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**PRELIMINARY
ENVIRONMENTAL NOISE REPORT
AND
LAND USE COMPATIBILITY REPORT**

PROPOSED INDUSTRIAL DEVELOPMENT
772 WINSTON CHURCHILL BOULEVARD
TOWN OF OAKVILLE

PREPARED FOR
772 WINSTON NOMINEE INC.

Revised December 13, 2022
Revised December 15, 2021
June 25, 2021
File: 21-051-01



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SUMMARY

The proposed industrial development is to be located at 772 Winston Churchill Boulevard in the Town of Oakville. The proposed development will consist of two industrial buildings.

The environmental noise guidelines for transportation and stationary noise sources of the Town of Oakville, Region of Halton and Ministry of the Environment, Conservation and Parks (MOE) set out sound level limits for both the indoor (transportation sources only) and outdoor space (both transportation and stationary sources).

The noise sources associated with the proposed buildings are rooftop mechanical equipment, non-refrigerated truck pass-bys and associated back-up beepers, non-refrigerated truck idling, emergency backup generators, as well as impulses associated with the loading/unloading operations and trailer coupling/uncoupling operations at the loading bays and trailer coupling/uncoupling operations at the trailer parking areas.

As the building tenants are not known at this time, tenant-specific information regarding rooftop mechanical equipment associated with the proposed buildings was not available at the time of preparation of this report. Information on equipment proposed for the shell buildings has been included in the analysis. Once tenant-specific information regarding the mechanical equipment becomes available, the analysis may need to be revisited to verify compliance with the applicable sound level limits at the nearby residential receptors, if there is a significant change to what has been considered in this analysis.

Based on the preliminary analysis, the applicable sound level limits are predicted to be exceeded at the nearest sensitive receptor locations; therefore, noise mitigation measures are required.

Garbage collection operations should be limited to daytime hours between 7:00 a.m. and 7:00 p.m., Monday to Friday.

As requested by the municipality, this report also addresses land-use compatibility. The operations are considered a Class II industry as defined by the MOE D-6 Guidelines. The setback requirement of 70 m to any sensitive receptors is met. In addition, as required by D-6, regardless of the setback to the sensitive receptors, the numerical limits of the NPC-300 need to be achieved. With the proposed building orientation and the proposed sound barriers the sound level limits in NPC-300 are predicted to be achieved.

This revised report considers peer review comments provided by Dillon Consulting Limited (on behalf of the Region of Halton) dated April 18, 2022 regarding our December 15, 2021

noise report. The peer review comments and associated responses are included in Appendix D.

1.0 INTRODUCTION

Jade Acoustics Inc. was retained by 772 Winston Nominee Inc. to prepare a revised Preliminary Environmental Noise Report to investigate the potential impact of external noise sources including transportation and stationary sources on the proposed development, as well as to assess the noise emissions from the proposed development to the satisfaction of the Town of Oakville and Halton Region.

A Preliminary Environmental Noise Report dated June 25, 2021, revised December 15, 2021 was prepared by Jade Acoustics Inc. in support of the proposed development. This revised report has been prepared to address review comments from the Town of Oakville and Dillon Consulting Limited (on behalf of the Region of Halton) on the latest revised report. See Appendix D for responses to the Town comments and the Dillon/Region comments.

The proposed development is identified as:

772 Winston Churchill Boulevard
Town of Oakville

The proposed development is located southeast of Beryl Road and the CN rail corridor, and southwest of Winston Churchill Boulevard. Surrounding land uses include industrial developments to the northeast and northwest, future industrial developments and existing residential to the southeast, and existing residential developments to the southwest.

The proposed development will consist of two industrial buildings. The tenants of the buildings are not known at this time.

Figure 1 shows the Key Plan. Figure 2 shows the Site Plan of the proposed development. Figures 3 to 8 show the locations of the noise sources analyzed as well as the receiver locations. Figure 9 shows the location of the subject site and associated MOE Guideline D-6 setback distances.

In preparing this report, the following information has been used:

- Site plan, architectural plans and architectural elevations for the proposed development last dated December 15, 2021, received on December 2, 2022, prepared by Baldassarra Architects Inc.;
- Above Ground Grading and SWM Plan – East Site Area drawing received November 3, 2022, prepared by A.M. Candaras Associates Inc.;

- Information on proposed rooftop mechanical units and emergency backup generators through discussion with Baldassarra Architects Inc., and A.M. Candaras Associates Inc., respectively;
- Information on truck movements through discussions with IBI Group; and
- Site visit conducted by Jade Acoustics Inc. staff on April 19, 2021.

2.0 ENVIRONMENTAL NOISE AND VIBRATION GUIDELINES

The MOE document “Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning, Publication NPC-300”, dated August, 2013, released October 21, 2013 (updated final version # 22) was used for the analysis. A brief summary of the NPC-300 guidelines is given in Appendix A. The guidelines are also summarized below.

For the purpose of this analysis, the area of the proposed development was considered to be a Class 1 Residential Area.

The MOE guidelines require that the sound level due to the stationary source not exceed the ambient sound level due to road traffic in any hour of operation, or the values of 50 dBA between 7:00 a.m. and 11:00 p.m. applicable to any location on the premises of a person including outdoor areas and the plane of any window and 45 dBA between 11:00 p.m. and 7:00 a.m. applicable to the plane of any open window but not to outdoor areas, whichever is higher. Tables C-5, C-6, C-7 and C-8 of NPC-300, included in Appendix A, provide the exclusion limit values of one-hour equivalent sound level (Leq, dBA) and impulsive sound level (LIm, dBAI).

The sound level limits applicable within the Town of Oakville are generally consistent with the above noted MOE criteria, except during evening hours (i.e. 7:00 p.m. to 11:00 p.m.), where the applicable Town of Oakville sound level limit is reduced to 47 dBA. Between 7:00 a.m. and 7:00 p.m., the 50 dBA daytime sound level limit is applicable.

The most critical hour is usually the quietest hour of road traffic in which the stationary source is also operating. If the guidelines are exceeded, the MOE requires mitigation measures, preferably at the source. The sounds from the stationary source are measured in terms of Leq, the energy equivalent continuous sound level over a defined time period (in this case, one hour) and LIm, the logarithmic average of sound levels (impulses) measured using the impulsive settings of sound level meters.

The MOE also has vibration guidelines with respect to stationary sources, NPC-207. These guidelines require that the peak vibration velocities not exceed 0.3 mm/s at the point of reception during the day or night.

The MOE recognizes the need for back-up beepers/alarms as safety devices and, as such, does not have any guidelines or criteria to address these sources.

It should be noted that the MOE guidelines do not require that the source be inaudible but rather that specific sound level limits be achieved.

The Town of Oakville has a by-law to prohibit or regulate noise likely to disturb the inhabitants of the Town, By-law No. 2008-098 (as amended by By-laws No. 2009-081, 2011-100, 2013-028 and 2016-016). The By-law provides qualitative information with respect to sources of noise and prohibitions by time and place, further to the above noted sound level limits. In addition, the Town of Oakville's noise by-law requires that back-up beepers be assessed.

The Town of Oakville also has an anti-idling by-law to provide for the control of the idling of vehicles, By-law No. 2002-153 (as amended by By-laws No. 2017-11 and 2019-050). The By-law generally prohibits idling of a vehicle while parked or stopped for a duration greater than three minutes, though certain exceptions apply (e.g. emergency situations or if idling is required to support the basic function of the vehicle).

MOE Guideline D-6

The D-Series guidelines were developed by the MOE to assess the potential for adverse impacts due to odour, noise, vibration and dust. The purpose of these guidelines is to assess the potential for negative impacts and provide guidance regarding the need for assessment at specific separation distances, as well as to minimize the potential for adverse impact by identifying areas of influence and recommend minimum setback distances. Regardless of whether the recommended setback distances are met, the numerical sound level limits outlined in NPC-300 are still required to be achieved.

NPC-300 guidelines, which are the focus of this report, includes references to the D-Series Guidelines. The D-6 Compatibility tables are provided in Appendix C of this report. The tables outlined in D-6 are based on the classification of industrial/commercial uses with respect to the type of operations. The industrial/commercial uses can have different classifications with respect to odour, noise, vibration and dust.

3.0 THE EFFECT OF THE NEIGHBOURHOOD ON THE DEVELOPMENT

As outlined in MOE Publication NPC-300, the industrial and office space uses proposed within the subject development are not considered to be noise sensitive spaces requiring acoustical assessment. As such, the potential impact of the surrounding transportation and stationary sources on the proposed development have not been considered further in this report.

While the proposed development does not contemplate the inclusion of noise sensitive uses, the permitted uses under the current site zoning notes that certain noise sensitive uses could be permitted within the subject site. It is our understanding that noise sensitive uses are not proposed within the development; however, should noise sensitive uses be proposed within the subject development, an analysis will need to be conducted to ensure compliance with the applicable sound level limits at the noise sensitive receptor locations.

4.0 THE EFFECT OF THE DEVELOPMENT ON THE NEIGHBOURHOOD

Land-Use Compatibility

With respect to the possible noise sources, the proposed development has been considered a Class II facility. Based on the separation distances from the nearby noise sensitive receptor locations to the proposed noise sources, the 70 m separation distance requirement is met. See Figure 9. Regardless of whether the recommended setback distances are met, the numerical sound level limits outlined in NPC-300 are still required to be achieved. Based on our analysis, the applicable sound level limits are shown to be met at all surrounding noise sensitive receptor locations.

Noise Assessment

Noise sources associated with the proposed industrial buildings include rooftop mechanical equipment, non-refrigerated truck pass-bys and associated back-up beepers, non-refrigerated truck idling, emergency backup generators, as well as impulses associated with the loading/unloading operations and trailer coupling/uncoupling operations at the loading bays and trailer coupling/uncoupling operations at the trailer parking areas.

It should be noted that back-up beepers have been included in the analysis as required by the Town's noise by-law. NPC-300 exempts back-up beepers from the assessment as they are considered a safety measures.

At the time of preparation of this report, tenant specific information regarding mechanical equipment associated with the proposed buildings is not known. Details of the proposed mechanical systems to support the shell building have been included in the analysis.

A review comment from the Town of Oakville on the December 15, 2021 report indicated that as a condition of approval of the site plan, the final build-out condition is to be assessed in the noise report; however, the information on the final conditions is not known at this time as the tenants and specific operations are not known. The analysis and report therefore consider the predictable worst-case operations for the shell building and anticipated final use, based on the best available information at this time.

The rooftop mechanical equipment is not expected to affect the feasibility of the project. However, once final tenant specific mechanical equipment information is available, additional analysis may need to be conducted to ensure compliance with the guidelines at the noise sensitive receptors, should there be significant differences from what was analyzed in this report.

