

Environmental Noise Impact Study

DC Kentucky

Proposed Distribution Centre

Caledon, Ontario

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Prepared for

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Proposed Distribution Centre Caledon, Ontario

EXECUTIVE SUMMARY

Valcoustics Canada Ltd. (VCL) previously prepared an Environmental Noise Impact Study, dated July 15, 2021, as part of the Official Plan Amendment, Zoning By-law Amendment and Draft Plan of Subdivision applications for the proposed industrial development consisting of several future industrial buildings at the northeast corner of Torbram Road and Mayfield Road in the Town of Caledon. This report has been prepared in support of the Site Plan Approval (SPA) application for a proposed distribution centre on Block 1 and part of Block 4 at the northwest corner of the overall development.

The proposed facility will be a grocery store distribution centre, including office space, non-perishable, perishable and freezer storage areas. Shipping and receiving docks are located along the east, west and south sides of the building. Truck access to the facility will be from a future roadway east of the site, extending south to Mayfield Road. Private vehicle access for the office space will be from a separate entrance along Torbram Road, along the west side of the site.

The noise sources at the facility with the potential to impact nearby noise-sensitive receptors are truck activities, rooftop mechanical units and noise emitted from the overhead doors at the maintenance building.

The noise sensitive receptors in the vicinity are the existing residential dwellings along Torbram Road, Mayfield Road and Airport Road. The anticipated worst-case sound levels from the operations at the facility have been determined at the surrounding noise sensitive receptors and compared with the applicable Ministry of the Environment, Conservation and Parks (MECP) noise guideline limits to determine the need for noise mitigation.

The unmitigated sound levels at the surrounding noise sensitive receptors are predicted to exceed the applicable noise guideline limits, and noise control measures are required for the proposed development. Mitigation will include both physical (sound barriers) and administrative (no idling policy) measures.

The assessment is based on operating information provided by the future tenant, as well as grading plans, rooftop mechanical plans and equipment selections. The assessment should be reviewed if the information is revised.

1.0 INTRODUCTION

This report has been prepared in support of the SPA application for a proposed distribution centre in the vicinity of Torbram Road and Mayfield Road in the Town of Caledon. The site is part of a larger future industrial/commercial development and is located at the northwest corner of the overall area.

The anticipated worst-case sound levels from the operations at the facility have been determined at the surrounding noise sensitive receptors and compared with the applicable MECP noise guideline limits to determine the need for noise mitigation. Details of the assessment and noise control requirements are outlined herein.

1.1 THE SITE AND SURROUNDING AREA

The proposed development is located within the Tullamore Lands, a planned industrial area located at 0 & 12245 Torbram Road in the Town of Caledon. The overall industrial development extends from Mayfield Road at the south to about 1.5 km north, and from Torbram Road at the west to Airport Road at the east. The property boundaries cut around existing properties, which are not part of the Tullamore Lands, along Torbram Road, Airport Road and Mayfield Road.

The subject site is located at the northwest corner of the Tullamore Lands and is bounded by:

- Agricultural land, owned by the same landowner as the subject site and intended for future industrial development, to the north;
- Agricultural land (part of the Tullamore Lands and intended for future industrial development), with residential dwellings and Airport Road beyond, to the east;
- Residential dwellings and agricultural land (part of the Tullamore Lands and intended for future industrial development), with Mayfield Road beyond, to the south; and
- Single family dwellings and Torbram Road, with residential dwellings, agricultural lands and the Mayfield Golf Club beyond, to the west.

The lands to the south of Mayfield Road are part of the City of Brampton's Countryside Villages Secondary Plan and Vales North Secondary Plan areas, which are intended for future mixed-use (including residential) development.

A Key Plan is shown as Figure 1.

This report is based on the architectural drawings prepared by Stendel and Reich Architecture Inc., dated July 15, 2022 and the Grading Plan, prepared by Odan Detech Consulting Inc., dated July 15, 2022.

The Site Plan, Roof Plan and Elevations are included as Appendix A. The Grading Plan is included as Appendix B.

1.2 THE PROPOSED DEVELOPMENT

The proposed development includes an L-shaped distribution centre with freezer and perishable storage towards the north end of the building and ambient storage towards the south. Shipping/receiving docks are located around the east, south and west sides of the building, with additional trailer parking at the east and west sides of the building. Truck access to the facility will be from a future roadway east of the site, extending south to Mayfield Road.

Office space will be provided at north side of the ambient storage, facing northwest towards Torbram Road. There will be two areas to the office space. The main office will be 1-storey and front northwest onto an elevated private vehicle parking lot. A bridge will connect the main office to a secondary 2-storey office building connected to the warehouse. The bridge will pass above a truck laneway encircling the facility. Private vehicle access for the office area will be from a separate entrance along Torbram Road, at the west side of the site.

A maintenance building will be located at the southeast corner of the site, with overhead doors facing west.

2.0 ENVIRONMENTAL NOISE GUIDELINES

2.1 MECP PUBLICATION NPC-300

The applicable stationary noise source guidelines, as outlined in NPC-300, are summarized below and in Appendix C.

The site and area are Class 1; i.e., an area where the ambient sound environment is dominated by “urban hum”, primarily traffic noise during the daytime, evening and nighttime.

The MECP requires a “worst case” one-hour operating scenario be analyzed. This would typically occur when the background ambient sound level is at a minimum and the noise generated from the stationary noise sources is at a maximum.

The guideline limits apply to the outdoor plane of window of habitable spaces such as living/dining/family rooms and sleep areas as well as at locations amenable for use outdoors. No indoor sound level guidelines are provided for stationary sources.

2.1.1 Non-Impulse Sound Limit

MECP Publication NPC-300 states that the guideline limits shall be the higher of the ambient sound level, due to road traffic noise, or the minimum exclusion limits. For a Class 1 area, the minimum exclusion limits (in terms of the one-hour continuous equivalent sound level, $L_{eq\ 1hr}$) at a noise sensitive plane of window are 50 dBA in the daytime (0700 to 1900 hours) and evening (1900 to 2300 hours) and 45 dBA in the nighttime (2300 to 0700 hours). The minimum exclusion limits at an outdoor point of reception is 50 dBA in the daytime and evening. The sound level limits do not apply at an outdoor point of reception at night.

2.1.2 Impulsive Sound Limit

Impulsive sounds are a category of sounds which last for a brief time (typically fractions of one second). Examples are the sounds of banging of metal, such as when a forklift drives over a dock leveler plate while loading/unloading goods or when a truck couples/uncouples from a trailer.

Impulse sounds are measured and treated separately because of their special time characteristics. The L_{LM} descriptor is the energy (logarithmic) average of the range of impulse sound levels impinging on a receptor.

The same numerical sound level criteria as indicated above for outdoors and the plane of a window apply, expressed using the L_{LM} descriptor. The sound level limits noted above are for nine or more impulses in a given hour which is considered as frequent events.

2.2 NOISE SENSITIVE RECEPTORS

The noise sensitive receptors in the vicinity are the existing residential uses east, west and south of the subject site.

Ten (10) receptors, representing either plane of window (POW) or outdoor point of reception (OPOR) were used and are defined as:

- POW01 and OPOR01– Representing the POW and OPOR receptors at the one-storey residential dwelling along the east side of Torbram Road, northwest of the site;
- POW02 and OPOR02 – Representing the POW and OPOR receptors at the two-storey residential dwelling along the east side of Torbram Road, west of the site.
- POW03 and OPOR03 – Representing the POW and OPOR receptors at the two-storey residential dwelling along the west side of Torbram Road, west of the site.
- POW04 and OPOR04 - Representing the POW and OPOR receptors at the two-storey residential dwellings along the east side of Torbram Road, southwest of the site.
- POW05 – Representing the future POW receptor at the vacant lot south of Mayfield Road.
- POW06 – Representing the POW receptor at the two-storey residential dwellings along the west side of Airport Road, east of the site.

The POW receptors representing first and second -storey windows were assessed at heights of 2.5 m and 4.5 m above grade, respectively. The OPORs were assessed at a standing height of 1.5 m above grade.

Figures 2A to 2D, 3A to 3D and 4A to 4D show the location of the assessment receptors.

2.3 APPLICABLE GUIDELINE LIMITS

The minimum exclusion limits were applied at all receptors.

