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architecture + engineering

ACOUSTICAL REPORT
1360 & 1376 HOWARD AVE APARTMENTS

1360 HOWARD AVE
WINDSOR, ONTARIO

PROJECT NO. 25-016

DATED: SEPTEMBER 18, 2025

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1. INTRODUCTION

Baird AE has been retained to conduct an acoustical study to examin e the impacts of noise created by transportation sources on the proposed residential development in the City of Windsor. This report will recommend mitigation measures based on criteria set by the Ministry of Environment and Climate Change (MOECC).

The subject land is approximately 0.197 hectares (0.487 ac) in size and bounded by Ottawa Street to the North, Lillian Street to the east and Howard Avenue to the west and a cemetery on the other side of the road from Howard Avenue, existing residential area to the south. The location of the property is illustrated in Figure 1.

Figure 1: Development location

1.1 Nature of Subject Lands

The development will consist of one 4 storey apartment building containing 25 residential units. The total height of the development is expected to be 14.0m high.

The development's access will be from Lillian Street. The site plan and architectural drawings of the propose development are provided in Appendix A.

2. NOISE CRITERIA

The MOECC publication NPC-300 "Environmental Noise Guideline Stationery and Transportation Sources – Approval and Planning" was used in this noise study. Based on the initial investigation, the primary noise affecting the development is from nearby roadways, Howard Ave and Ottawa St. Air traffic noise was not considered, as the development is located outside the zone of influence of local airports.

Due to the acoustical environment typical of an urban setting, it is therefore assumed that the development is located in a "Class 1" area defined by MOECC. The "Class 1" MOECC criteria for noise levels resulting from traffic sources for this development are summarized in Table 1, and Table 2. Whereas, Table 3 summarized MOECC criteria for stationary sources.

The requirements for a "Class 4 Area" as per MEOCC NPC-300 guidelines to be recommended is an urban area with an established stationary source adjacent to the subject property. The only stationary source that has a possibility to effect noise levels on the subject property is "Flex N Gate" located about 100m away to the Sout on Howard Ave. According to the iNoise software as well as the recorded noise levels, the stationary noise does not affect the subject property enough to warrant the "Class 4 area" reclassification (see Appendix B). **Therefore, the subject property will remain with a "Class 1 Area" classification.**

Table 1 – MOECC Noise Level Criteria – Road (Ventilation and Warning Clauses)

Location	Time Period	Noise Levels Requirement
Outdoor - Living Areas	07:00 - 23:00	<55dBA – No Control
		55 to 60dBA – Physical Control or Type A Clause
		> 60dBA – Physical Control and Type B Clause
Indoor - Living/dining Plane of Window	07:00 - 23:00	<55dBA – No Control
		55 to 65dBA – Forced Air and Type C Clause
		> 65dBA – Air Conditioner, Type D Clause and Building Components
Indoor - Living/dining Plane of Window	23:00 to 07:00	<50dBA – No Control
		50 to 60dBA – Forced Air and Type C Clause
		> 60dBA – Air Conditioner, Type D Clause and Building Components

MOECC Guidelines NPC-300 Section C7.1.1 and C7.1.2 – August 2013

The outdoor living areas in residential buildings are usually backyards, and the indoor living areas are usually bedrooms and living rooms. The limitations on indoor and outdoor sound levels from road traffic are summarized in Table 1.

Where the noise level exceeds sound level limits, mitigation measures such as architectural design, noise barrier and building components are required. Where building components are required, the noise level limits for indoor spaces with windows and doors closed are taken into consideration as shown in Table 2.

Table 2 – MOECC Noise Level Criteria – Road

Type of Space	Times of Day	Plane of Window
Living/Dining Room	0700 – 1900 1900 - 2300	50 dBA
Sleeping Quarters	2300 - 0700	45 dBA

Source: MOECC publication NPC-300 "Sound level limits for Stationary and Transportation Sources", in Class 1 Area, Tables B-2; August 2013.

Table 3 describe NPC-300 stationary source noise requirements re-summarized below for steady sound sources for outdoor and plan-of-window receptor locations.

Table 3 – MOECC Noise Level Criteria – Stationary

Type of Space	Times of Day	Plane of Window
Outdoor	0700 – 1900 1900 – 2300 2300 – 0700	50 dBA 50 dBA -
Plane of Window	0700 – 1900 1900 – 2300 2300 – 0700	50 dBA 50 dBA 45 dBA

Source: MOECC publication NPC-300 "Sound level limits for Stationary and Transportation Sources", in Class 1 Area, Tables C-6; August 2013.

3. NOISE ENVIRONMENT

The following sources have been investigated for potential for impact the development.

1. Transportation noise impacts from surrounding roadways; and
2. Stationary noise from the surrounding commercial sources.

3.1 Transportation Source

The major roadways impacting the proposed development is Howard Avenue and Ottawa Street.

Traffic counts at the intersection of Howard Avenue and Ottawa Street were obtained from City of Windsor on March 21, 2023. The received data consist of peak hour traffic which then converted to daily traffic by applying Peak Hour Factor (PHF) of 0.15. Traffic counts and other relevant data are included in Appendix A.

Sound level prediction software STAMSON 5.04, based on MOECC ORNAMENT (Ontario Road Noise Analysis Method for Environmental and Transportation, 1989) was used for estimating noise levels from roadway traffic. Further, MOECC requires that all traffic data be projected ten (10) years into the future from the date of construction such that the proposed mitigation will be relevant for future volumes. Traffic volumes along with other relevant traffic data utilized by STAMSON are summarized in Table 4.

Table 4 – 2023 Background Traffic Volumes

Item	Howard Avenue	Ottawa Street
Annual Average Daily Traffic	15,653 (pm peak 2,348)	4,013 (pm peak 602)
% Medium Trucks	2.0%	2.0%
% Heavy Trucks	2.0%	2.0%
Road Grade	< 2.0%	<2.0%
Speed Limit	60 km/h	60 km/h
Day/Night Percent Split	90% / 10%	90% / 10%

3.1.1 Projected Sound Level

Road traffic sound level was predicted using iNoise software. The roadway was modelled as line of source of sound and its effect on façade of building. The emission rates at building facades were calculated using the STAMSON 5.04 which uses MOECC ORNAMENT algorithm model utilizing existing traffic data. The emission rates were also compared with the monitoring noise. Table 5 has both predicted STAMSON Noise level at receiver location and monitored noise level.

Table 5 – Projected and Monitored Noise Levels

Receiver Location	Height Above Grade (m)	STAMSON Results	Monitor Results
Monitor A	1.5m	61.10 dBA	66.90 dBA
Monitor B	1.5m	55.31 dBA	63.90 dBA
Monitor C	1.5m	52.00 dBA	56.80 dBA
Monitor D	1.5m	55.45 dBA	56.00 dBA
Monitor E	1.5m	53.19 dBA	52.00 dBA
Monitor F	1.5m	61.30 dBA	63.30 dBa

Note: street painting was taking place the day of the stationary monitoring results, results may be higher than usual noise emitted to the north side of the property.

Based on results above, the monitored noise levels were use as line of sources of sound in iNoise Software. The output results are provided in table 7 and 8 and predicted STAMSON and iNoise output results, as well as traffic data, are provided in Appendix A and Appendix B.

3.2 Stationary Source

A review of surrounding stationary commercial and industrial noise sources was conducted. Based on the aerial image, site is surrounded by residential to the North, South and East, Cemetery to the West and Industrial to the South West. The potential noise produced by these facilities are loading and unloading, idling cars and trucks, ventilation fan and rooftop HVAC units. For the purpose of study, it is assumed that all equipment and idling operate on 75% duty cycle during daytime and evening hours, and 25% duty cycle during night-time hours.

The following are the significant stationary point sources which are included in the analysis.

- Flex N Gate - 1425 Howard Ave: The facility provides automotive products. The operation of business is from 24 Hours a Day, Closed on Weekends. The noise emitted from this facility includes, 9 generic HVAC sound, car idling and truck traffic. It is assumed that around 3 trucks arrive every hour. Most other noise from the facility cannot be heard. A generic idling car sound power was used with the sound specifications are provided in Appendix. Based on aerial photography.
- Windsor Grove Cemetery – 455 Giles Blvd E: The operation of business is open 24 hours a day. No sound sources are assumed. Based on aerial photography.
- Saint Alphonsus Roman Catholic Cemetery – Shepherd St E: The operation of business is open 24 hours a day. No sound sources are assumed. Based on aerial photography.
- Emrick Plastics - Division of Windsor Mold Inc. – 310 Ellis St E: The facility is a plastic parts production facility. Hours of operation as of May 2, 2025 – Permanently Closed. The noise sources will be assumed based on what is currently in place with an 8am to 5pm schedule. include 4 rooftop HVAC units. Based on aerial photography.

Following assumption are also considered in the analysis.

- During the daytime and evening period (7:00 – 23:00), the rooftop mechanical unit (RTU) and idling will be in 75-90% operation.
- During the nighttime period (23:00 – 07:00), the rooftop equipment and idling cars will be in 10-25% operation.

3.3 Receiver Locations

Six receiver locations (A to F) were identified and are located at the worst-case locations (most exposed) for both day and nighttime noise. The receiver locations are shown in Appendix A, Sheet 1.