Based on information provided by the client, the proposed development will be comprised of industrial uses with associated office space. It is anticipated that the facility will operate on a 24-hour basis. The analysis has accounted for 36 truck round trips per hour during the worst case hour during daytime, evening and nighttime periods (18 round trips per hour, per building) and assumes the trucks idle for three minutes while on the property, which is the maximum permissible idling time for compliance with the Town of Oakville anti-idling by-law. The back-up beepers associated with truck movements have been included in the analysis, as required by the Town of Oakville noise by-law.

A review comment by Dillon Consulting Limited indicated that increased truck idling times should be considered, in support of the use of heating or air conditioning of the truck cab for the operator comfort. The analysis considers idling of three minutes per truck within one hour, which is generally representative of constant idling at the subject site. In order to satisfy the peer review comment, a sensitivity analysis was conducted to consider increased idling times. It was found that the idling time can be increased up to 20 minutes per truck, assuming 36 trucks are idling at the same time. With this increased idling time, the sound level limits at all noise sensitive receptors are still met. It should be noted that in both cases the analysis has conservatively accounted for the sound power level associated with the idling of the engine block; however, it is possible for trucks to be equipped with auxiliary power units for operation of the heat/cool systems, which would be expected to have a reduced sound power level. As the anti-idling by-law and the conservative analysis conducted allows for 3 minutes per truck for 36 trucks, the predicted results shown on Figures 3 to 8 account for the 36 idling trucks for 3 minutes each.

Impulses associated with delivery loading/unloading and trailer coupling/uncoupling have also been accounted for in the analysis.

Sound power levels for the shell building rooftop mechanical equipment, non-refrigerated truck pass-bys and idling, emergency backup generators, back-up beepers, as well as impulses associated with the loading/unloading and coupling/uncoupling operations were based on information from the proponent and other Jade Acoustics Inc. files prepared for similar developments.

A list of the analyzed continuous, impulsive, and emergency noise sources and sound power levels in octave bands is given in Table A below.

Due to the location and orientation relative to the sensitive receptors, vibration associated with operations at the subject site is not expected to be significant at the existing sensitive receptors and was not analyzed further at this time. If a tenant(s) which operate specific equipment that produce ground-borne vibration are located at this site, as part of the tenants' Environmental Compliance Approval (ECA) they will be required by the MOE to submit the supporting noise/vibration reports to show compliance at the adjacent sensitive receptors.

TABLE A

SUMMARY OF NOISE SOURCE INFORMATION

Noise Source	Source ID	Sound Power Level (PWL), dB re. 10 ⁻¹² watts								Overall dBA/dBAI
		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
Non-Refrigerated Truck Pass-by	TP	97.0	101.0	100.0	97.0	93.0	90.0	83.0	76.0	98.9
Non-Refrigerated Truck Idling	IDLE	93.1	97.1	96.1	93.1	89.1	86.1	79.1	72.1	95.0
Backup Beepers	--	--	--	--	--	112.0	--	--	--	112.0
Lennox HVAC	HVAC	76.0	76.0	79.0	84.0	83.0	79.0	73.0	66.0	88.3
Cambridge Heaters	HEAT	54.2	54.2	57.2	62.2	61.2	57.2	51.2	44.2	66.7
Backup Generator	GEN	77.8	74.8	80.8	84.8	86.8	83.8	81.8	74.8	90.8
Impulses	IMP5	93.0	107.0	103.0	108.0	110.0	104.0	99.0	89.0	112.5 (dBAI)

The critical receptors are the existing residential dwellings, located on either side of Winston Churchill Boulevard, in a southeastern direction from the subject site, as well as the existing residential development to the west/southwest. Two-storey dwellings were modelled at 4.5 m above ground level; bungalow dwellings were modelled at 2.5 m above ground level. The receptors are labelled R1 to R6 on Figures 3 to 8.

Also shown on Figures 3 to 8 are outdoor area receptors R7 to R12, associated with the respective building receptor locations (R1 through R6) noted above. The respective receptor locations are taken up to 30 m from the associated façade receptor location, within the respective property limits, as required by NPC-300. These outdoor receptors have been included in this revised report for completeness further to the peer review comments by Dillon Consulting Limited.

The MOE noise guidelines require that the noise from the proposed development not exceed the existing ambient Leq due to road traffic in any hour of operation or the exclusion limits previously discussed in Section 3.0.

For the current analysis, the MOE Class 1 exclusion limits have been used. See Table B and Appendix A for details.

Based on information provided by IBI, the building structures have not been designed to support refrigeration equipment; therefore, the analysis does not include any refrigeration equipment on the buildings or refrigerated trucks delivering to the site. If this is altered at a later date, the acoustic analysis should be updated.

TABLE B

SUMMARY OF SOUND LEVEL LIMITS

Receptor	Leq 1 hour (dBA/dBAI)		
	Daytime 7:00 a.m. to 7:00 p.m.	Evening 7:00 p.m. to 11:00 p.m.	Nighttime 11:00 p.m. to 7:00 a.m.
R1 to R6	50*	47**	45*
R7 to R12	50*	47**	N/A

* MOE Class 1 Area exclusion limits.

** The evening time period sound level limit of the Town of Oakville differs from that of the MOE.

As noted above, the analyzed noise sources associated with the proposed industrial development are:

- Non-refrigerated truck pass-by and manoeuvring (including back-up beepers);
- Non-refrigerated truck idling;
- Emergency back-up generators;
- Impulses associated with the loading/unloading operations and trailer coupling/uncoupling operations; and
- Rooftop mechanical equipment.

For the rooftop heat/cool units associated with the office areas and the heaters associated with the warehouse areas, duty cycles of 100% for daytime hours, 70% for evening hours, and 40% for nighttime hours were used.

Based on information from IBI Group, 36 non-refrigerated tractor trailer round trips during the daytime, evening and nighttime periods entering the proposed site from Winston Churchill Boulevard, manoeuvring to the loading bay area of either building, and exiting the proposed site on Winston Churchill Boulevard are included in the analysis. The analysis assumes the trucks idle at the loading bays for three minutes each, as per the terms

of the Town of Oakville anti-idling by-law which is representative of constant idling at the subject site; however, as previously noted, in order to address the peer review comment by Dillon Consulting, increased truck idling times up to twenty (20) minutes per truck has been considered. The backup beepers associated with truck maneuvering has also been included in accordance with the Town of Oakville noise by-law; a 17 % (ten minute) duty cycle has been considered.

Screening from proposed buildings within the site has been included in this analysis. The proposed buildings have been modelled to include the height of the low parapets shown on the architectural plans. The higher parapets will provide additional screening of the proposed mechanical equipment; therefore, the current analysis represents a conservative scenario.

Table A, above, shows the sound power levels for noise sources used in the analysis. Figures 3 to 8 show the locations of the analyzed noise sources.

The sound level in terms of Leq (one-hour continuous noise sources) and LIm (impulsive noise sources) were determined for the critical receptors. The CadnaA computer program (Version 2022 MR2), which uses International Standard Analytical Code ISO 9613-2 was used for the analysis.

As per the MOE guidelines, impulsive noise sources were analyzed separately. The impulsive noise associated with the loading bays of the proposed buildings and with the trailer coupling/uncoupling at the trailer parking areas have been analyzed. The modelling included all time periods for the loading/unloading and coupling/uncoupling operations. The impulsive sound level used in the analysis is representative of a typical industrial facility loading/unloading and coupling/uncoupling activities.

As per the MOE guidelines, emergency noise sources were also analyzed separately. The emergency noise sources are the two back-up generators shown on Figures 5 and 8 and are associated with the underground storm pump and sanitary pump. It is our understanding that the generators will only operate during a power loss event and do not serve as the general power source for the pumps. Based on information from the generator supplier, the back-up generators will be housed within Level 1 sound enclosures.

The emergency back-up generators meet the MOE guidelines without any additional mitigation. However, as sound barriers are needed to mitigate other sources, the back-up generators benefit from these barriers.

Tables 1 to 3 and Figures 3 to 5 show the results of the analysis without the addition of mitigation measures.

As can be seen from Tables 1 and 2 and Figures 3 and 4, the unmitigated sound levels are predicted to exceed the MOE guidelines at the critical noise sensitive receptors due to proposed continuous and impulsive noise sources. Therefore, noise mitigation measures are required.

The proposed acoustic barrier shown on Figures 6 to 8 is needed to address the existing residential receptors to the southeast of the subject site (Receptors R1 to R4 and R7 to R10). It should be noted that this acoustic barrier is not required to meet the applicable sound level limits at the existing residential development to the west/southwest. As shown on Figures 3 to 5; the proposed 4.5 m high screen wall on the north side of Building B and the building locations and orientation provide sufficient screening to achieve the applicable sound level limits. It should be noted that the 4.5 m high screen wall is required to achieve the sound level limits at the receptor locations and should not be removed or reduced in height or length once constructed.

There are existing industrial developments to the northeast and northwest of the subject site. Based on information on the Town of Oakville website, there is a proposed industrial development at 560 Winston Churchill Boulevard, directly southeast of the subject site, which proposes three warehouse-type buildings. As per NPC-300, these facilities are not considered to be noise sensitive uses and were not considered further in this report.

Further to a peer review comment by Dillon Consulting Limited and in consideration of the adjacent proposed industrial use at 560 Winston Churchill Boulevard, the potential need for cumulative noise impact of the two proposed uses has been considered. As the developments are proposed under separate planning applications, are located within separate lands and have different ownership, there is no requirement by NPC-300 for consideration of cumulative noise impact. That said, in order to respond to the peer review comment, we have reviewed the potential cumulative impacts on the limited existing receptor locations along Winston Churchill Boulevard.

Based on the review of the latest noise report dated September 9, 2022, prepared by HGC Engineering in support of the 560 Winston Churchill Boulevard development and in consideration of the updated analysis in this report, it was found that with the inclusion of proposed respective mitigation measures at each site, the sound level limits have the potential to be exceeded by up to 2 dB during the evening and nighttime hours. As noted by the peer reviewer, a change in sound level of up to 3 dB is typically imperceptible. Further, the result indicating the 2 dB potential exceedance considers the predictable worst-case

hour at each proposed facility which assumes all operations at both facilities are operating simultaneously, which is conservative.

Required Noise Mitigation Measures

As shown in Tables 1 and 2 and Figures 3 and 4, certain operations at the subject site are predicted to exceed the applicable sound level limits without the implementation of noise mitigation measures.

In order to achieve the applicable sound level limits for all scenarios analyzed (non-refrigerated truck activities, emergency back-up generators and loading/unloading and coupling/uncoupling impulses), a 4.3 m high acoustic barrier is required along the southeast edge of the storm pond and paved surface, as shown on Figures 6 to 8. As noted above, this proposed mitigation is needed to address exceedance above the sound level limits at Receptors R1 to R4 and R7 to R10. The proposed 4.5 m screen located at the north side of Building B is required to achieve the sound level limits at receptor locations within the existing residential development to the west/southwest.

