

March 20, 2013

The Corporation of the City of Brampton

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**Reference: Second Peer Review of Noise Impact Assessment, Proposed Norval Quarry,
Brampton Brick Limited**

Introduction and Summary

HGC Engineering has completed a second peer review of the Noise Control Study prepared in support of the proposed Norval Quarry. The opinions expressed in this peer review (including Appendices) may be supplemented, reconsidered or otherwise revised by the author due to new or previously unknown information.

Our comments provided below are based on our review of the originally submitted materials described in our initial noise peer review dated May 31, 2011 and the following documents recently submitted in response to that peer review.

- Aercoustics Engineering Limited (AEL) letter to Long Environmental Consultants Inc. dated December 6, 2011 RE: Brampton Brick Norval Quarry – Ambient Sound level Monitoring
- AEL letter to Brampton Brick Limited dated April 16, 2012 (responses to HGC Engineering peer review comments)
- “*Brampton Brick Norval Quarry Noise Impact Study Report Addendum #1*”, prepared for Brampton Brick Limited by Aercoustics Engineering Ltd. dated Sept. 18, 2012.

In summary, the AEL Addendum has been prepared to support the addition of a second scraper to the quarry operations and recommends increased berm heights in that regard. Many of our initial peer review comments have been adequately addressed. We remain concerned that due to factors outlined in the comments below, sound levels may exceed the criteria on occasion and no mechanism has been proposed to ensure that the sound level limits are met on an ongoing basis. Recommendations are provided.

Review Comments

1. The study states that it is in support of an application for a Class A Category 2 license under the Aggregate Resources Act. It does not state that it is in support of an application for a zone change or discuss any implications or issues arising therefrom.

We are satisfied with the AEL response to this comment.

2. There is no reference to any policy regime in the Brampton Official Plan with respect to the assessment/acceptability of noise.

We are satisfied with the AEL response to this comment. The Brampton Official Plan does make reference the assessment of noise and separation distances when assessing land use compatibility. The AEL report and associated materials are sufficient for review with respect to noise. The MOE D1 – D6 Guidelines which relate to Land Use Compatibility and deal with distance setbacks do not apply to quarries.

3. AEL has calculated the receptor sound levels and berm heights based on a point of reception 1.5 m above the ground, typical of a person standing in their yard near the house. While this has been common practice in the industry in the past, the MOE now requires that the plane of any window be considered as a point of reception, even upstairs windows during daytime operations. Sound levels are typically higher outside upstairs windows and berm heights may need to be increased to fully protect them.

We do not agree with this response. MOE Guideline NPC-205 states that a "Point of reception" means any point on the premises of a person where sound or vibration originating from other than those premises is received. We concur that sound levels are typically 1 to 2 dB higher at these elevated locations.

4. The study considers the sound levels only in the immediate vicinity of the residential dwellings, not at locations on the residential properties closer to the quarry operations, further to the rear of the lots on the east side of Old Pine Crest Road, for example, where sound levels may be higher.

We are satisfied with the AEL response to this comment.

5. The study identifies the residences to the east as being in a rural environment and the residences to the west as being in an urban environment, but does not present any quantitative evidence to support those classifications. This is important because the criteria are lower for rural points of reception, which would result in excesses under the proposed mitigation scheme (berms). In particular we are concerned about the urban classification of R5 and R6 on the east side of Old Pine Crest road. The acoustical environment in the rear yard areas of those properties may not be much different that the residences to the east of

the site which are classified as rural. The reception point criteria and definitions of urban and rural classifications are contained in MOE Guidelines NPC-205 and NPC-232.

We are satisfied with the AEL response to this comment.

6. Clarification should be provided as to the manner in which the number of trucks required for the shipping of material to the plant (three per hour). If we consider the 200,000 tonne annual limit and the use of 20 tonne haul trucks 250 days per year, 8 hours per day, our calculation indicates a number closer to five per hour, and that is assuming that it will be a steady operation with no peak hours.