The term “outdoor living area” (OLA) is used in reference for an outdoor patio, a backyard, a terrace, balconies or any other area where passive recreation is expected to occur. For indoor living areas, the plane of window (POW) will be used to represent the worst-case for both daytime and nighttime receivers.

Table 6 identifies the various receiver heights chosen as the “worst-case” locations within the proposed development.

Table 6 – Receiver Locations

Receiver Location	Height Above Grade (m)	Type	Represents
Level 1	1.5m	Bedroom POW	North, East and West Façade
Level 2	6.5m	Bedroom POW	
Level 3	11.5m	Bedroom POW	
Level 4	16.5m	Bedroom POW	

Overall unattenuated daytime and nighttime sound levels at the receiver locations are shown in Sheet 1 (Appendix A). iNoise output results are described in Table 7 and detailed output results are provided in Appendix B.

3.4 Projected Sound Levels

The roadway sound emission rates and truck route were in iNoise Model as a line source of sound. These predictions are validated and equivalent to those monitored noise level. Monitored noise results are provided in Appendix C.

The noise propagation analysis was completed using the noise modelling program “iNoise”, produced by DGMR Software. The iNoise program follows International Standards Organization (ISO) standards 9613 parts 1 and 2. The model is capable of incorporating various site features such as elevations, berms, absorptive grounds and barriers. This will enable it to accurately predict noise levels at specific receptors pertaining to noise emissions from sources. The model is considered conservative since it represents the atmospheric conditions that promote the propagation of sound from the source to the receiver.

The following assumptions were used in the modelling:

Reflections: A building reflection of 0.8 was assumed to represent the brick façade present in the surrounding buildings, including the proposed building.

Ground Absorption & Topography: A ground absorption coefficient of 0 was used to represent the most reflective (i.e., paved surface) surface. The area surrounding the monitoring location is characterized as generally flat. As such, topography was not incorporated into the noise modelling.

Transportation and stationary post-development daytime and nighttime sound levels are described in tables 7 and 8. And, graphical results are provided in Appendix B.

Table 7 – Post Development Predicted Noise Levels – Transportation

Modelling Results (dBA)							MOECC Limits (dBA)
Location	Rec A	Rec B	Rec C	Rec D	Red E	Rec F	Road
Level 1 Daytime Nighttime	 61.10 55.23	 55.31 50.24	 52.00 47.00	 55.45 50.20	 54.19 49.54	 62.40 55.37	 50 45
Level 2 Daytime Nighttime	 61.42 56.76	 55.83 50.25	 53.02 48.27	 56.25 50.13	 55.09 50.46	 61.58 55.78	50 45
Level 3 Daytime Nighttime	 61.79 56.44	 56.47 51.46	 54.18 48.89	 57.13 51.67	 56.09 51.02	 61.92 56.48	50 45
Level 4 Daytime Nighttime	 62.21 56.78	 57.21 52.55	 55.37 59.56	 58.06 52.71	 57.12 52.11	 62.29 56.98	50 45

For indoor living areas, noise levels are above 50dBA daytime and 45dBA nighttime at the receiver's location. Hence, mitigation measures such as warning clause and central air conditioning are required. Whereas sound levels at the Receiver locations A and F due to road traffic is more than 60 dBA during the daytime and 55dBA during the nighttime, therefore requirement of glazing is not necessary to meet indoor sound level requirements as outlined in Table 1. Hence mitigation measure such as glazing is required to meet MOECC criteria. Also, The OLA Noise level at all receiver locations is less than 60dBA hence no physical mitigation measures such as a noise wall or berm are required.

The stationary noise modelling results for the building facades levels are shown graphically in figures for daytime and night time are provided in Appendix B and are tabulated below:

Table 8 – Post Development Predicted Noise Levels - Stationary

Location	Modelling Results (dBA)						MOECC Limits (dBA)
	Rec A	Rec B	Rec C	Rec D	Red E	Rec F	Stationary
Level 1 Daytime Nighttime	 65 55	 63 53	 57 47	 57 47	 54 44	 63 54	 50 45
Level 2 Daytime Nighttime	 64 54	 62 52	 57 48	 57 47	 55 45	 63 53	50 45
Level 3 Daytime Nighttime	 63 54	 62 52	 57 48	 57 47	 56 46	 62 53	50 45
Level 4 Daytime Nighttime	 63 53	 61 51	 57 48	 57 47	 57 47	 62 52	50 45

For indoor living areas, noise levels are above 55dBA daytime and 45dBA nighttime at the receiver's location B, C and D at all levels. Hence, mitigation measures such as special building components, a warning clause and central air conditioning are required. The mitigation measures are discussed in Section 4 of the report.

4. MITIGATION MEASURES REQUIREMENTS

Based on predicted transportation sound levels, warning clauses are required in all purchase agreements and rental agreements.

A Type C warning clause is required for all affected units with façade sound levels from road traffic are between 40 to 50dBA during the nighttime.

This affects the North and West facades of buildings. The **Type C** warning clause is below:

Warning Clauses

The MOECC warning clauses be included in the property sale and rental agreement. The following are the suggesting wording as per MOECC:

Type C Warning Clause

"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."

Building Components and Ventilation Requirements

Road Traffic

Based on road traffic sound levels at receiver locations A, B, C, D, E and F the STC requirements for wall, doors and windows due to traffic noise is shown in Table 10. It is noted that at Receiver locations A, B and F, the worst-case scenario from traffic and stationary sources is taken into consideration in designing building component.

Stationary Sources

Based on predicted stationary sound levels, the indoor level is at all receiver locations. Hence, mitigation measures such as building components are required to mitigate noise. The building components are discussed below and shown in Table 10. It is noted that at Receiver locations A and F, the worst-case scenario from traffic and stationary sources is taken into consideration in designing building component.

Glazing Requirements

The appropriate building components were selected based on the Acoustic Insulation Factor (AIF) which is related to the difference in indoor and outdoor noise levels. The AIF is calculated as follows:

AIF = Leq (outdoor façade) – Leq (indoor) + 10 log C + 2

C = number of building components forming the room envelope

To calculate the required building components, the dimensions of the rooms and their wall/window sizes must be known. Currently, the room dimensions and floor height are unknown. Assuming 25% window-door/floor ratios, the required components were estimated from the building facades. The following table provides AIF requirements for sound levels for both daytime and nighttime noises.

Table 9 – Typical AIF Values for Building Component

Daytime Noise (dBA)	Night time Noise (dBA)	AIF Noise Limit	Living/Dining Window/Door Treatment	Bedroom Window Treatment
55 or less	50 or less	17 or less	None (OBC)	None (OBC)
56 - 65	51 - 60	18 - 27	None (OBC)	STC 23 - 32
66 - 68	61 - 63	28 – 30	None (OBC)	STC 33 - 34
69 - 70	64 - 65	31 – 32	STC 31 - 32	STC 36 - 37
71 - 72	66 - 67	33 – 34	STC 33 - 34	STC 38 - 39
73 - 78	68 - 73	35 – 40	STC 35 - 40	STC 40 - 45
79	74	41	STC 41	STC 46

Source: “Road Noise: Effects on Housing”, NHA 5156 81/10, 1981

Based on the assumed 25% window-door/floor ratio, the windows and door component requirements were estimated from the attenuated noise level shown in Table 10 for both daytime and nighttime. Using this assumption, the façades of the building's window and door components should have a Sound Transmission Class (STC):

Table 10 – Typical AIF Values for Worst Case for Dwellings

Façade	Stationary	Transportation	Type of Warning Clause	Glazing[1]
West (A)	STC 32	STC 32	C	See Appendix A – Glazing as per OBC
North (A2)	STC 32	STC 32	C	
East (E2)	STC 32	OBC	C	
South (F)	OBC	STC 32	C	

Note 1: Glazing construction meeting the maximum requirement of the Ontario Building Code.
Note 2: See Appendix A for Noise Information Plan displaying receiver/monitor locations as well as sources.

All adjoining walls between dwellings shall have an STC rating no lower than 50.

It is also recommended that an acoustic consultant review the building components to ensure that noise levels satisfy the requirements.

A typical glazing configuration is provided in Appendix A.

The Ontario Building Code (OBC) section 5.8.1 specifies the minimum required sound insulation characteristics for partitions in terms of STC values. For acoustic privacy in a multi-tenant building between suites, the inter-unit wall should meet or exceed STC-50. In addition, it is recommended that the separation of suites from any amenities or commercial spaces for building components (floor/ceiling) also meet or exceed STC-55.

5. RECOMMENDATIONS

As demonstrated in this report, mitigation measures are required to bring residential units within the development into compliance with MOECC criteria. With the inclusion of these measures, the MOECC noise criteria will be satisfied.

Recommendation #1

Due to the exceedance of the MOECC criteria for daytime and nighttime acoustic levels from nearby roadway and air traffic, the dwellings shall include warning clause Type C as discussed in Section 4.

Recommendation #2 (Building Components)

Due to exposure to stationary and road noises, some units require special building components for areas of sensitive use (i.e., bedroom, living room, dining room, kitchen, etc.) and the following is required:

Window requirements:

All windows leading to sensitive living areas must have a minimum sound transmission class (STC) as per Section 4 in order to meet the MOECC indoor noise level criteria.