The design detail considerations such as, but not limited to, grading and structural implications will need to be confirmed by the appropriate technical discipline prior to implementation. The sound barrier height is to be measured from the proposed finished grade on the northwest side of the fence line (location shown on Figures 6 to 8), as there is a grade change needed to accommodate drainage at this location.

Tables 4 to 6 show the predicted sound levels at the nearby noise sensitive receptors with the implementation of the above noted acoustic barriers, as shown on Figures 6 to 8.

Generally, if a sound barrier is to be used, the sound barrier may be an acoustic fence, berm, or a berm/acoustic fence combination. The acoustic fence must be solid with no gaps along its length and have a minimum surface density of 20 kg/m² (4 lb/ft²). Appropriate treatment of the sound barrier at all discontinuities and points of termination would be required to ensure that the sound barrier is effective.

If gaps at the bottom of the acoustic fence are necessary for drainage, special design techniques to create interrupted line of sight under the acoustic fence are required. Any treatment of the drainage proposed for the subject site should be reviewed by Jade Acoustics Inc. prior to its implementation.

5.0 THE EFFECT OF THE DEVELOPMENT ON ITSELF

As discussed in Section 3.0, no noise sensitive uses are proposed within the development; therefore, based on NPC-300, analyses of the potential noise impact of stationary sources within the proposed development on the development itself are not needed, and, as such, they were not analyzed further.

As the site zoning permits the development of certain noise sensitive uses within the subject site, should a noise sensitive use be proposed in the future, a noise report will need to be prepared to ensure compliance with the applicable noise and vibration guidelines.

6.0 CONCLUSION

Based on the preliminary analysis, the Town/Region/MOE sound level limits are predicted to be met at the existing noise sensitive receptors with the incorporation of the mitigation measures options outlined in Section 5.0.

A detailed noise and vibration report will need to be prepared once all building plans and selection of mechanical equipment have been finalized. Specific tenant information should be assessed in the detailed noise report if this information becomes available.


Prior to issuance of building permits, an acoustical consultant should review the plans and mechanical equipment to ensure compliance with the MOE guidelines.

Prior to final occupancy an acoustical consultant should inspect the installed equipment and mitigation measures, if mitigation is required.

Respectfully submitted,


JADE ACOUSTICS INC.

Per:


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Per:


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MB/DCG/jg
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7.0 REFERENCES

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2. ORNAMENT – "Ontario Road Noise Analysis Method for Environment and Transportation", Ontario Ministry of the Environment, October, 1989.
3. "Building Practice Note No. 56: Controlling Sound Transmission into Buildings", J.D. Quirt, Division of Building Research, National Research Council of Canada, September, 1985.
4. "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", Ontario Ministry of the Environment, Publication NPC-300, August, 2013, released October 21, 2013 (updated final version # 22).
5. "Impulse Vibration in Residential Buildings", Ontario Ministry of Environment Publication NPC-207 (Draft), November, 1983.
6. Town of Oakville Noise By-law – By-law No. 2008-098 (as amended by By-laws No. 2009-081, 2011-100, 2013-028 and 2016-016), Town of Oakville, July 7, 2008.
7. Town of Oakville Anti-Idling By-law – By-law No. 2002-153 (as amended by By-laws No. 2017-011 and 2019-050), Town of Oakville, August 12, 2002.
8. "Preliminary Environmental Noise Report and Land Use Compatibility Report", Jade Acoustics Inc., December 15, 2021.
9. "Noise Feasibility Study", HGC Engineering, September 9, 2022.

TABLE 1
PROPOSED INDUSTRIAL DEVELOPMENT
772 WINSTON CHURCHILL BOULEVARD
TOWN OF OAKVILLE

**SUMMARY OF PREDICTED SOUND LEVELS DUE TO CONTINUOUS
NOISE SOURCES AT THE CLOSEST RESIDENTIAL RECEPTOR LOCATIONS
WITHOUT MITIGATION MEASURES**

Receptor Location	Daytime Sound Level* Leq 1 hour (dBA)			Evening Sound Level** Leq 1 hour (dBA)			Nighttime Sound Level*** Leq 1 hour (dBA)		
	Predicted	Limit	Exceedance	Predicted	Limit	Exceedance	Predicted	Limit	Exceedance
R1	51	50	Yes	51	47	Yes	50	45	Yes
R2	47	50	No	47	47	No	47	45	Yes
R3	48	50	No	48	47	Yes	48	45	Yes
R4	49	50	No	48	47	Yes	48	45	Yes
R5	40	50	No	40	47	No	39	45	No
R6	38	50	No	37	47	No	35	45	No
R7	51	50	Yes	51	47	Yes	N/A	N/A	N/A
R8	48	50	No	48	47	Yes	N/A	N/A	N/A
R9	49	50	No	49	47	Yes	N/A	N/A	N/A
R10	49	50	No	49	47	Yes	N/A	N/A	N/A
R11	38	50	No	37	47	No	N/A	N/A	N/A
R12	39	50	No	37	47	No	N/A	N/A	N/A

* (7:00 a.m. to 7:00 p.m.)

** (7:00 p.m. to 11:00 p.m.)

*** (11:00 p.m. to 7:00 a.m.)

Note: Receiver height for plane of window receptors has been taken at 4.5 m above grade for two-storey dwellings and at 2.5 m above grade for bungalow dwellings. For outdoor area receptors, the receptor height is 1.5 m above grade.

TABLE 2
PROPOSED INDUSTRIAL DEVELOPMENT
772 WINSTON CHURCHILL BOULEVARD
TOWN OF OAKVILLE

**SUMMARY OF PREDICTED SOUND LEVELS DUE TO IMPULSIVE
NOISE SOURCES AT THE CLOSEST RESIDENTIAL RECEPTOR LOCATIONS
WITHOUT MITIGATION MEASURES**

Receptor Location	Daytime Sound Level* Leq 1 hour (dBA)			Evening Sound Level** Leq 1 hour (dBA)			Nighttime Sound Level*** Leq 1 hour (dBA)		
	Predicted	Limit	Exceedance	Predicted	Limit	Exceedance	Predicted	Limit	Exceedance
R1	51	50	Yes	51	47	Yes	51	45	Yes
R2	48	50	No	48	47	Yes	48	45	Yes
R3	48	50	No	48	47	Yes	48	45	Yes
R4	49	50	No	49	47	Yes	49	45	Yes
R5	36	50	No	36	47	No	36	45	No
R6	36	50	No	36	47	No	36	45	No
R7	53	50	Yes	53	47	Yes	N/A	N/A	N/A
R8	49	50	No	49	47	Yes	N/A	N/A	N/A
R9	49	50	No	49	47	Yes	N/A	N/A	N/A
R10	49	50	No	49	47	Yes	N/A	N/A	N/A
R11	35	50	No	35	47	No	N/A	N/A	N/A
R12	36	50	No	36	47	No	N/A	N/A	N/A

* (7:00 a.m. to 7:00 p.m.)

** (7:00 p.m. to 11:00 p.m.)

*** (11:00 p.m. to 7:00 a.m.)

Note: Receiver height for plane of window receptors has been taken at 4.5 m above grade for two-storey dwellings and at 2.5 m above grade for bungalow dwellings. For outdoor area receptors, the receptor height is 1.5 m above grade.

TABLE 3
PROPOSED INDUSTRIAL DEVELOPMENT
772 WINSTON CHURCHILL BOULEVARD
TOWN OF OAKVILLE

**SUMMARY OF PREDICTED SOUND LEVELS DUE TO EMERGENCY
NOISE SOURCES AT THE CLOSEST RESIDENTIAL RECEPTOR LOCATIONS
WITHOUT MITIGATION MEASURES**

Receptor Location	Daytime Sound Level* Leq 1 hour (dBA)			Evening Sound Level** Leq 1 hour (dBA)			Nighttime Sound Level*** Leq 1 hour (dBA)		
	Predicted	Limit	Exceedance	Predicted	Limit	Exceedance	Predicted	Limit	Exceedance
R1	39	50	No	39	47	No	39	45	No
R2	35	50	No	35	47	No	35	45	No
R3	36	50	No	36	47	No	36	45	No
R4	37	50	No	37	47	No	37	45	No
R5	35	50	No	35	47	No	35	45	No
R6	32	50	No	32	47	No	32	45	No
R7	41	50	No	41	47	No	N/A	N/A	N/A
R8	36	50	No	36	47	No	N/A	N/A	N/A
R9	37	50	No	37	47	No	N/A	N/A	N/A
R10	38	50	No	38	47	No	N/A	N/A	N/A
R11	31	50	No	31	47	No	N/A	N/A	N/A
R12	27	50	No	27	47	No	N/A	N/A	N/A

* (7:00 a.m. to 7:00 p.m.)

** (7:00 p.m. to 11:00 p.m.)

*** (11:00 p.m. to 7:00 a.m.)

Note: Receiver height for plane of window receptors has been taken at 4.5 m above grade for two-storey dwellings and at 2.5 m above grade for bungalow dwellings. For outdoor area receptors, the receptor height is 1.5 m above grade.

TABLE 4
PROPOSED INDUSTRIAL DEVELOPMENT
772 WINSTON CHURCHILL BOULEVARD
TOWN OF OAKVILLE

**SUMMARY OF PREDICTED SOUND LEVELS DUE TO CONTINUOUS
NOISE SOURCES AT THE CLOSEST RESIDENTIAL RECEPTOR LOCATIONS
WITH MITIGATION MEASURES**

Receptor Location	Daytime Sound Level* Leq 1 hour (dBAI)			Evening Sound Level** Leq 1 hour (dBAI)			Nighttime Sound Level*** Leq 1 hour (dBAI)		
	Predicted	Limit	Exceedance	Predicted	Limit	Exceedance	Predicted	Limit	Exceedance
R1	45	50	No	45	47	No	45	45	No
R2	42	50	No	42	47	No	42	45	No
R3	43	50	No	43	47	No	42	45	No
R4	43	50	No	43	47	No	43	45	No
R5	40	50	No	40	47	No	39	45	No
R6	38	50	No	37	47	No	35	45	No
R7	44	50	No	44	47	No	N/A	N/A	N/A
R8	42	50	No	42	47	No	N/A	N/A	N/A
R9	43	50	No	43	47	No	N/A	N/A	N/A
R10	44	50	No	43	47	No	N/A	N/A	N/A
R11	38	50	No	37	47	No	N/A	N/A	N/A
R12	39	50	No	37	47	No	N/A	N/A	N/A

* (7:00 a.m. to 7:00 p.m.)

