

October 26, 2023

Attention: Sital Singh
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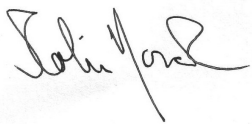
Re: Noise Assessment for the Proposed Residential Development – 1350 Pelletier Street, City of Windsor, Ontario.

Dear Mr. Singh,

Please find enclosed a noise assessment report submitted to you for the proposed residential development located at 1350 Pelletier Street, in the City of Windsor. This assessment pertains to the transportation noise impacts from the nearby roads and railways which are located near to the proposed site.

I trust that the enclosed information meets your requirements. Please do not hesitate to contact me if you have any questions.

Sincerely,



Colin Novak PhD, PEng

**Noise Assessment for the Proposed Residential
Development at 1350 Pelletier Street, City of Windsor**



Sital Singh
4633 Southwood Lakes Blvd.
Windsor, ON N9G 3C4

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Statement of Liability

Akoustik Engineering Limited prepared this report for Mr. Sital Singh. The material in it reflects Dr. Helen Ule's and Dr. Colin Novak's judgement considering the information available to them and Akoustik Engineering Limited at the time of the measurements and report preparation, under the stated test conditions. Any use that a Third Party makes of this report, or any reliance on decisions made based on it, is the responsibility of such Third Parties. Akoustik Engineering Limited accepts no responsibility for damages, if any, suffered by any Third Party resulting from decisions made or actions based on this report.

Introduction

This report is an acoustic assessment for the proposed residential development located at 1350 Pelletier Street, in the City of Windsor. The proposed development is a two-storey building having 4 residential units. The assessment pertains to the environmental noise impact from the nearby sources of transportation noise including both road and rail. An illustration of the geographical area with the proposed development location identified, as well as the proposed development plan is given in Appendix A: Site Location. A zoning map of the area is provided in Appendix B.

The expected acoustic impacts from the sources of transportation noise were predicted using the Ministry of the Environment, Conservation and Parks (MECP) prediction software STAMSON and are based on available traffic volumes, which have been projected 10 years forward. Given that the road and rail noise occur during all periods of a 24-hour day, as defined by the applicable Noise Pollution Control document NPC-300, the assessment has been carried out for the entire 24-hour period. All assumptions used for the calculations given in this report are detailed in Appendix C. Any recommended abatement measures, if required, to control the noise are included in this report.

Identification of Noise Sources

The proposed development is bordered by residential land around the property area in all directions. The Ministry of the Environment (MECP) typical specifications for the identification of existing or future major sources of noise impact (transportation and stationary) on a development is whether they are within 500 metres of the site; railway lines are considered if they are within 300 meters. No sources of stationary noise are identified to have a potential impact on this development, and as such, none are considered.

The roadway sources of noise which could possibly produce an impact on the proposed development are Tecumseh Road West, Campbell Avenue and Crawford Avenue. While Campbell Avenue and Crawford Avenue are within the 500-metre radius of the proposed development there are several intermediate rows of houses between the proposed development and these roadways which, along with distance, makes the noise contribution from these roadways insignificant. As such, these two roadways are not considered in the following evaluation.

There is a Canadian National Railway (CN) rail line, which runs parallel to the development, that goes to the international rail tunnel that goes under the Detroit River to the US. This rail line is approximately 120 meters from the proposed residential site and is evaluated for noise impacts in this study. No assessment for vibration is required given that it is further than 75 metres from the proposed development.

The CN Van de Water railway yard is approximately 1,600 metres from the proposed residential site and is not included in this assessment given that it is more than 1,000 metres from the proposed site. It is also worth mentioning that the proposed development is not located within the South Cameron Planning District as detailed in the City of Windsor Official Plan, Volume II, South Cameron Planning Area, Section 4.3.2.

The Canadian Pacific and Kansas City Southern (CPKC) Railway yard is located approximately 625 metres east of the proposed development. The potential noise impacts from the rail operations at this yard were

evaluated using on-site one-hour logged noise measurements and impulsive noise measurements to evaluate the potential impacts from shunting activities.

Given that the land of the proposed development falls outside the Windsor International Airport’s NEF/NEP 25 contours, no consideration for aircraft noise is warranted. There are no other significant sources of noise which are expected to have an impact on the proposed development.

Ministry of the Environment and Climate Change Noise Criteria

In accordance with the MECP Guideline NPC-300, the following sound level limits for residential developments of Class 2 have been set and are shown for roadway noise in Table 1 below. Select pages from the NPC-300 guideline have been included in Appendix D: NPC-300 Reference Pages for reference. The proposed development is classified as a Class 2 area, given that the region exhibits features of both a Class 1 and a Class 3 area, based on the environmental noise characteristics. It is worth noting that when the sound level limits presented in Table 1 are exceeded, noise control abatement is required.

Table 1: Ministry of the Environment, Conservation and Parks Noise Criteria for Roadway Noise

Location	Daytime L_{eq} [dBA]	Nighttime L_{eq} [dBA]
Outdoor Living Area (OLA)	55	--
Plane of Window (Indoor)	55 (45)	50 (40)

From Table 1, daytime refers to the period from 07:00 to 23:00 and nighttime refers to the period from 23:00 to 07:00 hours. An outdoor living area (OLA) refers to a location such as a patio, yard, or barbeque area. It should be noted that there are no designated OLA areas in this proposed development.

The limits presented in Table 1 are the limits before noise control measures are required. The noise level limit in an OLA may be exceeded by up to 5 dBA if proper warning clauses are inserted in the titles, deeds, and any tenancy agreements relating to the property and only after barriers or other noise control measures have been found to be impractical or unfeasible. A noise attenuation barrier is required to protect the OLA and bring the sound level down to 55 dBA in the OLA if the noise level exceeds 60 dBA. Only in cases where the required noise control measures are not feasible for technical, economic or administrative reasons would an excess above the limit (55 dBA) be acceptable with the appropriate warning clause; in this situation, any excess above the noise limit will not be deemed acceptable if it exceeds 5 dB.

The guideline also recommends the provision for the installation of central air conditioning when the noise level outside the plane of a window exceeds 55 dBA for the daytime or 50 dBA for the nighttime. If the noise level exceeds 65 dBA for the daytime or 60 dBA for the nighttime, the installation of central air conditioning should be implemented. Further, building components including exterior walls, windows and doors should be designed to have sufficient Sound Transmission Class (STC) ratings to meet the indoor noise guidelines.

Identification of the Representative Receptor Locations

Upon examination of the layout for the proposed residential development, 2 residential units located on the second floor of the development were evaluated for noise impacts as these represent the worst-case residential unit façades for the building due to their proximity and orientation to the road and railway. These are identified as POR1 (south facing façade; nearest to Tecumseh Road West and railway) and POR2 (east facing façade; nearest to the railway). There are no designated outdoor amenity areas as defined by the MECP at the proposed development.

Noise Source Data

The road traffic volume data used to predict the roadway noise impacts was obtained from the City of Windsor in the form of annual average daily traffic (AADT) volumes. The projected road traffic volumes along with the breakdown of vehicle types are given in Appendix E: Road Traffic Volume Data E. Also, given in Appendix E are the input distances used in the model between the representative receptor locations and the sources of roadway noise.

A conservative approach was taken to use

The most up to date traffic volumes for Tecumseh Road West, which are included in Appendix E, were used with a 2.0% growth rate to represent the future traffic volume for the year 2033. The split between the day and night traffic volumes was assumed to be 90%-day and 10%-night, which is consistent with the modelling procedures recommended by the MECP for municipal roadways. The volume of commercial truck traffic for Tecumseh Road West was taken as 5 percent with 70% of the commercial traffic being heavy trucks and 30% of the commercial traffic being medium trucks.

CN Freight traffic volume information was provided by the Canadian National Railway. Train traffic data used in this report was obtained for the CN Caso Subdivision near Cabana Road in Windsor, ON. Due to the lengthy timeline to obtain rail data, information previously obtained (January 2022) for another study along the same rail corridor was used. That is, the rail traffic passing by this proposed development area would have originated from the Caso Subdivision area in the CN letter given in Appendix F. The rail traffic data was projected 10 years into the future using a 2.5% increase per annum. As such, the predicted noise levels given in this report are for future traffic volumes. The CN freight traffic information, including future traffic volumes and modelled distances and exposure angles is included in Appendix F.