Wall requirements:

All walls leading to sensitive living areas are to have a minimum sound transmission class (STC) as per Section 4. Also, acoustic privacy between units in a multi-tenant building, the inter-unit wall, should meet or exceed STC-50. Wall separation between noisy spaces, such as refuse chutes or elevator shafts, and suites should meet or exceed STC-55.

Recommendation #3

Prior to the issuance of building permits, it is recommended that an acoustic consultant review the sound transmission class (STC) for the proposed development's walls, windows and doors to ensure they conform to the recommendations outlined in this report.

6. SUMMARY

We conclude that this development with the implementation of the above-described mitigation measures will be designed to address impacts from the surrounding noise sources.

If you have any questions or wish to discuss our findings, please advise us accordingly.

Yours truly,

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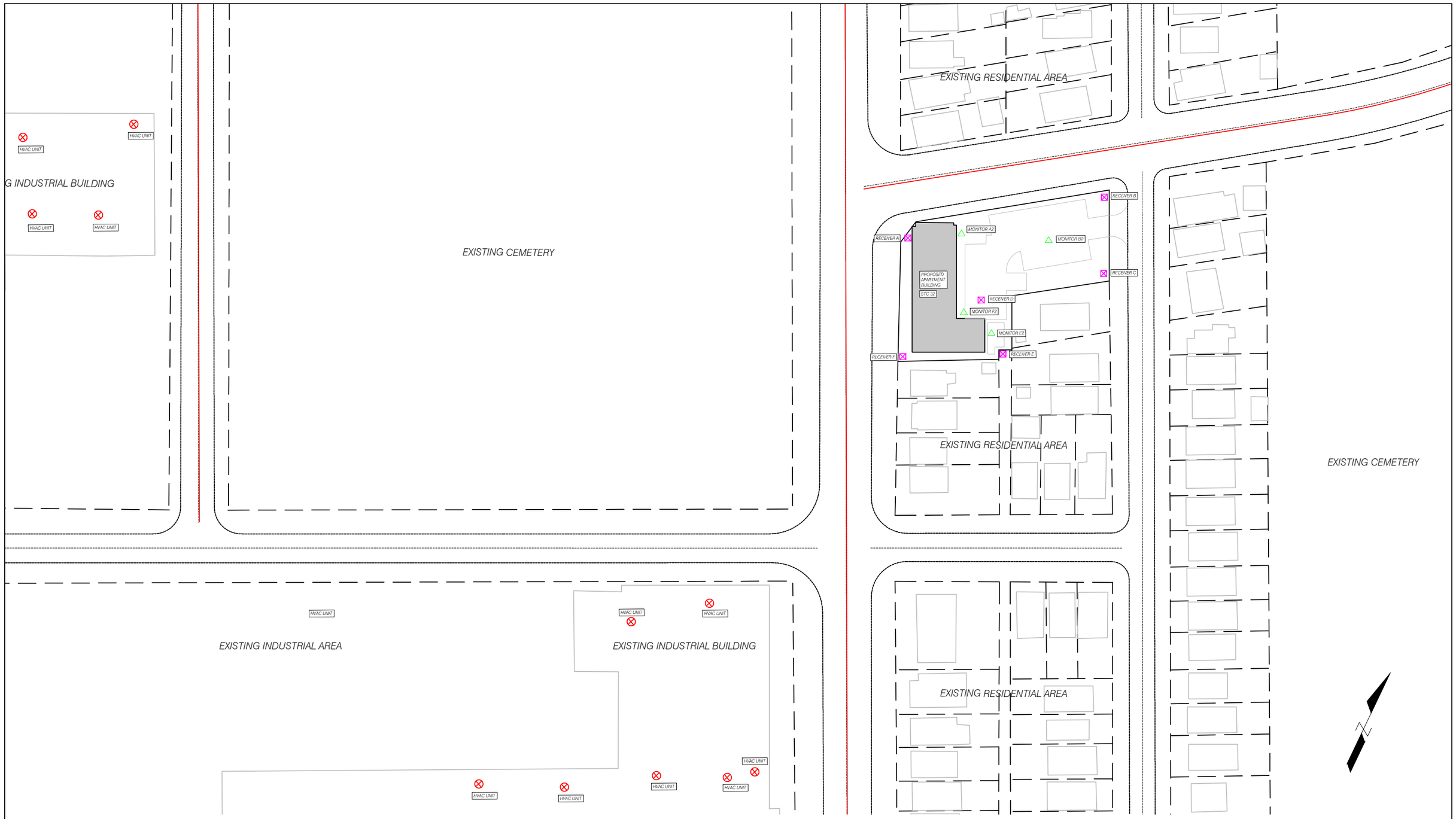
Appendix A

NOISE INFORMATION PLAN
TRAFFIC DATA
AND
BACKGROUND INFORMATION



LEGEND

- RECEIVER LOCATION
- PROPOSED BUILDING
- INOISE MONITORS
- TRANSPORTATION NOISE
- STATIONARY HVAC

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PROJECT TITLE:
1360 & 1376 HOWARD AVE APARTMENTS
1360 & 1376 HOWARD AVE, CITY OF WINDSOR
WINDSOR, ON

SHEET TITLE:
NOISE INFORMATION PLAN

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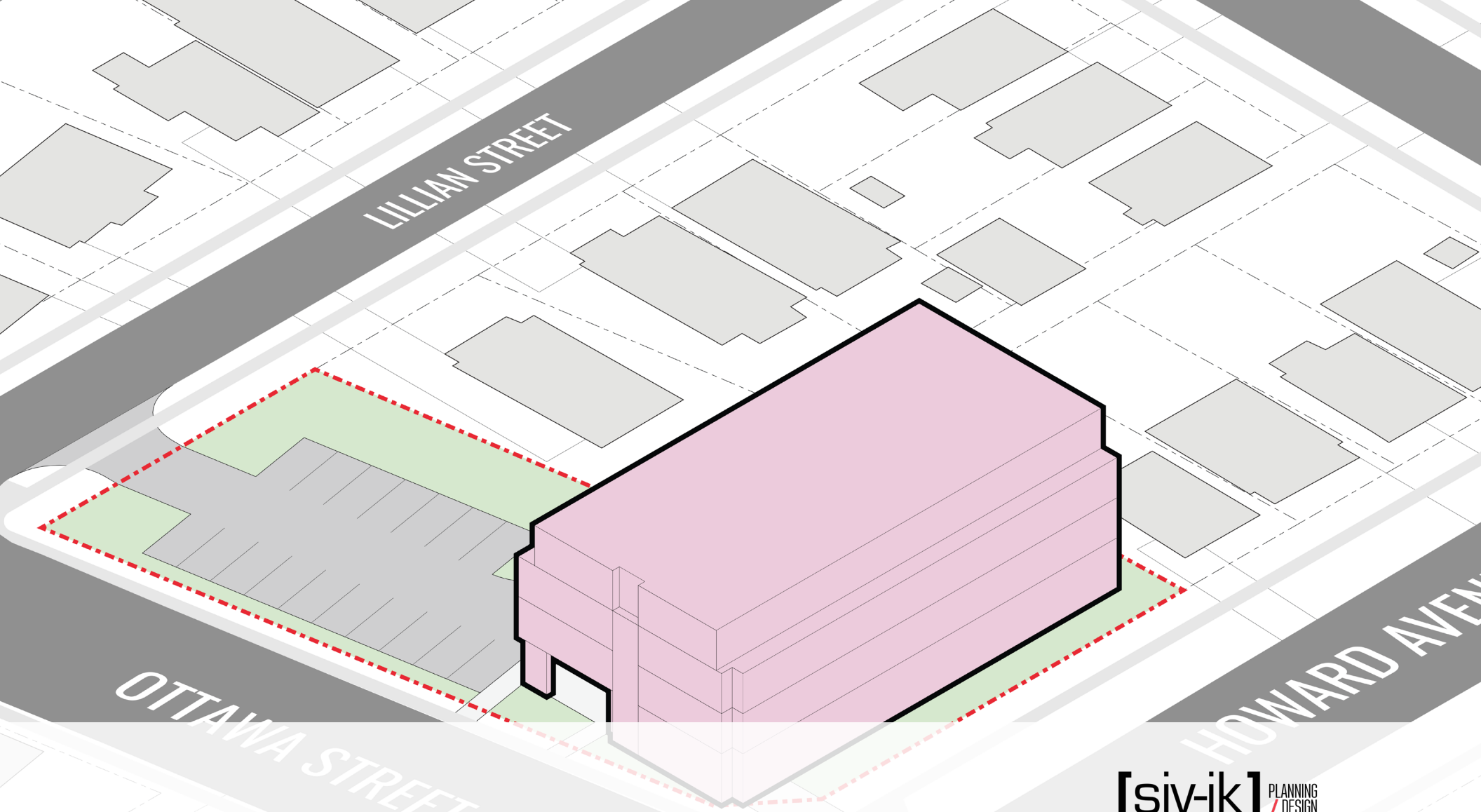

PROJECT **VISION BRIEF**

1360 & 1376 HOWARD AVE

WINDSOR / ON

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Client

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1. INTRODUCTION

1.1 Project Site

The subject site is comprised of two legally titled parcels, municipally identified as 1360 & 1376 Howard Avenue. The site is located on the southeast corner of the intersection of Howard Avenue and Ottawa Street in South-Central Windsor. The site is approximately 1,968m2 (0.197ha) in size and currently accommodates a used vehicle automotive dealership consisting of a 2-storey converted building and a large sales and display area in the rear of the property along Ottawa Street and Lillian Avenue. The site contains direct frontage on three adjacent municipal streets (i.e., Howard Ave, Ottawa Street & Lillian Avenue) and is currently accessed via a 2-way driveway connection to Lillian Avenue. The site is irregular in shape, spanning a depth of approximately 59.3m along Ottawa Street and containing a total frontage of 37.6m on Howard Avenue. City sidewalks are located along all three adjacent municipal streets, with dedicated bicycle lanes along the Ottawa Street frontage.

