

November 20, 2019

Capital Paving Inc.  
P.O. Box 815  
Guelph, Ontario  
N1H 6L8Attention: George Lourenco, P.Eng.  
[glourenco@capitalpaving.on.ca](mailto:glourenco@capitalpaving.on.ca)**VIA E-MAIL****Re: Response to Peer Review Comments  
Shantz Station Pit  
Part of Lots 81 and 82, German Tract Company  
Breslau, Ontario  
VCL File: 118-0188**

Dear Mr. Lourenco:

Valcoustics Canada Ltd. (VCL) prepared a Noise Impact Analysis (the Report) dated May 10, 2019 in support of the proposed Shantz Station Pit in the Township of Woolwich. This letter has been prepared in response to the peer review comments, prepared by SS Wilson Associates (SSWA), dated September 13, 2019.

The Peer Review of the Report concluded that noise study assumptions, noise assessment criteria, assumed equipment sound levels, and recommended mitigation measures are acceptable. The outstanding issues are presented in Sections 3, 5, and 6 and are summarized in Section 7 of the Peer Review. Responses to these items are presented below.

**RESPONSE TO COMMENTS**

*Comment #1 – haul route (Section 3): VCL assessed the Haul Route noise source based on a qualitative rating along with the draft MECP Noise Guidelines for landfill Sites. This method of assessing the noise impact from the haul route was found to be partly acceptable by SSWA, however, the direction from the MNR regarding haul routes were not acknowledged or implemented as outlined below.*

*The policies developed by the Ministry of Natural Resources (MNR) require the following matters be given consideration by the proponent respecting haul routes leading towards an aggregate site.*

*Firstly, while no specific sound level criteria are given by the MNR for haul route noise, the direction from the MNR is simple in that it requires selection of the haul routes with the least noise impact. The responsibility for generating such data related to the best haul route rests with the consultants submitting various reports to the Region. Specifically, for noise, the haul route that creates the least impact for noise will be the one to be considered as part of the overall noise assessment.*

*Therefore, Valcoustics responsibility should be to provide the necessary information related to the background traffic noise and how the proposed quarry added truck traffic would affect the results for various possible alternatives. The selection of the proposed haul route would then be left up to the decision makers.*

**VCL Response:** VCL is not aware of any MNR guideline applicable to haul route assessment. The MNR only requires a noise assessment report be completed if extraction / processing facilities are located within 150 m of a noise sensitive receptor to determine compliance with the provincial guideline limits.

The noise assessment of the haul route was completed using the procedure outlined in the draft MECP Noise Guideline for Landfill Sites. The guideline requires that an access route for off-site source vehicles be selected which results in a minimum noise impact. A quantitative assessment to determine the potential noise impacts was completed and the results outlined in the Report.

MHBC submitted a memo to the Region of Waterloo entitled "Shnatz Station Pit – Access Route Options Review and Evaluation" (the Memo) dated May 13, 2019. In the Memo, MHBC identified four (4) potential access route options:

1. 1226 Maryhill Road;
2. South farm driveway;
3. Residential driveway to Village View Road; and
4. North through right-of-way to Maryhill Road.

The four haul route options are shown on Figure 1 of the Memo.

As indicated in the Report, the anticipated destination for the trucks is south to Highway 7 where they will travel either east towards Guelph or west towards Kitchener. A quick visual review of Figure 1 indicates that the noise impacts from Option 2 will be less than those from Options 3 and 4 since both of these options include the Option 2 haul route and have the truck traffic going through the Town of Maryhill. Option 1 has the potential to have lower noise impacts than Option 2. However, Option 1 uses Forester Road which is not suitable for heavy truck traffic. Thus, Option 1 was deemed to not be a viable option. It should also be noted that Shantz Station Road is already designated as a haul route by the Region.

Note, Shantz Station Road has been planned and designed to accommodate heavy truck traffic in accordance with the Region's Official Plan. Having the haul traffic enter directly onto a regional road results in the minimum noise impact as required by the Landfill guideline.