** (7:00 p.m. to 11:00 p.m.)

*** (11:00 p.m. to 7:00 a.m.)

Note: Receiver height for plane of window receptors has been taken at 4.5 m above grade for two-storey dwellings and at 2.5 m above grade for bungalow dwellings. For outdoor area receptors, the receptor height is 1.5 m above grade.

TABLE 5
PROPOSED INDUSTRIAL DEVELOPMENT
772 WINSTON CHURCHILL BOULEVARD
TOWN OF OAKVILLE

**SUMMARY OF PREDICTED SOUND LEVELS DUE TO IMPULSIVE
NOISE SOURCES AT THE CLOSEST RESIDENTIAL RECEPTOR LOCATIONS
WITH MITIGATION MEASURES**

Receptor Location	Daytime Sound Level* Leq 1 hour (dBA)			Evening Sound Level** Leq 1 hour (dBA)			Nighttime Sound Level*** Leq 1 hour (dBA)		
	Predicted	Limit	Exceedance	Predicted	Limit	Exceedance	Predicted	Limit	Exceedance
R1	45	50	No	45	47	No	45	45	No
R2	42	50	No	42	47	No	42	45	No
R3	41	50	No	41	47	No	41	45	No
R4	42	50	No	42	47	No	42	45	No
R5	36	50	No	36	47	No	36	45	No
R6	36	50	No	36	47	No	36	45	No
R7	46	50	No	46	47	No	N/A	N/A	N/A
R8	43	50	No	43	47	No	N/A	N/A	N/A
R9	42	50	No	42	47	No	N/A	N/A	N/A
R10	42	50	No	42	47	No	N/A	N/A	N/A
R11	35	50	No	35	47	No	N/A	N/A	N/A
R12	36	50	No	36	47	No	N/A	N/A	N/A

* (7:00 a.m. to 7:00 p.m.)

** (7:00 p.m. to 11:00 p.m.)

*** (11:00 p.m. to 7:00 a.m.)

Note: Receiver height for plane of window receptors has been taken at 4.5 m above grade for two-storey dwellings and at 2.5 m above grade for bungalow dwellings. For outdoor area receptors, the receptor height is 1.5 m above grade.

TABLE 6
PROPOSED INDUSTRIAL DEVELOPMENT
772 WINSTON CHURCHILL BOULEVARD
TOWN OF OAKVILLE

**SUMMARY OF PREDICTED SOUND LEVELS DUE TO EMERGENCY
NOISE SOURCES AT THE CLOSEST RESIDENTIAL RECEPTOR LOCATIONS
WITH MITIGATION MEASURES**

Receptor Location	Daytime Sound Level*			Evening Sound Level**			Nighttime Sound Level***		
	Leq 1 hour (dBAI)			Leq 1 hour (dBAI)			Leq 1 hour (dBAI)		
	Predicted	Limit	Exceedance	Predicted	Limit	Exceedance	Predicted	Limit	Exceedance
R1	32	50	No	32	47	No	32	45	No
R2	29	50	No	29	47	No	29	45	No
R3	30	50	No	30	47	No	30	45	No
R4	30	50	No	30	47	No	30	45	No
R5	35	50	No	35	47	No	35	45	No
R6	32	50	No	32	47	No	32	45	No
R7	33	50	No	33	47	No	N/A	N/A	N/A
R8	30	50	No	30	47	No	N/A	N/A	N/A
R9	30	50	No	30	47	No	N/A	N/A	N/A
R10	30	50	No	30	47	No	N/A	N/A	N/A
R11	31	50	No	31	47	No	N/A	N/A	N/A
R12	27	50	No	27	47	No	N/A	N/A	N/A

* (7:00 a.m. to 7:00 p.m.)

** (7:00 p.m. to 11:00 p.m.)

*** (11:00 p.m. to 7:00 a.m.)

Note: Receiver height for plane of window receptors has been taken at 4.5 m above grade for two-storey dwellings and at 2.5 m above grade for bungalow dwellings. For outdoor area receptors, the receptor height is 1.5 m above grade.



N.T.S.

**Proposed Industrial Development
772 Winston Churchill Boulevard
Town of Oakville**

Date: December 2022

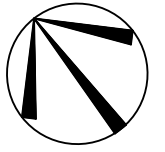
File: 21-051-01

**KEY PLAN
FIGURE 1**



EXISTING/FUTURE INDUSTRIAL

WINSTON CHURCHILL BOULEVARD



EXISTING RESIDENTIAL

SWM POND

BUILDING A

EXISTING INDUSTRIAL

CN RAIL

FUTURE INDUSTRIAL

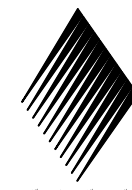
BUILDING B

N.T.S.