1.2 Area Context

Within a 400-metre radius (approximately a 5-minute walk) of the site, the land use pattern exhibits a diverse mix of uses. Immediately west of the site is the historic Windsor Grove Cemetery, established in 1866. To the east, the area comprises a mix of low-density residential buildings and additional cemetery lands. Further along Ottawa Street is a traditional main street commercial corridor, featuring a variety of shops, restaurants, and service businesses. The built form along this corridor is typical of a main street, with low-rise buildings that have commercial uses at grade and residential units above.

To the southeast, east of Howard Avenue, the land is characterized by a mix of older light industrial and employment uses. The Howard Avenue corridor itself is primarily residential, containing a range of housing types, including single-detached dwellings, converted dwellings, and low-rise multiplexes. This historic arterial road offers significant potential for redevelopment and residential intensification, given its proximity to a wide range of services and amenities.

Transit access in the area is robust, with Windsor Transit operating multiple routes within 400 metres of the site. Nearby stops include those at Ottawa Street & Parent Avenue to the east and Howard Avenue & Giles Street to the north. This combination of land use diversity, historic context, and transit accessibility underscores the redevelopment potential of the Howard Avenue corridor.

AT-A-GLANCE

Site Area	0.197 Hectares
Frontage	37.6 Metres (Howard)
Depth	59.3 Metres (Ottawa)
Existing Use	Automotive Dealership
Servicing	Full Municipal

N — Low-Rise Residential

S — Low-Rise Residential

W — Windsor Groves Cemetery

E — Low-Rise Residential & Ottawa Street Commercial Corridor

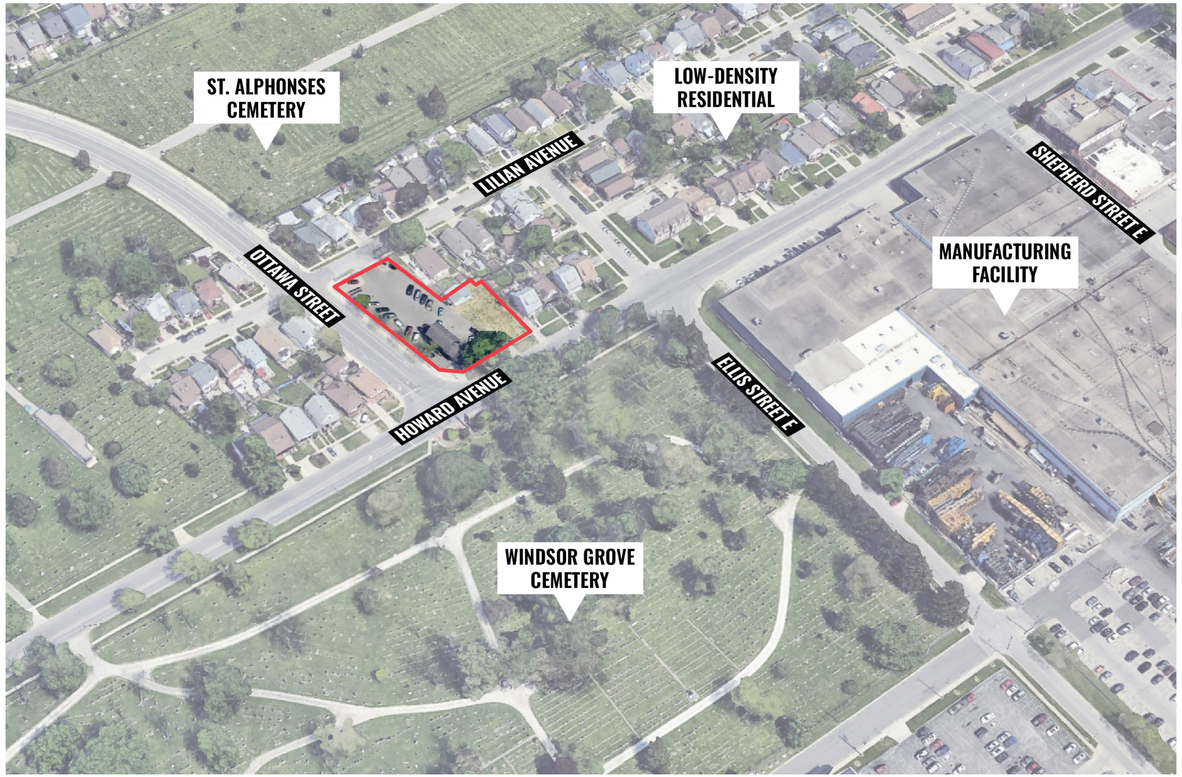


Figure 1: The Project Site

2. PLANNING FRAMEWORK

2.1 City-Structure

Figure 2 provides visual context for the site's positioning relative to Windsor's city-structure, including the City's network of major streets. The project site contains frontage on Howard Avenue which is now identified as a Class II Arterial by the City of Windsor Official Plan and Ottawa Street. This intersection occupies a strategic position within the City of Windsor's overall urban structure, serving as a critical node that bridges residential, commercial, and mixed-use areas. This intersection is characterized by its proximity to established neighborhoods, which contribute to the city's historical and cultural fabric, and its accessibility to major arterial routes, enhancing connectivity to key destinations across Windsor.

The site is located in the Walkerville Planning District, in close proximity to Downtown Windsor. Howard Avenue, a significant north-south corridor, facilitates the movement of people and goods between the core and suburban areas, connecting to the E.C. Row Expressway and Downtown Windsor. Ottawa Street, on the other hand, is a vibrant commercial corridor that supports local businesses, featuring specialty shops, restaurants, and services that attract both residents and visitors. Together, these streets create a dynamic intersection that embodies Windsor's goals of fostering complete and connected communities.

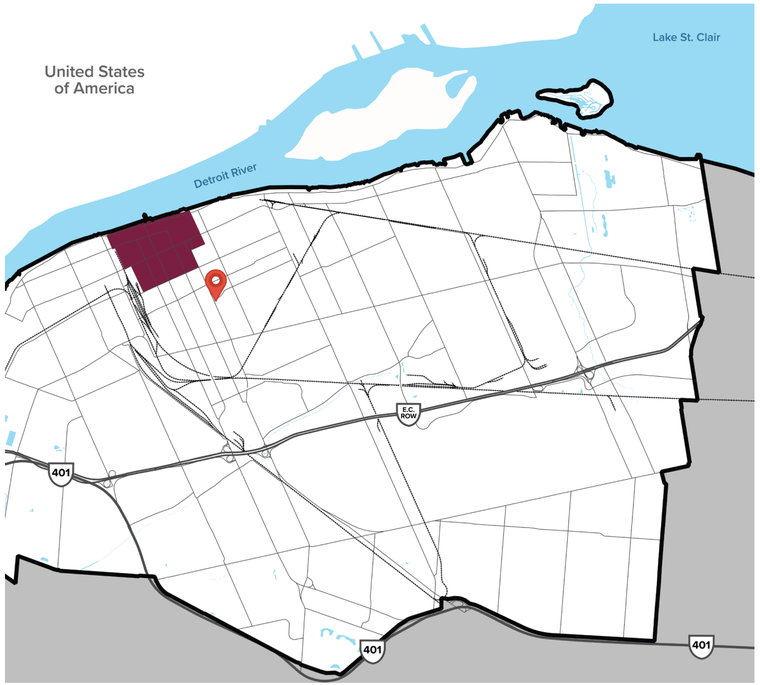
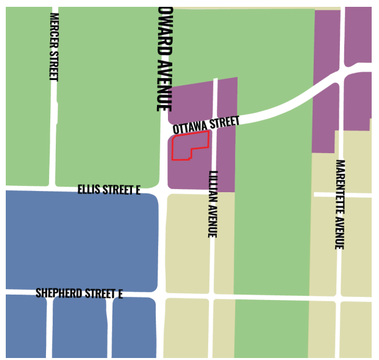


Figure 2: City-Wide Context

2.2 City of Windsor Official Plan

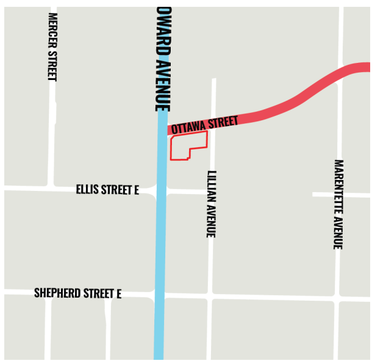
The project site is within the "Mixed Use Corridor" designation as per Schedule D - Land Use Plan - of the City of Windsor Official Plan. Lands designated as "Mixed Use Corridor"are intended become vibrant mixed-use commercial and residential areas. Ideally, the predominant form of new or redeveloped housing should be Medium and High Profile residential buildings with ground floor and possible second floor commercial uses and upper floor residential dwellings. In accordance with the permitted uses policies of 6.5.3.1, Medium and High Profile residential uses either as stand-alone buildings or part of a commercial-residential mixed use buildings shall be throughout the Corridors. The project site is bounded by a Class II Arterial Road (Howard Avenue) to the west and a Class I Collector Road to the North (Ottawa Street), as illustrated on the Schedule F- Roads and Bikeways of the City of Windsor Official Plan. Class II Arterial Roads are intended to carry higher volumes of traffic and direct vehicular accesses to new developments are discouraged. From a built form and intensity perspective, heights are generally limited to 4-storeys or less in the designations except for locations at the intersection of to higher order streets. The subject site, in accordance with policy 6.5.3.3 a), would potentially qualify for said taller building heights given it's corner location at Howard Avenue and Ottawa Street.

