

February 5, 2018

sent via email:

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Dear Chris,

**MERIDIAN BRICK (NORTH ALDERSHOT) 1775 King Rd.
PLANNED DEVELOPMENT OF EAST QUARRY**

The UPDATED NOISE STUDY

Meridian announced in September 2015 that they intended to start the deforestation of the East quarry of their North Aldershot operation. This is now scheduled for Jan – Mar 2018 timeframe. Meridian also presented on their website updated noise (December 22, 2017) and dust studies – the updated dust study will be addressed in a separate communication - it is the purpose of this memo to address the updated noise study!

This latest Noise Study was SS Wilson's **third attempt** (the first two being April 23, 1996 and the second on October 22, 1998) to mathematically 'predict' the noise effect that an urban quarry operation (now operated as Meridian - a joint venture between Boral & Lone Star) will have on the adjacent neighborhood of Tyandaga, a quarry that, in some cases, is approximately 35 meters from some residential properties.

It is our understanding that the conclusions SS Wilson arrived at in these studies were based on the results obtained from two 'Software-based Predictive Modelling Applications' – ORNAMENT and CadnaA V4.5. This is a complicated and dynamic mathematical problem since there are many contributing factors that can readily change and hence are very difficult to accurately quantify, in fact, on this basis alone one could effectively argue that the results obtained by the SS Wilson study and presented in such an 'absolute' way should be viewed with a certain amount of scepticism.

The Predictive Modelling Applications produce results that investigators HOPE captures the TRUE situation, however, this has NOT always been the case (remember the bumblebee that couldn't fly). Like ALL predictive modelling approaches the software used by SS Wilson, is susceptible to the "garbage in, garbage out phenomenon (*GIGO*)", a phrase that originated in the computer science and information technology fields to CAUTION the reader that the quality of the output received from a predictive modelling program (e.g. as used by SS Wilson) not only depends on the quality of the algorithms but also depends on the objectivity, relevance, and integrity of the information (data) that was input.

For example, SS Wilson are VERY specific with respect to the operational conditions (Operational Plan) that were used in their analysis:

- *The bulldozer and the front-end loader were assumed to work simultaneously at different locations for the full 60 minutes in any 1 hour during peak operations of the quarry*
- *Two stockpile areas will be located within the site; one close to the toe face and one close to the front-end loader.*
- *Trucks will enter the site from the entrance on the south-west section of the property and proceed to the stockpile areas.*
- *The projected number of trucks entering and leaving the site in any one hour is 2 each hauling 3 loads per hour.*
- *Roughly 4 minutes will be required to load trucks at the site.*
- *The maximum speed of the vehicles within the site will be up to 20 km/hr”*
- *Face slope is 4:1*
- *Bulldozer speed 3 km/hr*
- *Rip spacing 2.1 m apart*
- *Calculated length of the work face 82 m ±*
- *Calculated width of the work face 39 m ±*
- ...
- **AND THERE ARE MANY MORE**

(NOW we CHALLENGE ANY AGENCY to ensure that the Meridian Operation complies to this long list of operational assumptions, assumptions that they say are **KEY** to their predictive modelling approach - *“this operation is somewhat complex in nature and modelling of the noise events include a **thorough knowledge of the operations...**”*.)

To exemplify the potential vulnerability of Noise Modelling and how the parameters can be manipulated / changed to produce very different results we present two very different scenarios below. Now although the *model* used in these examples is minimal in functionality it does use as input what seems to be the main noise contributing components in the SS Wilson Noise Study – the equipment used, the noise expectancy (loudness) of this equipment, and their time and occurrence of operation over a specified time period (1 hour).

*In the first example we assume that a bulldozer performs 15 ‘heavy duty’ events **per hour** (e.g. deep digging and moving ore to a stockpile) and each event has a maximum noise level of 90 dB with an event duration of 180 seconds (3 minutes). Using a handy-dandy *calculator* we get a noise value (*Leq*) of **~77dB***

Now let's assume that the same bulldozer performs 10 'light duty' events **per hour** (e.g. redistributing the stockpile, idling, moving between locations, etc.) with a maximum noise level of 60 dB and an event duration of 30 seconds then the noise value (Leq) would be **~40dB**

(Note: the values (77dB and 40dB) could be considered as being the 'average' noise value taken over a 1-hour time-period. This value can, however, be somewhat misleading in practice since it does not necessarily represent what may be considered a nuisance value. For example, 4 very loud noises every 15 minutes lasting only a few seconds could result in an acceptable 'average' value (within the MOECC guidelines) **YET** such operating conditions could be **intolerable to the average person's ear, nerves, health, and well-being!** In fact, contrary to the SS Wilson supposition, there are many examples in the literature concluding that **loud intermittent sounds are far more annoying than a constant noise** – think of a mosquito flying around your ear lobe while trying to sleep, or a fly buzzing around your bedroom, always disappearing just as you locate your swatter **NOW** compare that noise to the hum of a refrigerator.