Assessment Approach for Transportation Noise

During the multiple site visits and noise monitoring period, it was observed that the most significant contributor to the background noise was traffic noise followed by other environmental sources including bird noise, siren noise, local vehicles (and honking), construction noise and the occasional noise from distant trains during the evaluation period. These observations and conclusion was reinforced from a review of noise recordings collected at the proposed site over a period of 91 hours. The purpose of the site noise

monitoring was to assess any impacts from the Canadian Pacific and Kansas City Southern (CPKC) Railway yard which is located approximately 625 metres to the east.

The predicted sound levels from the nearby road traffic were determined using the MECP noise prediction software STAMSON 5.0. All input data pertaining to the lot layout parameters was based on the layout plan provided at the time of the study, as shown in Appendix A: Site Location. The input data used to calculate the predicted sound level exposures for the selected units impacted by the road traffic noise, and the resulting outputs, are given in Appendix G: Noise Model Printout.

The acoustic propagation model used to predict the noise levels at the representative residential units was developed to determine the noise impacts and extent of the noise control requirements (if any). The MECP requires the calculation of the noise impacts at the outdoor living area (OLA) and plane of window of the dwellings, in this case the residential sleeping quarters. Since there are no balconies or common amenity area associated with the development, no OLA was considered.

Observations conducted at the site concluded that there are no audible noise impacts from the distant rail yard activities, especially given the roadway noise from the roadways adjacent to the proposed development. However, warning clauses (detailed in a later section) are recommended.

Evaluation of Rail Yard Sources (Measured)

According to NPC-300, the sound level limit at a point of reception expressed in terms of the one-hour equivalent sound level (Leq) is the higher of the applicable exclusion limit provided in Table 1 or the background sound level determined at the point of reception. The potential noise impacts from the adjacent rail activities were evaluated using 91 hours of continuous noise monitoring data which was carried out at the proposed development property. A summary table showing the maximum, minimum and average sound levels is shown in Table 2. It should be noted that the measured noise levels also include noise contributions from the nearby feeder roadways, and therefore are conservative. The resulting measured noise data is given in Appendix H. Any hourly periods with unacceptable weather including winds exceeding 15 km/h, periods of precipitation and humidity above 90% are identified and excluded from the analysis. For all periods having a measured exceedance of the MECP exclusion limits, the recorded sound files were listened to. From these, it was found that the overages were caused by other natural (birds) and environmental sounds, predominantly from nearby feeder road traffic, and not due to the rail activity from the Canadian Pacific and Kansas City Southern (CPKC) Railway yard. Photos of the noise monitor equipment setup are given in Appendix I: Photographs of Noise Measurement Location. Details pertaining to the measurement instrumentation is given in Appendix J.

Table 2: Measured One-Hour Equivalent Sound Level

Period	Max (dBA)	Min (dBA)	Average (dBA)
Daytime	58	42	49
Nighttime	59	38	46

*red text denotes exceedance

Rail Yard Noise Results (Measured) Summary

From inspection of the data given in Table 2, it is found that the measured sound levels exceed the limits given in Table 1. However, from observations made at the site and from listening to the recorded data, it is concluded that other sources of natural and environmental noise (such as construction noise which is excluded from assessment) is the significant contributor to the exceedances and not noise from rail activity at the CP yard.

Evaluation of Road and Rail line Sources (Calculated)

Given that the road traffic (Tecumseh Road West) and rail traffic (nearby CN rail line) occurs during all periods of a 24-hour day, as defined by the applicable MECP's Noise Pollution Control documents (NPC-300), the assessment has been carried out for the entire 24-hour period. The input data used to calculate the predict sound level exposures for the selected receptors impacted by the road and rail traffic noise, and the resulting outputs, are given in Appendix G: Noise Model Printout.

The predicted noise level impacts for the daytime and nighttime periods at the representative receptors with no control measures are given in Table 3. From this table, it is seen that the MECP noise limits for transportation noise identified in Table 1 are not exceeded at the receptor during either the daytime or nighttime periods, and therefore no abatement for roadway and railway noise impacts at the proposed development is required.

Table 3: Predicted Road and Rail Noise Levels – with No Abatement

POR ID	Daytime Period LAeq (dBA)	Nighttime Period LAeq (dBA)
POR1	48	41
POR2	41	N/A

*red text denotes exceedance

Transportation Noise Source (Calculated) Summary

The modeled road and railway noise is shown to comply with the MECP NPC-300 guidelines. The measured noise levels which were collected to evaluate any impacts from the rail yard have maximum hourly levels between 50 and 60 dBA for all periods of the day which exceed the guidelines. However, these elevated levels were found to be from natural sources of noise, including birds and construction noise, which is exempt. The noted train noise was from the nearby CN line to the rail tunnel for which the impacts from this railway are included in the modelled assessment discussed in the previous section.

Impulsive Noise – Rail Yard

Given the proximity of the proposed development to the rail yard, impulsive noise measurements were conducted to evaluate the potential impacts from activities including train coupling/uncoupling and stretching. These are evaluated using a logarithmic mean impulse sound level (L_{LM}). The LLM noise limits for rail activity are shown in Table 4 below. These are taken from the Guidelines for New Development in

Proximity to Railway Operations document which was prepared for the Federation of Canadian Municipalities and the Railway Association of Canada.

Table 4: Noise Criteria in Proximity to Freight Rail Shunting Yards, Class 2 Area

Time of Day	L_{LM} (dBAI)
07:00 – 19:00	50
19:00 – 23:00	45
23:00 – 07:00	45

Approximately 3.5 hours of onsite logarithmic mean impulse sound level measurements were conducted at the proposed development location on September 12, 2023, from 10:00 to 13:30. During this period, no impulsive noise was heard originating from the nearby CP railyard. As such, it is concluded that there is no impulsive noise impacts from the rail yard given the 625-metre distance between the site and the nearest section of the rail yard.

Results and Noise Control Requirements

The following section is a summary and assessment of the modeled results for the representative units.

Road Noise

As specified by the MECP Environmental Noise Guideline NPC-300, the outdoor and indoor sound level limits (based on one-hour LA_{eq} values) at a residence for road traffic noise are categorized into three (3) limits, based on the type of space assessed. The document also specifies the recommended noise control measures, if required, that should be followed for the OLA, plane of a window (ventilation requirements) and the indoor living area (building components) noise assessments. Select pages from the NPC-300 guideline are given in Appendix D: NPC-300 Reference Pages, which includes the warning clauses and other requirements based on the predicted noise levels.

Notes taken from NPC-300 (where applicable):

Note A: Noise control measures may be applied to reduce the sound level to 55 dBA. If measures are not provided, prospective purchasers or tenants should be informed of potential noise problems by a warning clause Type A.

Note B: Noise control measures should be implemented to reduce the level to 55 dBA. Only in cases where the required noise control measures are not feasible for technical, economic or administrative reasons would an excess above the limit (55 dBA) be acceptable with a warning clause Type B.

Note C: The dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Type C is also recommended.

Note D: Installation of central air conditioning should be implemented with a warning clause Type D. In addition, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the sound level limits in Table C-2.

Note E: Building components including windows, walls and doors, where applicable, need to be designed so that the indoor sound levels comply with the sound level limits in Table C-2. The acoustical performance of the building components (windows, doors and walls) needs to be specified.

For all buildings and units that are applicable to Note E, it is recommended that the building plans be inspected and approved by a qualified acoustical engineer prior to the issuance of a building permit to ensure that the proposed building materials and design comply with the noise control requirements.

If required, the following warning clauses are to be implemented in all development agreements, offers to Purchase, and agreements of Purchase or Sale or Lease of each dwelling unit:

Warning Clause(s) (where applicable):

Type A: "Purchasers/tenants are advised that sound levels due to increasing road traffic and rail traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."

Type B: "Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic and rail traffic may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."

Type C: "This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks."

Type D: "This dwelling unit has been equipped with central air conditioning in order to allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment, Conservation and Parks. Air conditioning units are to be installed in a noise insensitive area."

Given the measured sound levels at the proposed receptor that exceed the MECP noise limits are not attributed to Tecumseh Road West, the CN rail line to the Windsor-Detroit rail tunnel or the Canadian Pacific and Kansas City Southern (CPKC) Railway yard, no warning clauses are required.

Rail Noise

Given the proximity of the proposed buildings to the CN rail line, it is required that the following warning clause be implemented in all development agreements, offers to Purchase, and agreements of Purchase or Sale or Lease of each affected dwelling unit (all units).

Warning Clause:

The Canadian National Railway (CN), or its assigns or successors in interest has or have a right-of-way within 300 meters from the land the subject hereof. There may be alterations to or expansions of the railway facilities on such rights-of-way in the future including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). CN will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid rights-of-way.