It is noted that road traffic on the intervening Mayfield Road will affect the background sound levels at the future dwellings to the south, on the south side of Mayfield Road. The ambient sound levels at these dwellings will most likely exceed the minimum exclusions limits, notably in the

daytime and evening. Regardless, the minimum exclusion limits were used at the receptor representing these dwellings (POW05), to be conservative.

3.0 NOISE SOURCES AND OPERATING SCENARIOS

Noise sources at the facility with the potential to impact the nearby noise sensitive receptors are truck activities, rooftop mechanical units and noise emitted from the overhead doors at the maintenance building.

The distribution center will operate 24 hours a day, 7 days a week. Trucks will enter the facility along the east side of the site, proceed through a security checkpoint and continue to their respective docks. Perishable and freezer goods will be shipped/received from the north half of the facility, and non-refrigerated goods will be shipped/received from the south half of the building. Shunt trucks will move the trailers (both refrigerated and non-refrigerated) to and from the parking areas around the yard, as required. Refrigerated trailers will be parked at the lots east and west of the perishable/freezer area, while ambient trailers will be parked at the remaining lots. In departing the facility, the trucks will proceed back through the security checkpoint and exit at the southeast corner of the property.

The noise sources are shown on Figures 2A to 2D, 3A to 3D and 4A to 4D. Appendix D includes the operating scenarios. Appendix E includes noise source sound level data and sample calculations.

3.1 NON IMPULSE NOISE SOURCES

Truck Activity

- The facility will receive up to 15 trucks and dispatch up to 30 trucks in the busiest daytime/evening hour (0700 to 2300 hours). During the busiest nighttime hour (2300 to 0700 hours), the facility will receive/dispatch up to 10 trucks. The trucks would idle at the entrance/exit for approximately 20 minutes as they pass through security checkpoints.
- The trucks are not expected to idle at the docks. However, to be conservative, all trucks were modelled as idling for 2 minutes each to account for any maneuvering on arrival and departure.
- The trailer refrigeration units are expected to idle continuously while parked at the refrigerated/perishable storage docks as well as in the parking lots east and west of the building. The analysis was based on sample sound level data provided for Carrier refrigeration units model Vector 8500. These units have two modes of operation; a typical diesel engine mode, as well as in a “plug-in” standby mode (which has lower noise emissions). Product sound level data for the refrigeration units in both modes of operation was provided by the future tenant.
- All docks along the south, east and west sides of the building may be full during the busiest daytime/evening hour, while reduced operations are expected at night at the refrigeration/perishable storage docks. Reduced operations are also expected to occur at the ambient docks at night, however, these were modelled as full during the nighttime hour, which is conservative. **[NTD: will there be reduced options at the ambient docks at night?]** 75%

of the refrigerated trailers will operate in the “plug-in” standby mode, while the remaining trailers will idle in the typical diesel engine mode.

- Eight (8) shunt trucks will operate at the facility during the daytime/evening hours, while six (6) shunt trucks will operate at night, moving trailers to and from the parking areas around the yard/building.
- All trucks were assumed to travel at a speed of 20 kph while on site.
- Sound level data for a shunt truck movements and heavy truck movements/idling was based on VCL measurements at similar facilities.

Rooftop Mechanical Equipment

- There will be 23 packaged rooftop units on the roof of the ambient storage (Source ID: RTU_01 to 23). The units will be 25 ton York units (model AV25N3DQ5E1AAS12A1). Product sound level data was provided by the future tenant.
- There will be 3 condensers at the north end of the facility (Source ID: Cond_01, Cond_02 and Cond_03). The condensers will be Evapco units (model ECO-ATC-1001A). Product sound level data was provided by the future tenant.
- The roof of the perishable/freezer storage will have 52 mini penthouse units, used for refrigeration evaporation. These units will be completely enclosed, with no louvers or openings to the exterior environment. Thus, significant noise emissions are not expected, and these units have not been considered further in the analysis.

Maintenance Building

- Noise from activities occurring within the maintenance buildings could be emitted through the overhead doors, which would typically be left open during the warmer months. It is assumed that the maintenance buildings are operational during the daytime only.
- Sound level data for maintenance activities includes the use of air compressor and air tools were based on VCL measurements at similar facilities.

3.1.1 Operating Scenarios – Non-Impulse Sources

Two Non-Impulse noise source scenarios were considered in the assessment, representing the worst-case daytime/evening hour (0700 to 2300) and nighttime hour (2300 to 0700) at the facility. The operating scenarios were provided by the future tenant and are shown graphically in Appendix D and described in Table 1.

TABLE 1 NON-IMPULSE OPERATING SCENARIOS

Location	Activity	Day/Eve	Night
A (Refrigeration/Perishable Storage – Yard)	# of refer trailers running for full hour	13	4
B (Ambient Storage – South Docks)	# of trucks idling for 2 minutes/hour	59	
C (Refrigeration/Perishable Storage – West Dock)	# of trucks idling for 2 mins/hr	68	30
	# of refer trailers running for full hour	51 in standby mode 17 in diesel mode	23 in standby mode 7 in diesel mode
D (Refrigeration/Perishable Storage – East Dock)	# of trucks idling for 2 mins/hr	87	40
	# of refer trailers running for full hour	65 in standby mode 22 in diesel mode	30 in standby mode 10 in diesel mode
E (Refrigeration/Perishable Storage – Yard)	# of refer trailers running for full hour	131 in standby mode 44 in diesel mode	30 in standby mode 10 in diesel mode
Perimeter Drive Isle	# of shunt trucks operating continuously for full hour	8	6
	# of trucks driving around the site	30	10
Entrance	# of trucks entering the facility, idling for 20 mins/hr at entrance	15	10
Exit	# of trucks departing the facility, idling for 20 mins/hr at exit	30	10
Rooftop	Duration that the RTUs and Condensers operate	100% duty cycle (60 minutes of the hour)	50% duty cycle (30 minutes of the hour)
Maintenance Building	Duration that noise is emitted to the exterior via open overhead doors	20 minutes	Not operating

3.2 IMPULSIVE NOISE SOURCES

Impulsive noise will occur at each dock during the loading/unloading of trailers, as well as when a truck/shunt truck couples/uncouples to a trailer at the loading docks or at the parking areas around the site.

Each trailer is assumed to hold 20 pallets, resulting in 40 impulse events while the goods are loaded/unloaded.

Sound data for the noise sources was based on VCL measurements completed at similar facilities.

3.2.1 Operating Scenarios – Impulsive Sources

Three (3) worst case impulse scenarios were used to model the impact at the receptors around the southeast, west and northeast areas of the site. For each scenario, a single trailer is dropped off at the docks, loaded, and moved by shunt truck to the yard. This scenario results in:

- 3 coupling/uncoupling events (2 at the docks and 1 in the yard); and

- 40 loading/unloading events at the docks.

4.0 ANALYSIS METHOD

A 3-D acoustic model of the proposed development was developed using CadnaA V2021 MR2 environmental noise modelling software, which follows the protocol of ISO Standard 9613-2, “Acoustics – Attenuation of Sound During Propagation Outdoors”, to predict sound levels at each of the receptor locations. The sound level from all the relevant noise sources was determined for each receptor position, for each of the operating scenarios. Two orders of sound reflection from the buildings were used. Hard ground (G=0) was used for the paved areas and soft ground (G=1) was used elsewhere.

5.0 SOUND LEVEL RESULTS - UNMITIGATED

Table 2 and Figures 2A to 2D show the predicted unmitigated sound levels at the noise sensitive receptors due to the non-impulse and impulsive noise sources at the site.