Proposed Industrial Development
772 Winston Churchill Boulevard
Town of Oakville

Date: December 2022

Our File: 21-051-01

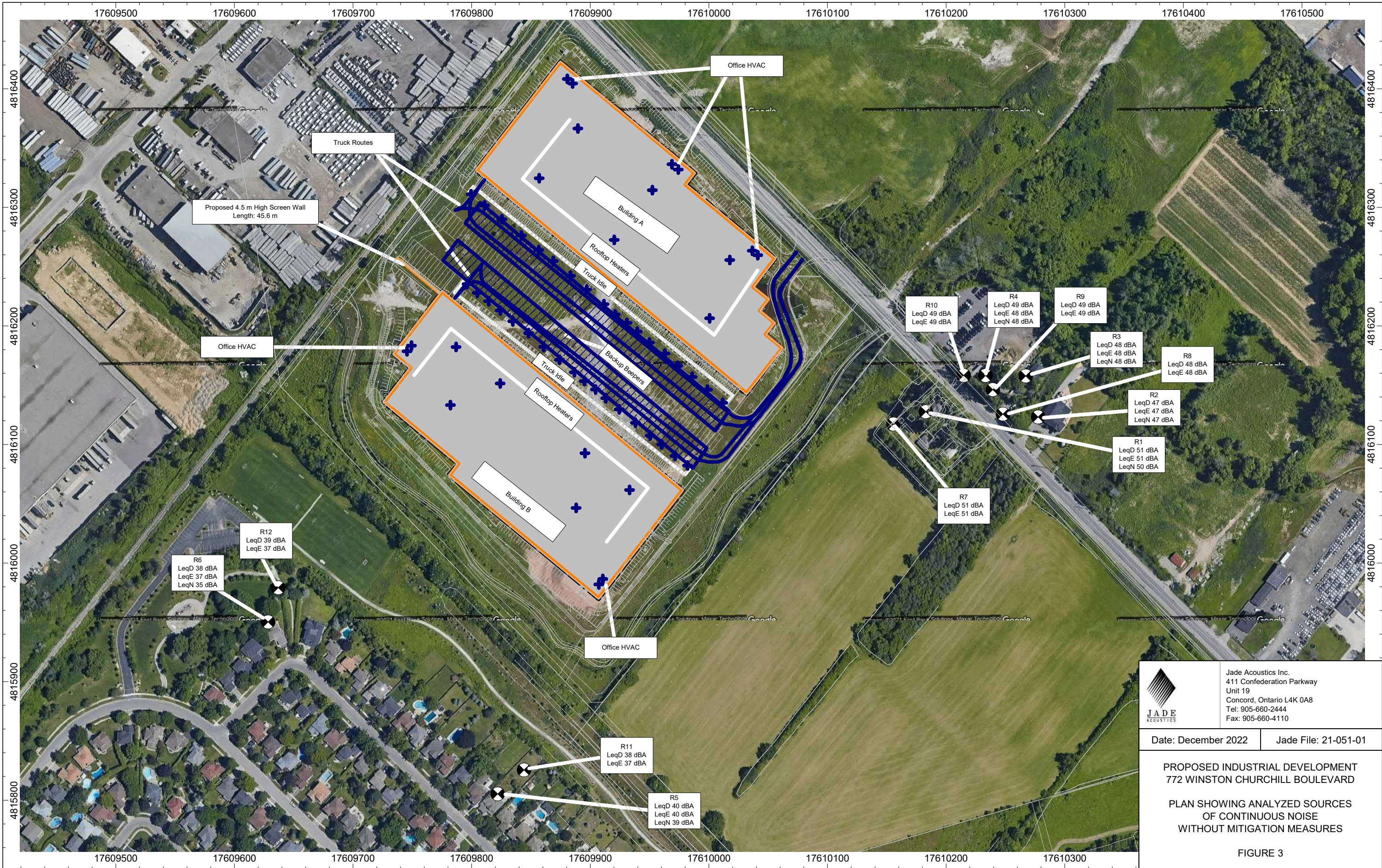



JADE
ACOUSTICS

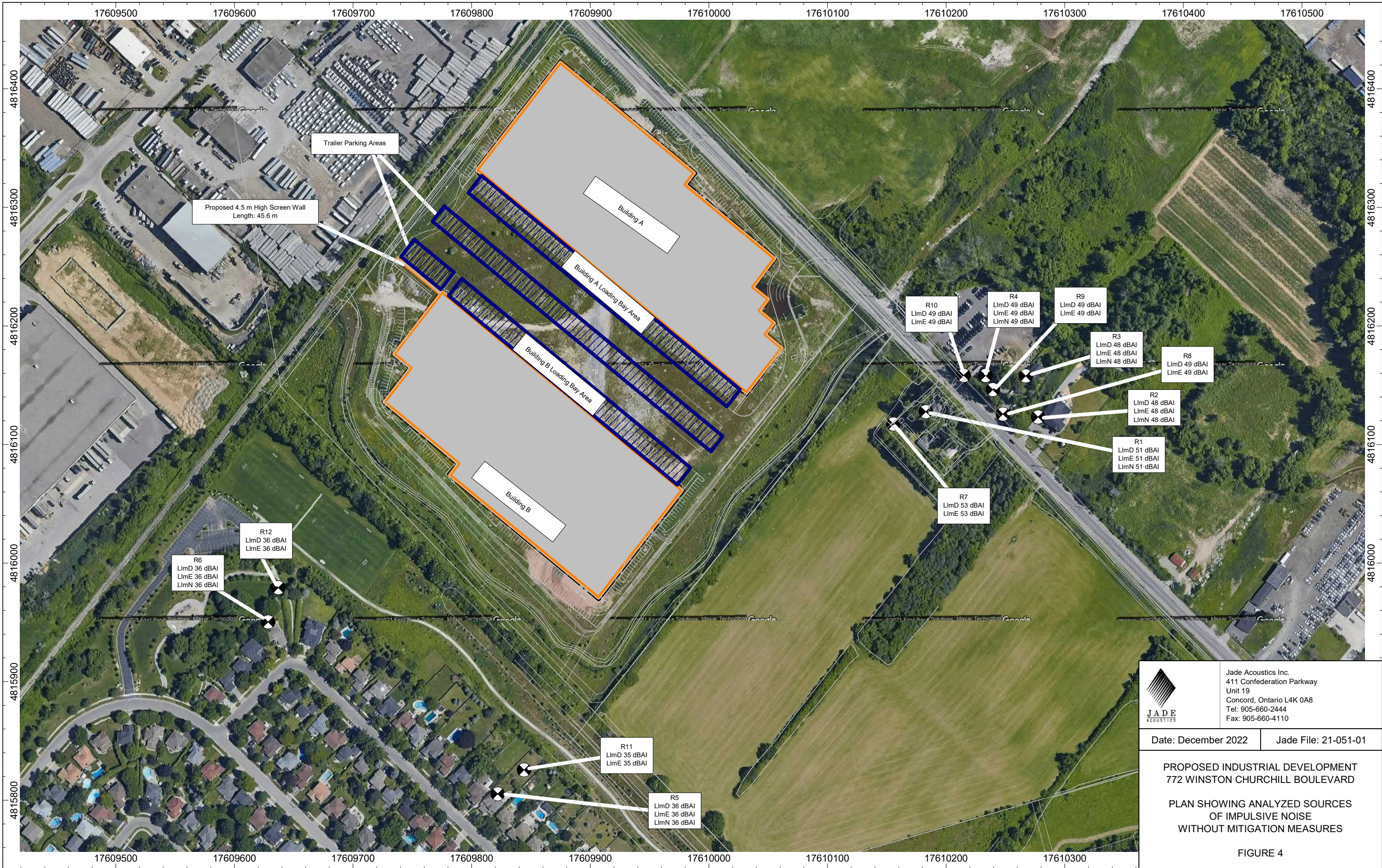
SITE PLAN

FIGURE 2

EXISTING RESIDENTIAL



 <p>Jade Acoustics Inc. 411 Confederation Parkway Unit 19 Concord, Ontario L4K 0A8 Tel: 905-660-2444 Fax: 905-660-4110</p>	Date: December 2022	Jade File: 21-051-01
	<p>PROPOSED INDUSTRIAL DEVELOPMENT 772 WINSTON CHURCHILL BOULEVARD</p> <p>PLAN SHOWING ANALYZED SOURCES OF CONTINUOUS NOISE WITHOUT MITIGATION MEASURES</p>	
<p>FIGURE 3</p>		





 Jade Acoustics Inc.
 411 Confederation Parkway
 Unit 19
 Concord, Ontario L4K 0A8
 Tel: 905-660-2444
 Fax: 905-660-4110

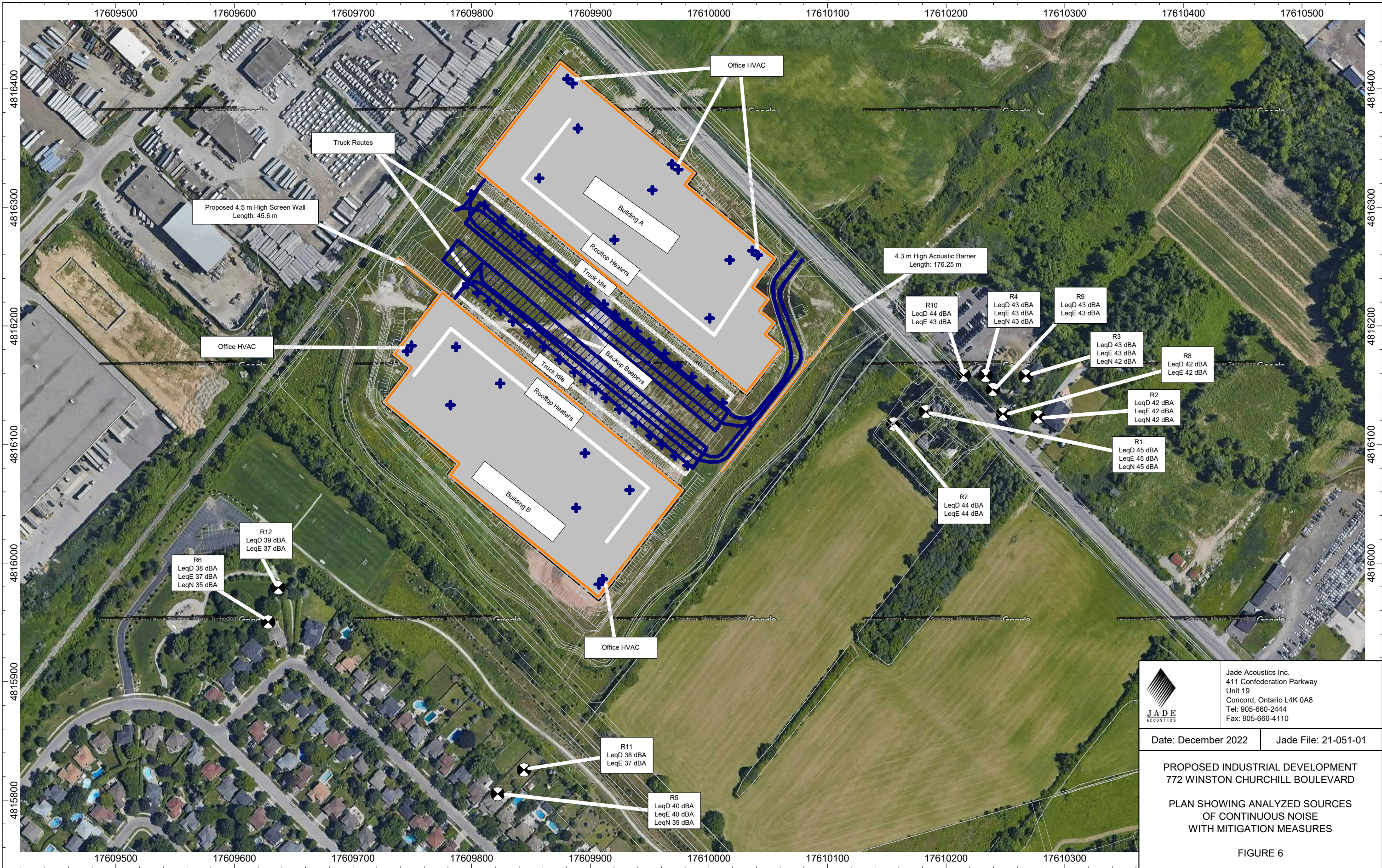
Date: December 2022 Jade File: 21-051-01

PROPOSED INDUSTRIAL DEVELOPMENT
772 WINSTON CHURCHILL BOULEVARD
PLAN SHOWING ANALYZED SOURCES
OF IMPULSIVE NOISE
WITHOUT MITIGATION MEASURES

FIGURE 4



 <p>JADE ACOUSTICS</p>	<p>Jade Acoustics Inc. 411 Confederation Parkway Unit 19 Concord, Ontario L4K 0A8 Tel: 905-660-2444 Fax: 905-660-4110</p>
	<p>Date: December 2022 Jade File: 21-051-01</p>
<p>PROPOSED INDUSTRIAL DEVELOPMENT 772 WINSTON CHURCHILL BOULEVARD</p> <p>PLAN SHOWING ANALYZED SOURCES OF EMERGENCY NOISE WITHOUT MITIGATION MEASURES</p>	
<p>FIGURE 5</p>	

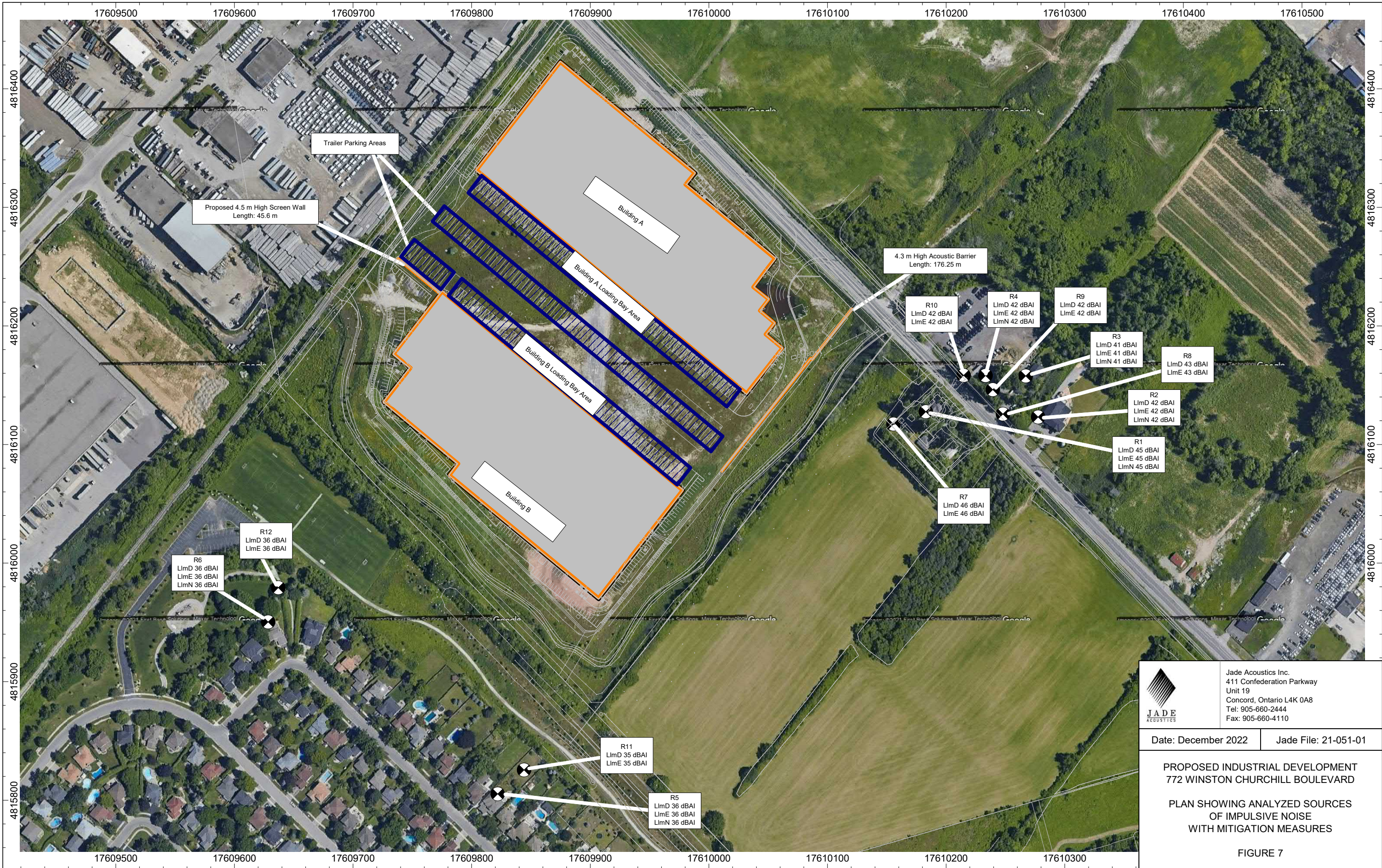



 Jade Acoustics Inc.
 411 Confederation Parkway
 Unit 19
 Concord, Ontario L4K 0A8
 Tel: 905-660-2444
 Fax: 905-660-4110