We are satisfied with the AEL response to this comment.

7. The noise source which is most often a source of complaint with respect to quarry operations is back-up beepers. There is no mention of back up beepers in the study. While back up beepers are excluded from assessment (Annex to NPC-205 and NPC-232) since they are “auditory warning devices required or authorized by law or in accordance with good safety practices”, the study should discuss their use and indicate how they will be managed. Sometimes operations can be staged to minimize reverse operations, for example. We also recommend that alternative warning technologies be investigated.

*We are satisfied with the AEL response to this comment. **Brampton Brick should confirm that they have investigated alternative warning technologies. They should implement such technologies and develop a best practices plan for their employees concerning the use of these devices.***

8. There are some inconsistencies in the calculations which should be explained. Particularly related to the nearest residences to the west, which could result in higher than predicted sound levels at those residences. For example, in Appendix B the source “BBNQScrapper” is assigned a Penalty/Adjust value of -5 decibels for all residences except R5 and R6, which are assigned a value of -7 decibels. Had a consistent value of -5 decibels been used higher sound levels, potentially exceeding the criteria may have been determined at R5 and R6.

The revised analysis in the Addendum and the AEL response adequately address this comment

9. Another similar situation exists at R1, the nearest residence to the east where the source “BBQNloader” is assigned a Penalty/Adjust value of -1 dB, and 0 dB at most other receptors.

The revised analysis in the Addendum and the AEL response adequately address this comment

10. Also with respect to the calculations for R1, the sound level is calculated to be 45.5 dBA, which is rounded down to be 45 dBA to be exactly equal to the criteria, rather than being rounded up to 46 dBA, a more common rounding technique. A similar situation exists with respect to R6 where the calculated sound level is 50.5 and the criteria value is 50.0.

The revised analysis in the Addendum and the AEL response adequately address this comment

11. The calculation sheets contain the inputs to the model and the overall results. There is no way of determining from what has been provided if the calculations have been conducted in accordance with the applicable model. For example, to what specifically does Penalty/adjust refer; what factors were used for air absorption; how are moving pieces of equipment modeled, along what paths, etc.

The revised analysis in the Addendum and the AEL response adequately address this comment

12. Places of worship are considered to be Points of Reception in both NPC-205 and NPC-232. A Jehovah's Witness Kingdom Hall and Assembly Centre located to the north of Highway 7 within 500 m south of the site which was not considered in the study.

We are satisfied with the AEL response to this comment.

13. The noise from haul trucks travelling on public roadways is not regulated, but must be studied, reported and be considered in the selection of the haul route. The AEL Noise Report deals with this matter on an average hour basis and the impact (increased sound levels) is found to be insignificant. That may not be the case in the quieter (off peak) hours of the day when the background traffic volumes (in particular on Winston Churchill Blvd sound of Wanless Road) can be fairly low. Increased truck traffic on public roadways is a major source of concern related to quarrying operations, and in this case it appears that there is a limited selection of potential haul routes. We are of the opinion that the potential impact of offsite truck traffic may have been underestimated in the AEL Noise Report and that there should be a clear understanding of the potential impact of offsite truck traffic before the application is approved. Additional analysis is recommended.

*We do not agree with the AEL response. The increase in truck traffic associated with pits and quarries is a major concern of residents. This response indicates that the truck traffic from the project will have the effect of increasing the traffic noise during hours of low background to be similar to current sound levels in current peak traffic hours. In our opinion, that is a significant increase during many hours of the day. **Brampton Brick should quantify the increased sound levels which will be experienced at representative receptors near the haul route in all hours which they will operate.***

14. The quarry operator has indicated that the haul trucks will likely be operated by Brampton Brick. In our opinion, consideration should be given in the Noise Study as to means to manage the noise of haul trucks operating both within the quarry and on public roadways.