Combined Results Summary



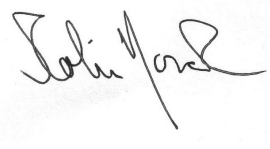
Table 5 summarizes the required warning clauses and building requirements for all residential units within the proposed development. It is required that any necessary warning clauses be implemented in all development agreements, offers to Purchase, and agreements of Purchase or Sale or Lease as identified in Table 5.

Table 5: Summary of Warning Clauses and Building Component Requirements

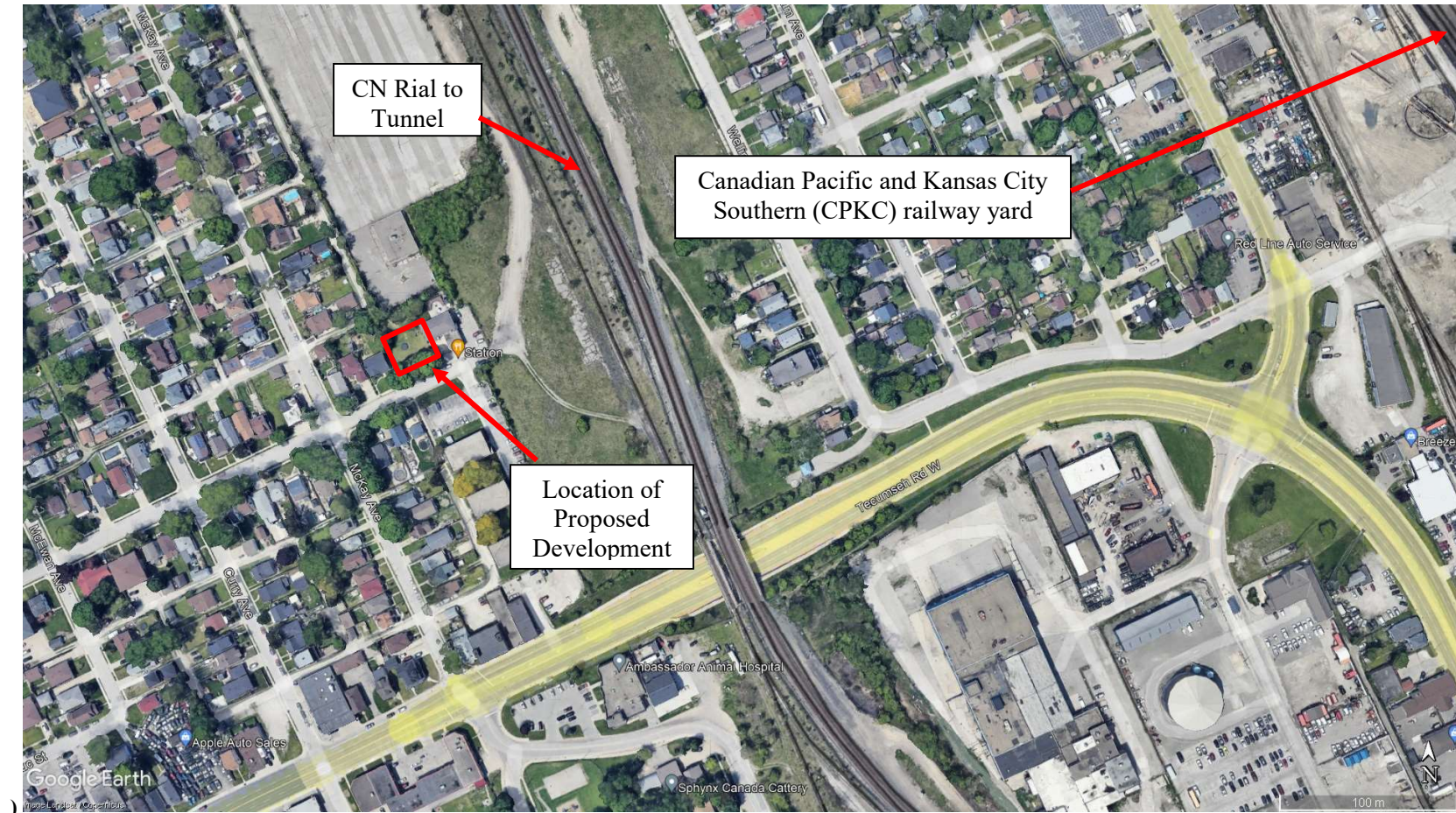
Units(s)	Noise Barrier Requirement (Y/N)	Warning Clause(s)	Building Component Requirement(s)	Ventilation Requirement(s)
All	N/A	Rail	Minimum Building Code	None

Conclusion

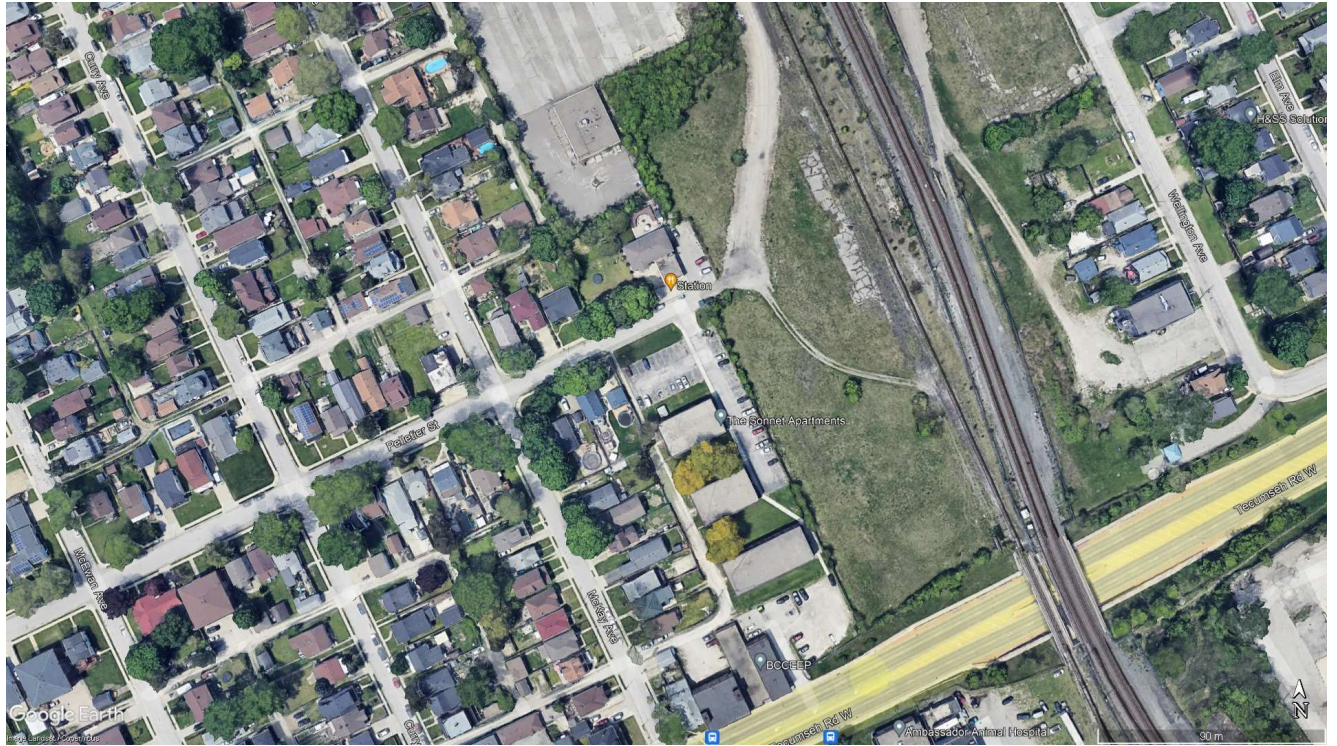
A noise impact assessment was conducted for the proposed two storey residential development located at 1350 Pelletier Street, in the City of Windsor. For this, Tecumseh Road West, the Canadian Pacific and Kansas City Southern (CPKC) railway yard and the CN rail line connecting to the Windsor-Detroit rail tunnel were considered. It was shown in this report that the predicted noise levels did not exceed the limits set by the Ontario Ministry of the Environment, Conservation and Parks. It was also concluded from evaluation of the on-site measured noise levels that there are no hourly or impulsive noise levels from the CP rail yard operations that exceed the MECP limits at the proposed development. It is recommended that the development be given approval with respect to noise impacts with the understanding that the stated rail warning clause is implemented in all development agreements, offers to Purchase, and agreements of Purchase or Sale or Lease of each dwelling unit.