TABLE 2 PREDICTED UNMITIGATED SOUND LEVELS

Scenario	Receptor	Predicted Sound Level			Noise Guideline Limit			Compliance with Limits?
		Day	Eve	Night	Day	Eve	Night	
Non-Impulse Sources (dBA)	POW01	54	54	50	50	50	45	No
	POW02	56	56	52	50	50	45	No
	POW03	48	48	45	50	50	45	Yes
	POW04	52	52	50	50	50	45	No
	POW05	46	46	42	50	50	45	Yes
	POW06	50	50	45	50	50	45	Yes
	OPOR01	52	52	-	50	50	-	No
	OPOR02	51	51	-	50	50	-	No
	OPOR03	45	45	-	50	50	-	Yes
	OPOR04	47	47	-	50	50	-	Yes
West Impulse Events (dBA)	POW01	50	50	50	50	50	45	No
	POW02	55	55	55	50	50	45	No
	POW03	41	41	41	50	50	45	Yes
	POW04	36	36	36	50	50	45	Yes
	POW05	19	19	19	50	50	45	Yes
	POW06	13	13	13	50	50	45	Yes
	OPOR01	48	48	-	50	50	-	Yes
	OPOR02	50	50	-	50	50	-	Yes
	OPOR03	41	41	-	50	50	-	Yes
	OPOR04	31	31	-	50	50	-	Yes

.../cont'd

TABLE 2 PREDICTED UNMITIGATED SOUND LEVELS (continued)

Scenario	Receptor	Predicted Sound Level			Noise Guideline Limit			Compliance with Limits?
		Day	Eve	Night	Day	Eve	Night	
South Impulse Events (dBAI)	POW01	22	22	22	50	50	45	Yes
	POW02	30	30	30	50	50	45	Yes
	POW03	36	36	36	50	50	45	Yes
	POW04	52	52	52	50	50	45	No
	POW05	41	41	41	50	50	45	Yes
	POW06	34	34	34	50	50	45	Yes
	OPOR01	21	21	-	50	50	-	Yes
	OPOR02	25	25	-	50	50	-	Yes
	OPOR03	30	30	-	50	50	-	Yes
	OPOR04	47	47	-	50	50	-	Yes
East Impulse Events (dBAI)	POW01	28	28	28	50	50	45	Yes
	POW02	23	23	23	50	50	45	Yes
	POW03	20	20	20	50	50	45	Yes
	POW04	19	19	19	50	50	45	Yes
	POW05	39	39	39	50	50	45	Yes
	POW06	43	43	43	50	50	45	Yes
	OPOR01	28	28	-	50	50	-	Yes
	OPOR02	24	24	-	50	50	-	Yes
	OPOR03	21	21	-	50	50	-	Yes
	OPOR04	19	19	-	50	50	-	Yes

The predicted sound levels exceed the noise guideline limits for the non-impulse and west/south impulse noise source scenarios.

- Excess noise levels are predicted at the nearest residential dwellings along Torbram Road (POW01, 02 and 04 and OPOR01 and 02).
- The largest excess of 10 dB occurs at night during the west impulse scenario.

Based on the predicted excess sound levels, noise control measures are required for the development.

6.0 NOISE CONTROL MEASURES

Physical and administrative noise control measures can be used to meet the MECP noise guideline limits.

The physical mitigation measures can include:

- 6.0 m high sound barrier at the northwest extent of the site. There are two options for this sound barrier configuration:

- Option 1: The barrier can begin along the west property line of the site, wrapping around the existing dwellings along the east side of Torbram Road. The barrier can extend east along the north property line of the site for a total length of 485 m in length. See Figures 3A to 3D; or
- Option 2: Similar to above, the barrier can begin along the west property line of the site, wrapping around the existing dwellings along the east side of Torbram Road. The alternative barrier configuration can extend north into the adjacent lands (that are owned by the same landowner), along the rear yards of the adjacent dwellings, for a total for 425 m in length. See Figures 4A to 4D.
- The height of the barrier is the same for both options (6.0 m in height).
- 2.0 m high, 82 m long sound barrier along the west property line, between the two access points for the private vehicle parking area; and
- 8.0 m high, 200 m long sound barrier along at the southwest corner of the site, extending east along the south property line.

The sound barrier orientations are shown in Figures 3A to 3D and 4A to 4D.

The facility should also implement the following administration noise control:

- A no idling policy must be used, such that the trucks do not idle once parked at the loading bays.
- Signage outlining the above should be posted at the loading bay areas and be easily observable to truck operators accessing the site.

6.1 PREDICTED MITIGATED SOUND LEVELS

Table 3 and Figures 3A to 3D show the predicted mitigated sound levels at the surrounding receptors with the above noise control measures, including the Option 1 sound barrier configuration.

TABLE 3 PREDICTED MITIGATED SOUND LEVELS – BARRIER OPTION 1

Scenario	Receptor	Predicted Sound Level			Noise Guideline Limit			Compliance with Limits?
		Day	Eve	Night	Day	Eve	Night	
Non-Impulse Sources (dBA)	POW01	47	47	43	50	50	45	Yes
	POW02	46	46	43	50	50	45	Yes
	POW03	48	48	45	50	50	45	Yes
	POW04	47	47	44	50	50	45	Yes
	POW05	46	46	42	50	50	45	Yes
	POW06	50	50	45	50	50	45	Yes
	OPOR01	47	47	-	50	50	-	Yes
	OPOR02	43	43	-	50	50	-	Yes
	OPOR03	45	45	-	50	50	-	Yes
	OPOR04	42	42	-	50	50	-	Yes

.../cont'd

TABLE 3 PREDICTED MITIGATED SOUND LEVELS – BARRIER OPTION 1 (continued)

Scenario	Receptor	Predicted Sound Level			Noise Guideline Limit			Compliance with Limits?
		Day	Eve	Night	Day	Eve	Night	
West Impulse Events (dBAI)	POW01	43	43	43	50	50	45	Yes
	POW02	44	44	44	50	50	45	Yes
	POW03	41	41	41	50	50	45	Yes
	POW04	34	34	34	50	50	45	Yes
	POW05	19	19	19	50	50	45	Yes
	POW06	13	13	13	50	50	45	Yes
	OPOR01	43	43	-	50	50	-	Yes
	OPOR02	41	41	-	50	50	-	Yes
	OPOR03	40	40	-	50	50	-	Yes
	OPOR04	28	28	-	50	50	-	Yes
South Impulse Events (dBAI)	POW01	22	22	22	50	50	45	Yes
	POW02	25	25	25	50	50	45	Yes
	POW03	40	40	40	50	50	45	Yes
	POW04	44	44	44	50	50	45	Yes
	POW05	40	40	40	50	50	45	Yes
	POW06	34	34	34	50	50	45	Yes
	OPOR01	22	22	-	50	50	-	Yes
	OPOR02	22	22	-	50	50	-	Yes
	OPOR03	34	34	-	50	50	-	Yes
	OPOR04	42	42	-	50	50	-	Yes
East Impulse Events (dBAI)	POW01	26	26	26	50	50	45	Yes
	POW02	23	23	23	50	50	45	Yes
	POW03	20	20	20	50	50	45	Yes
	POW04	19	19	19	50	50	45	Yes
	POW05	39	39	39	50	50	45	Yes
	POW06	43	43	43	50	50	45	Yes
	OPOR01	26	26	-	50	50	-	Yes
	OPOR02	24	24	-	50	50	-	Yes
	OPOR03	21	21	-	50	50	-	Yes
	OPOR04	19	19	-	50	50	-	Yes

As shown, the predicted sound levels comply with the applicable limits at all receptors with the Option 1 sound barrier configuration.

Table 4 and Figures 4A to 4D show the predicted mitigated sound levels at the noise sensitive receptors with the Option 2 barrier configuration.

TABLE 4 PREDICTED MITIGATED SOUND LEVELS – BARRIER OPTION 2

Scenario	Receptor	Predicted Sound Level			Noise Guideline Limit			Compliance with Limits?
		Day	Eve	Night	Day	Eve	Night	
Non-Impulse Sources (dBA)	POW01	46	46	42	50	50	45	Yes
	POW02	46	46	42	50	50	45	Yes
	POW03	48	48	45	50	50	45	Yes
	POW04	47	47	44	50	50	45	Yes
	POW05	46	46	42	50	50	45	Yes
	POW06	50	50	45	50	50	45	Yes
	OPOR01	44	44	-	50	50	-	Yes
	OPOR02	43	43	-	50	50	-	Yes
	OPOR03	45	45	-	50	50	-	Yes
	OPOR04	42	42	-	50	50	-	Yes
West Impulse Events (dBAI)	POW01	43	43	43	50	50	45	Yes
	POW02	44	44	44	50	50	45	Yes
	POW03	41	41	41	50	50	45	Yes
	POW04	34	34	34	50	50	45	Yes
	POW05	19	19	19	50	50	45	Yes
	POW06	13	13	13	50	50	45	Yes
	OPOR01	42	42	-	50	50	-	Yes
	OPOR02	41	41	-	50	50	-	Yes
	OPOR03	40	40	-	50	50	-	Yes
	OPOR04	28	28	-	50	50	-	Yes
South Impulse Events (dBAI)	POW01	22	22	22	50	50	45	Yes
	POW02	25	25	25	50	50	45	Yes
	POW03	40	40	40	50	50	45	Yes
	POW04	44	44	44	50	50	45	Yes
	POW05	40	40	40	50	50	45	Yes
	POW06	34	34	34	50	50	45	Yes
	OPOR01	21	21	-	50	50	-	Yes
	OPOR02	22	22	-	50	50	-	Yes
	OPOR03	34	34	-	50	50	-	Yes
	OPOR04	42	42	-	50	50	-	Yes
East Impulse Events (dBAI)	POW01	24	24	24	50	50	45	Yes
	POW02	23	23	23	50	50	45	Yes
	POW03	20	20	20	50	50	45	Yes
	POW04	19	19	19	50	50	45	Yes
	POW05	39	39	39	50	50	45	Yes
	POW06	43	43	43	50	50	45	Yes
	OPOR01	23	23	-	50	50	-	Yes
	OPOR02	23	23	-	50	50	-	Yes
	OPOR03	21	21	-	50	50	-	Yes
	OPOR04	19	19	-	50	50	-	Yes

As shown, the predicted sound levels comply with the applicable limits at all receptors with the Option 2 sound barrier configuration.