VCL conducted a noise assessment of the selected haul route; the results are presented in Section 6.2 of the Report. The analysis results show insignificant to noticeable noise impact are predicted in the worst-case scenario. This is the recommended haul route option and it results in minimum noise impact. Thus, the use of Shantz Station Road as the haul route is the preferred option.

Comment #2 – analysis and results (Section 5): *One of the most concerns about the noise study is the fact that the extraction process and associated noise is “dynamic” in terms of the working cell location(s), associated equipment, truck and equipment movements within the gravel pit depending on the phase and the timing. This appears not to have been covered at all in this study.*

VCL Response: We agree with the peer review comment that a gravel pit operation is a dynamic and continually changing process that moves across the site. This has been addressed in our analysis.

The noise assessment considered the worst-case noise source locations for each nearby receptor in all the phases (Phase 1 to Phase 5 of the aggregate extraction in the Report). In each phase, the portable noise sources (one front end loader, one conveyor, and one portable crusher) will be moving within the phase extraction boundary. The extracted material from the pit will be pre-processed at the working face using the portable crusher and then transferred via field conveyors to the processing plant (constructed during Phase 1). The processed material will be shipped off-site using haul trucks that are loaded by a front-end loader. Note, the haul truck will only move from the site entrance to the permanent processing plant; there will be no haul truck movement within the extraction boundary in the different phases.

To determine the worst-case sound level at the receptor locations, grid calculations for the portable noise sources (one front end loader, conveyor, and one portable crusher) within each phase were done in Cadna/A. The source locations for the portable noise sources that produce the highest sound level at the receptor locations is the worst-case location. All equipment will be operating at the pit floor elevation (i.e. the inherent acoustical screening from the pit wall was considered in the analysis). The only exception is the parts of the on-site haul route that are not within the extraction area which will be at the existing ground elevation (which is higher than the pit floor elevation). To be conservative, it was further assumed that all the equipment will be operating continuously during a predictable worst-case hour of operation.

Thus, the “dynamic” nature of the extraction process has been addressed in our assessment. The predicted noise levels at each receptor represent the worst-case locations only.

To provide further clarity to the discussion, sample calculations and associated figures corresponding to different locations (“working cell locations”) of portable noise sources within each phase are provided in Appendix A. Accordingly, Appendix A is bookmarked for ease of reference.

Comment #3 – analysis and results (Section 5): *Essentially, VCL should divide each quarry phase into “work cells” and assign equipment locations, mobile equipment path, etc. and calculate the sound levels at the various points of reception based on which the necessary mitigation strategy be predicted and documented. The parameters that must be addressed for the site specific and phase specific operations of this project include the following:*

- *Location of the equipment relative to the Points of Reception (the longer distance means lower sound levels).*
- *Ground elevation of the equipment (the lower the ground elevation, the lower the sound level at the receptor depending on the relative grade difference).*
- *Presence of natural ground shielding or deliberately constructed sound barriers (berms and/or walls) can greatly affect the acoustic efficiency of such structures depending on the relevant locations of the sources and the barriers. Therefore, it is important for the assessment to consider numerous location iterations throughout the entire site.*

- The possibility of the changes to the equipment used for extraction must also be assessed.
- Of particular importance is the aggregate truck operations IN and OUT of the site as the path of such vehicles is likely to change every meter in terms of location and ground elevations.

VCL Response: Regarding the changes to the equipment being used on site, the report already recommends that if there are any changes to the equipment, it needs to be reviewed to ensure sound emission levels are not exceeded. See 1<sup>st</sup> bullet point of the page 15 in the Report and Note 1.2.27 to the attached Site Plan in Appendix B.

For the remaining items, please see our response above to the previous comment.