For  akoustik engineering limited		
	Prepared by: Helen Ule, Ph.D., PEng	Reviewed by: Colin Novak, Ph.D., PEng

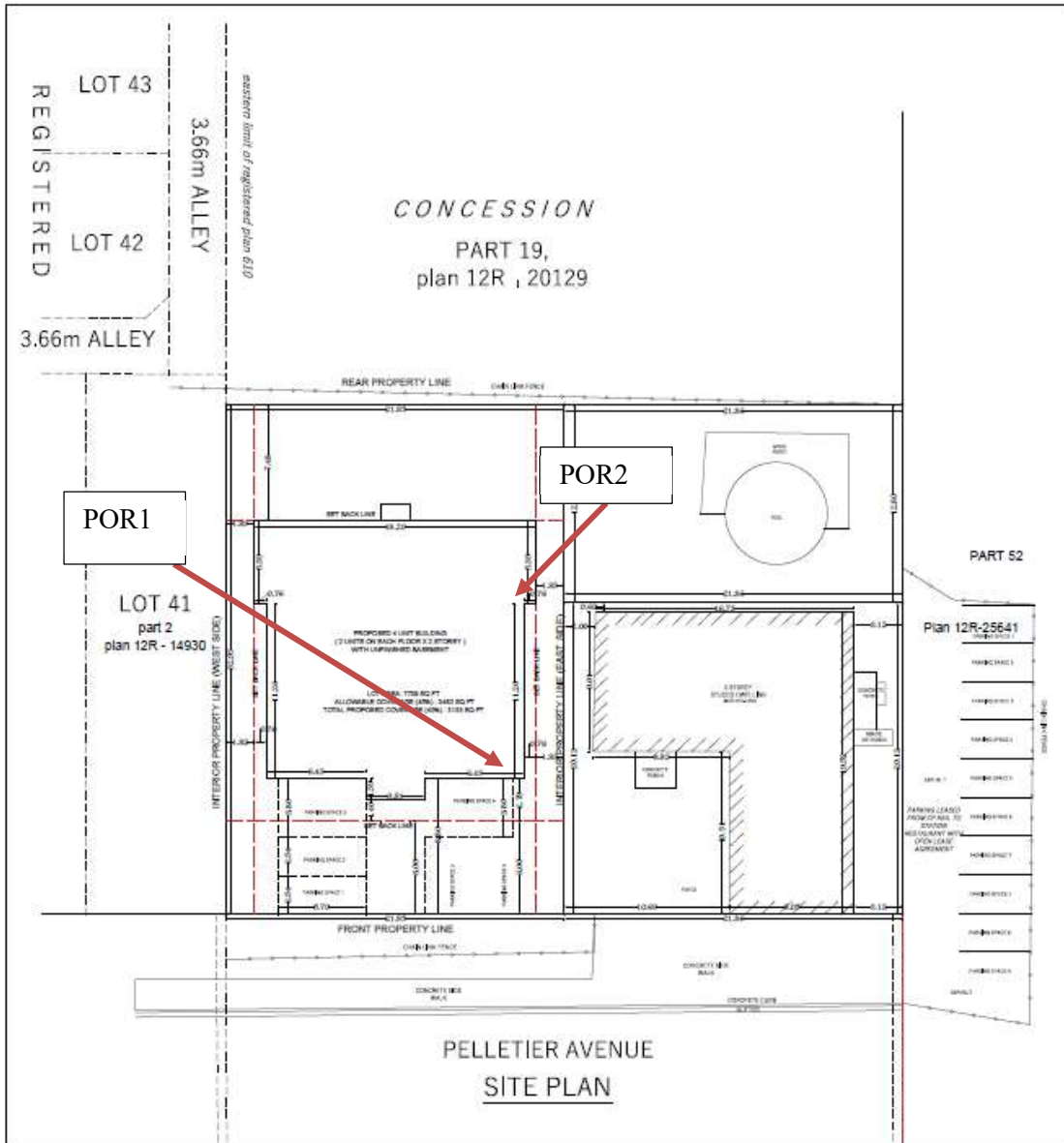
Appendix A: Site Location



A 1: General Location of Proposed Development and Nearby Surrounding Area including Road and Rail Sources of Noise