7.0 CONCLUSION

With appropriate mitigation measures in place, a suitable acoustical environment can be achieved at the noise sensitive receptors surrounding the proposed distribution centre, and the applicable MECP noise guideline limits can be met.

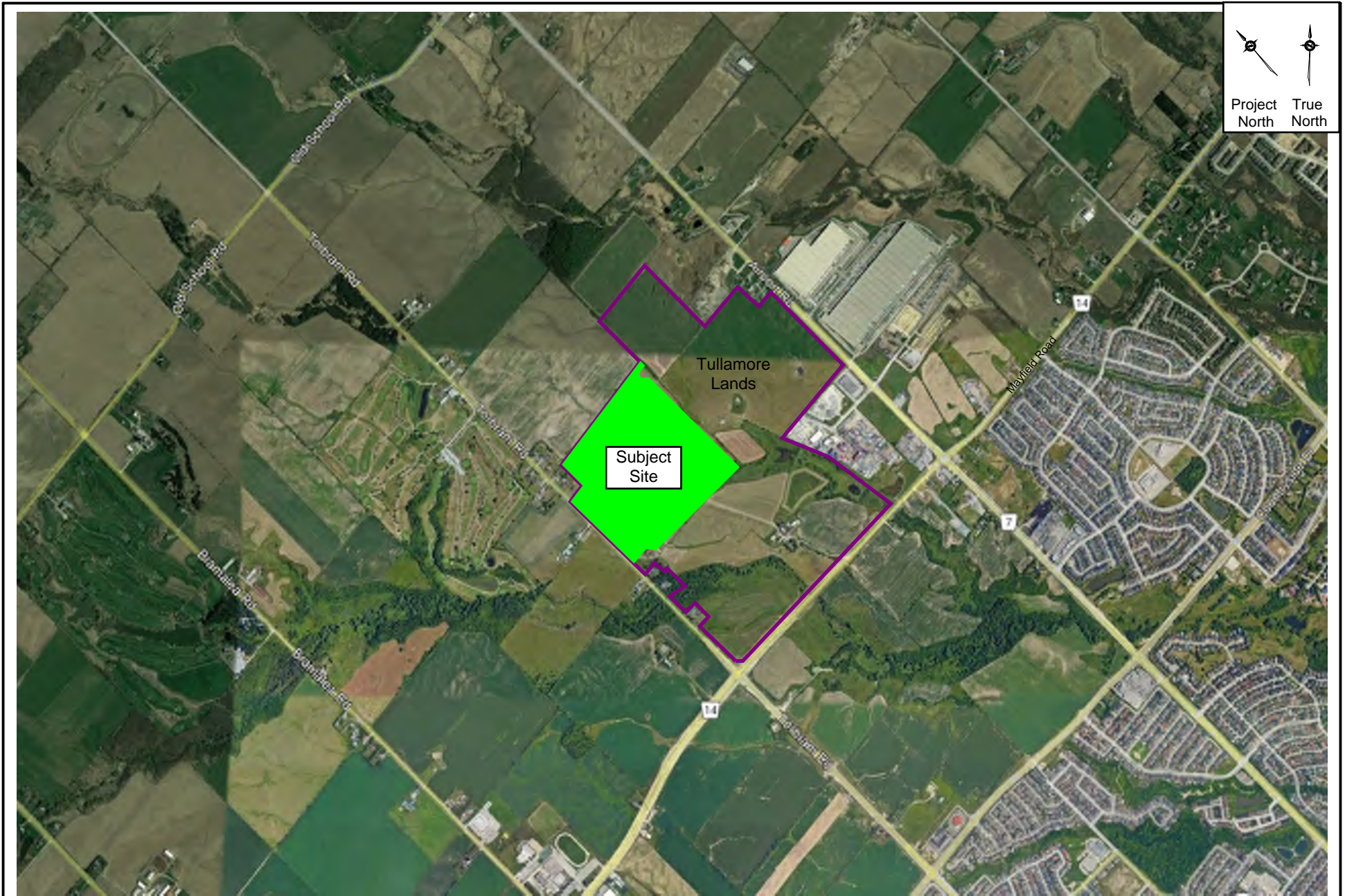
Physical (sound barriers) and administrative (no idling policy) noise control measures will be implemented for the development.

The assessment is based on operating information provided by the future tenant, as well as grading plans, rooftop mechanical plans and equipment selections. The assessment should be reviewed if the information is revised.