Comment #4 – analysis and results (Section 5): *SSWA performed several calculations based on the assumptions made by VCL within their stationary model. Although the majority of the calculations were in line with VCL's stationary model, a few noise level calculations differed significantly. For example, Figure A5 within VCL's Noise Study notes the following predicted sound levels for POR08:*

- Day: 54 dBA
- Night: 41 dBA
- OLA: 51 dBA

*SSWA had calculated much higher sound levels due to the close proximity of the receptor location to the noise sources for both the façade and OLA. The discrepancy could be due to the grade elevations at the various phases of the gravel pit extraction. Therefore, we request that additional calculations be undertaken for several other phases to confirm the inputs made by VCL. Due to the large size of the computerized output calculations, they could be excluded from the report and included in a supplementary document.*

VCL Response: The peer review noted that SSWA calculated “much higher” sound levels at POR08 due to the close proximity to the receptor but the predicted/calculated sound levels are not reported with the review comments. We are not sure how the sound levels are calculated at the POR08 (i.e. the assumptions, screening effect of the pit face, etc.)

Additional sample calculations for different source locations within each phase are presented in Appendix A. As can be seen from the attached results (Figures A1 to A32), the maximum unmitigated sound level at POR08 is predicted to be 54 dBA (see Figures A5 and A6) and this is consistent with the Report. As mentioned earlier, acoustical screening from the pit face was considered in the analysis.

Comment #5 – mitigation results: *Figures A9, A10, A11, A12, and A13 detail the recommended noise mitigation measures, which include barrier and berm heights. In reviewing the figures, the outlines provided illustrate all berms to be of the same width, regardless of the height of the berm. The project drawings submitted by VCL show a recommended 11m high berm around the processing plant and screening plant within Phase 1. It should be noted that the maximum acceptable slope for a berm is typically 2:1, which means that the base of the recommended 11m high berm would be 44m + 1m top for stability and reduced erosion. Such berm is “massive” and will require extensive space that is not shown to any reasonable scale on the drawing and such base may impede equipment movements within the property. VCL should be required to re-examine the details of such conceptual berm and provide a realistic depiction on the various phases of the project drawings.*

VCL Response: Typical berm details are provided on the Site Plans. Please see the attached Site Plan in Appendix B and accompanied notes 1.2.18, 1.2.19 and 1.2.27. All the perimeter berms show the appropriate width corresponding to the height of the berm. With regards to the 11m berm surrounding the permanent processing plant (constructed during Phase 1), the Site Plan drawing labels this feature as an 11 m high “barrier” as opposed to “berm”, thus differentiating it from the rest of the perimeter berms on the site. The typical cross section detail of this barrier does not have to be built in the same way as the perimeter berms. The barrier can also utilize product stockpiles that can be maintained at a minimum 11m height with the use of telescoping radial stackers. A typical processing plant, including product stockpiles, requires approximately 5 to 6 acres of space, therefore, there is sufficient room to accommodate the barrier in phase 1.

Comment #6 – general comments (Section 7): *Revise the Noise Study to account for the dynamic process of the gravel pit extraction activities with the use of working cells throughout the extraction areas. The objective would be to predict the resulting sound levels without and with the recommended noise control measures.*

VCL Response: See response to Comment #2.

Comment #7 – general comments (Section 7): *Include more sample calculations to support the sound level predictions as indicated by the figures within the appendix.*

VCL Response: Additional sample calculations are attached. See Appendix A.

Comment #8 – general comments (Section 7): *VCL should re-examine the details of such conceptual berms and provide a realistic depiction on the various phases of the project drawings.*



VCL Response: Updated site plan is attached in Appendix B.

We trust that the above responses address all the issues raised regarding the noise impact assessment.

Yours truly,

**VALCOUSTICS CANADA LTD.**

Per:    
**Sami Rahman, M.A.Sc., P.Eng.**

Per:    
**John Emeljanow, B.Eng., P.Eng.**

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Enclosures

**APPENDIX A**  
**SAMPLE CALCULATION**