

June 19, 2017

Averton (Brock) Limited
161 Pennsylvania Avenue, Suite 5
Vaughan, Ontario
L4K 1C 3

Attention: Vincent Baffa
vbaffa@averton.ca

**Re: Addendum Letter #2 to the
Environmental Noise Assessment Update
Main Street Seaton - Phases 3 and 4
Proposed Residential Development
Blocks 3 and 4 on Plan 40M-2568
Pickering, Ontario
VCL File: 113-034-300**

VIA E-MAIL

Dear Mr. Baffa:

1.0 INTRODUCTION

Valcoustics Canada Ltd. (VCL) previously completed an Environmental Noise Assessment, dated July 24, 2013, an update to the Environmental Noise Assessment, dated May 5, 2015 (herein referred to as the Noise Report), and Addendum #1 to the updated Environmental Noise Assessment, dated September 24, 2015, for the proposed residential development on Plan 40M-2568 (formerly known as 2675, 2699, 2705 and 2725 Brock Road) in the City of Pickering.

This Addendum has been prepared to update the analysis to account for changes to Phases 3 and 4 of the development (Blocks 3 and 4 on Plan 40M-2568). Phase 3 consists of two stacked back-to-back townhouse blocks with a total of 44 dwelling units and an apartment building with a podium up to 7 storeys in height and a tower up to 16 storeys in height. Phase 4 consists of five stacked back-to-back townhouse blocks with a total of 106 dwelling units and an apartment building with a podium up to 7 storeys in height and a tower up to 21 storeys in height.

This Addendum is based on the Site Plan prepared by RN Design, last revised May 30, 2017. Figure 1 shows the Site Plan in reduced form.

Note, the block numbering has been added by VCL for ease of description.

2.0 NOISE SOURCES

The noise sources, analysis method and parameters used in this addendum are the same as those used in the Noise Report.

The rail volumes used in this assessment have been escalated to the year 2027 design condition at a growth rate of 2.5%, compounded annually.

3.0 NOISE IMPACT ASSESSMENT

The highest unmitigated daytime/nighttime sound levels of 74 dBA/69 dBA are predicted to occur on the northwest facade of Phase 3 apartment tower (Building C). The highest unmitigated daytime outdoor amenity area (“Outdoor Living Areas” - OLA’s) sound level of 58 dBA is predicted to occur at the seating area in Phase 3.

Table 1 summarizes the predicted sound levels outdoors at specific locations due to the transportation noise sources.

Appendix A contains a sample sound level calculation.

4.0 NOISE ABATEMENT REQUIREMENTS

4.1 INDOORS

4.1.1 Architectural Requirements

The indoor noise level guidelines can be achieved by using appropriate construction for exterior walls, windows and doors.

4.1.1.1 Townhouse Blocks

In determining the worst-case architectural requirements, wall and window areas were assumed to be 80% and 30% of the associated floor area, respectively, on the facades exposed directly or at an angle to the road and rail traffic noise sources for both living/dining areas and sleeping quarters.

Based on the predicted sound levels, the townhouse blocks in adjacent to Brock Road in both Phases 3 and 4 (Buildings A, B, E, F and G) require exterior walls meeting a minimum STC rating of 54 and windows with STC ratings up to 32.

For the two remaining townhouse blocks in Phase 4 (Buildings H and I), exterior walls and windows meeting the minimum non acoustical requirements of the OBC will be sufficient to achieve the indoor noise guideline criteria of the MOE.

4.1.1.2 Apartment Buildings

In determining the worst-case architectural requirements for the residential suites in the apartment buildings, wall and window areas were assumed to be 50% and 50% of the associated floor area, respectively, on the facades exposed directly or at an angle to the road and rail traffic noise sources for both living/dining areas and sleeping quarters.

Based on the predicted sound levels, apartment Buildings C and D require exterior walls meeting a minimum STC rating of 54 and upgraded windows with STC ratings up to 38.

4.1.1.3 General Notes

For walls, a typical exterior facade construction which meets the minimum non-acoustical requirements of the OBC would be expected to achieve the requirement of STC 37. Brick veneer exterior wall construction is expected to achieve an STC rating of 54.

The final sound isolation requirements should be reviewed when architectural plans are developed. Wall and window constructions should also be reviewed at this point to ensure that they will meet the required sound isolation performance. This is typically required by the City at the time of building permit application.

4.1.2 **Ventilation Requirements**

The sound levels are such that mandatory air conditioning is required for the townhouse blocks and apartment buildings adjacent to Brock Road, in both Phases 3 and 4 (Buildings A to G).

