

July 20, 2010

Mr. Tom Goodeve  
Manager of Policy  
Development Services Department  
City of Oshawa

Attn: Mr. Tom Goodeve:

Email: [tgoodeve@oshawa.ca](mailto:tgoodeve@oshawa.ca)

**Re: City of Oshawa Peer Review  
Peer Review of Acoustic Assessment Report  
Novus File No. 11-0078**

Dear Mr. Goodeve:

At the request of the City of Oshawa, Novus Environmental has completed a peer review of the Jacques Whitford Stantec Limited (JWSL) Acoustic Assessment Report (AAR), dated November 27, 2009. The JWSL AAR was completed for the Proposed Ethanol Plant located in Oshawa, Ontario.

Several key issues remain relating to the completeness and accuracy of this assessment, which is now being used for a Federal *Canadian Environmental Assessment Act* screening, instead of a Provincial Certificate of Approval application.

Below is a summary of our peer review comments. As part of our work, we have also reviewed the previous peer review comments made by Jade Acoustics, in 2009. We note that several of their comments and concerns have still not been addressed by the report authors. **It is recommended that responses should be provided for the comments in Bold.**

#### **1.0 Noise Sources and Source Data**

1. Several sources were either omitted or considered insignificant by JWSL. **The following sources should either be included or justified as insignificant noise sources:**

- a. *Harbour unloading noise* – Since Harbour unloading operations are physically connected to the Facility, noise from ship unloading, baghouses, silos and conveyors are required to be assessed with the Facility impacts. This is consistent with our experiences with the MOE requirements for CofA applications with respect to associated operations of a facility. In addition, since the report is being used in support of the CEAA screening assessment, the reasoning for not including these sources (that they are on Federally regulated land) does not apply.
- b. *Emergency Fire Water Pump unit noise* – The noise from the Emergency Fire Water Pump Exhaust noise appears to be included in the JWSL AAR. The casing noise is also likely to be significant and should be included either as an outdoor unit *or* the air ventilation vents (cooling air intake/discharge) for an indoor unit.
- c. *Emergency Generator* – The noise impact from an Emergency Generator (exhaust and either casing noise or air ventilation noise) is required, if applicable. Based on our experience, we find it highly unlikely that such a facility would not include an emergency generator of some type. A similar facility to the proposed exists in Sarnia. We note from the Certificate of Approval (No. 9329-87DH33) for the Suncor Ethanol Plant that a emergency generator is located there.
- d. *On-site truck traffic noise for 145 Trucks/day traffic* - A 145 truck/day volume of traffic has the potential to be significant, and should be assessed as a line source or equivalent.

In addition, we have reason to understand that the 145 trucks per day number may significantly under-predict the actual truck volumes entering and leaving the site, as it may not include ethanol shipments off site, and empty trucks entering or leaving the site. Current noise modelling appears to only include truck idling noise (source TR), which should be confirmed by JSWL.

2. *Table 6-2 Point of Reception Noise Impact Table – Night-time Period* shows the individual impacts from thirteen (13) noise sources, which appears to be the basis of the cumulative impacts shown in *Table 6-3 Acoustic Assessment Study Summary Table*. The consideration of only thirteen (13) sources for the overall facility impact when approximately fifty (50) sources are included in the modelling may under-predict the facility impacts. This is due to the potential for a large number of insignificant sources to have a significant impact. For example, fifteen (15) sources with an individual impact of 27 dBA results in an overall impact of 39 dBA, which is relevant against a 45 dBA criteria. **Inclusion of impacts from all modelled noise sources is required.**

3. Determination of Sound Power Levels based on Sound Pressure Levels with short separation distances (approx. 1 m) should be re-assessed. The JWSL AAR Sound Power Levels appear to be determined based on a 100% sphere partition coefficient and the short separation distances (e.g. 1 m). This approach is likely to under-predict Sound Power Levels by as much as 10 dB for sources significantly larger than 1 m x 1 m x 1 m dimension. For example, the Sound Pressure Level of the Hammer Mill (source HM) is 100 dBA at 1 m, as indicated in Table 3-1. If the Unit dimensions were 2 m x 1 m x 1m, the overall Sound Power Level of the unit is expected to be 116 dBA, which is 8 dBA higher than the 108 dBA Sound Power Level used in the JWSL noise modelling.

