Appendix E NOISE WARNING CLAUSES

## WARNING CLAUSES

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

TYPE A: ($L_{eq}$(16) in the OLA greater than 55 dBA and less than or equal to 60 dBA)

"Purchasers/tenants are advised that sound levels due to increasing road traffic (rail traffic) (air 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: ($L_{eq}$(16) in the OLA greater than 60 dBA)

"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 (rail traffic) (air 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: ($L_{eq}$(16) in the OLA greater than 55 dBA and less than or equal to 65 dBA or ($L_{eq}$(8) in the OLA greater than 50 dBA and less than or equal to 60 dBA)

"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: ($L_{eq}$(16) in the OLA greater than 65 dBA or $L_{eq}$(8) in the OLA greater than 60 dBA)

"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

*Source:* Ontario Ministry of the Environment, *Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning Publication NPC-300*, Queen's Printer for Ontario, 2013