In the 'updated' Noise Study, SS Wilson again present many figures and tables which, we suspect, are incomplete and difficult to understand by the average. Again, the study needs to be reviewed 'in total' by an independent professional acoustical engineer for accuracy and relevance BUT appreciate that ANY Operational Plan they present and use as the basis for their noise 'calculations' is NOT enforceable. There is possibly a mental block to looking at 'decimal points' for theoretical predictive exercises that uses a potentially inaccurate data model or one that is closely tied to an operational plan that can be substantially changed at any time!

CONSTRUCTION NOISE

One significant addition in the latest SS Wilson Noise Study is the extensive inclusion of what they call CONSTRUCTION NOISE.

*"... Construction Noise (which is assessed differently than the shale extraction and removal operations), is defined to include noise generated due to a variety of activities on the quarry site, including: **Cutting, removal and processing of trees, removal of (includes grubbing of roots, etc.), and removal of the overburden to reach the most suitable aggregate strata.**"*

(NOTE: The shale extraction operations of the quarry, which was the focus of the October 22, 1988 Noise Study, was classified as **STATIONARY NOISE** as defined by MOECC.)

The classification of the quarrying noise as being either Construction or Stationary is **EXTREMELY** important since the 'rules of engagement' applied by the MOECC (the regulatory body) are VERY different.

For STATIONARY Noise “The generally accepted MOECC objective in new residential areas is Leq 55 dBA and the maximum acceptable limit is Leq 60 dBA ...”

*“At the present time, the MOECC does **NOT have specific acceptable sound level criteria for CONSTRUCTION noise** at either the point-of-reception or at the property line of a construction site”.*

Because of the obvious noise that the ‘Construction’ will produce, SS Wilson made several recommendations. For example, they suggest that it would be best to perform the heavy construction activity in the winter months when it is anticipated that the windows in the adjacent houses would most likely be closed → *SO, avoid the noise by closing your window!* They also recommend that *“the construction operations comply with the city of Burlington Noise Control By-Law which prohibits the operation of any construction equipment in connection with construction from 9:00pm – 7:00 am (9:00pm Saturday – 12:00 noon Sundays)”* → *unbelievable!*

*“Perhaps the most effective method for reducing the impact of the construction related noise is to recommend that all construction operations including: cutting, removal and processing of trees, removal of topsoil (includes grubbing of roots, etc.), and removal of the overburden to reach the most suitable aggregate strata, be undertaken during the cold weather season where **windows are mostly closed** with minimum or no outdoor activities within the dwellings located immediately east of the subject site.”*

So, reading between the lines the SS Wilson report tells us that the anticipated Construction Noise will be erratic, VERY loud, VERY intrusive and VERY difficult if not impossible to monitor – in effect, it could be VERY harmful to your health and well-being. **We also wonder if all the animals that inhabit the ‘about to be lost’ forest will have the same ‘luxury’ that we do in being able to close their ‘windows’ to the decimation of their habitat and the accompanying dust and pollution!**

CONCLUSION

It is the health, well-being and livelihood of a neighborhood as well as the habitat for the many species that is in jeopardy and it is imperative for the City officials and their staff to understand this.

Without the support and intervention of the City as well as the regional, provincial, and federal governments we are literally in the hands of those who are driven **purely by profit** and who are physically divorced from the day-to-day quarry operation being located many, many miles away in the USA and Australia.

The current quarrying operation (Central quarry) is approximately 750 meters from the Tyandaga community BUT the proposed East quarry is MUCH CLOSER being an estimated average of ONLY 50 meters away from the property line. If we get the same ‘attention’ and concern to this potentially life-threatening operation as we did from the Central quarry operation, then we can expect:

- **NO independent** peer review of the Dust Study

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- NO **independent** peer review of the Noise Study
 - NO monitoring of the Operational Plan
 - NO MNRF / MOECC site visits to ensure license compliance
 - NO air quality monitoring
 - NO noise monitoring – ***this is not exactly true since Meridian are ‘proposing’ in the future to have SS Wilson monitor the quarry sound for compliance - in effect offering SS Wilson the opportunity to police their own predictions!***

The apparent lack of attention from the various levels of government is VERY disappointing as is ***the seemingly ‘unquestioned’ acceptance of self-serving theoretical studies and the lack of any regulated monitoring, studies that were commissioned and paid for by the interested parties and were also seemingly monitored by the interested parties!***

When ‘push gets to shove’ there is apparently NO-ONE in the decision process that will be held accountable for any miscalculation, bad judgement, complacency, incompetence, or just FUBAR

- The consultants will have been paid and will move on to their next assignment.
- To my knowledge NOT ONE predictive consultant’s report that ruled in favor of the aggregates has ever been retrospectively analysed for accuracy by a government agency. A situation that surely leads the aggregates (and their consultants) to a position of professional impunity and hence complacency and arrogance
- In the past, the City has been unwilling to actively respond to and protect the needs of their constituents
- The province cannot have a ‘hands off’ policy and must play an active role in this process ensuring that ALL the ‘environmental’ regulations are obeyed, monitored, and strictly enforced.

The decision by the City and the Ministries should not be taken lightly since lives and livelihoods are at stake and if the quarrying commences it CANNOT BE REVERSED.

Tyandaga Environmental Coalition Inc. (TEC)