**Sources with sound pressure level data provided with 1 m, 5 ft or 3 ft separation distances are required to have the Sound Power Levels calculated based on a parallelepiped surface area, in accordance with applicable ISO 3744 standards.** This would include casing noise for blower motors, the Hammer Mill, and any other sources included in the Section A – Minor Noise Sources.

4. The CO<sub>2</sub> Blower Fan (source BF-3803) currently only has the exhaust noise source and data presented in Table 3-1. However, the noise modelling included in Appendix C only shows the CO<sub>2</sub> Blower Fan casing noise (source BF-3803a) impacts. Sufficient information is not provided in the JWSL AAR to justify exclusion of the exhaust noise for source BF-3803. In addition, several other sources are modelled as exhaust noise without casing noise (eg. sources BH-1 to BH-4, and BL\_7902, etc.) or as casing noise without an exhaust (eg. source BF-3813).

**A review of all noise sources with the potential for significant noise from the exhaust and casing is required. All significant noise sources (exhaust and casing noise) are required to be included in the noise modelling, with the source sound level data supported.**

5. Significant noise sources are located within the Energy Centre Building, which include the Dryers, Dryer ID Fans, Thermal Oxidizer ID fan, Thermal Oxidizer Combustion Fan, Thermal Oxidizer Pre-heat Fan, Centrate Fan, Centrifuges, and other combustion fans.

**A review of the Energy Centre Building Construction is required in the JWSL AAR to confirm exclusion of the building radiated noise.**

6. Energy Centre Louvre source level data in Appendix B implies the Sound Pressure Level at the plane of the louvre was assessed based on Sound Pressure Level of all sources within the building and the room effect. However, the Sound Power

Level of the individual Louvres shown in Appendix C do not agree with the Energy Centre Louvre (source ECL) Sound Power Level indicated in Table 3-1 or Appendix B calculations. For example, the second LOV-307-07 has an indicated Sound Power Level of 64 dBA, which is significantly lower than the Sound Power Level of 106 dBA shown in Table 3-1. **Clarification is required for the determination of source data for the Energy Centre Building Louvres (sources LOV-307-01 to LOV-307-10).**

7. The Energy Centre Louvre (source ECL) sound level in Table 3-1 indicates a Sound Power Level of 106 dBA, which is consistent with the cumulative Sound Pressure Level of 106 dBA shown in Appendix B.

**Clarification is required for the determination of whether a Sound Power Level or Sound Pressure Level was used for the Energy Centre Building Louvres (sources LOV-307-01 to LOV-307-10).**

8. Based on a review of Appendix C data, several Energy Centre Louvres with identical Source ID and Descriptions appear to be modelled with subtle differences in coordinates and A-weighted Sound Power Levels (eg. the second LOV-307-10 shows a decrease in height of 1 m, and a decrease in Sound Power Level by 1 dB).

**Clarification is required for the noise modelling of the Energy Centre Building Louvres (sources LOV-307-01 to LOV-307-10), in particular the number of repeated sources and the variations in sound levels.**

9. The Energy Centre Rooftop Exhausters (sources FA-11921 to FA-11923) Sound Power Level should be re-assessed. Appendix B data indicates the 40,000 CFM fan can have a sound level of either 44 Sones or 80 Sones. To be conservative, the higher 80 Sones sound level should be used. Following a conversion from 80 Sones to a Sound Pressure Level @ 5 ft, a Sound Power Level of 110 dBA is calculated based on the smallest unit (size 24) shown in Appendix B. The 110 dBA Sound Power Level is significantly higher than the 84 dBA Sound Power Level used in the JWSL assessment.

**The Energy Centre Rooftop Exhauster Sound Power Levels are required to be re-assessed using a more conservative Sones rating, and the appropriate size of the unit.**

10. Discrepancies were noticed between the Appendix C Sound Power Level (PWL) Data and the source data. For example, Thermal Oxidizer (source TO) exhaust noise at 1000 Hz:

$$\begin{aligned}\text{PWL in dBA} &= \text{Man Data Outlet PWL} - \text{Silencer IL} + \text{A-Weight Adj} \\ &= 109.5 - 19 + 0 \\ &= 90.5 \text{ dBA}\end{aligned}$$

The Sound Power Level in Appendix C indicates 78 dBA at 1000 Hz, which is inconsistent with the calculated 90.5 dBA. **A review and justification of Appendix C Sound Power Level data is required, since the Sound Power Level determination is not clear.**

11. Several sources are listed in Table 3-1 and not included in the modelling (eg. sources BF-9401, BF-6215, etc.) and several sources are included in the modelling and not listed in Table 3-1 or supported for the Sound Power Level data (eg. BH-1, BH-4, BF, etc.). Consistency is required between the source information and the noise impact modelling.