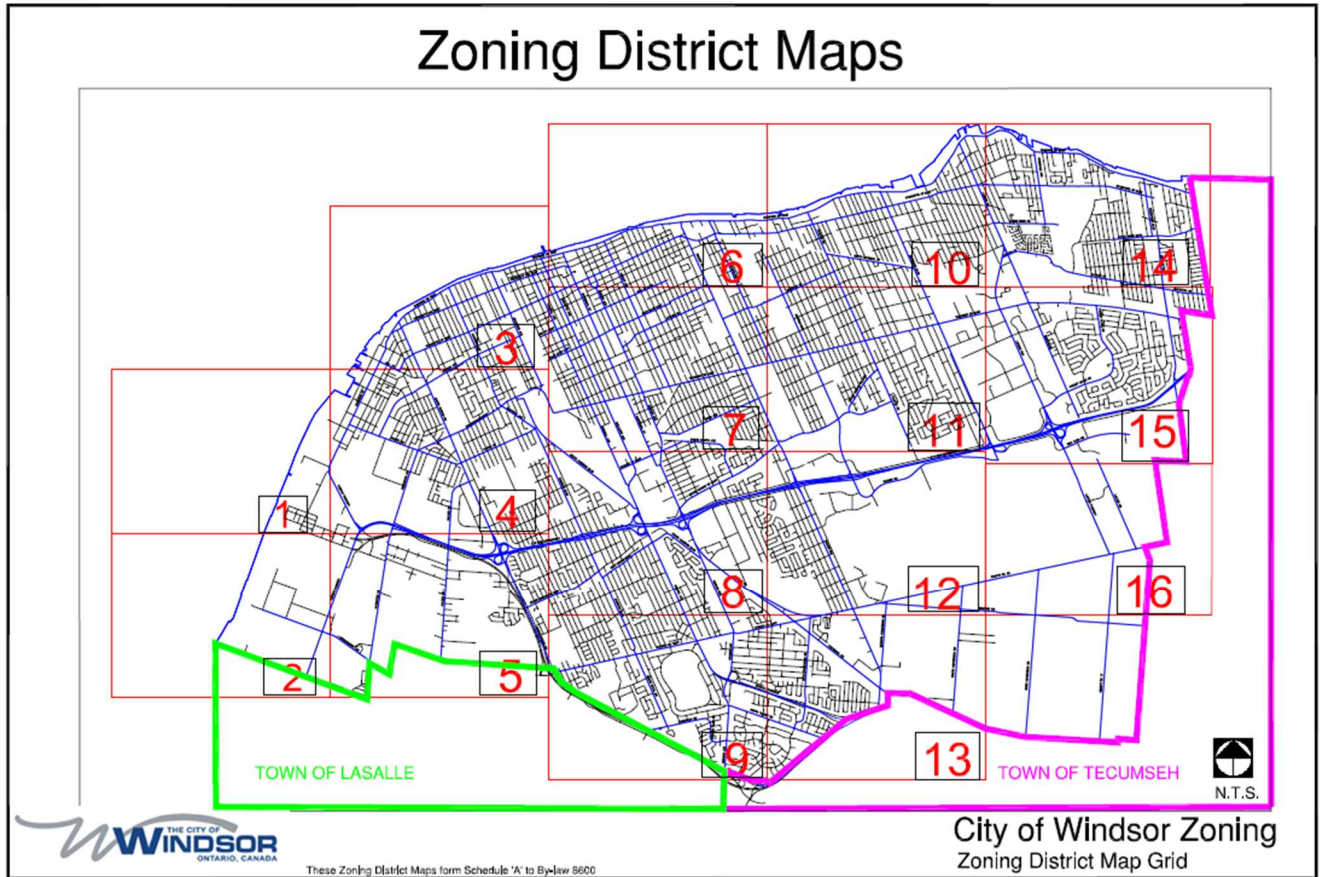


A 2:Proposed Development Site showing detailed Surrounding Area Features

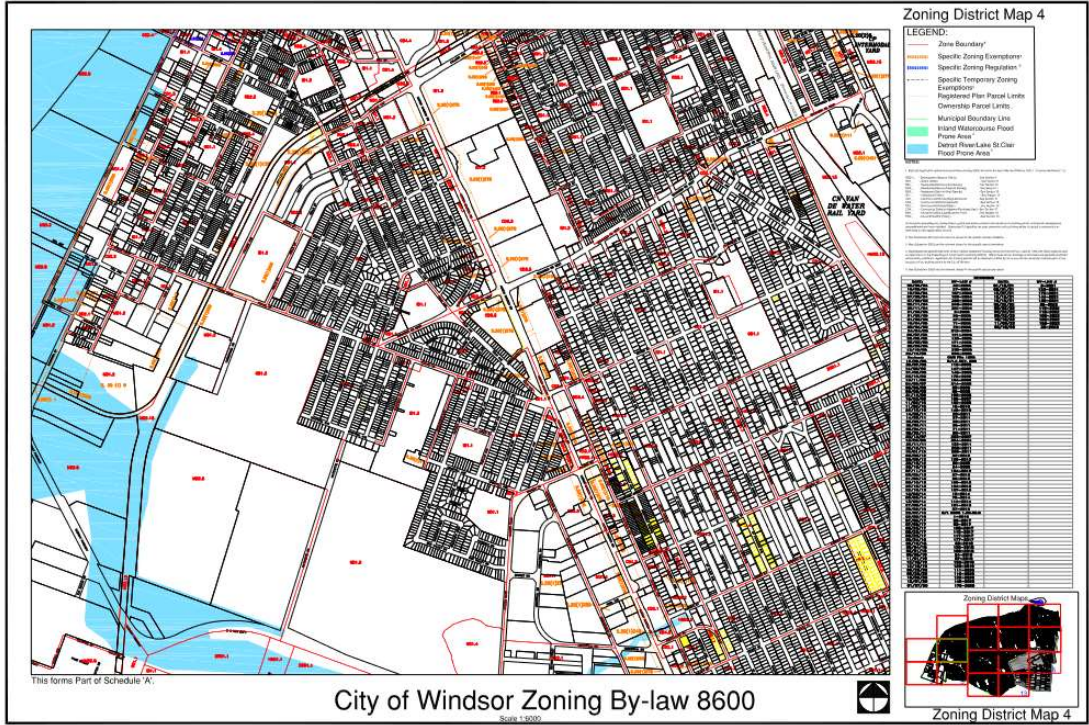


A 4: Proposed Development Representative PORs Identified

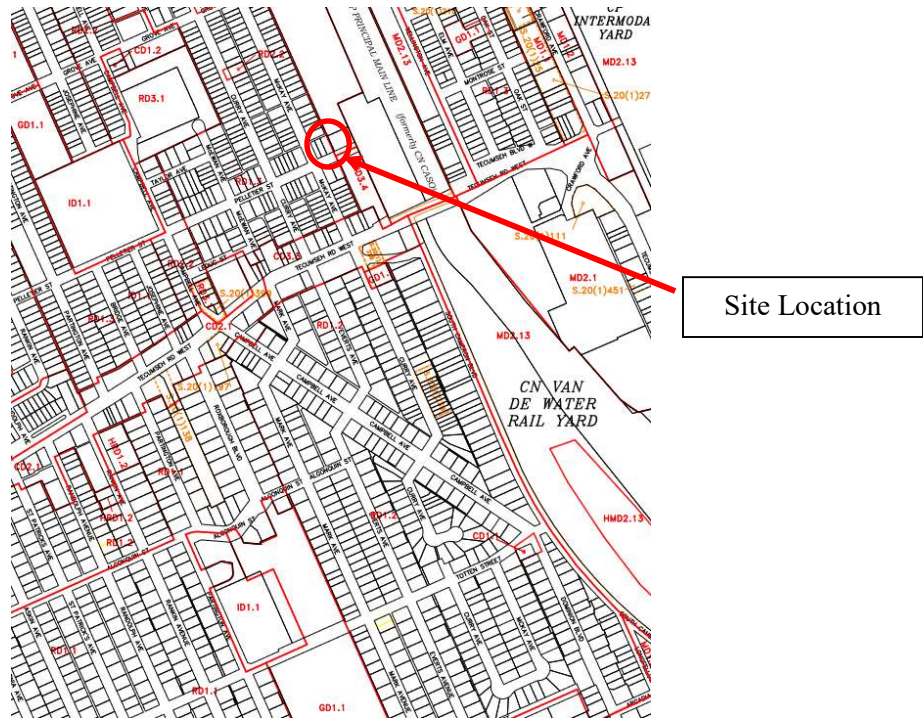
Appendix B: Land-use Zoning Map of Area



B 1: City of Windsor Zoning – Zoning District Map Grid



B 2: City of Windsor Zoning Map #4



B 3: City of Windsor Zoning Map #4, site location

Appendix C: Report and Model Assumptions

ROAD:

- Traffic counts (AADT) provided by Mike Spagnuolo, City of Windsor
- Traffic volumes projected to 2033
- Historical roadway data:
 - Tecumseh Rad West (West of Crawford):
 - 2013 20,500
 - 2033 30,462 (projected)
- 90% of traffic during day period and 10% during night period
- Distribution:
 - Tecumseh Road West: 95% cars, 3.5% medium trucks, 1.5% heavy trucks
- Growth rate of 2.0% assumed
- Distances (m):
 - POR 1
 - Tecumseh Rd. W – 187.8
 - POR 2
 - Tecumseh Rd. W – N/A
- Exposure Angles for modelling:
 - POR 1
 - Tecumseh Rd. W: -70 to 0 (0 rows) and 0 to 90 (4 rows; 80% density)
 - POR 2
 - Tecumseh Rd. W: N/A
- 2033 Road Volume
 - Tecumseh Road West (West of Crawford)
 - Cars – 26,045 day, 2,894 night
 - Commercial –
 - Medium – 960 day, 106 night
 - Heavy – 411 day, 46 night
- Speeds:
 - Tecumseh Road West – 50 km/h

PROPERTY:

- Assume:
 - POR heights: 4.5m
 - POR1 at facing south
 - POR2 at facing east

General:

- Model is 16 hour day, 8 hour night

Appendix D: NPC-300 Reference Pages

ENVIRONMENTAL NOISE GUIDELINE Stationary and Transportation Sources - Approval and Planning		NPC-300	
<p>L_{eq} (8). For complete description on assessing road traffic impacts, refer to ORNAMENT. Other traffic noise prediction models have been and are being developed by various authorities and may be adopted from time to time for use in Ontario by the MOE.</p> <p>In order to be consistent with MOE guidelines, the sound level should be assessed in an OLA, such as a rear yard or a patio, and in indoor living areas, such as bedrooms and living rooms. Where the noise impact exceeds the applicable sound level limits, mitigation measures such as site planning, architectural design, noise barriers, building envelope elements (windows, exterior walls, doors) with upgraded sound isolation performance and/or central air conditioning may be required. Noise control measures are not required if the sound level estimated in the OLA is 55 dBA or less during the daytime and 50 dBA or less in the plane of bedroom windows during either daytime or nighttime.</p>			
C3.2.2 Daytime Outdoor Sound Level Limit			
Table C-1 gives the equivalent sound level (L_{eq}) limit for designated OLAs. The limit applies to the entire daytime period from 07:00 to 23:00.			
Table C-1 Sound Level Limit for Outdoor Living Areas Road and Rail			
Time Period		L_{eq} (16) (dBA)	
16-hour, 07:00 – 23:00		55	
C3.2.3 Indoor Sound Level Limits			
Table C-2 gives the equivalent sound level (L_{eq}) limits and the applicable time periods for the indicated types of indoor spaces. The specified indoor sound level limits are maxima and apply to the indicated indoor spaces with windows and doors closed.			
Table C-2 Indoor Sound Level Limits Road and Rail			
Type of Space	Time Period	L_{eq} (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
Ministry of the Environment, August 2013		38	

D 1: Daytime Outdoor and Daytime/Nighttime Indoor Sound Level Limits

the emissions are not required to be included with the overall noise assessment of a stationary source facility.

In addition, sound level limits do not apply to emergency equipment operating in emergency situations.

C4.5.4 Sound Level Limits for Layover Sites

The sound level limit for noise from a layover site in any hour, expressed in terms of the One-Hour Equivalent Sound Level (L_{eq}) is the higher of either 55 dBA or the background sound level.

C5 Noise Impact Assessment – Multiple Sources

Impulse sources, non-impulse sources and emergency equipment are to be analyzed separately. Where there are multiple, non-impulse sources at a stationary source, the noise assessment should be based on the combined effect of all sources comprising the stationary source, added together on an energy basis.

C6 Noise Impact Assessment – Supplementary Noise 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	L_{eq} (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 Limits
(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 listed 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.