Schedule D - Land Use



- Mixed Use Corridor
- Residential
- Industrial
- Open Space

Schedule F - Roads & Bikeways

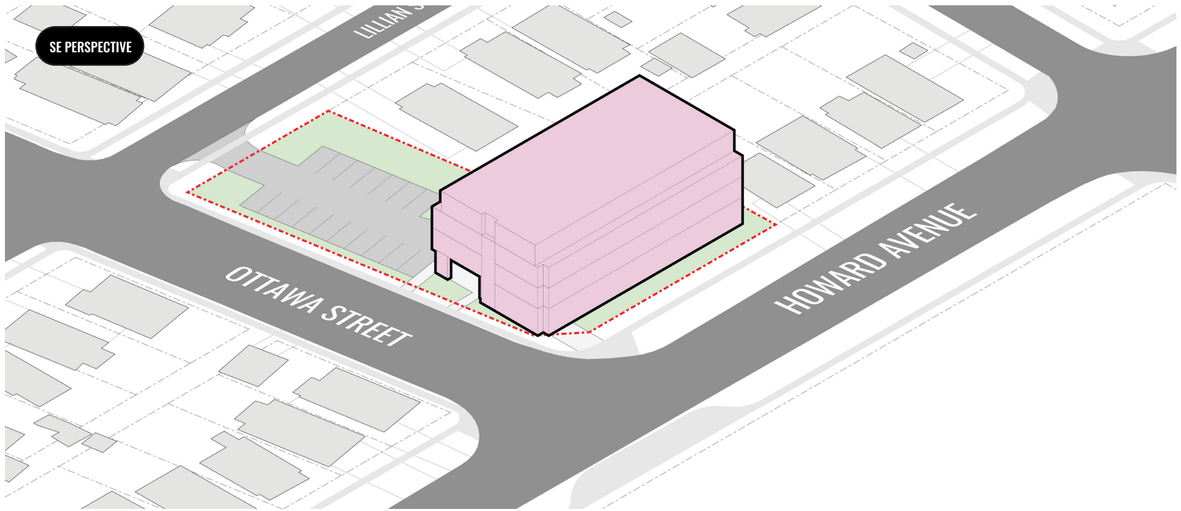


- Class II Arterial Road
- Class I Collector Road

3. PRELIMINARY CONCEPT DESIGN

3.1 4-Storey Multiple Dwelling (Walk-Up Apartment)

The preliminary concept plan illustrated on page 05-06 of this brief envisions the development of a 4-storey residential apartment building with a total of 25 dwelling units. The built form is oriented towards Howard Avenue with surface parking and landscaped amenity areas located in the rear portion of the site. Access is proposed to remain in its current general location, stemming from Lillian Avenue. The site design provides for a total of 25 surface parking stalls (1.0 stalls per unit). Direct pedestrian connections from the building towards the adjacent City sidewalks have been provided to integrate the development with the existing public realm. Main floor units facing Howard Avenue are envisioned to have direct unit entrances and designed as barrier-free. The building has been conceived as a "walk-up" style without an interior elevator system. The upper units as planned as "two-storey" units with access from a common corridor on the 3rd floor. The preliminary concept represents the desirable implementation of the proposed Zoning By-law Amendment outlined in Section 4 of this brief.



Note: Simplified site plan prepared by Siv-ik Planning & Design Inc.

CONCEPT AT-A-GLANCE

Site Area	0.197 ha.
Height	4-Storeys (14.0m)
Residential Units	25
Commercial (GFA)	n/a
Parking	1.0 Per Unit
Amenity Area	10.5m2 per unit
Lot Coverage	36.2%
Landscape OS	31.6%
Density	127uph

LEGEND

- Site Boundary
- Apartment Building
- Principal Entrance
- Pedestrian Connections
- Common Amenity Space
- Enhanced Landscaping

4. ZONING APPROACH

4.1 Proposed Zoning By-law Amendment

The proposed Zoning By-law will provide a framework for a medium density/medium-profile residential development (i.e., 25-unit Multiple Dwelling). To support the development vision for 1360 & 1376 Howard Avenue and to implement the applicable Official Plan policies, we propose to rezone the site from the Residential Districts 2 (RD2.2) and Commercial Districts 2 (CD2.6) to a Residential Districts 3 (RD3.1(_)) Special Provision Zone. The proposed Zoning By-law will provide a framework for residential intensification in an appropriate medium-profile building form. The proposed zone includes special regulations to account for the urban context of the site and implement applicable form-based policy directions of the City of Windsor Official Plan including Section 6.5.3.3.c) which encourages buildings at the street frontage lot line with parking accommodated at the rear of the site. The proposed zone and special regulations are structured to facilitate an appropriate range of desirable site design outcomes but are not directly tied to a specific development design. In this regard, the proposed Zoning By-law Amendment will "lock-in" the key development and built form standards but will also allow for a degree of flexibility to address site and building design details through the future Site Plan Control application process.

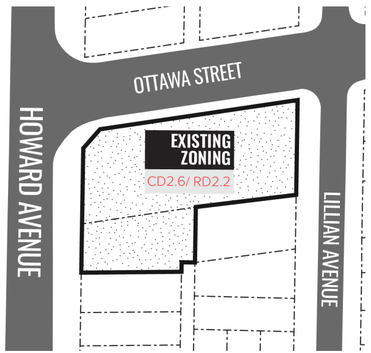


Figure 3: Existing Zoning

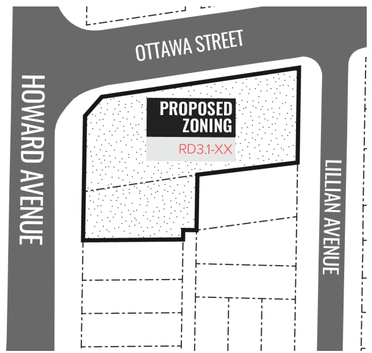


Figure 4: Proposed Zoning

4.2 Proposed Special Regulations Overview

Zone Requirements	Standard RD3.1 Zone Regs	Proposed RD3.1-XX Zone Regs ('-' means no change)
Permitted Uses	See detailed list in Section 12.1.1	-
Lot Frontage (min.)	18.0m	-
Lot Area (min.)	540m2 for the first 5 dwelling units and 67.0m2 per unit for each additional dwelling unit.	-
Lot Coverage (max.)	35%	37%
Main Building Height (max.)	14.0m	-
Front Yard Depth (min.)	6.0m	3.0m
Rear Yard Depth (min.)	7.5m	4.1m
Side Yard Depth (min.)	a) Where a habitable room window of any dwelling unit faces a side yard: 6.0m b) Any other side yard: 3.0m	Interior Side Yard Depth: 3.0m Exterior Side Yard Depth: 0.0m
Landscaped Open Space (min.)	35%	30%
Parking (min.)	**Multiple Dwelling:** 1.25 per unit	**Multiple Dwelling:** 1.0 per unit

Table 1: Special Regulations Overview

5. ADDITIONAL CONSIDERATIONS

5.1 Applications Required

It is anticipated that the following Planning Act applications will be required in order to implement the planned vision for the project site:

1. Zoning By-law Amendment: To rezone the site from the Residential Districts 2 (RD2.2) and Commercial Districts 2 (CD2.6) to a Residential Districts 3 (RD3.1(_)) Special Provision Zone, with special provisions to address the site context and applicable policy framework.
2. Site Plan Control: To implement the specific development design envisioned in the preliminary development concept illustrations.

5.2 Issues for Clarification

From the proponent's perspective, the following attributes are critical to the success of the development vision. As such, the project team would appreciate any specific insights that City Staff are able to offer on the following:

1. Staff perspective on the proposed built form, height, massing and site layout.
2. Known site servicing opportunities and constraints.
3. Reports and studies required for the complete Zoning By-law Amendment application.

REFERENCES

1. Provincial Planning Statement, 2024.
2. City of Windsor Official Plan.
3. City of Windsor Zoning By-law 8600.
4. City of Windsor, MappMyCity (Last updated December 01, 2024).