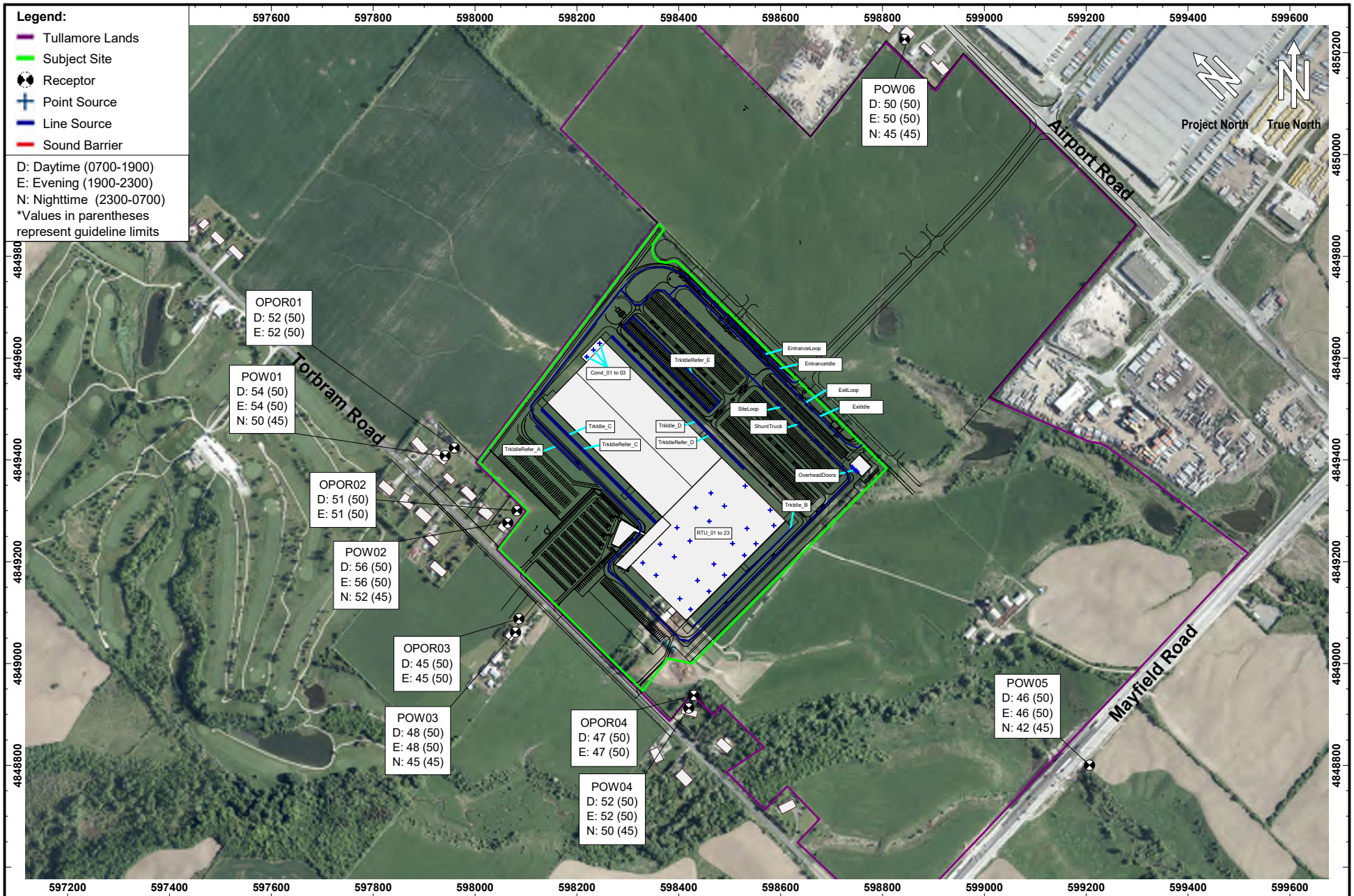
8.0 REFERENCES


1. "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning", Ontario Ministry of the Environment, Publication NPC-300, October 2013.
2. "Procedures", Ontario Ministry of the Environment, Publication NPC-103, August 1978.
3. Building Practice Note No. 56: "Controlling Sound Transmission into Buildings", by J. D. Quirt, Division of Building Research, National Council of Canada, September 1985.
4. "Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation", ISO 9613-2, December 15, 1996.
5. "Environmental Noise Impact Study, Tullamore Lands, Proposed Industrial Development, 0 & 12245 Torbram Road, Town of Caledon", Valcoustics Canada Ltd., July 15, 2021.

