TOWN OF CALEDON
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Environmental Noise Impact Study - **Project: 21389.00**

Proposed Transport Truck/Trailer Parking Facility

12434 Dixie Road, Town of Caledon ON

Prepared for:

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1 Introduction

Malone Given Parsons Ltd. has retained Aercoustics Engineering Limited (Aercoustics) to conduct an Environmental Noise Impact Study (ENIS) in support of a temporary Zoning By-Law Amendment for a proposed transport truck/trailer parking facility located at 12434 Dixie Road in the Town of Caledon.

The purpose of this study is to assess the noise impact of the proposed facility on the noise sensitive receptors in the area and to outline noise mitigation measures, if required, to satisfy the MECP noise guidelines.

Sound level limits for the facility noise on the residential receptors were first established. These were based on the noise guidelines of the MECP. Next, the noise predictions of the facility operations were performed at these receptors and compered with the applicable noise level limits.

This assessment has been conducted in compliance with the MECP publication NPC-300.

Key plan showing the project location is provided in Figure 1. Figure 2 shows the site plan of the facility and the critical noise sensitive receptors, while Figure 3 illustrates the recommended noise controls.



Figure 1: Key Plan showing Site Location

2 Guidelines and Criteria

2.1 Stationary Noise Sources

The noise level limits pertaining to stationary noise sources have been established based on the MECP publication NPC-300. For sound from a stationary source, the sound level limit at a point of reception, expressed in terms of the one-hour equivalent sound level (Leq-1hr), is the higher of the applicable exclusion limit value given in Tables 1a and 1b.

As the traffic on Dixie Road dominates the sound environment in the area, the proposed site was considered an MECP Class 2 area.

Table 1a:
Noise Exclusion Limits (dBA)– Steady Sound Stationary Sources – Classes 1, 2, 3, and 4

Time of Day	Sound Level Exclusion Limit* Class 1 Area	Sound Level Exclusion Limit* Class 2 Area	Sound Level Exclusion Limit* Class 3 Area	Sound Level Exclusion Limit* Class 4 Area
	Outdoor Points of Reception			
Day (07:00 to 19:00)	50	50	45	55
Evening (19:00 to 23:00)	50	45	40	55
	Plane of Window of Noise Sensitive Spaces			
Day (07:00 to 19:00)	50	50	45	60
Evening (19:00 to 23:00)	50	50	40	60
Night (23:00 to 07:00)	45	45	40	55

* or the minimum existing hourly background sound level Leq, whichever is higher

Table 1b:
Noise Exclusion Limits (dBAI)– Impulse Sound Stationary Sources – Classes 1, 2, 3, and 4

Time of Day	Number of Impulses in Period of One Hour	Sound Level Exclusion Limit* Class 1 Area	Sound Level Exclusion Limit* Class 2 Area	Sound Level Exclusion Limit* Class 3 Area	Sound Level Exclusion Limit* Class 4 Area
		Outdoor Points of Reception			
Day (07:00 to 23:00)	9 or more	50	50	45	60
	8	55	55	50	65
Night (23:00 to 07:00)	9 or more	n/a	n/a	n/a	n/a
	8	n/a	n/a	n/a	n/a
		Plane of Window of Noise Sensitive Spaces			
Day (07:00 to 23:00)	9 or more	50	50	45	60
	8	55	55	50	65
Evening (19:00 to 23:00)	9 or more	50	50	40	60
	8	55	55	45	65
Night (23:00 to 07:00)	9 or more	45	45	n/a	55
	8	50	50	n/a	60

* or the minimum existing hourly background sound level Leq, whichever is higher

The outdoor sound level limits for stationary sources apply only to daytime and evening hours while sound level limits apply during the nighttime period for the plane of the window of a noise sensitive space. In general, the outdoor points of reception will be protected during the nighttime because of meeting the sound level limits at the adjacent plane of window of noise sensitive spaces.

Note that for Class 1, 2, and 3 areas, the plane of window limits apply to a window that is assumed to be open. For Class 4 areas, the plane of window limits apply to a window which is assumed to be closed. This distinction does not affect the prediction of plane of window sound levels.

The above listed sound level limits for an outdoor point of reception define the point of reception as any area in the development that is amenable for use. The sound level limit is also valid for a point of reception location at the centre of the plane of a window. In the night-time period, the criterion is defined at the plane of a bedroom window.

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

3 Facility Description

Figure 1 below provides the proposed site plan and the nearest noise sensitive receptors, namely existing dwellings located in the vicinity of the project are shown in Figures 2. The municipal address of the proposed transport truck/trailer parking facility is 12434 Dixie Road, Caledon ON.

