September 29, 2023

Heafey Group
768, boulevard St-Joseph, Suite 100
Gatineau, QC J8Y 4B8

Attn: Raad Akrawi, Project Manager
rakrawi@groupeheafey.com

Dear Mr. Akrawi:

Re: Roadway Traffic Noise Assessment, Addendum
1740-1760 St. Laurent Boulevard, Ottawa
Gradient Wind File 20-142

Following the completion of a roadway traffic noise assessment for the proposed mixed-use development located at 1740-1760 St. Laurent Boulevard in Ottawa (ref. report 20-142-Traffic Noise, dated February 17, 2022), Gradient Wind Engineering Inc. (Gradient Wind) was informed by the planners that the site plan has been updated. The following is a list of the notable changes to the building massing relevant to traffic noise impacts:

- **Tower 1:** Even though the footprint and area of the building are impacted by the revision, Tower 1's shape did not change significantly. The noise levels at plane of window (POW) receptors and recommendations listed in Gradient Wind 20-142-Traffic Noise report, dated February 17, 2022, are still applicable.

  The only significant change is that the green roof is removed and turned into an at-grade outdoor area. The traffic noise level for this area (Receptor 15) is recalculated and the results can be seen below.

- **Tower 2:** The almost square footprint of the building changed into an L-shape. The change is not significant as it does not impact the location of our receptors drastically. The noise levels at receptors and recommendations listed in Gradient Wind 20-142-Traffic Noise report, dated February 17, 2022, are still applicable.
- **Tower 3:** The L-shaped Tower 3 has a rectangular footprint in the updated site plan. The change is not significant as it does not impact the location of our receptors drastically. The noise levels at receptors and recommendations listed in Gradient Wind 20-142-Traffic Noise report, dated February 17, 2022, are still applicable.
- **Tower 4:** The wide-angled L-shaped tower is mirrored by the northwest-southeast axis and has a perpendicular L-shaped footprint. The change is not significant as it does not impact the location of our plane of window (POW) receptors drastically. The noise levels at receptors and recommendations listed in Gradient Wind 20-142-Traffic Noise report, dated February 17, 2022, are still applicable. However, the outdoor living area (OLA) receptor location has changed. The are is now mostly blocked by the tower itself. Therefore, Receptor 14 is recalculated, the results can be seen below.

TABLE 1: THE CITY COMMENTS

Roadway Traffic Noise Assessment, prepared by Gradient Wind, Consultant's report # GW20-142-Traffic Noise, dated July 31 2021.			
2	The green roof from Tower 2 should be assessed as an OLA. Consider the distance to Industrial Avenue.	Gradient Wind	**GWE Response:** The related receptor (Receptor 15) and the other OLA receptor in the study has been reassessed with the recent changes to the site plan.
3	It is noted that the following does not impact the results of the study, but the following rounding errors were identified in Table 3: R2 should be rounded up to 68 dBA in the daytime. R7 should be rounded to 73 dBA in the daytime.	Gradient Wind	**GWE Response:** The rounding errors were corrected in our revised Roadway Traffic Noise Assessment dated February 17, 2022.

1. OUTDOOR LIVING AREA ASSESSMENT

The sound level criterion for outdoor living areas (OLA) is 55 dBA, which applies during the daytime (07:00 to 23:00). When noise levels exceed 55 dBA but are less than 60 dBA, mitigation should be provided to reduce noise levels where technically and administratively feasible to acceptable levels at or below the criterion. Where noise levels exceed 60 dBA noise mitigation is required to reduce the noise levels at or below 60 dBA. If these measures are not provided, prospective purchasers or tenants should be informed of potential noise problems by a warning clause.

TABLE 2: EXTERIOR NOISE LEVELS AT OUTDOOR LIVING AREAS

Receptor Number	Receptor Height Above Grade (m)	Receptor Location	STAMSON 5.04 Noise Level (dBA)	
			Day	Night
Outdoor Living Areas (OLA)				
14	1.5	At-Grade-Level Outdoor Area (Tower 4)	52	N/A*
15	1.5	At-Grade-Level Outdoor Area (Tower 2)	58	N/A*

* OLA receptors are not assessed during nighttime as per ENCG and NPC-300

The revised noise levels can be seen in Table 2 above. The STAMSON calculation input-output data for the OLA receptors are shared in Appendix A. As the noise levels are below 60 dBA, mitigation measures will not be needed. However, a Type B Warning Clause will be required in all Lease, Purchase and Sale Agreements for Tower 2, as summarized below:

Type B

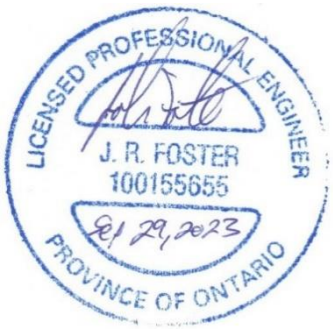
"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

Even though the building massing has changed since the completion of the original report, the distances and angles of exposure to traffic noise sources at plane of window (POW) receptors have not changed significantly. As the noise levels from local roadway sources, namely St. Laurent Boulevard, are expected to be similar to the original predictions achieved for the previous design, our previous recommendations are still applicable to the buildings.