Date: December 2022 Jade File: 21-051-01

PROPOSED INDUSTRIAL DEVELOPMENT
772 WINSTON CHURCHILL BOULEVARD
PLAN SHOWING ANALYZED SOURCES
OF CONTINUOUS NOISE
WITH MITIGATION MEASURES

FIGURE 6





 Jade Acoustics Inc.
 411 Confederation Parkway
 Unit 19
 Concord, Ontario L4K 0A8
 Tel: 905-660-2444
 Fax: 905-660-4110

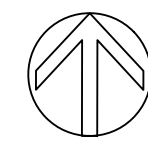
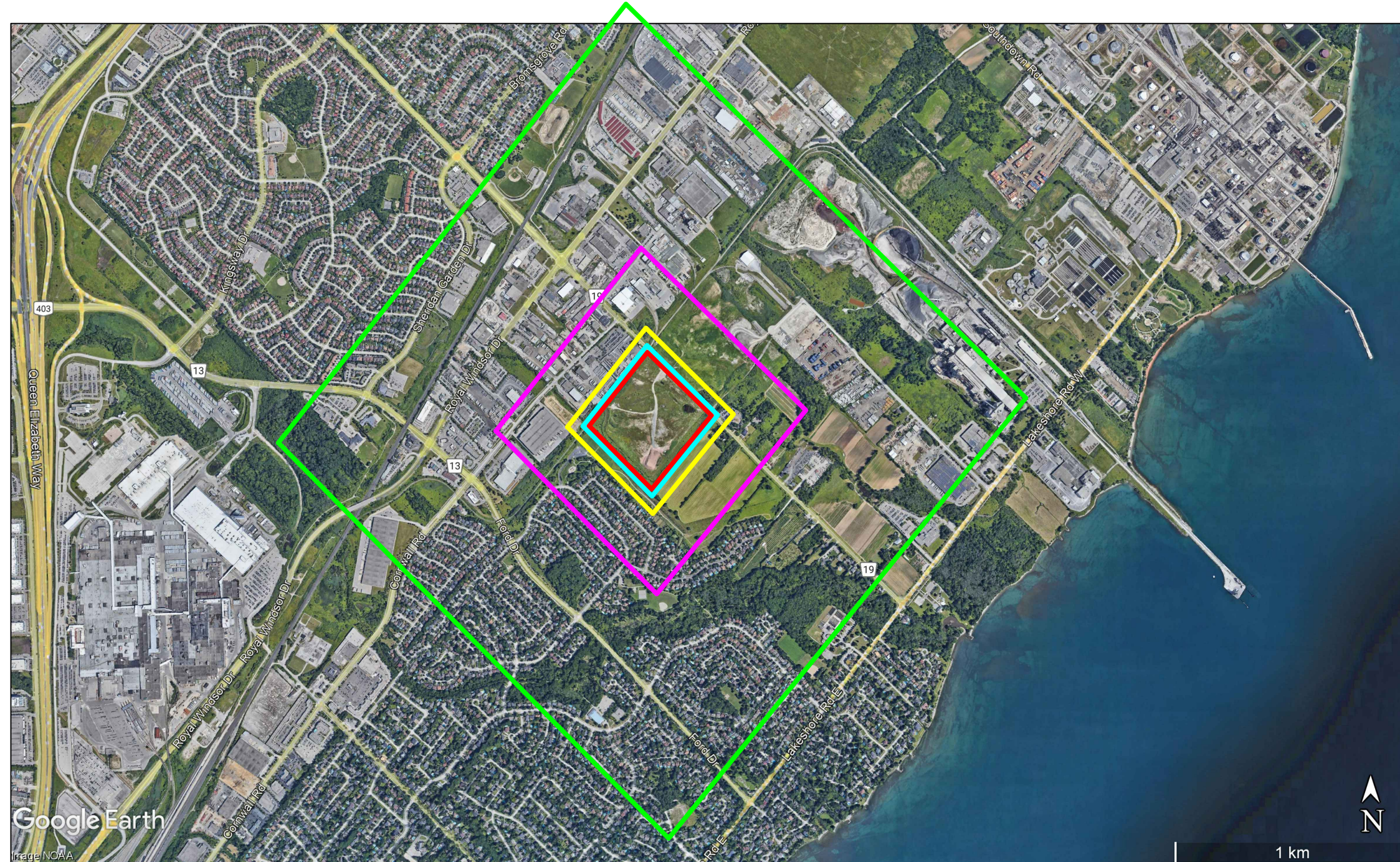
Date: December 2022 Jade File: 21-051-01

PROPOSED INDUSTRIAL DEVELOPMENT
772 WINSTON CHURCHILL BOULEVARD
PLAN SHOWING ANALYZED SOURCES
OF IMPULSIVE NOISE
WITH MITIGATION MEASURES

FIGURE 7



 <p>Jade Acoustics Inc. 411 Confederation Parkway Unit 19 Concord, Ontario L4K 0A8 Tel: 905-660-2444 Fax: 905-660-4110</p>	Date: December 2022	Jade File: 21-051-01
	<p>PROPOSED INDUSTRIAL DEVELOPMENT 772 WINSTON CHURCHILL BOULEVARD</p> <p>PLAN SHOWING ANALYZED SOURCES OF EMERGENCY NOISE WITH MITIGATION MEASURES</p> <p>FIGURE 8</p>	



LEGEND:

	Subject Site
	20 m
	70 m
	300 m
	1,000 m

N.T.S.

Proposed Industrial Development
 772 Winston Churchill Boulevard
 Town of Oakville

Date: December 2022 Our File: 21-051-01



PLAN SHOWING MOE
 GUIDELINE D-6
 SETBACK DISTANCES

FIGURE 9

APPENDIX A

ENVIRONMENTAL NOISE CRITERIA

ONTARIO MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MOE)

Reference: “Environmental Noise Guidelines Stationary and Transportation Sources – Approval and Planning”, Publication NPC-300, August, 2013, released October 21, 2013 (updated final version # 22).

SOUND LEVEL CRITERIA FOR ROAD AND RAIL NOISE

TABLE C-1

Sound Level Limit for Outdoor Living Areas

Road and Rail

Time Period	Leq (16) (dBA)
16 hr, 07:00 – 23:00	55

TABLE C-2

Indoor Sound Level Limits

Road and Rail

Type of Space	Time Period	Leq (dBA)	
		Road	Rail
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	07:00 – 23:00	45	40
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	23:00 – 07:00	45	40
Sleeping quarters	07:00 – 23:00	45	40
	23:00 – 07:00	40	35

SOUND LEVEL CRITERIA FOR AIRCRAFT NOISE

TABLE C-3

Outdoor Aircraft Noise Limit

Time Period	NEF/NEP
24-hour	30

TABLE C-4

Indoor Aircraft Noise Limit (Applicable over 24-hour period)

Type of Space	Indoor NEF/NEP*
Living/dining/den areas of residences, hospitals, nursing/retirement homes, schools, daycare centres, etc.	5
Sleeping Quarters	0

* The indoor NEF/NEP values in Table C-4 are used to determine acoustical insulation requirements based on the NEF/NEP contour maps.

SOUND LEVEL CRITERIA FOR STATIONARY SOURCES

TABLE C-5

Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA) Outdoor Points of Reception

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	55
19:00 – 23:00	50	45	40	55

TABLE C-6

**Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA)
Plane of Window of Noise Sensitive Spaces**

Time of Day	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 19:00	50	50	45	60
19:00 – 23:00	50	50	40	60
23:00 – 07:00	45	45	40	55

TABLE C-7

**Exclusion Limit Values for Impulsive Sound Level (L_{LM}, dBAI)
Outdoor Points of Reception**

Time of Day	Actual Number of Impulses in Period of One-Hour	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 23:00	9 or more	50	50	45	55
	7 to 8	55	55	50	60
	5 to 6	60	60	55	65
	4	65	65	60	70
	3	70	70	65	75
	2	75	75	70	80
	1	80	80	75	85

TABLE C-8

**Exclusion Limit Values of Impulsive Sound Level (L_{LM} , dBAI)
Plane of Window – Noise Sensitive Spaces (Day/Night)**

Actual Number of Impulses in Period of One-Hour	Class 1 Area (07:00-23:00)/ (23:00-07:00)	Class 2 Area (07:00-23:00)/ (23:00-07:00)	Class 3 Area (07:00-19:00)/ (19:00-07:00)	Class 4 Area (07:00-23:00)/ (23:00-07:00)
9 or more	50/45	50/45	45/40	60/55
7 to 8	55/50	55/50	50/45	65/60
5 to 6	60/55	60/55	55/50	70/65
4	65/60	65/60	60/55	75/70
3	70/65	70/65	65/60	80/75
2	75/70	75/70	70/65	85/80
1	80/75	80/75	75/70	90/85

SUPPLEMENTARY SOUND LEVEL LIMITS

Indoor limits for transportation sources applicable to noise sensitive land uses are specified in Table C-2 and Table C-4. Table C-9 and Table C-10 are expanded versions of Table C-2 and Table C-4, and present guidelines for acceptable indoor sound levels that are extended to land uses and developments which are not normally considered noise sensitive. The specified values are maximum sound levels and apply to the indicated indoor spaces with the windows and doors closed. The sound level limits in Table C-9 and Table C-10 are presented as information, for good-practice design objectives.

TABLE C-9**Supplementary Indoor Sound Level Limits
Road and Rail**

Type of Space	Time Period	Leq (Time Period) (dBA)	
		Road	Rail
General offices, reception areas, retail stores, etc.	16 hours between 07:00 – 23:00	50	45
Living/dining areas of residences, hospitals, schools, nursing/retirement homes, daycare centres, theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms, etc.	16 hours between 07:00 – 23:00	45	40
Sleeping quarters of hotels/motels	8 hours between 23:00 – 07:00	45	40
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	8 hours between 23:00 – 07:00	40	35

TABLE C-10**Supplementary Indoor Aircraft Noise Limit
(Applicable over 24-hour period)**

Type of Space	Indoor NEF/NEP*
General offices, reception areas, retail stores, etc.	15
Individual or semi-private offices, conference rooms, etc.	10
Living/dining areas of residences, sleeping quarters of hotels/motels, theatres, libraries, schools, daycare centres, places of worship, etc.	5
Sleeping quarters of residences, hospitals, nursing/retirement homes, etc.	0

- * The indoor NEF/NEP values in Table C-10 are not obtained from NEF/NEP contour maps. The values are representative of the indoor sound levels and are used as assessment criteria for the evaluation of acoustical insulation requirements.