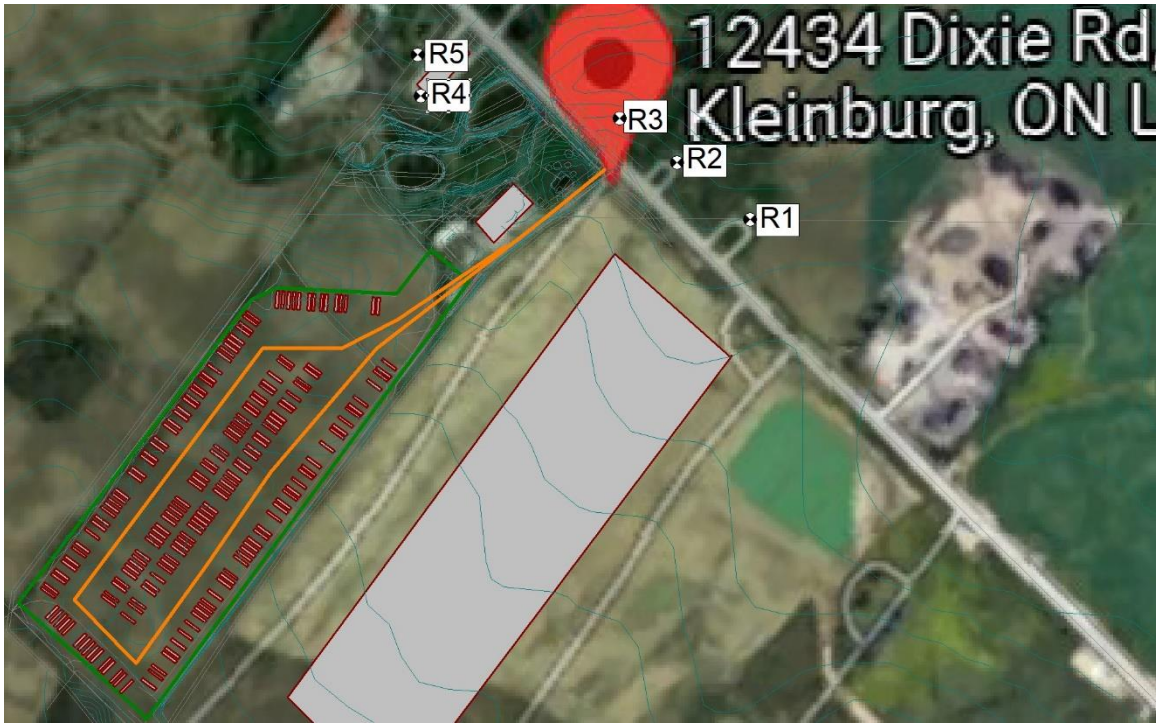


Figure 2: Proposed Site Plan and Noise Sensitive Receptor Locations

The subject facility is a transport truck and trailer parking facility. Noise sources associate with the operation of the facility will include on-site trucking movements and as well as coupling/uncoupling of trailers.

The details of the proposed/expected activities at the facility are as follows:

1. The peak hour traffic volumes/ truck movements obtained from the transportation study are also representative of the 'worst-case' scenario regarding noise. They represent the maximum activity/traffic volumes that could occur during 1 hour period during daytime. Namely, 21 trips during the worst case scenario hour.

2. It has been assumed that each trip would generate one coupling or uncoupling event. This kind of activity produces impulse sound and is assessed independently from steady noise generated by truck movements.

3. The worst-case 1hour scenario during the nighttime (23:00 to 07:00) represents up to 8 truck trips, confirmed by the client.

4 Points of Reception

There are existing residential buildings to the east and north of the proposed parking identified as Receptors R01 to R05. The receptors' heights are shown in Table 2 and their location is illustrated in Figures 2 and 3.

Table 2: Summary of Points of Reception

Receptor	Description	Height
R01	Existing 1-storey Residence	1.5 m
R02	Existing 1-storey Residence	1.5 m
R03	Existing 1-storey Residence	1.5 m
R04	Existing Church	1.5 m
R05	Existing 2-storey Residence	4.5 m

The appropriate noise criteria for the receptors in the vicinity of the facility were based on the MECP Noise Pollution Control publication NPC-300 "Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning" (MECP, August 2013).

Points of reception R01 to R05 have an ambient acoustical environment consistent with the Class 2 designation as defined by the MECP Publication NPC-300. In a Class 2 area, the background sound levels during the daytime (07:00 to 19:00) are defined by man-made sources. In this case, the man-made noise sources primarily include road traffic. While the evening, (19:00 to 23:00) and night-time (23:00 to 07:00) background sound levels are defined by natural environment and infrequent human activities.

5 NOISE CONTROLS

The noise level predictions indicate that the unmitigated noise level at R05 exceeds the applicable noise level limits. A 4m acoustic barrier as shown in Figure 3 below has been included in the Site Plan. This feature will address the exceedance.