Please contact the undersigned with any questions.

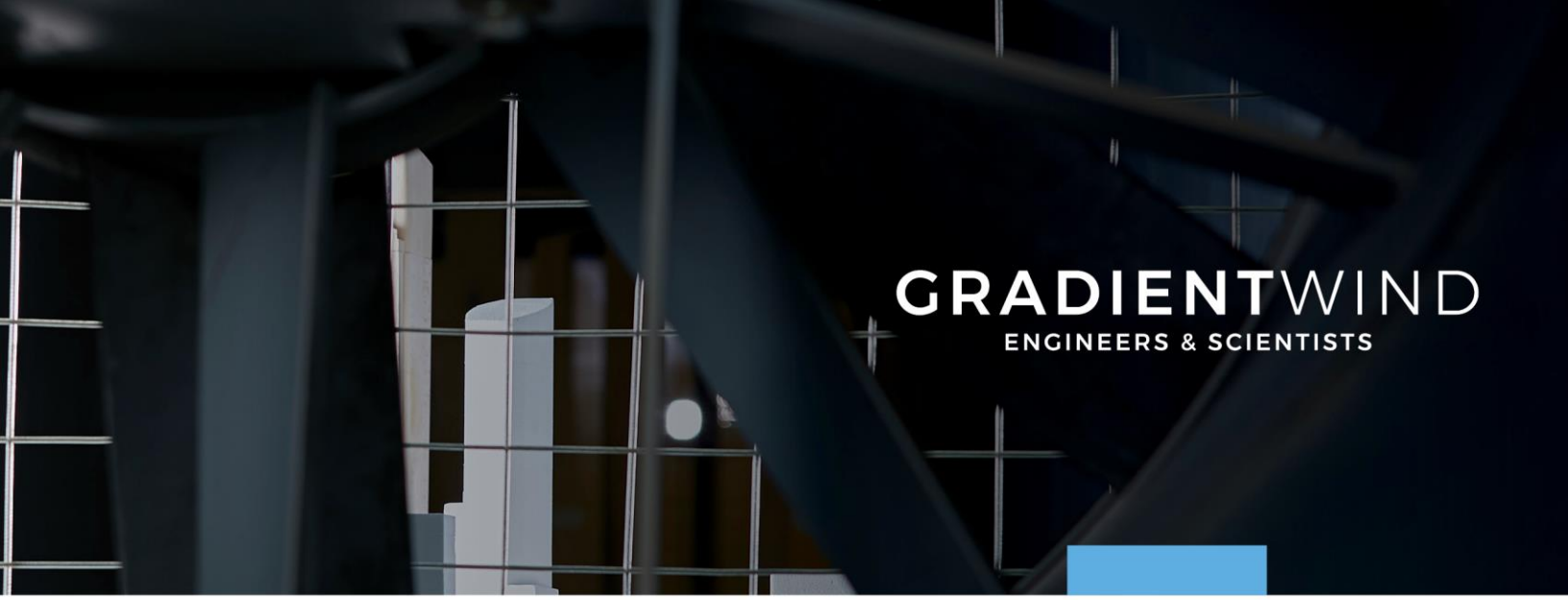
Sincerely,

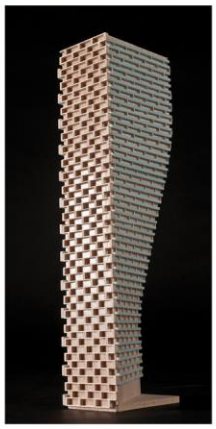
Gradient Wind Engineering Inc.