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Project #23-048 - City of Windsor

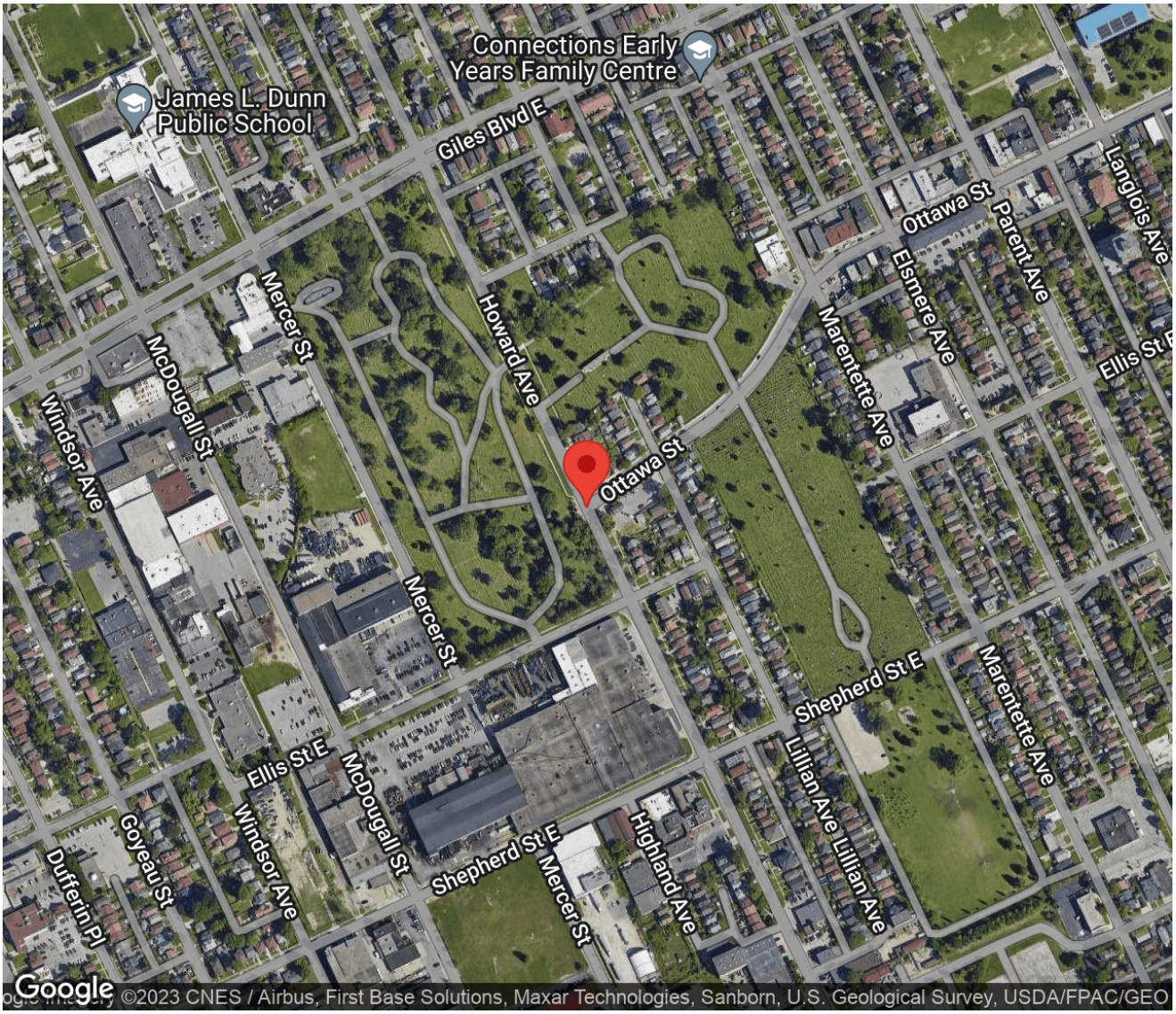
Intersection Count Report

Intersection:	OTTAWA ST & HOWARD AVE
Municipality:	Windsor
Count Date:	Tuesday, Mar 21, 2023
Site Code:	2304800042
Count Categories:	Cars, Medium Trucks, Heavy Trucks, Peds, Bicycles
Count Period:	07:00-10:00, 11:00-14:00, 15:00-18:00
Weather:	Clear
Comments:	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Map

Intersection:	OTTAWA ST & HOWARD AVE
Site Code:	2304800042
Municipality:	Windsor
Count Date:	Mar 21, 2023



Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: OTTAWA ST & HOWARD AVE
Site Code: 2304800042
Municipality: Windsor
Count Date: Mar 21, 2023

HOWARD AVE - Traffic Summary

	North Approach Totals						South Approach Totals						
	Includes Cars, Medium Trucks, Heavy Trucks, Bicycles						Includes Cars, Medium Trucks, Heavy Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	28	204	0	0	232	1	0	247	54	0	301	0	533
08:00 - 09:00	47	266	0	0	313	3	0	419	153	0	572	1	885
09:00 - 10:00	51	286	0	0	337	0	0	319	105	0	424	2	761
BREAK													
11:00 - 12:00	57	300	0	0	357	0	0	380	133	0	513	2	870
12:00 - 13:00	66	338	0	0	404	0	0	358	137	0	495	3	899
13:00 - 14:00	64	328	0	0	392	0	0	368	131	0	499	6	891
BREAK													
15:00 - 16:00	84	461	0	0	545	0	0	424	207	0	631	2	1176
16:00 - 17:00	91	505	0	0	596	0	0	401	167	0	568	1	1164
17:00 - 18:00	68	360	0	0	428	2	0	371	165	0	536	4	964
GRAND TOTAL	**556**	**3048**	**0**	**0**	**3604**	**6**	**0**	**3287**	**1252**	**0**	**4539**	**21**	**8143**

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Traffic Count Summary

Intersection: OTTAWA ST & HOWARD AVE
Site Code: 2304800042
Municipality: Windsor
Count Date: Mar 21, 2023

OTTAWA ST - Traffic Summary

	East Approach Totals						West Approach Totals						
	Includes Cars, Medium Trucks, Heavy Trucks, Bicycles						Includes Cars, Medium Trucks, Heavy Trucks, Bicycles						
Hour	Left	Thru	Right	U-Turn	Total	Peds	Left	Thru	Right	U-Turn	Total	Peds	Total
07:00 - 08:00	91	0	41	0	132	3	0	0	0	0	0	0	132
08:00 - 09:00	157	0	80	0	237	7	0	0	0	0	0	0	237
09:00 - 10:00	131	0	54	0	185	2	0	0	0	0	0	0	185
BREAK													
11:00 - 12:00	131	0	63	0	194	13	0	0	0	0	0	0	194
12:00 - 13:00	156	0	72	0	228	5	0	0	0	0	0	0	228
13:00 - 14:00	190	0	66	0	256	4	0	0	0	0	0	0	256
BREAK													
15:00 - 16:00	217	0	97	0	314	10	0	0	0	0	0	0	314
16:00 - 17:00	194	0	68	0	262	8	0	0	0	0	0	0	262
17:00 - 18:00	168	0	72	0	240	7	0	0	0	0	0	0	240
GRAND TOTAL	**1435**	**0**	**613**	**0**	**2048**	**59**	**0**	**0**	**0**	**0**	**0**	**0**	**2048**

Peak Hour Diagram

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Specified Period		One Hour Peak	
From:	07:00:00	From:	08:15:00
To:	10:00:00	To:	09:15:00

Intersection: OTTAWA ST & HOWARD AVE
Site Code: 2304800042
Count Date: Mar 21, 2023

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: HOWARD AVE runs N/S

North Approach

	Out	In	Total
Cars	324	485	809
MT	6	9	15
HT	3	8	11
Bicycles	0	0	0
	333	**502**	**835**

HOWARD AVE

Bicycles	0	0	0
HT	3	0	0
MT	5	1	0
Cars	265	59	0
Totals	**273**	**60**	**0**

Peds: 3

Peds: 0

Peds: 6

Peds: 1

Totals	**411**	**146**	**0**
Cars	401	143	0
MT	6	1	0
HT	4	2	0
Bicycles	0	0	0

HOWARD AVE

East Approach

	Out	In	Total
Cars	244	202	446
MT	5	2	7
HT	7	2	9
Bicycles	0	0	0
	256	**206**	**462**

OTTAWA ST

Totals	Cars	MT	HT	Bicycles
0	0	0	0	0
91	84	3	4	0
165	160	2	3	0

South Approach

	Out	In	Total
Cars	544	425	969
MT	7	7	14
HT	6	6	12
Bicycles	0	0	0
	557	**438**	**995**

Cars - Cars MT - Medium Trucks HT - Heavy Trucks Bicycles - Bicycles

Comments

Peak Hour Diagram

Specified Period
From: 11:00:00
To: 14:00:00

One Hour Peak
From: 12:15:00
To: 13:15:00

Intersection: OTTAWA ST & HOWARD AVE
Site Code: 2304800042
Count Date: Mar 21, 2023

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: HOWARD AVE runs N/S

North Approach

	Out	In	Total
Cars	377	440	817
MT	8	7	15
HT	3	2	5
Bicycles	0	0	0
	388	**449**	**837**