The two remaining townhouse blocks in Phase 4 (Buildings H and I) require the provision for adding air conditioning by the occupant at a future date. This typically takes the form of a ducted, forced air heating system, suitably sized to accommodate central air conditioning.

4.2 **OUTDOORS**

For the seating area in Phase 3, the unmitigated daytime OLA sound level is predicted to be less than 60 dBA but above the 55 dBA design objective. This is within the maximum permitted by the MOE noise guidelines, provided a warning clause is registered on title. To meet the 55 dBA objective, a 1.8 m high sound barrier could be used.

It is understood that all balconies and terraces in the development will be less than 4 m in depth and therefore do not qualify as OLA's. If the plans are revised to include balconies and terraces that are greater than 4 m in depth, these locations will qualify as OLA's, and the assessment should be updated to include these locations.

It should be noted that the above sound barrier requirements were based on flat topography (i.e., base elevation of receptor, road elevation and base elevation of sound barrier were assumed to be the same). The sound barrier requirements should be checked once grading information is available.

The sound barriers must be of solid construction with no gaps, cracks or holes and must have a minimum surface weight of 20 kg/m². A variety of materials are available, including concrete, masonry, glass, wood, specialty composite materials, or a combination of the above.

5.0 CONCLUSIONS

With incorporation of the recommendations above, the MOE noise guideline requirements are expected to be met and a suitable acoustical environment provided for the future residents.

The approvals and administrative procedures are available to ensure that the acoustical requirements are implemented.

If you have any questions, please let us know.

Yours truly,

VALCOUSTICS CANADA LTD.

Per:


Seema Nagaraj, Ph.D., P.Eng.



Per:


Cris delos Santos, M.Eng. P.Eng.



SN\CDS\vk
J:\2013\113034\300\Letters\2675-2725 Brock Road, Pickering - Addendum #1 v1_0 Fnl.wpd

Enclosures

TABLE 1A
ULTIMATE ROAD TRAFFIC DATA⁽¹⁾

Roadway	AADT ⁽²⁾	% Trucks		Day/Night Split	Speed Limit (kph)
		Medium	Heavy		
Brock Road	40 000	5.25	9.75	90%/10%	70

Notes:

- (1) Obtained from the Region of Durham.
 (2) AADT – Annual Average Daily Traffic.

TABLE 1B
RAIL TRAFFIC DATA⁽¹⁾ – CPR BELLEVILLE SUBDIVISION

Period	Train Type	# of Trains	Maximum # of Cars/Train	Maximum # of Locos/Train	Maximum Speed (kph)
Daytime (0700 to 2300 hours)	Freight	13 (17.5)	157	5	97
Nighttime (2300 to 0700 hours)	Freight	6 (8.1)	157	5	97

Note:

- (1) Rail data applicable to the year 2013 was obtained from CPR and confirmed for the year 2015. The data shown in brackets has been projected to the year 2027 with a 2.5% growth rate, compounded annually.

TABLE 2

PREDICTED YEAR 2027 SOUND LEVELS OUTDOORS⁽¹⁾ - NO MITIGATION

Location⁽²⁾	Source	Distance (m)⁽³⁾	L_{eq Day} (dBA)	L_{eq Night} (dBA)
Building A Phase 3 Townhouse Block (West Face)	Brock Road Northbound	20	71	65
	Brock Road Southbound	20	68	62
	CPR Belleville Subdivision	272	57	56
	TOTAL	–	73	67
Building A Phase 3 Townhouse Block (North Face)	Brock Road Northbound	20	68	62
	Brock Road Southbound	30	65	59
	CPR Belleville Subdivision	272	57	57
	TOTAL	–	70	64
Building C Phase 3 Apartment Tower (Southwest Face)	Brock Road Northbound	20	72	65
	Brock Road Southbound	30	70	63
	CPR Belleville Subdivision	356	62	62
	TOTAL	–	74	68
Building C Phase 3 Apartment Tower (Northwest Face)	Brock Road Northbound	20	72	65
	Brock Road Southbound	30	70	63
	CPR Belleville Subdivision	356	62	62
	TOTAL	–	74	68
Building D Phase 4 Apartment Tower (Southwest Face)	Brock Road Northbound	20	72	65
	Brock Road Southbound	30	70	63
	CPR Belleville Subdivision	356	62	61
	TOTAL	–	74	68
Building D Phase 4 Apartment Tower (Northwest Face)	Brock Road Northbound	20	72	65
	Brock Road Southbound	30	70	63
	CPR Belleville Subdivision	356	63	62
	TOTAL	–	74	68