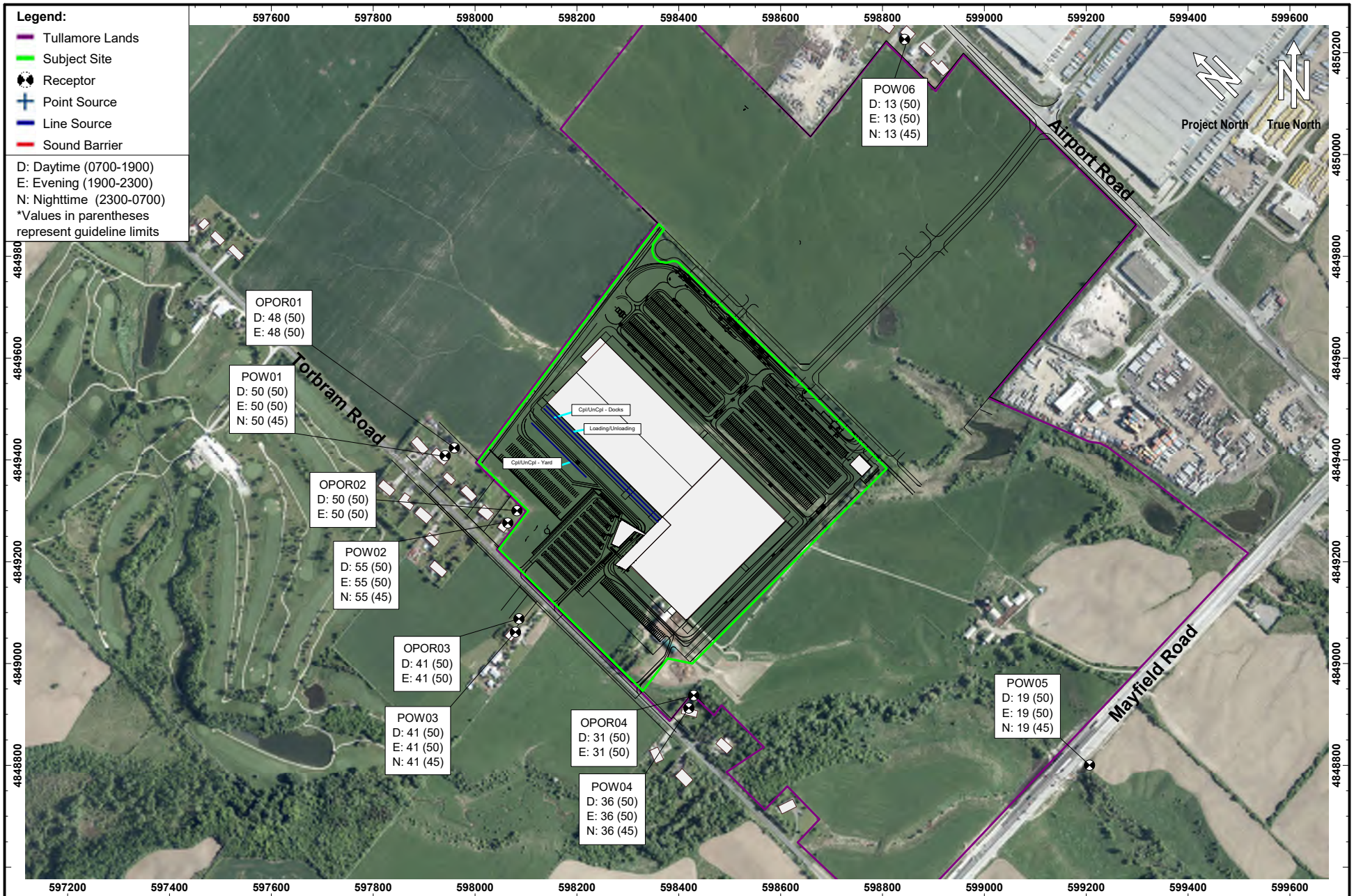
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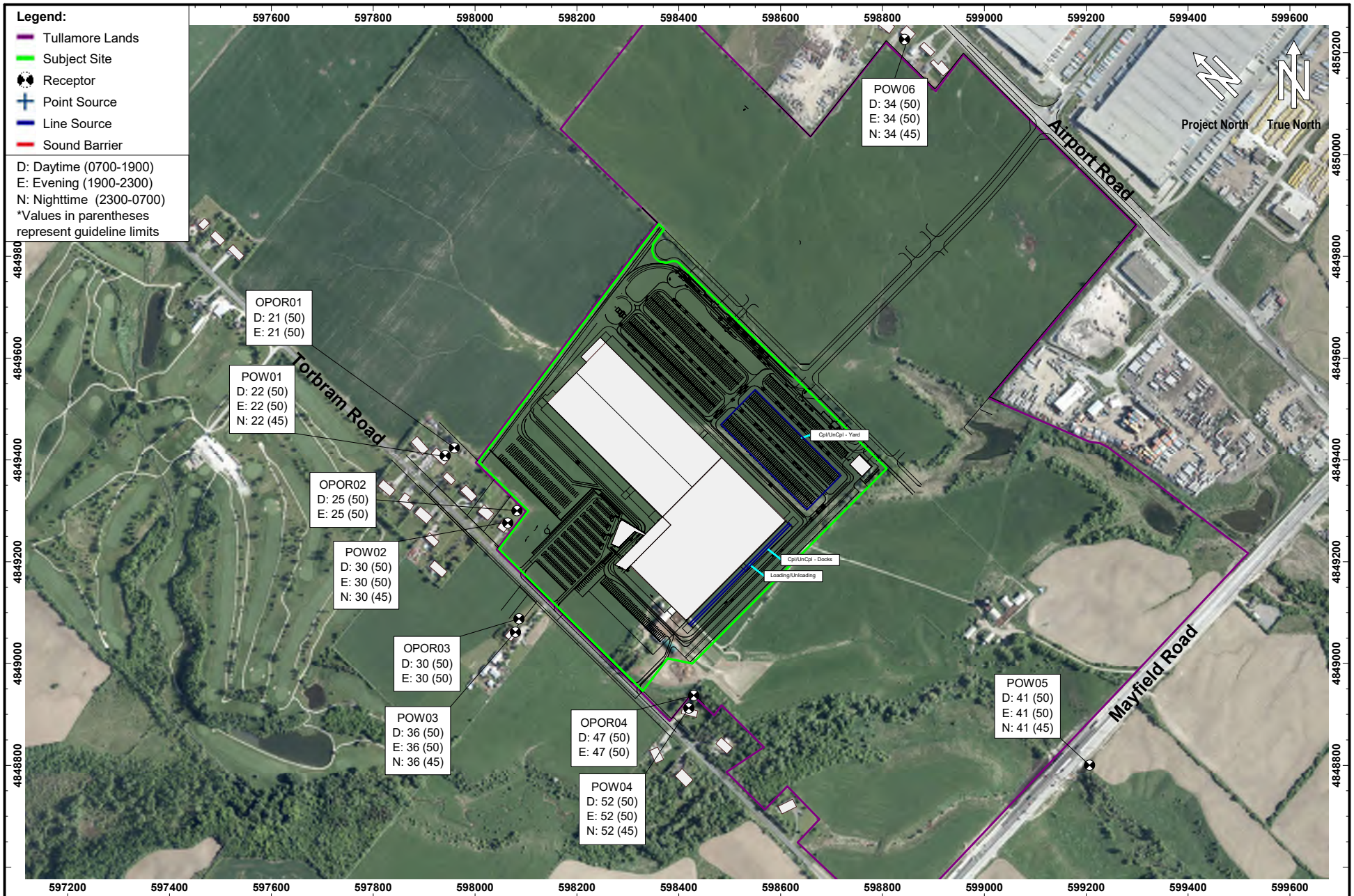
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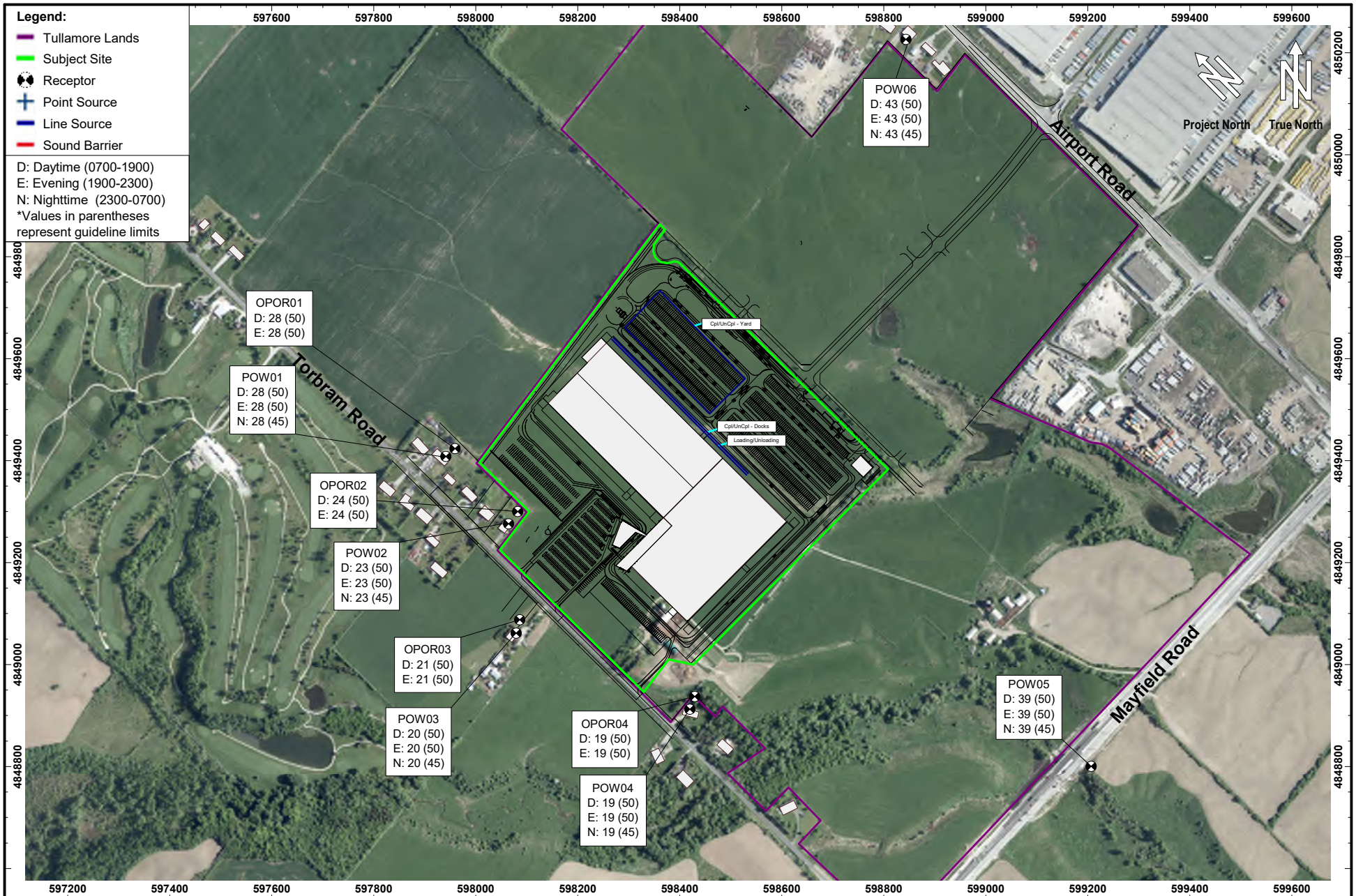
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	Project Name		Project No.	
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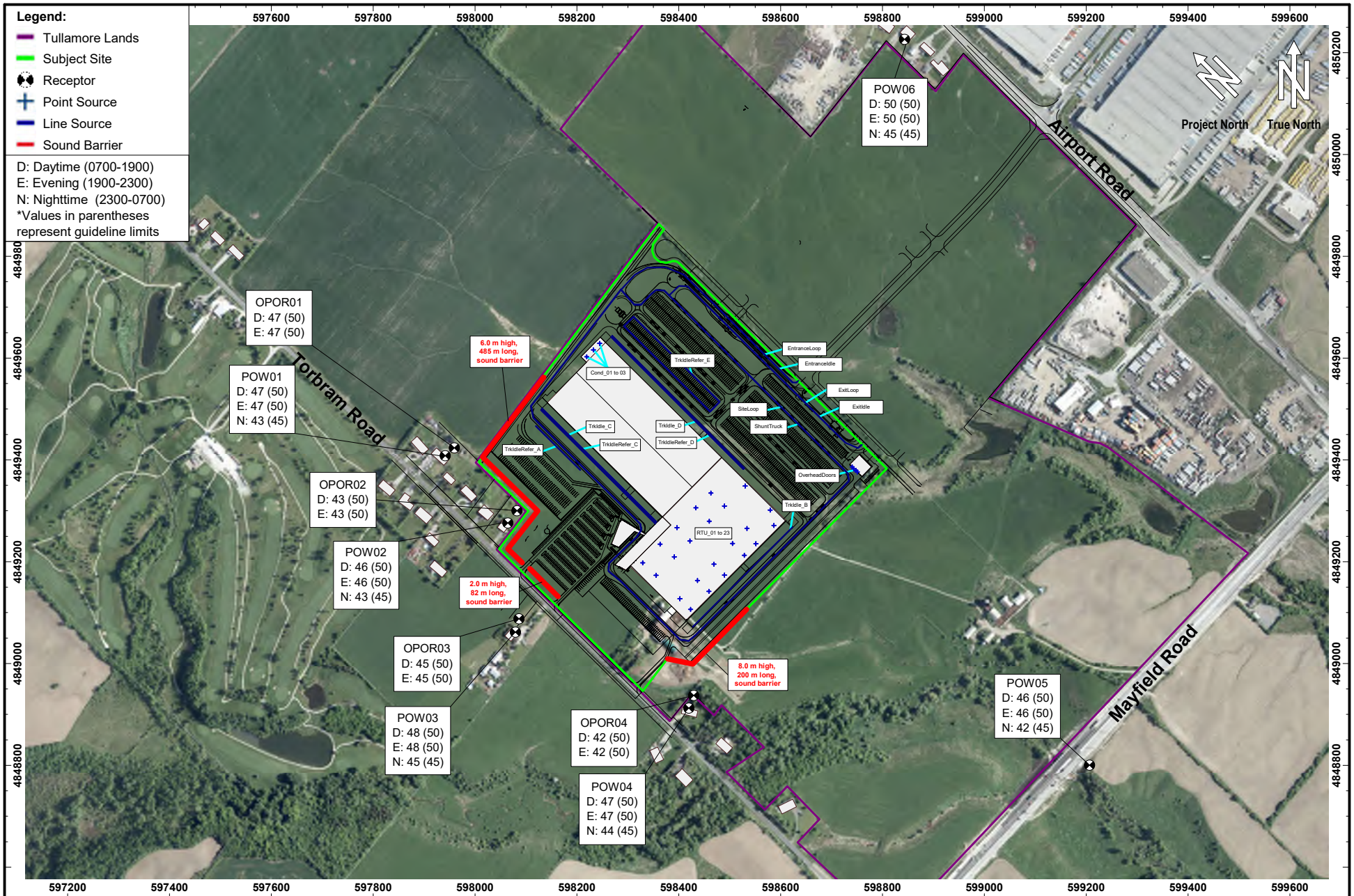
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	Project Name		Project No.	
	DC Kentucky, Caledon		121-0208.100	2B