APPENDIX B

SAMPLE CADNAA CALCULATIONS

Point sources

Name	M.	ID	Result: PWL			Lw / Li	Type	Value	Correction			Sound Reduction		Attenuation			Operating Time			K0	Freq.	Direct.	Height	Coordinates		
			Day (dB(A))	Evening (dB(A))	Night (dB(A))				norm.	Day (dB(A))	Evening (dB(A))	Night (dB(A))	α	Area (m²)	Day (min)	Special (min)	Night (min)	(dB)	(Hz)					(m)	X (m)	Y (m)
Cambridge Water		1000000000	87	87	87	Low	HEAT	0	0	0	0	0	60	42	24	0	(none)	1.57	g	17609856.9	4816324.54	109.96				
Cambridge Water		1000000000	87	87	87	Low	HEAT	0	0	0	0	0	60	42	24	0	(none)	1.57	g	17609920.2	4816272.55	109.96				
Cambridge Water		1000000000	87	87	87	Low	HEAT	0	0	0	0	0	60	42	24	0	(none)	1.57	g	17610000.6	4816206.35	109.96				
Cambridge Water		1000000000	87	87	87	Low	HEAT	0	0	0	0	0	60	42	24	0	(none)	1.57	g	176210017.6	4816255.48	109.96				
Cambridge Water		1000000000	87	87	87	Low	HEAT	0	0	0	0	0	60	42	24	0	(none)	1.57	g	17609786.8	4816182.25	107.77				
Cambridge Water		1000000000	87	87	87	Low	HEAT	0	0	0	0	0	60	42	24	0	(none)	1.57	g	17609824	4816151.39	107.77				
Cambridge Water		1000000000	87	87	87	Low	HEAT	0	0	0	0	0	60	42	24	0	(none)	1.57	g	17609895.4	4816092.68	107.77				
Cambridge Water		1000000000	87	87	87	Low	HEAT	0	0	0	0	0	60	42	24	0	(none)	1.57	g	17609933.1	4816061.57	107.77				
Office HVAC Unit		1000000000	88.5	88.5	88.5	Low	HVAC	0	0	0	0	0	60	42	24	0	(none)	1.52	g	17609880.6	4816408.25	109.91				
Office HVAC Unit		1000000000	88.5	88.5	88.5	Low	HVAC	0	0	0	0	0	60	42	24	0	(none)	1.52	g	17609883	4816404.37	109.91				
Office HVAC Unit		1000000000	88.5	88.5	88.5	Low	HVAC	0	0	0	0	0	60	42	24	0	(none)	1.52	g	17610041.2	4816259.6	109.91				
Office HVAC Unit		1000000000	88.5	88.5	88.5	Low	HVAC	0	0	0	0	0	60	42	24	0	(none)	1.52	g	17610036.6	4816263.3	109.91				
Office HVAC Unit		1000000000	88.5	88.5	88.5	Low	HVAC	0	0	0	0	0	60	42	24	0	(none)	1.52	g	17609745.5	4816178.65	107.72				
Office HVAC Unit		1000000000	88.5	88.5	88.5	Low	HVAC	0	0	0	0	0	60	42	24	0	(none)	1.52	g	17609749.3	4816182.34	107.72				
Office HVAC Unit		1000000000	88.5	88.5	88.5	Low	HVAC	0	0	0	0	0	60	42	24	0	(none)	1.52	g	17609907.2	4815981.98	107.72				
Office HVAC Unit		1000000000	88.5	88.5	88.5	Low	HVAC	0	0	0	0	0	60	42	24	0	(none)	1.52	g	17609910.5	4815986.5	107.72				
Office HVAC Unit		1000000000	88.5	88.5	88.5	Low	HVAC	0	0	0	0	0	60	42	24	0	(none)	1.52	g	17609968.9	4816336.26	109.91				
Office HVAC Unit		1000000000	88.5	88.5	88.5	Low	HVAC	0	0	0	0	0	60	42	24	0	(none)	1.52	g	17609974.1	4816331.85	109.91				
Cambridge Water		1000000000	87	87	87	Low	HEAT	0	0	0	0	0	60	42	24	0	(none)	1.57	g	17609889.6	4816366.47	109.96				
Cambridge Water		1000000000	87	87	87	Low	HEAT	0	0	0	0	0	60	42	24	0	(none)	1.57	g	17609952.3	4816314.44	109.96				
Cambridge Water		1000000000	87	87	87	Low	HEAT	0	0	0	0	0	60	42	24	0	(none)	1.57	g	17609888	4816046.45	107.77				
Cambridge Water		1000000000	87	87	87	Low	HEAT	0	0	0	0	0	60	42	24	0	(none)	1.57	g	17609782.1	4816133.25	107.77				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17610011.7	4816135.03	95.29				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609799.5	4816320.95	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609911.5	4816218.28	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609856.5	4816263.95	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609962.9	4816176.61	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609825.5	4816289.95	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609882.2	4816242.28	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609939.6	4816195.27	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609985.9	4816156.94	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609810.9	4816301.61	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609841.9	4816276.28	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609868.9	4816254.61	95.31				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609896.9	4816230.61	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609920.9	4816209.61	95.29				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609949.9	4816185.94	95.29				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609973.6	4816166.27	95.28				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609998.5	4816146.27	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609930.9	4816202.61	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609796.1	4816235.27	95.31				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609981.9	4816082.17	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609896.6	4816160.93	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609824.7	4816202.77	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609938	4816118.3	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609814.4	4816220.78	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609860.8	4816182.35	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609913.1	4816139.09	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609960.1	4816100.03	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609804.7	4816227.92	95.31				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609824.2	4816213.01	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609848	4816193.9	95.29				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609874	4816171.43	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609895	4816152.44	95.31				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609924.4	4816129.64	95.3				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609950.4	4816107.38	95.31				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609971.4	4816090.36	95.31				
Truck idle		1000000000	95	95	95	Low	IDLE	0	0	0	0	0	3	3	3	0	(none)	1.5	r	17609904.5	4816146.37	95.3				
Gen																										

Line sources

Name	M.	ID	Result: PWL			Result: PWL'			Lw / Li		Correction			Sound Reduction		Attenuation			Operating Time			KD	Freq.	Direct.	Moving Pt. Src					
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area	Day	Special	Night	Day	Special				Night	Number	Day	Evening	Night	Speed
			(dB(A))	(dB(A))	(dB(A))	(dB(A))	(dB(A))	(dB(A))			(dB(A))	(dB(A))	(dB(A))	(dB(A))	(m ²)	(min)	(min)	(min)	(dB)	(Hz)	Day				Evening	Night	(km/h)			
Truck Route Bldg A		00000001	101.4	101.4	101.4	71.4	71.4	71.4	PWL-Pt	TP		0	0	0								0		(none)	18	18	18	10		
Truck Route Bldg B		00000001	101.4	101.4	101.4	71.4	71.4	71.4	PWL-Pt	TP		0	0	0								0		(none)	18	18	18	10		

Area sources

Name	M.	ID	Result: PWL			Result: PWL'			Lw / Li		Correction			Sound Reduction		Attenuation			Operating Time			KD	Freq.	Direct.	Moving Pt. Src					
			Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area	Day	Special	Night	Day	Special				Night	Number	Day	Evening	Night	Speed
			(dB(A))	(dB(A))	(dB(A))	(dB(A))	(dB(A))	(dB(A))			(dB(A))	(dB(A))	(dB(A))	(dB(A))	(m ²)	(min)	(min)	(min)	(dB)	(Hz)	Day				Evening	Night	(km/h)			
Trailer Storage Area	-	0001021	106.5	106.5	106.5	77.5	77.5	77.5	Lw	HMPS-10*LOG10/4		0	0	0								0		(none)						
Trailer Storage Area	-	0001021	106.5	106.5	106.5	69.5	69.5	69.5	Lw	HMPS-10*LOG10/4		0	0	0								0		(none)						
Loading - Building A	-	0001021	106.5	106.5	106.5	69.3	69.3	69.3	Lw	HMPS-10*LOG10/4		0	0	0								0		(none)						
Loading - Building B	-	0001021	106.5	106.5	106.5	69.8	69.8	69.8	Lw	HMPS-10*LOG10/4		0	0	0								0		(none)						
Backup Beepers		00000002	109	109	109	71.4	71.4	71.4	Lw	112-10*LOG10/2		0	0	0								10	10	10	0	1000	(none)			
Backup Beepers		00000002	109	109	109	71.4	71.4	71.4	Lw	112-10*LOG10/2		0	0	0								10	10	10	0	1000	(none)			

Receivers

Name	M.	ID	Level Lr			Limit Value			Land Use		Noise Type	Height (m)	Coordinates		
			Day (LBA)	Night (LBA)	Evening (LBA)	Day (LBA)	Night (LBA)	Evening (LBA)	Type	Auto			X (m)	Y (m)	Z (m)
R1		01001	40	44.5	44.8	0	0	0	n	Total	4.5	17610182.9	4816117.66	99.45	
R2		01001	42.4	41.6	42	0	0	0	n	Total	4.5	17610277.5	4816123.1	98.89	
R3		01001	42.9	42.2	42.6	0	0	0	n	Total	2.5	17610267.1	4816157.82	96.51	
R4		01001	43.4	42.8	43.1	0	0	0	n	Total	2.5	17610231.2	4816158.08	96.68	
R5		01001	40.1	38.8	39.5	0	0	0	n	Total	4.5	17609821.9	4815805.33	99.65	
R6		01001	38	34.9	36.7	0	0	0	n	Total	4.5	17609628.4	4815950.37	98.94	
R7		01001	44.3	43.9	44.1	0	0	0	n	Total	1.5	17610155.5	4816117.21	96.09	
R8		01001	42	41.5	41.8	0	0	0	n	Total	1.5	17610407.8	4816126.88	95.7	
R9		01001	43	42.3	42.7	0	0	0	n	Total	1.5	17610238.3	4816146.2	95.72	
R10		01001	43.6	43	43.3	0	0	0	n	Total	1.5	17610214.7	4816158.3	95.62	
R11		01001	38.3	35.8	37.2	0	0	0	n	Total	1.5	17609844.1	4815825.55	96.9	
R12		01001	38.6	35.2	37.2	0	0	0	n	Total	1.5	17609636.9	4815979.23	96.15	

Barriers

Name	M.	ID	Absorption		Z Ext. (m)	Cantilever		Height	
			left	right		horz. (m)	vert. (m)	Begin (m)	End (m)
4.5m High Proposed Springs		03000	0.21	0.21				4.5	r
PA Barrier - 4.5m		0301000	0.21	0.21				4.3	r
Building A Low Parapet		03000	0.21	0.21				0.87	e
Building B Low Parapet		03000	0.21	0.21				0.26	e