**A review of noise sources and a comparison of the CadnaA noise modelling is required. All significant noise sources are required to be included in the noise modelling, and supporting information is required for all sources modelled.**

12. Source data referenced in Table 3-1 identifies Section A – Minor Noise Sources data, which does not appear to be included in Appendix B of the JWSL AAR. Based on the information provided, it is not clear if source data is exhaust specific noise, or casing noise of a unit. **A copy of the Section A – Minor Noise Sources data is required to be included in the JWSL AAR to help clarify source sound levels used in the JWSL AAR.**
13. It is unclear if tonal sources have been properly identified and the appropriate applicable penalties under MOE Publication NPC-104 applied. For example, in our experience with similar facilities, noises from Thermal Oxidizer systems are tonal in nature, and a +5 dB penalty is usually applied to these sources.

## **2.0 Noise Sensitive Receptors**

14. A review of the surrounding zoning (JWSL Report Appendix A) shows Harbour Commercial Zoned land (HBC.T12, and HBC(1).T12) along the west side of the Oshawa Harbour. As indicated in the City of Oshawa Zoning By-Law Number 60-94, the permitted uses for HBC zoned lands include Hotels. Although Hotels currently do not exist on this land, a point of reception includes existing land zoned for Hotel Use, as indicated in MOE NPC-233.

In addition, the Marina, located within the HBC zoned area, has the potential to be a season residence for houseboat owners and should be included as a noise sensitive receptor.

15. The City of Oshawa considers park and public recreation areas to be noise sensitive. Under MOE Guideline D-6 requirements, these locations should also be considered as noise sensitive receptors. This would include the Lakeview Park but would also include the Lake Ontario Waterfront Trail, and the Second Marsh recreational trails.

**The surrounding lands zoned for noise sensitive uses are required to be included as receptors in the JWSL AAR, since these lands are closer to the facility than POR2 and POR3.**

### **3.0 Accuracy of Noise Modelling and Adequacy of Noise Mitigation Measures**

16. As mentioned previously, a similarly sized and similarly designed ethanol facility (from the same manufacturer) exists in Sarnia, owned and operated by Suncor. The facility operates under Certificate of Approval No. 9329-87DH33. The "C of A" for the facility lists the required noise mitigation measures. A copy of the C of A is attached to this letter.
17. A site visit to the area of the facility was conducted on July 19, 2011. The closest noise sensitive receptor to the Suncor facility is approximately 800 m away from the centre of the plant.
18. The following table summarizes the acoustic mitigation measures listed in the JWSL Report for the proposed facility versus the Suncor facility:

#### ***Noise Mitigation Measure Comparison***

<b>Proposed Oshawa Plant</b> Closest Receptor = 550 m	<b>Existing Suncor Sarnia Facility</b> Closest Receptor = 780 m
<ul style="list-style-type: none"> <li>• Silencer, main thermal oxidizer stack</li> </ul>	<ul style="list-style-type: none"> <li>• Silencer, main thermal oxidizer stack</li> </ul>
<ul style="list-style-type: none"> <li>• Muffler for Emergency Diesel Fire Pump</li> </ul>	<ul style="list-style-type: none"> <li>• Silencer between CO<sub>2</sub> Collection Blower and Thermal Oxidizer Stack</li> </ul>
--	<ul style="list-style-type: none"> <li>• Muffler for Emergency Diesel Generator</li> </ul>
--	<ul style="list-style-type: none"> <li>• Silencer for Phase 1 Cooling Cyclone</li> </ul>
--	<ul style="list-style-type: none"> <li>• Silencer for Phase 2 Cooling Cyclone</li> </ul>
--	<ul style="list-style-type: none"> <li>• 3 m high acoustic barrier around the north and west side of the property</li> </ul>

19. As can be seen from the table, significantly more noise mitigation was designed into the Suncor facility, to control noise impacts at a receptor that is further away than at the proposed Oshawa site.

The marked difference in required mitigation measures between the two sites is consistent with our opinion that noise impacts from the facility have been significantly under-predicted in the JWSL report.