	Title		Date	Figure
	Predicted Sound Levels - South Impulses - Unmitigated (dBA)		2022-09-22	
	Project Name		Project No.	
	DC Kentucky, Caledon		121-0208.100	2C




	Title		Date	Figure
	Predicted Sound Levels - East Impulses - Unmitigated (dBAI)		2022-09-22	
	Project Name		Project No.	
	DC Kentucky, Caledon		121-0208.100	2D



	Title		Date	Figure
	Predicted Sound Levels - Non-Impulse Sources - Mitigated - Option 1 (dBA)		2022-09-22	
	Project Name		Project No.	
	DC Kentucky, Caledon		121-0208.100	3A




	Title		Date	Figure
	Predicted Sound Levels - West Impulses - Mitigated - Option 1 (dBA)		2022-09-22	
	Project Name		Project No.	
	DC Kentucky, Caledon		121-0208.100	3B



	Title		Date	Figure
	Predicted Sound Levels - South Impulses - Mitigated - Option 1 (dBAI)		2022-09-22	
	Project Name		Project No.	
	DC Kentucky, Caledon		121-0208.100	3C



	Title	Date	Figure
	Predicted Sound Levels - East Impulses - Mitigated - Option 1 (dBA)	2022-09-22	3D
	Project Name DC Kentucky, Caledon	Project No. 121-0208.100	




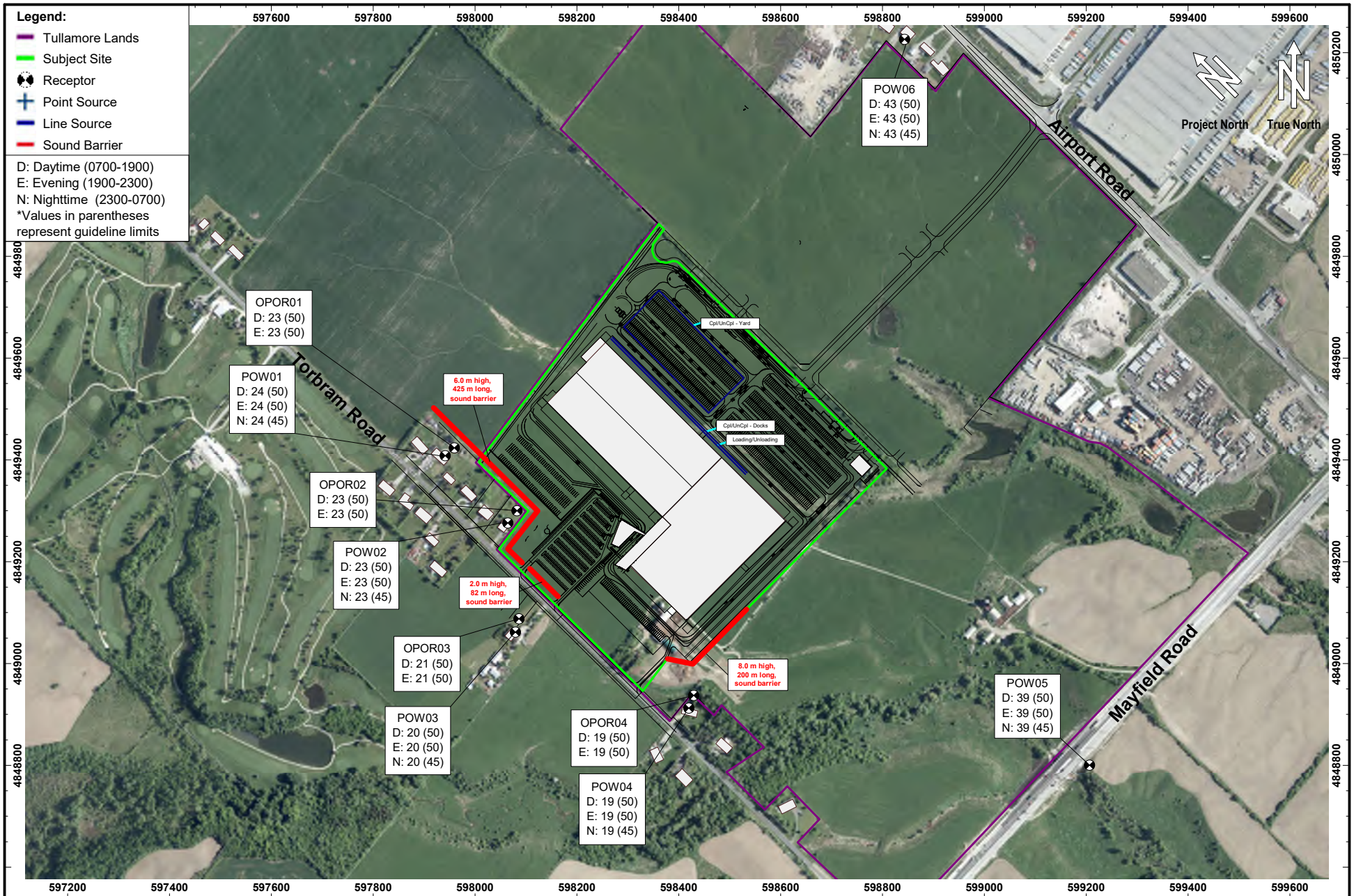
	Title		Date	Figure 4A
	Predicted Sound Levels - Non-Impulse Sources - Mitigated - Option 2 (dBA)		2022-09-22	
	Project Name		Project No.	
	DC Kentucky, Caledon		121-0208.100	




	Title		Date	Figure
	Predicted Sound Levels - West Impulses - Mitigated - Option 2 (dBA)		2022-09-22	
	Project Name		Project No.	
	DC Kentucky, Caledon		121-0208.100	4B



	Title	Date	Figure
	Predicted Sound Levels - South Impulses - Mitigated - Option 2 (dBAI)	2022-09-22	4C
	Project Name DC Kentucky, Caledon	Project No. 121-0208.100	



	Title		Date	Figure
	Predicted Sound Levels - East Impulses - Mitigated - Option 2 (dBAI)		2022-09-22	
	Project Name		Project No.	
	DC Kentucky, Caledon		121-0208.100	4D

APPENDIX A

SITE PLAN, ROOF PLAN AND ELEVATIONS





APPENDIX B

GRADING PLAN

APPENDIX C

ENVIRONMENTAL NOISE GUIDELINES

APPENDIX C

ENVIRONMENTAL NOISE GUIDELINES

MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MECP)

Reference: MECP Publication NPC-300, October 2013: “*Environmental Noise Guideline, Stationary and Transportation Source – Approval and Planning*”.