*Maintaining the vehicles in good operating condition and with proper mufflers is understood. Restrictions on the use of engine brakes could also be helpful, considering the road gradients in the area. **The best practices plan should also include means of minimizing noise due to offsite trucking such as the use of engine brakes.***

15. Clarification should be provided that the source sound levels assumed for the bulldozer contain the noise from the claw being dragged through the shale.

We are satisfied with the AEL response to this comment.

16. There is no discussion of how the noise from final extraction of the shale below the berms will be addressed after the berms are removed so that the underlying material is accessible. This activity will occur in close proximity to R1.

*We are satisfied with the AEL response to this comment. **The Operational Plans should be revised to include the AEL description of the means by which final extraction of shale from below the berms will be conducted.***

17. The noise study states that only a scraper, dozer and loader will be used on the site. The operational plan indicates that a backhoe and excavator could also be used. This inconsistency should be addressed.

*We are satisfied with the AEL response to this comment. **The Operational Plans should be revised to include a note that backhoes and excavators may be used in site preparation or rehabilitation but they cannot be used for extraction or shipping operations without prior assessment of the potential noise impacts and the provision of noise controls as required.***

18. The report does not recommend any means of verifying the compliance of the facility with MOE sound level limits during its operational life, such as conducting an acoustical audit upon startup and regularly scheduled monitoring on an ongoing basis.

*We are satisfied with the AEL response to this comment. **The Operational Plans should be revised to include the requirement for yearly acoustical audits as per MOE Guideline NPC-233.***

Summary of Recommendations

We have the following recommendations:

1. Brampton Brick should quantify the increased sound levels which will be experienced at representative receptors near the haul route in each daytime in which they will operate.
2. Brampton Brick should confirm that they have investigated alternative warning technologies. They should implement such technologies and develop a best practices plan for their employees concerning the use of these devices.
3. The best practices plan should also include means of minimizing noise due to offsite trucking such as the use of engine brakes.
4. The Operational Plans should be revised to include the AEL description of the means by which final extraction of shale from below the berms will be conducted.
5. The Operational Plans should be revised to include a note that backhoes and excavators may be used in site preparation or rehabilitation but they cannot be used for extraction or shipping operations without prior assessment of the potential noise impacts and the provision of noise controls as required.
6. The Operational Plans should be revised to include the requirement for yearly acoustical audits as per MOE Guideline NPC-233.

Thank you for the opportunity to provide this information. We trust it is sufficient for the present purposes. Please call if you have any questions.

Yours truly,

Howe Gastmeier Chapnik Limited



Bill Gastmeier, MAsc, PEng

References:

- 1) NPC-205, "Sound Level Limits for Stationary Sources in Class 1 and 2 Areas (Urban)"
- 2) NPC-232, "Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)"
- 3) LU-131, "Noise Assessment Criteria in Land Use Planning"

Appendix A: Updated Preliminary Review Table

Guideline Question	Findings regarding the Brampton Brick Report	Implications if this concern/issue is not addressed in the technical report
Purpose		
Is the purpose of the work clearly and understandably stated in the applicant's report?	Yes	
Does the purpose set out the proper direction to undertake the study?	Yes	
Methodology		
Is the methodological approach technically sound? Is the review of issues, data, facts objective and appropriate?	Generally yes with respect to on site operations although somewhat higher than predicted sound levels may occur outside second story windows. The methodological approach to offsite truck traffic is not well defined in the guidelines and requires additional consideration and analysis.	Noise impacts from on-site operations may be higher than predicted at second story windows. The methodology used for offsite truck traffic may result in an underestimation of its significance.
Does the peer review identify any technical concerns stemming from the methodology (and assumptions made to inform the methodology) that may compromise the analysis and/or conclusions of the report?	The choice of a ground level receptor height is questionable.	Noise impacts from on- site operations may be higher than predicted at second story windows, potentially resulting in minor sound level excesses.
Information		
Are relevant data and facts clearly and consistently presented in the technical report?	Generally yes.	
Is information gathered from appropriate sources? Is the information useful? Accurate? Are there concerns regarding their quality or validity?	Yes	
Is the data used critical to the conclusions?	Yes	
Is the Brampton Brick report thorough/comprehensive/complete? To respond to this question, peer reviewers must consider accuracy, appropriateness and timing/seasonality of the data collection (if applicable). Where specific technical report warrants, there may be a need to consider broader connections (i.e.: water inter-relationships). Please indicate if you feel this is lacking in the Brampton Brick report and what broader connections should be considered.	Generally yes, since the provision of additional information regarding monitoring of the existing background sound levels.	
How comprehensive and complete are the recommended mitigation and monitoring measures	Mitigation measures (berms) are generally appropriate for a quarry	Sound levels at residences may exceed the limits by a