C7 Noise Control Measures

The following sections provide MOE guidance for appropriate noise control measures. These sections constitute requirements that are applied to MOE approvals for stationary sources. This information is also provided as guidance which land use planning authorities may consider adopting.

The definition in Part A describes the various types and application of noise control measures. All the noise control measures described in the definition are appropriate to address the impact of noise of transportation sources (road, rail and aircraft) on planned sensitive land uses. Only some of the noise control measures described in the definition are appropriate to address the noise impact of stationary sources on planned sensitive land uses.

C7.1 Road Noise Control Measures

C7.1.1 Outdoor Living Areas

If the 16-Hour Equivalent Sound Level, $L_{eq}(16)$ in the OLA is greater than 55 dBA and less than or equal to 60 dBA, noise control measures may be applied to reduce the sound level to 55 dBA. If measures are not provided, prospective purchasers or tenants should be informed of potential noise problems by a warning clause Type A.

If the 16-Hour Equivalent Sound Level, $L_{eq}(16)$ in the OLA is greater than 60 dBA, noise control measures should be implemented to reduce the level to 55 dBA. Only in cases where the required noise control measures are not feasible for technical, economic or administrative reasons would an excess above the limit (55 dBA) be acceptable with a warning clause Type B. In the above situations, any excess above the limit will not be acceptable if it exceeds 5 dBA.

C7.1.2 Plane of a Window – Ventilation Requirements

C7.1.2.1 Daytime Period, 07:00 – 23:00 Hours

Noise control measures may not be required if the L_{eq} (16) daytime sound level in the plane of a bedroom or living/dining room window is less than or equal to 55 dBA. If the sound level in the plane of a bedroom or living/dining room window is greater than 55 dBA and less than or equal to 65 dBA, the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Type C is also recommended.

If the daytime sound level in the plane of a bedroom or living/dining room window is greater than 65 dBA, installation of central air conditioning should be implemented with a warning clause Type D. In addition, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the sound level limits in Table C-2. The location and installation of the outdoor air conditioning device should comply with sound level limits of Publication NPC-216, Reference [32], and guidelines contained in Environmental Noise Guidelines for Installation of Residential Air Conditioning Devices, Reference [6], or should comply with other criteria specified by the municipality.

C7.1.2.2 Nighttime Period, 23:00 – 07:00 Hours

Noise control measures may not be required if the L_{eq} (8) nighttime sound level in the plane of a bedroom or living/dining room window is less than or equal to 50 dBA. If the sound level in the plane of a bedroom or living/dining room window is greater than 50 dBA and less than or equal to 60 dBA, the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Type C is also recommended.

If the nighttime sound level in the plane of a bedroom or living/dining room window is greater than 60 dBA, installation of central air conditioning should be implemented, with a warning clause Type D. In addition, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the sound level limits in Table C-2. The location and installation of the outdoor air conditioning device should comply with sound level limits of Publication NPC-216, Reference [32], and guidelines contained in Environmental Noise Guidelines for Installation of Residential Air Conditioning Devices, Reference [6], or should comply with other criteria specified by the municipality.

C7.1.3 Indoor Living Areas – Building Components

If the nighttime sound level outside the bedroom or living/dining room windows exceeds 60 dBA or the daytime sound level outside the bedroom or living/dining area windows exceeds 65 dBA, building components including windows, walls and doors, where applicable, should be designed so that the indoor sound levels comply with the

In Class 4 areas, where windows for noise sensitive spaces are assumed to be closed, the use of central air conditioning may be acceptable if it forms an essential part of the overall building designs.

C7.9 Verification of Noise Control Measures

It is recommended that the implementation of noise control measures be verified by qualified individuals with experience in environmental acoustics.

C8 Warning Clauses

The use of warning clauses or easements in respect of noise are recommended when circumstances warrant. Noise warning clauses may be used to warn of potential annoyance due to an existing source of noise and/or to warn of excesses above the sound level limits. Direction on the use of warning clauses should be included in agreements that are registered on title to the lands in question. The warning clauses would be included in agreements of Offers of Purchase and Sale, lease/rental agreements and condominium declarations. Alternatively, the use of easements in respect of noise may be appropriate in some circumstances. Additional guidance on the use of noise warning clauses is provided in Section C7.1.1, Section C7.1.2.1, Section C7.1.2.2, Section C7.3 and Section C7.4.

C8.1 Transportation Sources

The following warning clauses may be used individually or in combination:

TYPE A: (see Section C7.1.1)

“Purchasers/tenants are advised that sound levels due to increasing road traffic (rail traffic) (air traffic) may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment.”

TYPE B: (see Section C7.1.1 and Section C7.4)

“Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic (rail traffic) (air traffic) may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment.”

TYPE C: (see Section C7.1.2.1, Section C7.1.2.2 and Section C7.4)

“This dwelling unit has been designed with the provision for adding central air conditioning at the occupant’s discretion. Installation of

central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment.”

TYPE D: (see Section C7.1.2.1, Section C7.1.2.2 and Section C7.4)

“This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment.”

C8.2 Stationary Sources

It is not acceptable to use warning clauses in place of physical noise control measures to identify an excess over the MOE sound level limits. Warning clause (Type E) for stationary sources may identify a potential concern due to the proximity of the facility but it is not acceptable to justify exceeding the sound level limits.

TYPE E: (see Section C7.6)

“Purchasers/tenants are advised that due to the proximity of the adjacent industry (facility) (utility), noise from the industry (facility) (utility) may at times be audible.”

C8.3 Class 4 Area Notification

TYPE F: (see Section B9.2 and Section C4.4.2)

“Purchasers/tenants are advised that sound levels due to the adjacent industry (facility) (utility) are required to comply with sound level limits that are protective of indoor areas and are based on the assumption that windows and exterior doors are closed. This dwelling unit has been supplied with a ventilation/air conditioning system which will allow windows and exterior doors to remain closed.”

Appendix E: Road Traffic Volume Data

E 1: Predicted Road Traffic

Year	Road	Location	AADT
2013	Tecumseh Rd West	West of Crawford	20,500
2033	Tecumseh Rd West	West of Crawford	30,462

E 2: Predicted Hourly Traffic Volumes per Period and Breakdown of Cars, Medium Trucks and Heavy Trucks – Tecumseh Road West

Period	Hourly Traffic Volume (Vehicles/hr)	Auto Traffic Volume (Vehicles/hr)	Medium Truck Traffic Volume (Vehicles/hr)	Heavy Truck Traffic Volume (Vehicles/hr)
Day	1,713	1,628	60	26
Night	381	362	13	6

E 3: Distance from Roadways to PORs

Façade	Distance from Tecumseh Rd West to Plane of Window (m)
POR1	187.8
POR2	N/A

Appendix F: Rail Traffic Volume Data

F 1: CN Rail Train Volume Data Modelled for 2033

	Number of Trains	Max Speed (km/h)	Number of Locomotive per Train	Number of Cars per Train	Engine Type
Day	2.62	16	4	25	Diesel
Night	0	16	0	0	Diesel

F 2: Distance from CN Rail Line to Selected Representative PORs

POR	Distance to Railway (m) and Conditions
POR1	121, -40 to -10
POR2	120, -60 to 0

Date: 2022/01/18

Project Number: CAS-220.54 - Cabana Road East Windsor ON

Dear Helen:

Re: Train Traffic Data – CN Caso Subdivision near Cabana Road East in Windsor, ON

The following is provided in response to Helen’s 2021/11/10 request for information regarding rail traffic in the vicinity of Cabana Road East in Windsor ON at approximately Mile 220.54 on CN’s Caso Subdivision.

Typical daily traffic volumes are recorded below. However, traffic volumes may fluctuate due to overall economic conditions, varying traffic demands, weather conditions, track maintenance programs, statutory holidays and traffic detours that when required may be heavy although temporary. For the purpose of noise and vibration reports, train volumes must be escalated by 2.5% per annum for a 10-year period.

Typical daily traffic volumes at this site location are as follows:

***Maximum train speed is given in Miles per Hour**

	0700-2300			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	0	140	10	4
Way Freight	2	25	10	4
Passenger	0	10	10	2

	2300-0700			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	0	140	10	4
Way Freight	0	25	10	4
Passenger	0	10	10	2

The volumes recorded reflect westbound and eastbound freight and passenger operations on CN’s Caso Subdivision.