SPACE	SOURCE	TIME PERIOD	CRITERION
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	Road	07:00 to 23:00	45 dBA
	Rail	07:00 to 23:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 5
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	Road	23:00 to 07:00	45 dBA
	Rail	23:00 to 07:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 5
Sleeping quarters	Road	07:00 to 23:00	45 dBA
	Rail	07:00 to 23:00	40 dBA
	Aircraft	24-hour period	NEF/NEP 0
Sleeping quarters	Road	23:00 to 07:00	40 dBA
	Rail	23:00 to 07:00	35 dBA
	Aircraft	24-hour period	NEF/NEP 0
Outdoor Living Areas	Road and Rail	07:00 to 23:00	55 dBA
Outdoor Point of Reception	Aircraft	24-hour period	NEF/NEP 30 [#]
	Stationary Source		
	Class 1 Area	07:00 to 19:00 ⁽¹⁾	50 ⁺ dBA
		19:00 to 23:00 ⁽¹⁾	50 ⁺ dBA
	Class 2 Area	07:00 to 19:00 ⁽²⁾	50 ⁺ dBA
		19:00 to 23:00 ⁽²⁾	45 ⁺ dBA
	Class 3 Area	07:00 to 19:00 ⁽³⁾	45 ⁺ dBA
		19:00 to 23:00 ⁽³⁾	40 ⁺ dBA
	Class 4 Area	07:00 to 19:00 ⁽⁴⁾	55 ⁺ dBA
		19:00 to 23:00 ⁽⁴⁾	55 ⁺ dBA

..../cont'd

SPACE	SOURCE	TIME PERIOD	CRITERION
Plane of a Window of Noise Sensitive Spaces	Stationary Source Class 1 Area	07:00 to 19:00 ⁽¹⁾	50* dBA
		19:00 to 23:00 ⁽¹⁾	50* dBA
		23:00 to 07:00 ⁽¹⁾	45* dBA
	Class 2 Area	07:00 to 19:00 ⁽²⁾	50* dBA
		19:00 to 23:00 ⁽²⁾	50* dBA
		23:00 to 07:00 ⁽²⁾	45* dBA
	Class 3 Area	07:00 to 19:00 ⁽³⁾	45* dBA
		19:00 to 23:00 ⁽³⁾	45* dBA
		23:00 to 07:00 ⁽³⁾	40* dBA
	Class 4 Area	07:00 to 19:00 ⁽⁴⁾	60* dBA
		19:00 to 23:00 ⁽⁴⁾	60* dBA
		23:00 to 07:00 ⁽⁴⁾	55* dBA

- # may not apply to in-fill or re-development.
 * or the minimum hourly background sound exposure $L_{eq(1)}$, due to road traffic, if higher.
 (1) Class 1 Area: Urban.
 (2) Class 2 Area: Urban during day; rural-like evening and night.
 (3) Class 3 Area: Rural.
 (4) Class 4 Area: Subject to land use planning authority's approval.

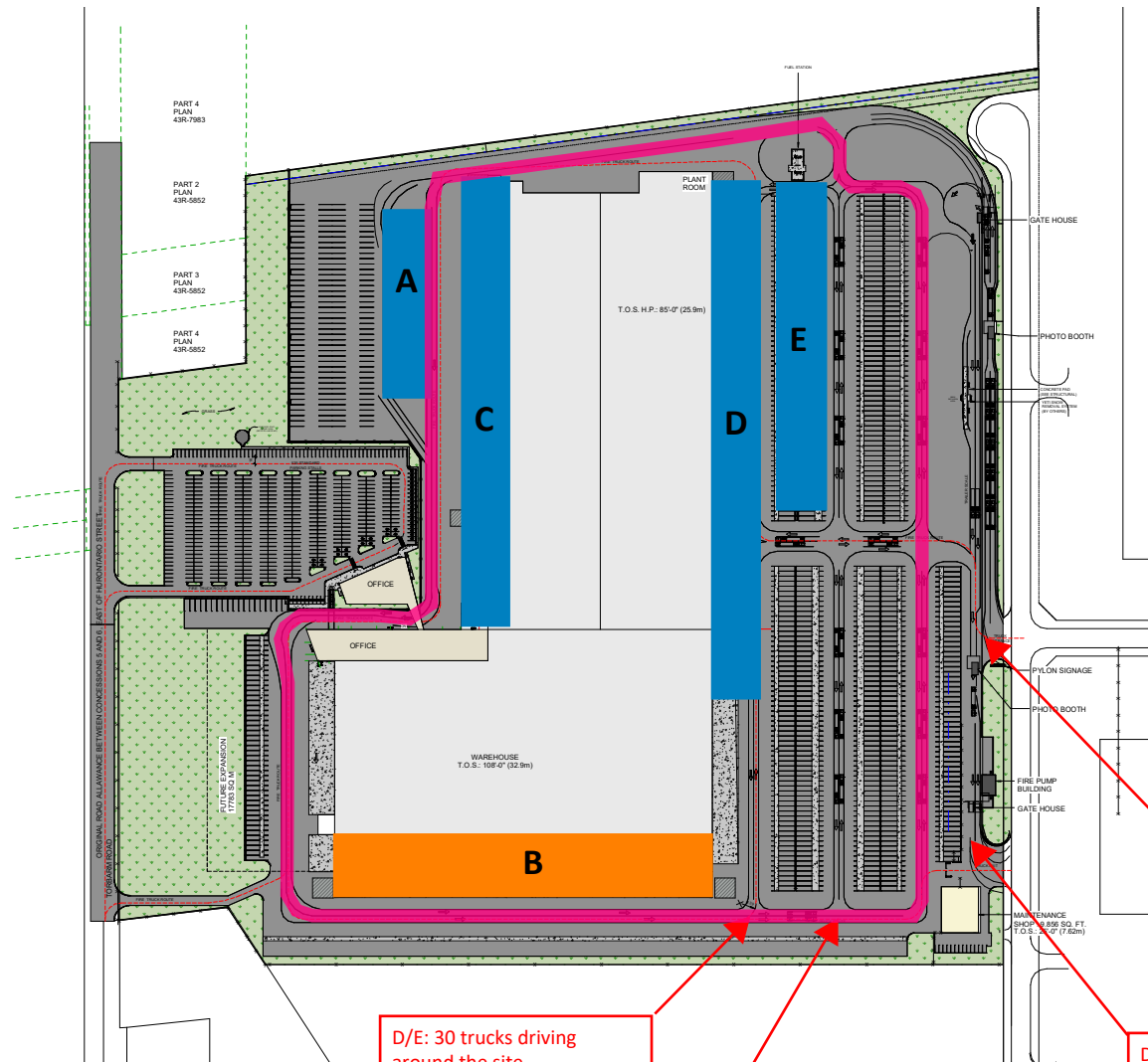
Reference: MECP Publication ISBN 0-7729-2804-5, 1987: "Environmental Noise Assessment in Land-Use Planning".

EXCESS ABOVE RECOMMENDED SOUND LEVEL LIMITS (dBA)	CHANGE IN SUBJECTIVE LOUDNESS ABOVE	MAGNITUDE OF THE NOISE PROBLEM	NOISE CONTROL MEASURES (OR ACTION TO BE TAKEN)
No excess (<55 dBA)	—	No expected noise problem	None
1 to 5 inclusive (56 to 60 dBA)	Noticeably louder	Slight noise impact	If no physical measures are taken, then prospective purchasers or tenants should be made aware by suitable warning clauses.
6 to 10 inclusive (61 - 65 dBA)	Almost twice as loud	Definite noise impact	Recommended.
11 to 15 inclusive (66 - 70 dBA)	Almost three times as loud	Serious noise impact	Strongly Recommended.
16 and over (>70 dBA)	Almost four times as loud	Very serious noise impact	Strongly Recommended (may be mandatory).

APPENDIX D

OPERATING SCENARIOS

Kentucky South Caledon - Hourly Operations (2036 Design Year)



A D/E: 13 refer trailers idling at yard in standby mode
N: 4 refer trailers idling at yard in standby mode

B D/E/N: 59 ambient tractor / trailers idling at dock for 2 minutes (out of 59 dock doors)

C D/E: 68 reefer trailers idling at dock (out of 85 dock doors)
- 17 in diesel mode
- 51 in standby mode
N: 30 reefer trailers idling at the dock
- 7 in diesel mode
- 23 in standby mode

D D/E: 87 reefer trailers idling at dock (out of 85 dock doors)
- 22 in diesel mode
- 65 in standby mode
N: 40 reefer trailers idling at the dock
- 10 in diesel mode
- 30 in standby mode

E D/E: 175 reefer trailers idling in the yard
- 44 diesel mode
- 131 standby mode
N: 40 reefer trailers idling in the yard
- 10 in diesel mode
- 30 in standby mode

D/E: 15 trailers enter the site, idle at entrance for 20 minutes
N: 10 trailers enter the site, idle at entrance for 20 minutes

D/E: 30 trucks driving around the site
N: 10 trucks driving around the site

D/E: 8 shunt trucks driving around the site
N: 6 shunt truck driving around the site

D/E: 30 trailers depart the site, idle at exit for 20 minutes
N: 10 trailers depart the site, idle at exit for 20 minutes

D: Daytime (0700-1900 hours)
E: Evening (1900-2300 hours)
N: Nighttime (2300-0700 hours)

APPENDIX E

STATIONARY NOISE SOURCE DATA & SAMPLE CALCULATION DETAILS