proposed by Brampton Brick? This includes assessing direct and indirect impacts; short and long term aspects.	operation. Noise monitoring is recommended to ensure ongoing compliance during operations.	minor amount on occasion. There are no means in place to ensure ongoing compliance. Acoustical Audits are recommended.
The gap analysis will assess the relative importance of the data gaps and limitations to the project and identify potential options for addressing them. As such, a recommendation from a peer reviewer could be that additional survey and baseline monitoring must be undertaken as the project proceeds, provided the necessary frameworks are in place to direct this data collection and any changes that are triggered.	No remaining gaps	
Certainty		
Are certainties and uncertainties of the proposal's success openly and objectively stated in the applicant's report/study?	No discussion of uncertainties	
Are all assumptions clearly stated? Are the assumptions reasonable? Analysis of assumptions and parameters.	Generally yes.	
Are the standards or thresholds commonly accepted in this type of technical area identified and appropriately utilized? (ie: transportation, soils, natural environment? Etc...)	Yes	
Issue Gaps		
Are there issue gaps arising from the review?	None remaining	
Were the identified issues addressed in the technical report?	Generally yes	
Are there key issues, related to the specific technical report, that have not been considered?	No	
Mitigation/Monitoring		
Are realistic mitigation measures/ rehabilitation plans proposed in the applicant's report? Is there sufficient detail?	Yes	
Do the proposed measures mitigate the impacts? Is the end result desirable from a technical point of view?	Yes	
Will the proposed measures be adequate to address outstanding concerns?	Yes	
Conclusion		
Do the conclusions satisfy the applicable policies of the relevant policy documents that need to be consulted as per the specific discipline (ie: Official Plan, Provincial legislation, standards and guidelines, etc...). This should be informed by the policy matrix. Have implications relating to required jurisdiction	Yes	

and agency approvals including environmental assessments been identified?		
Are the conclusions relevant to the purpose/objectives and supported by the work undertaken by the report authors?	Yes	
Based on the peer review, would the same conclusions be determined?	Generally yes. The report remains weak with respect to the consideration of offsite quarry truck traffic.	The impact of off-site truck traffic has not been thoroughly investigated. Roadside noise barriers are typically not required for quarry applications. Only one haul route is available and a clear understanding of the potential impacts should be required before the project is approved.
Adequacy		
Does the applicant's report/study adequately address the stated purpose?	No	
Is there anything that should, in your opinion, have been done differently?	Additional analysis of offsite truck traffic is recommended as is the preparation of best practices to manage noise from back up beepers, engine brakes etc.	

Conclusions Summary:

The recently submitted materials prepared by AEL have addressed many of the comments in our initial peer review. We remain concerned sound levels may exceed the criteria by a minor amount on occasion and no mechanism has been proposed to ensure that the sound level limits are met on an ongoing basis.

- Additional study/clarification is required concerning several items. These include more analysis of the potential impact of off-site trucking, and preparation of best practices around the use of back up beepers and engine brakes.
- The Operational Plan for the quarry should be modified to include a description of the means by which final extraction of shale from below the berms will be conducted, a note concerning the allowable use of backhoes and excavators and the requirement for yearly acoustical audits.

Gap Analysis:

- No significant gaps remain.