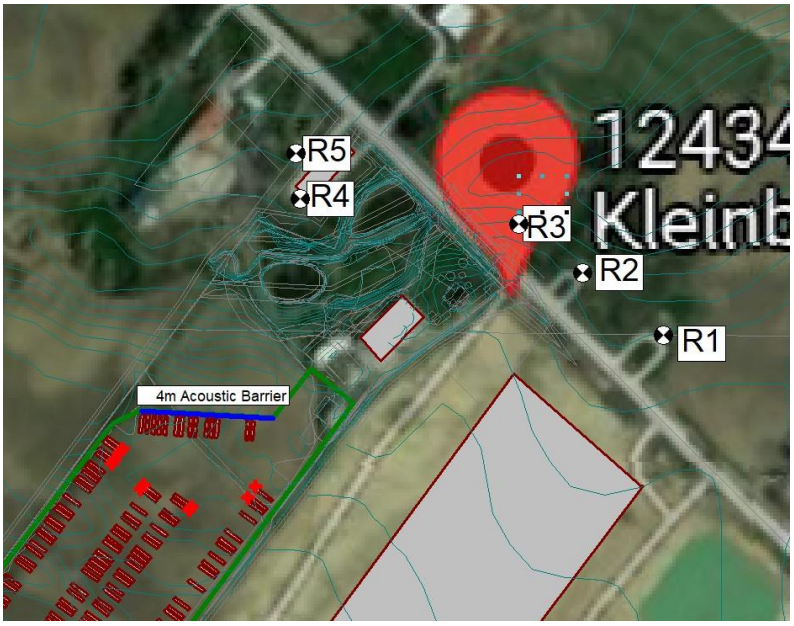


Figure 3: Acoustic Barrier Layout

6 Noise Impact Assessment

The noise impact calculations were performed using DataKustik's CadnaA environmental noise prediction software. The calculations are based on established prediction methods including the standard ISO 9613-2: "A Standard for Outdoor Noise Propagation".

Noise levels were predicted using the topography obtained from the Government of Canada Geospatial Data Extraction site, under conditions of downwind propagation, generally with hard ground modelled in applicable areas such as paved roads, and soft ground conditions elsewhere. The directivity of noise emission for applicable noise sources was considered. Shielding from existing structures was modelled where applicable.

Appendix A contains sound power data and Appendix B contains sample stationary source calculations/printouts.

The predicted worst-case hourly sound level at each receptor from stationary noise sources with 4m acoustic barrier in place is presented in 3a and 3b.

Table 3a: Summary of Noise Impact due to Truck Movements – Steady Noise Sources

Receptor ID	Time Period	Sound Level at Point of Reception L_{eq} (dBA)	Sound Level Limit (dBA)	Sound Level Satisfied (Yes/No)
R01	Daytime	43	50	Yes
	Nighttime	39	45	Yes
R02	Daytime	46	50	Yes
	Nighttime	42	45	Yes
R03	Daytime	47	50	Yes
	Nighttime	43	45	Yes
R04	Daytime	46	50	Yes
	Nighttime	41	45	Yes
R05	Daytime	38	50	Yes
	Nighttime	39	45	Yes

The predicted noise levels will satisfy the MECP sound level limits.

Table 3b: Summary of Noise Impact due to Coupling/Uncoupling – Impulse Noise Sources

Receptor ID	Time Period	Sound Level at Point of Reception (dBAI)	Sound Level Limit (dBAI)	Sound Level Satisfied (Yes/No)
R01	Daytime	43	50	Yes
	Nighttime	44	50	Yes
R02	Daytime	45	50	Yes
	Nighttime	45	50	Yes
R03	Daytime	45	50	Yes
	Nighttime	44	50	Yes
R04	Daytime	49	50	Yes
	Nighttime	48	50	Yes
R05	Daytime	48	50	Yes
	Nighttime	48	50	Yes

The predicted noise levels will satisfy the MECP sound level limits.

7 Conclusion

Aercoustics Engineering Limited was retained by Malone Given Parsons Ltd. to conduct an Environmental Noise Impact Study to address potential noise impact of the proposed transport trucks/trailer parking facility at 12434 Dixie Road in Caledon, Ontario. It has been concluded that with the noise controls recommended in Section 5 of this document the facility is expected to be within the MECP sound level limits at the surrounding noise sensitive receptors.