Buildings

Name	M.	ID	RB	Residents	Absorption	Height
						Begin
						(m)
Building B		02001		0	0.37	11.7
Building A		02001		0	0.37	13.10

APPENDIX C

ENVIRONMENTAL NOISE CRITERIA D-6 GUIDELINES

**GUIDELINE D-6 POTENTIAL INFLUENCE AREAS AND RECOMMENDED
MINIMUM SEPARATION SISTICS FOR INDUSTRIAL LAND USES**

INDUSTRIAL CLASSIFICATION	AREA OF INFLUENCE	RECOMMENDED MINIMUM SEPARATION DISTANCE
Class 1 – Light Industrial	70 m	20 m
Class 2 – Medium Industrial	300 m	70 m
Class 3 – Heavy Industrial	1,000 m	300 m

GUIDELINE D-6 – INDUSTRIAL CATEGORIZATION CRITERIA

CATEGORY	OUTPUTS	SCALE	PROCESS	OPERATION/ INTENSITY	POSSIBLE EXAMPLES
Class 1	<p>NOISE: Sound not audible off property</p> <p>DUST: Infrequent and not intense</p> <p>ODOUR: Infrequent and not intense</p> <p>VIBRATION: No ground-borne vibration on plant property</p>	<ul style="list-style-type: none"> • No outside storage • Small scale plant of scale is irrelevant in relation to all other criteria for this Class 	<ul style="list-style-type: none"> • Self-contained plant or building which produces/ stores a packaged product • Low probability of fugitive emissions 	<ul style="list-style-type: none"> • Daytime operations only • Infrequent movement of products and/or heavy trucks 	<ul style="list-style-type: none"> • Electronics manufacturing and repair • Furniture repair and refinishing • Beverage bottling • Auto parts supply • Packaging and crafting services • Distribution of dairy products • Laundry and linen supply
Class 2	<p>NOISE: Sound occasionally heard off property</p> <p>DUST: Frequent and occasionally intense</p> <p>ODOUR: Frequent and occasionally intense</p> <p>VIBRATION: Possible ground-borne vibration, but cannot be perceived off property</p>	<ul style="list-style-type: none"> • Outside storage permitted • Medium level of production allowed 	<ul style="list-style-type: none"> • Open process • Periodic outputs of minor annoyances • Low probability of fugitive emissions 	<ul style="list-style-type: none"> • Shift operations permitted • Frequent movements of products and/or heavy trucks with the majority of movement during daytime hours 	<ul style="list-style-type: none"> • Magazine printing • Paint spray booths • Metal command • Electrical production manufacturing • Manufacturing of dairy products • Dry cleaning services • Feed packing plants
Class 3	<p>NOISE: Sound frequently audible off property</p> <p>DUST: Persistent and/or intense</p> <p>ODOUR: Persistent and/or intense</p> <p>VIBRATION: Ground-borne vibration can frequently be perceived off-property</p>	<ul style="list-style-type: none"> • Outside storage of raw and finished products • Large production levels 	<ul style="list-style-type: none"> • Open process • Frequent outputs of major annoyances • High probability of fugitive emissions 	<ul style="list-style-type: none"> • Continuous movement of products and employees • Daily shift operations permitted 	<ul style="list-style-type: none"> • Paint and varnish manufacturing • Organic chemical manufacturing • Breweries • Solvent recovery plants • Soaps and detergent manufacturing • Metal refining and manufacturing

APPENDIX D

RESPONSES TO TOWN OF OAKVILLE COMMENTS

RESPONSES TO REVIEW COMMENTS PROVIDED THROUGH THE TOWN OF OAKVILLE

For consistency and completeness, we have reiterated the comments along with Jade's response. Only responses pertinent to comments on the Preliminary Environmental Noise Report and Land Use Compatibility Report dated December 15, 2021, have been included.

Conditions of Site Plan Approval

Comment:

“Council Addition – June 27, 2022 – The Owner shall evaluate the ultimate operating condition of the site, based on full build-out, and identify any required traffic, noise and vibration mitigation measures, prior to final approval of the site plan. This evaluation shall be reviewed by the Town’s peer review consultants at the expense of the Owner. Installation of any mitigation measures identified and required by the evaluation shall be incorporated into the final plans and studies and implemented prior to occupancy of any of the proposed buildings.”

Response:

As noted in the report, the assessment considers the representative predictable worst-case scenario based on known information at this time.

Comment:

“While CN has no noise and vibration guidelines that are applicable to non-residential uses, it is recommended the proponent assess whether railway noise and vibration could adversely impact the future use being contemplated (hotel, laboratory, precision manufacturing). It may be desirable to retain a qualified acoustic consultant to undertake an analysis of noise and vibration, and make recommendations for mitigation to reduce the potential for any adverse impact on future use of the property.”

Response:

As there are no noise sensitive receptors, as defined by the MOE NPC-300 guidelines, noise and vibration sources due to the CN operations do not need to be assessed.

3rd Submission Comments

Comment:

“Land Use Compatibility A “Land Use Compatibility Assessment (Air), dated December 2021 and prepared by Ortech, was submitted with this revised submission. A “Preliminary Environmental Noise Report and Land Use Compatibility Report”, dated December 2021 and prepared by Jade Acoustics was also submitted. The Region has engaged the services of a consultant to undertake a peer review of these studies. Further comments in relation to land use compatibility will be forwarded once received. The applicant will be required to cover the cost of the peer review. Peer review Comments were provided by Dillon Consulting in a letter dated April 18, 2022. Under the section on Air Quality review comments it makes four points and supports the conclusions of the study, however recommends the report be updated to appropriately reflect the potential impact from idling vehicles. We request an update be provided in this regard.

With regard to Noise Impacts, three points are provided. We request that the applicant provide an updated report/letter to address these points. We note that with regard to item 3, from the Region’s perspective we are satisfied that our requirements are met, however Town noise by-laws should be addressed to their satisfaction.”

Response:

We acknowledge the peer review comments by Dillon, which are addressed under separate responses to comments. In terms of the comment on the applicable sound level limits, the updated report has accounted for the numerical limits in the Town’s by-law.

Comment:

“Cumulative Impacts-Noise

With respect to Noise impacts, the peer review notes that the properties with the greatest potential to experience cumulative noise impacts were identified to be residential houses located at 658 Winston Churchill Boulevard and 645 Winston Churchill Boulevard (east side of Winston Churchill).

While the peer review believes that the cumulative noise impact would likely be less than 3dBA and thus typically imperceptible, it goes on to state:

“To fully understand the potential quantitative cumulative noise impacts from both industrial uses on the surrounding sensitive receptors, a stationary noise assessment should be completed by a Qualified Acoustic Consultant encompassing the operations of both 560 Winston Churchill Boulevard and 772 Winston Churchill Boulevard proposed facilities.”

We request that the noise report be updated to assess the cumulative noise impact, in particular as it relates to the above-noted two properties.”

Response:

A cumulative impact assessment is not required for approval as the subject sites are under separate planning applications.

That said, based on the predicted sound levels in the Jade and HGC reports, the potential cumulative sound levels are not expected to increase by as much as 3 dB, as reported by the peer reviewer. As a 3 dB change generally represents the threshold of perceived change in sound level, any potential cumulative impact would be considered to be negligible. In addition, accounting for all sources operating simultaneously, is conservative as typically not all operations will occur during the same hour.

Comment:

“Section 4 of the Noise Report identifies six noise sensitive receptors in close proximity to the Proposed Facility. The Noise Report identifies that the assessed receptors represent the façades of the residences assessed at a height of 4.5 m for two-storey dwellings, and 2.5 m for bungalow dwellings. As per NPC-300, a point of reception is any location on a noise sensitive land use where noise from a stationary source is received. In addition to the façades of the sensitive uses, outdoor points of reception for each residence should be assessed for non-impulsive and impulsive noise impacts. The Noise Report should be updated to consider outdoor points of reception.”

Response:

Outdoor points of reception (i.e. outdoor ground related receptors) were considered in the analysis and compliance with the applicable sound level limits was verified, although not explicitly reported. The outdoor areas are not subject to the nighttime sound level limits with which the façade/plane of window calculations must comply. Additionally, the outdoor area receptor location is at a reduced height of 1.5 m above grade, further benefiting from the proposed acoustic barrier. The outdoor area sound level predictions have been included in the updated report for completeness.

Comment:

“Section 4 of the Noise Report identifies that the analysis assumes trucks will idle at the loading bays for a maximum of three minutes each, per the terms of the Town of Oakville Anti-Idling By-Law 2002-153. As per By-Law 2002-153 Section 2(2)(k), the anti-idling does not apply to vehicles when the ambient outside temperature is more than 27 degrees Celsius or less than five degrees Celsius and the idling of the vehicle is necessary to the operation of air conditioning or heating equipment respectively. As the above scenarios may result in truck idling in excess of three minutes, the Noise Report should be updated to consider the assessment of truck idling. Note, if feasible for facility operations, a facility-wide anti-idling policy may be suitable.”

Response:

There is not necessarily a requirement for a truck driver to remain in their vehicle during a loading/unloading process, whereby the engine would need to idle for the operation of AC/heat. The analysis accounts for three (3) minutes of idling for each of the 36 trucks accessing the site during the worst-case hour, which is representative of constant idling at the subject site. That said, a sensitivity analysis was conducted to determine the maximum time of idling. Based on this analysis up to twenty (20) minutes of idling for each of the 36 trucks can occur while still meeting the MOE guidelines. This updated analysis is conservative and has been considered in order to demonstrate tolerance for compliance with the applicable sound level limits, while having regard for the peer review comment. It should be noted that the analysis has conservatively accounted for the sound power level associated with the idling of the engine block; however, it is possible for trucks to be equipped with auxiliary power units for operation of the heat/cool systems, which would be expected to have a reduced sound power level.

Comment:

“Table B of the Noise Report identifies the MECF Class 1 Area exclusionary limits to be applied to the surrounding sensitive receptors. The Town of Oakville By-Law 2008-098 Section 4 provides quantitative general limitations on sound levels. Daytime and nighttime limitations are aligned with NPC-300 Class 1 limits, however evening limitations are 47 dBA/dBAI as opposed to 50 dBA/dBAI. It should be noted that the predicted sound levels with mitigation outlined in Tables 4, 5, and 6 of the Noise Report demonstrate compatibility with the Oakville By-Law 2008-098 noise limitations on the surrounding sensitive uses. The purpose of this comment is to ensure that the appropriate criteria is used in future assessments and/or updates to the Noise Report.”

Response:

Noted. The applicable sound level limits have been revised in the updated report.