.../cont'd

TABLE 2 (continued)

PREDICTED YEAR 2027 SOUND LEVELS OUTDOORS⁽¹⁾ – NO MITIGATION

Location⁽²⁾	Source	Distance (m)⁽³⁾	L_{eq} Day (dBA)	L_{eq} Night (dBA)
Building G Phase 4 Townhouse Block (West Face)	Brock Road Northbound	18	72	65
	Brock Road Southbound	28	69	62
	CPR Belleville Subdivision	573	52	52
	TOTAL	–	74	67
Building G Phase 4 Townhouse Block (South Face)	Brock Road Northbound	18	69	59
	Brock Road Southbound	28	66	59
	TOTAL	–	71	64
Building I Phase 4 Townhouse Block (West Face)	Brock Road Northbound	44	58	51
	Brock Road Southbound	54	57	50
	TOTAL	–	60	54
Seating Area Phase 3 (OLA)	Brock Road Northbound	58	55	–
	Brock Road Southbound	68	54	–
	CPR Belleville Subdivision	306	47	–
	TOTAL	–	58	–

Notes:

- (1) Receptors were assessed at the top storey of each building.
- (2) See Figure 1 for receptor locations.
- (3) Distance indicated is from the centreline of the noise source to facade.

TABLE 3
MINIMUM NOISE ABATEMENT MEASURES

Building	Air Conditioning⁽¹⁾	Exterior Wall⁽²⁾	Window STC Rating⁽³⁾	Warning Clauses⁽⁵⁾
Building A	Mandatory	Brick Veneer (or STC 54 equivalent)	up to STC 32	A + B + D + E
Building B	Mandatory	Brick Veneer (or STC 54 equivalent)	up to STC 32	A + B + D
Buildings C and D	Mandatory	Brick Veneer (or STC 54 equivalent)	up to STC 38	A + B
Buildings E and F	Mandatory	Brick Veneer (or STC 54 equivalent)	up to STC 32	A + B
Building G	Mandatory	Brick Veneer (or STC 54 equivalent)	up to STC 32	A + B + E
Buildings H and I	Provision for adding	No special acoustical requirements	No special acoustical requirements	A + C

For notes to this table, see following page.

NOTES TO TABLE 3

- (1) Where means must be provided to allow windows to remain closed for noise control purposes, a commonly used technique is that of air central conditioning.
- (2) STC - Sound Transmission Class Rating (Reference ASTM-E413). Where brick veneer exterior wall construction is required, equivalent wall construction (STC 54) can be used. The STC ratings are based on *assumed* wall to associated indoor floor area. The final requirements should be confirmed when floor plans are available for the residential suites.
- (3) STC - Sound Transmission Class Rating (Reference ASTM-E413). A sliding glass walkout door should be considered as a window and be included in the percentage of glazing. The STC ratings shown are based on *assumed* window to associated indoor floor area. The final requirements should be confirmed when floor plans are available for the residential suites.
- (4) Sound barriers must be of solid construction with no gaps cracks or holes, and must have a minimum surface weight of 20 kg/m². A variety of materials are available, including wood, masonry, glass, specialty composite materials, or a combination of the above. Sound barrier requirements were based on flat topography and should be reviewed once the grading plan becomes available.
- (5) Warning clauses to be included in Occupancy Agreements:
 - A. "Purchasers are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road or rail traffic, may on occasion interfere with some activities of the dwelling occupants."
 - B. "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 Municipality's and the Ministry of the Environment's road and rail noise criteria where applicable."
 - C. This dwelling unit has been fitted with a forced air heating system and the ducting, etc. was sized to accommodate central air conditioning. Installation of central air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the Municipality's and the Ministry of the Environment's noise criteria. (Note: The location and installation of the outdoor air conditioning device should be done so as to minimize the noise impacts.
 - D. "Warning: Canadian Pacific Railway or their assigns or successors in interest has or have a rights-of-way within 300 metres from the land the subject hereof. There may be alterations to or expansions of the railway facilities on such rights-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). CPR will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid rights-of-way."
 - E. "Purchasers are advised that due to the proximity of the future commercial development, sound from this establishment may, at times, be audible."
- (6) All exterior doors shall be fully weatherstripped.



LEGEND

- ▲ Mandatory Air Conditioning
- ◆ Provision for Adding Air Conditioning



BASE DRAWING BY RN DESIGN

No.	Revision/Issue	Date



30 Wertheim Court, Unit 25
 Richmond Hill, Ontario
 Canada L4B 1B9
 Tel: 905-764-5223
 Fax: 905-764-6813
 solutions@valcoustics.com

Title	Project No.	Date
Site Plan	113-034-300	June 8, 2017
Project Name	Scale	Figure
2675, 2699, 2705 & 2725 Brock Road/Pickering Update	N.T.S.	1

APPENDIX A

SAMPLE STAMSON CALCULATION



VALCOUSTICS

Canada Ltd.