Except where anti-whistling bylaws are in effect, engine-warning whistles and bells are normally sounded at all at-grade crossings. There are three (3) at-grade crossings in the immediate vicinity of the study area at Mile 219.21 Walker Road, Mile 220.23 6th Concession Road, Mile 220.54 Cabana Road East and Mile 221.80 Howard Avenue. Anti-whistling bylaws are not in effect at this crossing. Please note that engine-warning whistles may be sounded in cases of emergency, as a safety and or warning precaution at station locations and pedestrian crossings and occasionally for operating requirements.

With respect to equipment restrictions, the gross weight of the heaviest permissible car is 286,000 lbs.

The double mainline track is considered to be continuously welded rail throughout the study area. The presence of four switches located at Mile 221.51, 221.56, 221.66 and 221.69 may exacerbate the noise and vibration caused by train movements.

The Canadian National Railway continues to be strongly opposed to locating developments near railway facilities and rights-of-way due to potential safety and environmental conflicts. Development adjacent to the Railway Right-of-Way is not appropriate without sound impact mitigation measures to reduce the incompatibility. For confirmation of the applicable rail noise, vibration and safety standards, Adjacent Development, Canadian National Railway Properties at Proximity@cn.ca should be contacted directly.

I trust the above information will satisfy your current request.

Sincerely,

Umair Naveed

Umair Naveed
Project Officer Public Works
Permits.gld@cn.ca

Appendix G: Noise Model Printouts

STAMSON 5.0 NORMAL REPORT Date: 26-10-2023 10:26:19
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POR1.te Time Period: Day/Night 16/8 hours
 Description: POR1 4.5 m height

Rail data, segment # 1: CN (day/night)

```
-----
Train          ! Trains      ! Speed !# loc !# Cars! Eng !Cont
Type          !              ! (km/h) !/Train!/Train! type !weld
-----+-----+-----+-----+-----+-----
  1.           !   2.6/0.0   !  16.0 !  4.0 ! 25.0 !Diesel! Yes
```

Data for Segment # 1: CN (day/night)

```
-----
Angle1  Angle2      : -40.00 deg  -10.00 deg
Wood depth      :          0   (No woods.)
No of house rows :          0 / 0
Surface         :          1   (Absorptive ground surface)
Receiver source distance : 120.00 / 120.00 m
Receiver height :          4.50 / 4.50 m
Topography      :          1   (Flat/gentle slope; no barrier)
No Whistle
Reference angle :          0.00
```

Results segment # 1: CN (day)

```
-----
LOCOMOTIVE (0.00 + 38.21 + 0.00) = 38.21 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
  -40   -10    0.50  59.73 -13.50  -8.02   0.00   0.00   0.00  38.21
-----+-----+-----+-----+-----+-----+-----+-----+-----
```

```
-----
WHEEL (0.00 + 20.02 + 0.00) = 20.02 dBA
Angle1 Angle2  Alpha RefLeq  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
  -40   -10    0.60  42.54 -14.45  -8.07   0.00   0.00   0.00  20.02
-----+-----+-----+-----+-----+-----+-----+-----+-----
```

Segment Leq : 38.28 dBA

Total Leq All Segments: 38.28 dBA

Results segment # 1: CN (night)

LOCOMOTIVE (0.00 + -21.52 + 0.00) = 0.00 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-40	-10	0.50	0.00	-13.50	-8.02	0.00	0.00	0.00	-21.52

WHEEL (0.00 + -22.52 + 0.00) = 0.00 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-40	-10	0.60	0.00	-14.45	-8.07	0.00	0.00	0.00	-22.52

Segment Leq : 0.00 dBA

Total Leq All Segments: 0.00 dBA

Road data, segment # 1: Tecumseh 1 (day/night)

Car traffic volume : 26045/2894 veh/TimePeriod
 Medium truck volume : 960/106 veh/TimePeriod
 Heavy truck volume : 411/46 veh/TimePeriod
 Posted speed limit : 50 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Tecumseh 1 (day/night)

Angle1 Angle2 : -70.00 deg 0.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 1 (Absorptive ground surface)
 Receiver source distance : 187.80 / 187.80 m
 Receiver height : 4.50 / 4.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Road data, segment # 2: Tecumseh 2 (day/night)

```
-----
Car traffic volume : 26045/2894 veh/TimePeriod
Medium truck volume : 960/106 veh/TimePeriod
Heavy truck volume : 411/46 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)
```