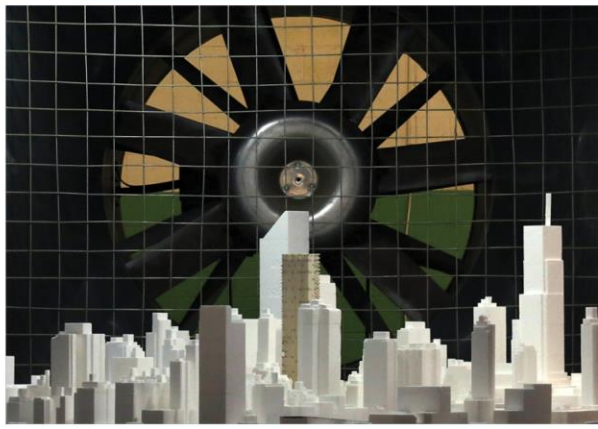


Efser Kara, MSc, LEED GA
Acoustic Scientist

Joshua Foster, P.Eng.
Lead Engineer







APPENDIX A

STAMSON 5.04 – INPUT AND OUTPUT DATA

127 WALGREEN ROAD, OTTAWA, ON, CANADA K0A 1L0 | 613 836 0934
GRADIENTWIND.COM

STAMSON 5.0 NORMAL REPORT Date: 29-09-2023 15:20:48
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r14R1.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: St Laurent 1 (day/night)

Angle1 Angle2 : 34.00 deg 38.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 128.00 / 128.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: St Laurent 2 (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 : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: St Laurent 2 (day/night)

Angle1 Angle2 : 38.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 128.00 / 128.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : 38.00 deg Angle2 : 90.00 deg
Barrier height : 7.00 m
Barrier receiver distance : 110.00 / 110.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

Results segment # 1: St Laurent 1 (day)

Source height = 1.50 m

ROAD (0.00 + 49.15 + 0.00) = 49.15 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
34 38 0.00 75.00 0.00 -9.31 -16.53 0.00 0.00 0.00 49.15

Segment Leq : 49.15 dBA

Results segment # 2: St Laurent 2 (day)

Source height = 1.50 m

Barrier height for grazing incidence

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

1.50 ! 1.50 ! 1.50 ! 1.50

ROAD (0.00 + 48.39 + 0.00) = 48.39 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
38 90 0.00 75.00 0.00 -9.31 -5.39 0.00 0.00 -11.90 48.39

Segment Leq : 48.39 dBA

Total Leq All Segments: 51.80 dBA

Results segment # 1: St Laurent 1 (night)

Source height = 1.50 m

ROAD (0.00 + 41.56 + 0.00) = 41.56 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
34 38 0.00 67.40 0.00 -9.31 -16.53 0.00 0.00 0.00 41.56

Segment Leq : 41.56 dBA

Results segment # 2: St Laurent 2 (night)

Source height = 1.50 m

Barrier height for grazing incidence

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

1.50 ! 1.50 ! 1.50 ! 1.50

ROAD (0.00 + 40.79 + 0.00) = 40.79 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
38 90 0.00 67.40 0.00 -9.31 -5.39 0.00 0.00 -11.90 40.79

Segment Leq : 40.79 dBA

Total Leq All Segments: 44.20 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 51.80
(NIGHT): 44.20

STAMSON 5.0 NORMAL REPORT Date: 29-09-2023 14:40:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r15R2.te Time Period: Day/Night 16/8 hours
Description:

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 veh/TimePeriod *
Posted speed limit : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 1: St Laurent 1 (day/night)

Angle1 Angle2 : -90.00 deg -56.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 131.00 / 131.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Road data, segment # 2: St Laurent 2 (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 : 70 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

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

Data for Segment # 2: St Laurent 2 (day/night)

Angle1 Angle2 : -56.00 deg -24.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 131.00 / 131.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -56.00 deg Angle2 : -24.00 deg
Barrier height : 30.00 m
Barrier receiver distance : 87.00 / 87.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

Results segment # 1: St Laurent 1 (day)

Source height = 1.50 m

ROAD (0.00 + 58.35 + 0.00) = 58.35 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	-56	0.00	75.00	0.00	-9.41	-7.24	0.00	0.00	0.00	58.35

Segment Leq : 58.35 dBA

Results segment # 2: St Laurent 2 (day)

Source height = 1.50 m

Barrier height for grazing incidence

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

ROAD (0.00 + 38.08 + 0.00) = 38.08 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-56 -24 0.00 75.00 0.00 -9.41 -7.50 0.00 0.00 -20.00 38.08

Segment Leq : 38.08 dBA

Total Leq All Segments: 58.39 dBA

Results segment # 1: St Laurent 1 (night)

Source height = 1.50 m

ROAD (0.00 + 50.75 + 0.00) = 50.75 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 -56 0.00 67.40 0.00 -9.41 -7.24 0.00 0.00 0.00 50.75

Segment Leq : 50.75 dBA

Results segment # 2: St Laurent 2 (night)

Source height = 1.50 m

Barrier height for grazing incidence

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

ROAD (0.00 + 30.49 + 0.00) = 30.49 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-56 -24 0.00 67.40 0.00 -9.41 -7.50 0.00 0.00 -20.00 30.49

Segment Leq : 30.49 dBA

Total Leq All Segments: 50.79 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 58.39
(NIGHT): 50.79