Consulting Acoustical Engineers

Filename: c_wf.te Time Period: Day/Night 16/8 hours
 Description: Block C - Southwest Facade

Rail data, segment # 1: CPR Bellevil (day/night)

Train Type	Trains	Speed (km/h)	# loc / Train	# Cars / Train	Eng type	Cont weld
* 1. Freight	17.5/8.1	97.0	5.0	157.0	Diesel	Yes

* The identified number of trains have been adjusted for future growth using the following parameters:

Train type / No Name	Unadj. Trains	Annual % Increase	Years of Growth
1. Freight	13.0/6.0	2.50	12.00

Data for Segment # 1: CPR Bellevil (day/night)

Angle1 Angle2 : -90.00 deg 30.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 356.00 / 356.00 m
 Receiver height : 46.50 / 46.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 No Whistle :
 Reference angle : 0.00

Results segment # 1: CPR Bellevil (day)

LOCOMOTIVE (0.00 + 61.40 + 0.00) = 61.40 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	30	0.00	76.91	-13.75	-1.76	0.00	0.00	0.00	61.40

WHEEL (0.00 + 55.06 + 0.00) = 55.06 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	30	0.00	70.58	-13.75	-1.76	0.00	0.00	0.00	55.06

Segment Leq : 62.31 dBA

Total Leq All Segments: 62.31 dBA

Results segment # 1: CPR Bellevil (night)

LOCOMOTIVE (0.00 + 61.06 + 0.00) = 61.06 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	30	0.00	76.58	-13.75	-1.76	0.00	0.00	0.00	61.06

WHEEL (0.00 + 54.73 + 0.00) = 54.73 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	30	0.00	70.24	-13.75	-1.76	0.00	0.00	0.00	54.73

Segment Leq : 61.97 dBA

Total Leq All Segments: 61.97 dBA

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

Car traffic volume : 15300/1700 veh/TimePeriod *
 Medium truck volume : 945/105 veh/TimePeriod *
 Heavy truck volume : 1755/195 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): 20000
 Percentage of Annual Growth : 0.00
 Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 5.25
 Heavy Truck % of Total Volume : 9.75
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 1: Brock Rd NB (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 20.00 / 20.00 m
 Receiver height : 46.50 / 46.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Road data, segment # 2: Brock Rd SB (day/night)

Car traffic volume : 15300/1700 veh/TimePeriod *
 Medium truck volume : 945/105 veh/TimePeriod *
 Heavy truck volume : 1755/195 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): 20000
 Percentage of Annual Growth : 0.00
 Number of Years of Growth : 0.00
 Medium Truck % of Total Volume : 5.25
 Heavy Truck % of Total Volume : 9.75
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: Brock Rd SB (day/night)

Angle1 Angle2 : -90.00 deg 45.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 30.00 / 30.00 m
 Receiver height : 46.50 / 46.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Results segment # 1: Brock Rd NB (day)

Source height = 1.77 m

ROAD (0.00 + 71.54 + 0.00) = 71.54 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.00	74.04	0.00	-1.25	-1.25	0.00	0.00	0.00	71.54

Segment Leq : 71.54 dBA

VALCOUSTICS

Canada Ltd.

Consulting Acoustical Engineers

Results segment # 2: Brock Rd SB (day)

Source height = 1.77 m

ROAD (0.00 + 69.78 + 0.00) = 69.78 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.00	74.04	0.00	-3.01	-1.25	0.00	0.00	0.00	69.78

Segment Leq : 69.78 dBA

Total Leq All Segments: 73.76 dBA

Results segment # 1: Brock Rd NB (night)

Source height = 1.77 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	45	0.00	67.51	0.00	-1.25	-1.25	0.00	0.00	0.00	65.01

Segment Leq : 65.01 dBA

Results segment # 2: Brock Rd SB (night)

Source height = 1.77 m

ROAD (0.00 + 63.25 + 0.00) = 63.25 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	45	0.00	67.51	0.00	-3.01	-1.25	0.00	0.00	0.00	63.25

Segment Leq : 63.25 dBA

Total Leq All Segments: 67.23 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 74.06
(NIGHT): 68.36

VALCOUSTICS

Canada Ltd.

Consulting Acoustical Engineers