Data for Segment # 2: Tecumseh 2 (day/night)

```
-----
Angle1 Angle2 : 0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 4 / 4
House density : 25 %
Surface : 1 (Absorptive ground surface)
Receiver source distance : 187.80 / 187.80 m
Receiver height : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Tecumseh 1 (day)

Source height = 1.11 m

ROAD (0.00 + 46.08 + 0.00) = 46.08 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
-70	0	0.58	68.25	0.00	-17.36	-4.81	0.00	0.00	0.00

SubLeq

46.08

Segment Leq : 46.08 dBA

Results segment # 2: Tecumseh 2 (day)

Source height = 1.11 m

ROAD (0.00 + 40.95 + 0.00) = 40.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
0	90	0.58	68.25	0.00	-17.36	-4.33	0.00	-5.60	0.00

SubLeq

40.95

Segment Leq : 40.95 dBA

Total Leq All Segments: 47.24 dBA

Page 4

Results segment # 1: Tecumseh 1 (night)

Source height = 1.11 m

ROAD (0.00 + 39.55 + 0.00) = 39.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

--									
-70	0	0.58	61.72	0.00	-17.36	-4.81	0.00	0.00	0.00
39.55									

--									

Segment Leq : 39.55 dBA

Results segment # 2: Tecumseh 2 (night)

Source height = 1.11 m

ROAD (0.00 + 34.43 + 0.00) = 34.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------

SubLeq									

--									
0	90	0.58	61.72	0.00	-17.36	-4.33	0.00	-5.60	0.00
34.43									

--									

Segment Leq : 34.43 dBA

Total Leq All Segments: 40.71 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 47.76
(NIGHT): 40.71

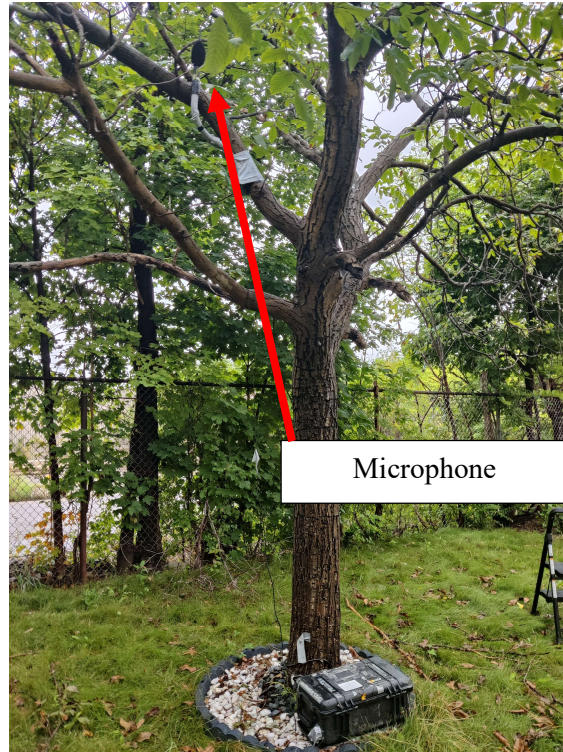
Appendix H: Measured Noise Data

Start Time	LAeq	Temp (°C)	Rel Hum (%)	Wind Spd (km/h)	Weather	Period	Noise Limit (dB) POW/OLA	Comments
2023-09-08 14:00	44	19.6	73	5	NA	Daytime	30/50	
2023-09-08 15:00	43	19.1	72	5	NA	Daytime	30/50	Traffic, dog barking plane, train pass by - not yard
2023-09-08 16:00	47	19.3	74	5	NA	Daytime	30/50	
2023-09-08 17:00	38	18.1	76	9	NA	Daytime	30/50	Train pass by - not yard, birds, kids playing, plane, hammering, traffic, idling motor
2023-09-08 18:00	33	18.1	80	11	NA	Daytime	30/50	Kids playing, traffic
2023-09-08 19:00	46	18.3	88	11	NA	Evening	30/45	Kids playing, traffic, plane
2023-09-08 20:00	44	18	82	13	NA	Evening	30/45	
2023-09-08 21:00	47	16.7	90	17	NA	Evening	30/45	
2023-09-08 22:00	48	16	97	9	Rain,Fog	Evening	30/45	
2023-09-08 23:00	43	15.9	94	9	Rain,Fog	Nighttime	43/-	
2023-09-09	31	16.3	80	9	NA	Nighttime	43/-	Traffic, plane, sirens, train pass by - not yard
2023-09-09 1:00	41	16.3	88	11	NA	Nighttime	43/-	
2023-09-09 2:00	31	16.3	88	9	NA	Nighttime	43/-	Train pass by - not yard, sirens, traffic
2023-09-09 3:00	40	15.9	93	9	NA	Nighttime	43/-	
2023-09-09 4:00	39	15.2	96	8	NA	Nighttime	43/-	
2023-09-09 5:00	36	15.3	89	11	NA	Nighttime	43/-	Traffic, train pass by - not yard
2023-09-09 6:00	44	15.4	87	13	NA	Nighttime	43/-	
2023-09-09 7:00	46	15.6	84	11	NA	Daytime	30/50	
2023-09-09 8:00	46	16.6	77	11	NA	Daytime	30/50	
2023-09-09 9:00	44	16.8	74	8	NA	Daytime	30/50	
2023-09-09 10:00	47	17.5	78	13	NA	Daytime	30/50	
2023-09-09 11:00	45	17.8	78	13	NA	Daytime	30/50	
2023-09-09 12:00	51	17.9	77	11	NA	Daytime	30/50	Traffic, birds, truck reverse beep, sirens, train pass by - not yard
2023-09-09 13:00	47	18.1	76	13	NA	Daytime	30/50	
2023-09-09 14:00	43	18.9	75	13	NA	Daytime	30/50	
2023-09-09 15:00	36	18.8	76	13	NA	Daytime	30/50	Traffic, train pass by - not yard, boat horn
2023-09-09 16:00	46	18.7	78	18	NA	Daytime	30/50	
2023-09-09 17:00	51	18.8	77	13	NA	Daytime	30/50	Animal noise, traffic, sirens, kids playing
2023-09-09 18:00	57	18.2	79	17	NA	Daytime	30/50	
2023-09-09 19:00	56	17.7	78	17	NA	Evening	30/45	
2023-09-09 20:00	48	17.7	78	13	NA	Evening	30/45	Traffic, train pass by - not yard
2023-09-09 21:00	47	17	77	17	NA	Evening	30/45	
2023-09-09 22:00	48	18.1	77	9	NA	Evening	30/45	HVAC noise, traffic
2023-09-09 23:00	50	15.4	80	8	NA	Nighttime	43/-	Traffic, train pass by - not yard, plane
2023-09-10	43	14.7	84	9	NA	Nighttime	43/-	
2023-09-10 1:00	50	16.4	79	5	NA	Nighttime	43/-	HVAC noise, traffic, idling motor/truck
2023-09-10 2:00	41	16	82	9	NA	Nighttime	43/-	
2023-09-10 3:00	55	16.1	81	8	NA	Nighttime	43/-	HVAC noise, train pass by - not yard, traffic
2023-09-10 4:00	40	16.2	80	8	NA	Nighttime	43/-	
2023-09-10 5:00	38	16.2	82	5	NA	Nighttime	43/-	
2023-09-10 6:00	40	16.1	81	4	NA	Nighttime	43/-	
2023-09-10 7:00	43	16.2	82	9	NA	Daytime	30/50	
2023-09-10 8:00	47	16.8	78	13	NA	Daytime	30/50	
2023-09-10 9:00	50	17.3	76	11	NA	Daytime	30/50	
2023-09-10 10:00	49	18.4	71	9	NA	Daytime	30/50	
2023-09-10 11:00	43	19.4	67	5	NA	Daytime	30/50	
2023-09-10 12:00	35	20.4	69	8	NA	Daytime	30/50	Traffic, hammering, HVAC noise, birds, train pass by - not yard
2023-09-10 13:00	46	20.9	64	5	NA	Daytime	30/50	
2023-09-10 14:00	43	21	61	4	NA	Daytime	30/50	
2023-09-10 15:00	51	21.1	61	9	NA	Daytime	30/50	Traffic, plane, sirens, train pass by - not yard, kids playing
2023-09-10 16:00	49	20.9	67	5	NA	Daytime	30/50	
2023-09-10 17:00	52	21.1	67	9	NA	Daytime	30/50	Kids playing, traffic, train pass by - not yard, birds, traffic, kids playing, train pass by - not yard
2023-09-10 18:00	51	19.9	72	11	NA	Daytime	30/50	
2023-09-10 19:00	43	17.5	87	8	NA	Evening	30/45	
2023-09-10 20:00	43	17.2	88	8	NA	Evening	30/45	
2023-09-10 21:00	43	16.3	90	8	NA	Evening	30/45	
2023-09-10 22:00	44	14.9	96	4	NA	Evening	30/45	
2023-09-10 23:00	53	15.7	96	4	NA	Nighttime	43/-	
2023-09-11	40	15.7	94	9	NA	Nighttime	43/-	
2023-09-11 1:00	41	15.1	97	4	NA	Nighttime	43/-	
2023-09-11 2:00	46	14.4	99	5	NA	Nighttime	43/-	
2023-09-11 3:00	43	14	98	5	NA	Nighttime	43/-	
2023-09-11 4:00	56	13.2	99	4	Fog	Nighttime	43/-	

2023-09-11 5:00	56	12.2	99	3	Fog	Nighttime	45/-	
2023-09-11 6:00	51	14	99	3	Fog	Nighttime	45/-	
2023-09-11 7:00	51	13	100	0	Fog	Daytime	50/50	
2023-09-11 8:00	52	16.6	98	0	Fog	Daytime	50/50	
2023-09-11 9:00	50	15	94	4	NA	Daytime	50/50	idling truck, traffic, truck back up beep, construction noise
2023-09-11 10:00	54	15.3	78	8	NA	Daytime	50/50	construction noise
2023-09-11 11:00	49	21.3	64	4	NA	Daytime	50/50	
2023-09-11 12:00	49					Daytime	50/50	
2023-09-11 13:00	54	23.7	57	13	NA	Daytime	50/50	construction noise, traffic, train pass by - not yard
2023-09-11 14:00	50	23.8	53	9	NA	Daytime	50/50	
2023-09-11 15:00	55	23.1	55	8	NA	Daytime	50/50	dog barking, train pass by - not yard, traffic, animal noise
2023-09-11 16:00	48	21.9	67	9	NA	Daytime	50/50	
2023-09-11 17:00	50	21	66	11	NA	Daytime	50/50	
2023-09-11 18:00	49	20.3	74	8	NA	Daytime	50/50	
2023-09-11 19:00	48	19.4	80	13	NA	Evening	50/45	kids playing, traffic
2023-09-11 20:00	53	18.3	88	8	NA	Evening	50/45	kids playing, traffic, train pass by - not yard
2023-09-11 21:00	43	18.3	87	8	NA	Evening	50/45	
2023-09-11 22:00	42	15.2	89	8	NA	Evening	50/45	
2023-09-11 23:00	43	18.4	89	5	NA	Nighttime	45/-	
2023-09-12	42	18.3	91	0	NA	Nighttime	45/-	
2023-09-12 1:00	46	15.8	93	8	Rain	Nighttime	45/-	
2023-09-12 2:00	53	17.6	98	5	Rain,Fog	Nighttime	45/-	
2023-09-12 3:00	46	17.4	98	11	Rain,Fog	Nighttime	45/-	
2023-09-12 4:00	47	17.2	98	9	Rain,Fog	Nighttime	45/-	
2023-09-12 5:00	48	17.2	97	11	Rain,Fog	Nighttime	45/-	
2023-09-12 6:00	47	17.3	97	11	Rain	Nighttime	45/-	
2023-09-12 7:00	50	17.1	94	18	NA	Daytime	50/50	
2023-09-12 8:00	47	17.1	94	13	NA	Daytime	50/50	

	High Humidity (>90%)
	High Wind (>15 km/h)
	Rain
	Exceedance

Appendix I: Photographs of Noise Measurement Location



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I 3: Microphone and Sound Level Meter



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I 2: Site Measurement Location

Appendix J: Measurement Equipment List

The following is the list of equipment used to perform the noise measurements:

Type 4231 Brüel & Kjær Acoustic Calibrator	Serial No. 2588643
Type 4952 Brüel & Kjær Outdoor Microphone	Serial No. 2766623
Type 2250 Brüel & Kjær Sound Level Meter	Serial No. 2763480

All measurement systems were checked for calibration before and after the measurement period and were found to be within the acceptable calibration limits. The battery levels also remained within the acceptable levels during the measuring period.

It is also worth noting that the meteorological conditions were measured before and after the measurement period and were found to be within the limits set by the MECP.