Appendix A

Sound Power Data
(sourced from Aercoustics' Data Base)

Name	M.	ID	Result. PWL			Lw / Li		
			Day	Evening	Night	Type	Value	norm.
			(dBA)	(dBA)	(dBA)			
TRimpuls		B03_	105.8	115.8	115.8	Lw	TRimpulse	
TRimpuls		B03_	105.8	115.8	115.8	Lw	TRimpulse	
TRimpuls		B03_	105.8	115.8	115.8	Lw	TRimpulse	
TRimpuls		B03_	105.8	115.8	115.8	Lw	TRimpulse	
TRimpuls		B03_	105.8	115.8	115.8	Lw	TRimpulse	
TRimpuls		B03_	105.8	115.8	115.8	Lw	TRimpulse	
TRimpuls		B03_	105.8	115.8	115.8	Lw	TRimpulse	
TRimpuls		B03_	105.8	115.8	115.8	Lw	TRimpulse	
TRimpuls		B03_	105.8	115.8	115.8	Lw	TRimpulse	
TRimpuls		B03_	105.8	115.8	115.8	Lw	TRimpulse	

Line Source

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Name	M.	ID	Result. PWL		
			Day	Evening	Night
			(dBA)	(dBA)	(dBA)
Truck	~	A02_	109.0	-4.2	-4.2

Appendix B

Sample Calculations/Printouts



Figure B1: Unattenuated Noise Levels due to Truck Movements (Day Time)

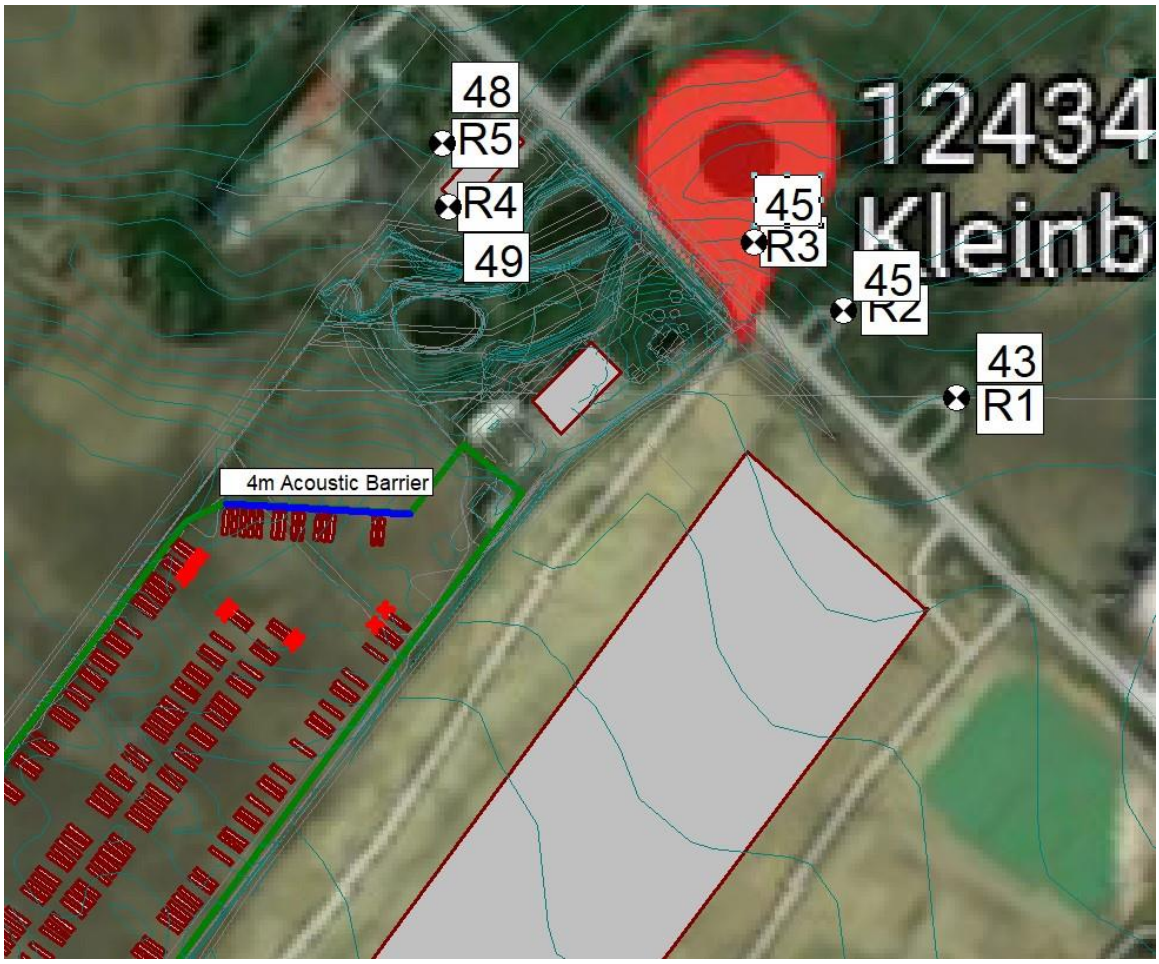


Figure B2: Noise Levels due to Coupling/Uncoupling with 4m Acoustic Barrier in Place (Day Time)