#### **4.0 Scoping Comments With Respect to CEAA Requirements**

20. The noise assessment is now being used in support of a CEAA screening report, and should be revised to meet CEAA requirements. In addition to addressing the modelling accuracy issues discussed above, The following assessments would be required:

- A discussion and comparison against all applicable Federal, Provincial and Municipal noise regulations, guidelines and bylaws, including by not limited to Health Canada National Guidelines for Noise, Ministry of the Environment Publications NPC-205, NPC-232, NPC-233, LU-131, Guideline D-6, the City of Oshawa Noise Bylaw, and the Department of Fisheries and Oceans Guidelines for the Use of Explosives In or Near Canadian Fisheries Waters.
- A correct and accurate assessment of the existing conditions in the area, due to industrial activity and existing transportation sources. This could be completed through a combination of modelling and monitoring, but would need to address existing Oshawa Harbour activity, as well as existing industrial activities in the area.
- An accurate prediction of the impacts from the project alone.

In addition to a corrected version of the assessment provided in the JWSL report, the assessment should also address the potential for noise and vibration impacts from truck activities on local roadways, and from ship unloading activities.

Mitigated and unmitigated predictions should be provided, to ensure that the mitigation measures selected are adequate.

- An assessment of cumulative impacts from the existing sources plus the proposed facility, and an assessment of change from existing conditions as well as guideline compliance.

- An assessment of cumulative impacts from planned future activities, including the planned harbour expansion, and the planned expansions of the existing industrial facilities. The potential impacts of a proposed CO2 bottling line at the Ethanol facility should also be quantitatively addressed.
- A quantitative assessment of construction noise and vibration impacts, providing a list of applicable Federal and Provincial guidelines, and a construction code of the practice to monitor and to reduce or eliminate potential impacts.

## 5.0 Other General Comments

21. In general, there is a lack of consistency between the noise sources in *Table 3-1 Noise Summary Table*, *Figure 3-1 Noise Source Locations*, *Table 6-2 Point of Reception Noise Impact Table – Night-Time Period*, and *Appendix C – Model (CADNA/A) Input and Output Data*. For example, nineteen (19) sources are listed in Table 3-1, thirty-four (34) sources are shown in Figure 3-1, thirteen (13) sources are listed in Table 6-2, and approx. fifty (50) sources are included in the Appendix C modelling table. **Consistency is required between the tables, figures and appendices of the JWSL AAR.**
22. *Table 6-2 Point of Reception Noise Impact Table* should include the noise impacts for each individual source. Since the AAR currently includes the requirement for mitigation, Table 6-2 Point of Reception Noise Impact Table should be separated into an Unmitigated and Mitigated table of impacts. Likewise, an Unmitigated and Mitigated table should be shown for the *Table 6-3 Acoustic Assessment Study Summary Table*. **Additional noise tables are required to be included in the JWSL AAR.**
23. Source data in Appendix C appears to be incomplete. For example, Thermal Oxidizer (source TO) is missing the 8000 Hz information. **A thorough review of the report tables is required to ensure data is accurate and no information is missing.**

## 6.0 Conclusions

A peer review of the JWSL AAR for the proposed Ethanol Plant located in Oshawa has been completed. Several outstanding issues were identified in this letter. Based on our review:

- The assessment may significantly under-predict potential noise levels from the proposed facility. This comment is based on our review of the documentation and calculations provided by JWSL in their report, and on observation and data from similar facilities.
- The assessment fails to correctly identify and assess impacts at the relevant noise sensitive receptors in the area.
- As a result, the noise mitigation measures listed in the JWSL report are not likely to be adequate to reduce noise levels to meet Ministry of the Environment guidelines.
- The scope of the assessment does not address the information required for a proper assessment under the Canadian Environmental Assessment Act, as it does not adequately address:
  - The applicable guidelines and requirements;
  - The existing conditions;
  - Impacts from the proposed facility;
  - Cumulative impacts from the existing conditions and the proposed facility;
  - Cumulative impacts from planned, disclosed activities such as the port expansion;
  - Construction and decommissioning noise and vibration impacts.
- As a result, the report does not meet either Provincial or Federal requirements.
- Therefore, noise and vibration impacts have not been adequately studied, and the potential for significant environmental noise and vibration impacts may still exist.

Sincerely,  
**Novus Environmental Inc.**

Marcus Li, B.Sc., B.Eng.Sc.  
Specialist - Acoustics, Noise and Vibration

Scott Penton, P.Eng.  
Principal / Specialist



c.c.:

Attach.