HOWARD AVE

Bicycles	0	0	0
HT	3	0	0
MT	7	1	0
Cars	314	63	0
Totals	**324**	**64**	**0**

Peds: 0

Peds: 0

Peds: 5

Peds: 4

Totals	**375**	**142**	**0**
Cars	367	140	0
MT	6	2	0
HT	2	0	0
Bicycles	0	0	0

HOWARD AVE

East Approach

	Out	In	Total
Cars	247	203	450
MT	2	3	5
HT	0	0	0
Bicycles	1	0	1
	250	**206**	**456**

OTTAWA ST

Totals	Cars	MT	HT	Bicycles
0	0	0	0	0
74	73	1	0	0
176	174	1	0	1

South Approach

	Out	In	Total
Cars	507	488	995
MT	8	8	16
HT	2	3	5
Bicycles	0	1	1
	517	**500**	**1017**

Cars - Cars MT - Medium Trucks HT - Heavy Trucks Bicycles - Bicycles

Comments

Peak Hour Diagram

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Specified Period		One Hour Peak	
From:	15:00:00	From:	15:15:00
To:	18:00:00	To:	16:15:00

Intersection: OTTAWA ST & HOWARD AVE
Site Code: 2304800042
Count Date: Mar 21, 2023

Weather conditions: Clear

**** Signalized Intersection ****

Major Road: HOWARD AVE runs N/S

North Approach

	Out	In	Total
Cars	566	484	1050
MT	7	3	10
HT	5	7	12
Bicycles	2	1	3
	580	**495**	**1075**

HOWARD AVE

Bicycles	1	1	0
HT	3	2	0
MT	7	0	0
Cars	478	88	0
Totals	**489**	**91**	**0**

Peds: 0

Peds: 0

Peds: 8

Peds: 2

Totals	406	201	0
Cars	395	201	0
MT	3	0	0
HT	7	0	0
Bicycles	1	0	0

HOWARD AVE

East Approach

	Out	In	Total
Cars	313	289	602
MT	0	0	0
HT	3	2	5
Bicycles	0	1	1
	316	**292**	**608**

OTTAWA ST

Totals	Cars	MT	HT	Bicycles
0	0	0	0	0
89	89	0	0	0
227	224	0	3	0

South Approach

	Out	In	Total
Cars	596	702	1298
MT	3	7	10
HT	7	6	13
Bicycles	1	1	2
	607	**716**	**1323**

Cars - Cars MT - Medium Trucks HT - Heavy Trucks Bicycles - Bicycles

Comments

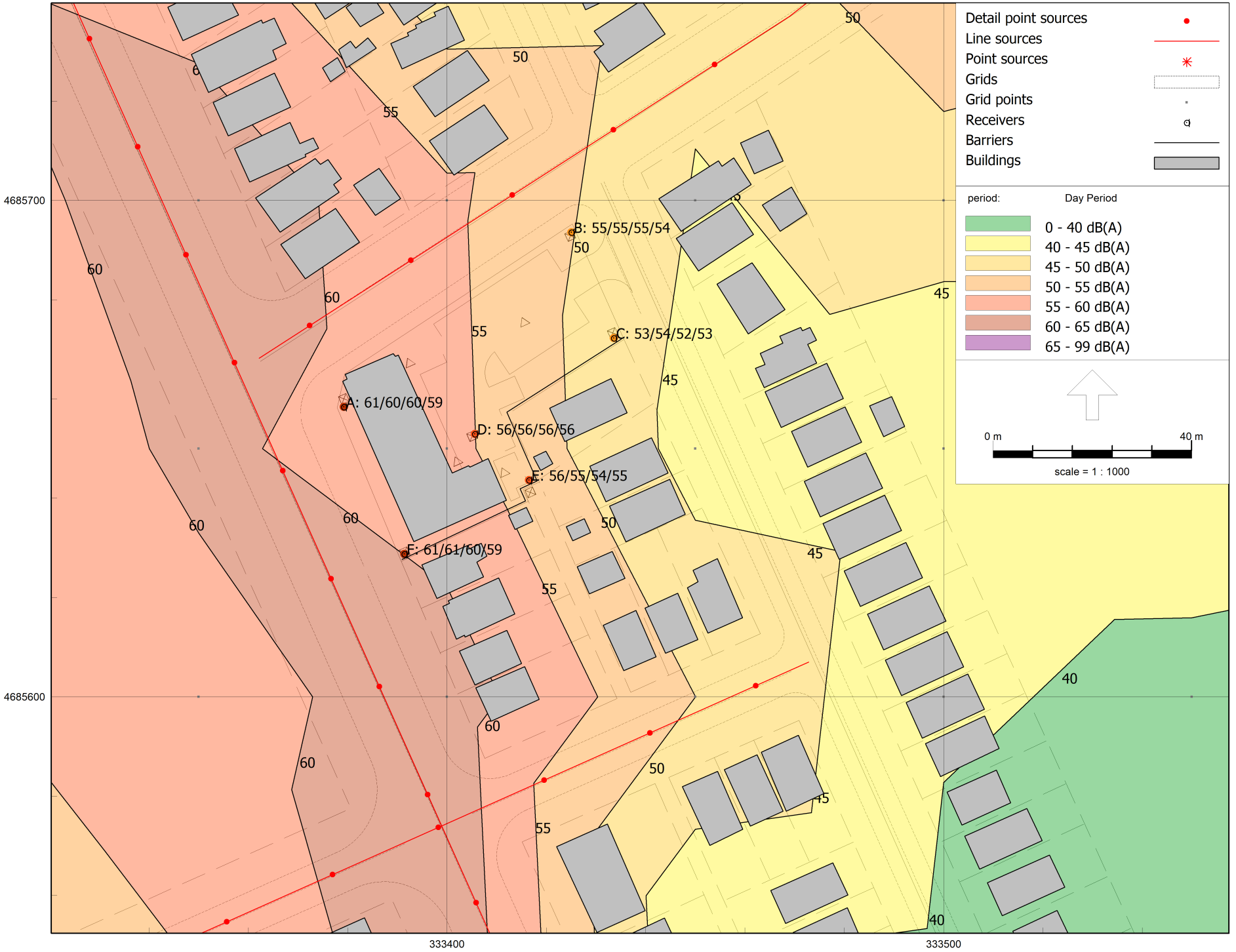
Table A – Typical Glazing as per STC

STC Requirement	Glazing Configuration (STC)
28-29	Double Glaze Unit
30-31	3(13)3
32-33	4(10)4
34	4(19)4
35-36	6(10)4, 5(16)4
37	6(13)6, 6(20)5, 5(25)6
38	6(25)5, 6L(13)6

Appendix B

INOISE OUTPUT

STAMSON - TRANSPORTATION NOISE

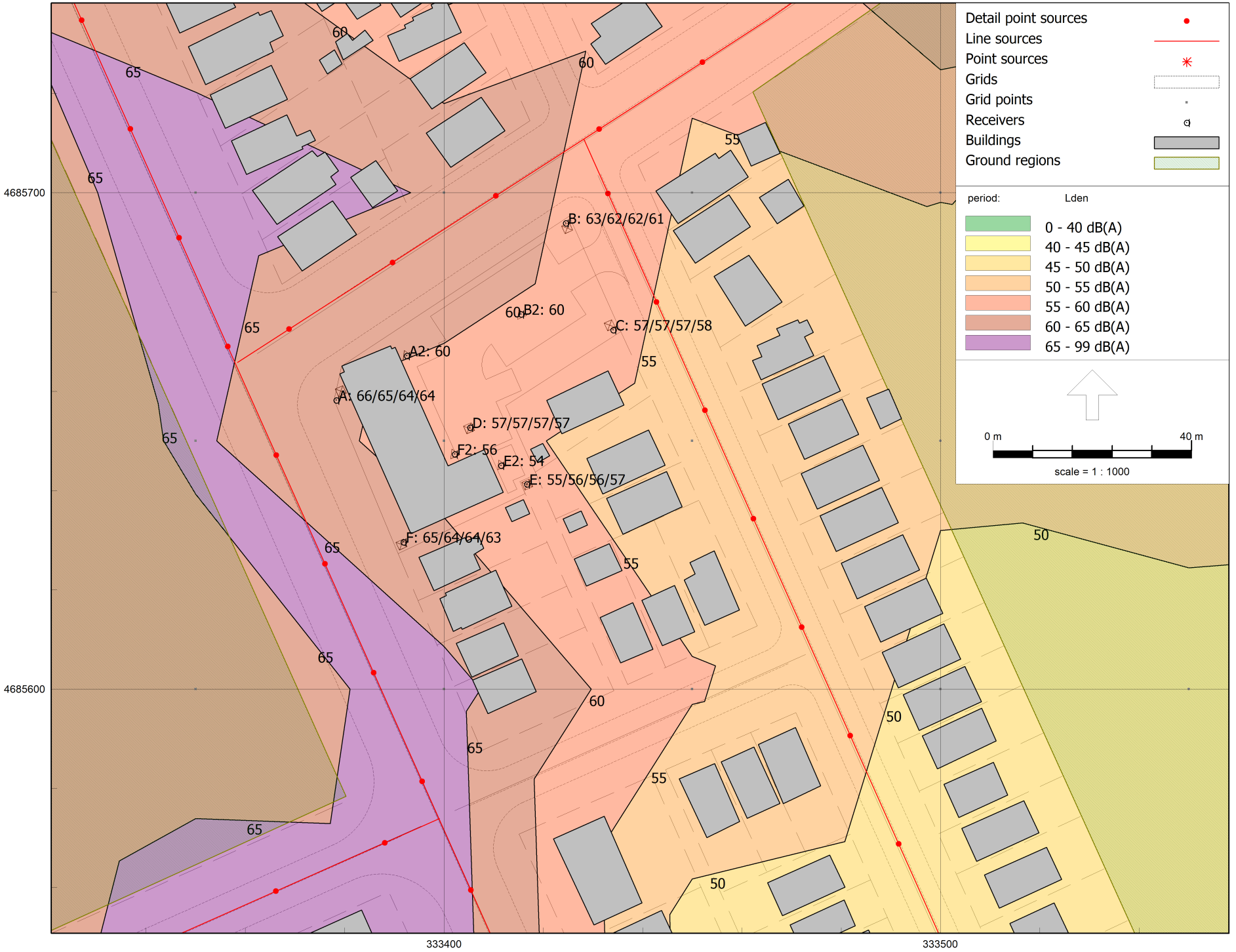


STAMSON Noise Information Plan

13 May 2025, 13:31

<unregistered user>

STATIONARY NOISE



Noise Information Plan
12 May 2025, 13:55

<unregistered user>

Appendix C

MONITORING AND STAMSON RESULTS

Howard Ottawa noise monitoring

Monitoring times:

A: starts at 10:36 AM

– road noise from Howard and Ottawa facing intersection

Street painting was taking place at the time of recording for monitor A, noise levels may by slightly higher than predicted.

B: starts at 10:58 AM

– road noise from Ottawa and Lillian facing intersection

Street painting was being finished at this time, although quieter than monitor A location and time.

C: starts at 11:21 AM

– road noise from Lillian facing residential housing.

D: starts at 11:46 AM

– road noise from Howard facing Howard from interior of lot

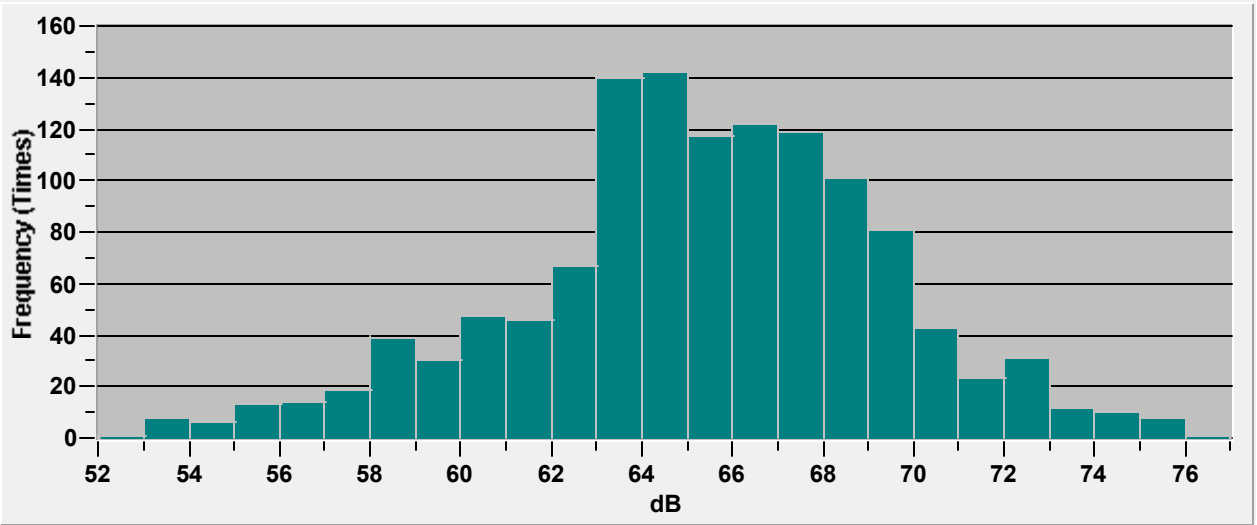
E: starts at 12:09 PM

- interior lot noise from residential to the south of property.

F: starts at 12:30 PM

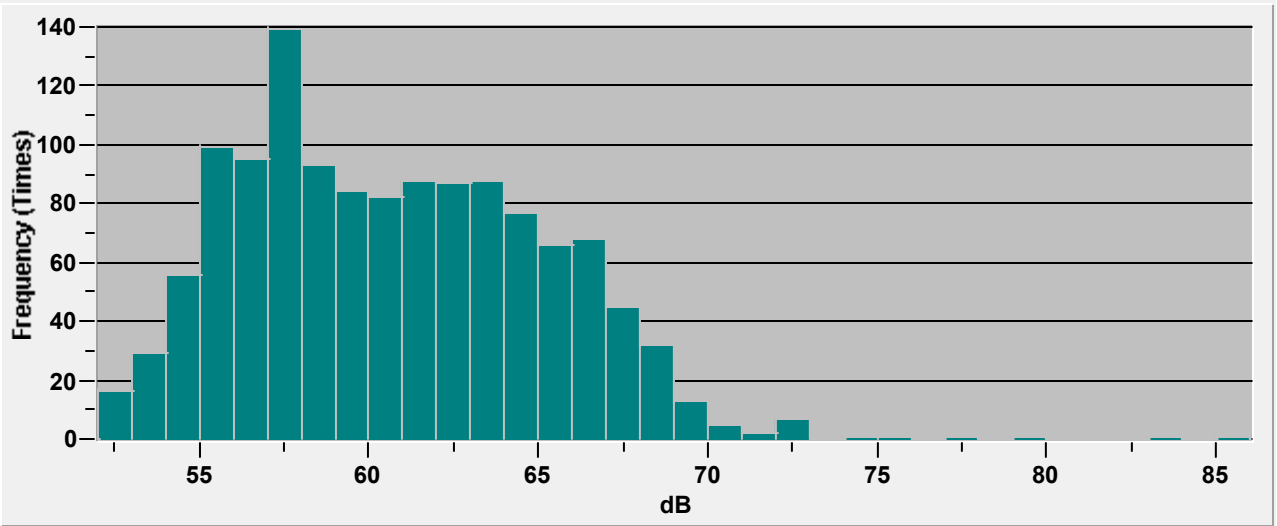
– road noise from Howard, some noise may be emitted from Flex N Gate to the south of the property on Howard

NOISE MONITOR A



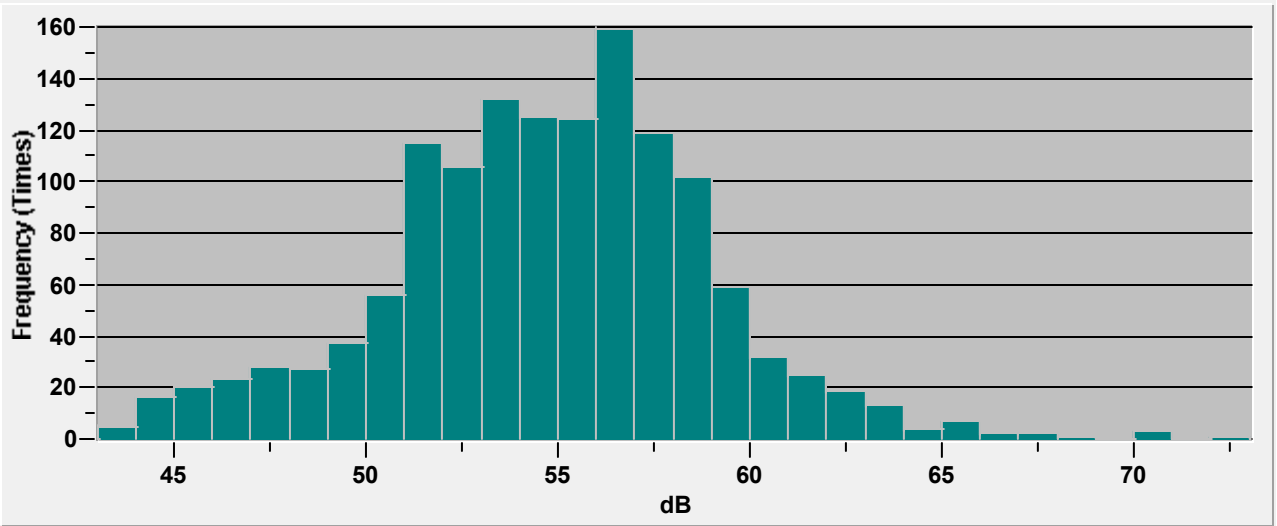
Ln	0	1	2	3	4	5	6	7	8	9
L(00)	75	74	73	72	72	71	71	70	70	70
L(10)	70	69	69	69	69	69	69	68	68	68
L(20)	68	68	68	68	68	67	67	67	67	67
L(30)	67	67	67	67	67	66	66	66	66	66
L(40)	66	66	66	66	66	65	65	65	65	65
L(50)	65	65	65	65	64	64	64	64	64	64
L(60)	64	64	64	64	64	63	63	63	63	63
L(70)	63	63	63	63	63	63	63	62	62	62
L(80)	62	62	61	61	61	61	60	60	60	60
L(90)	59	59	58	58	58	57	57	56	55	53

NOISE MONITOR B



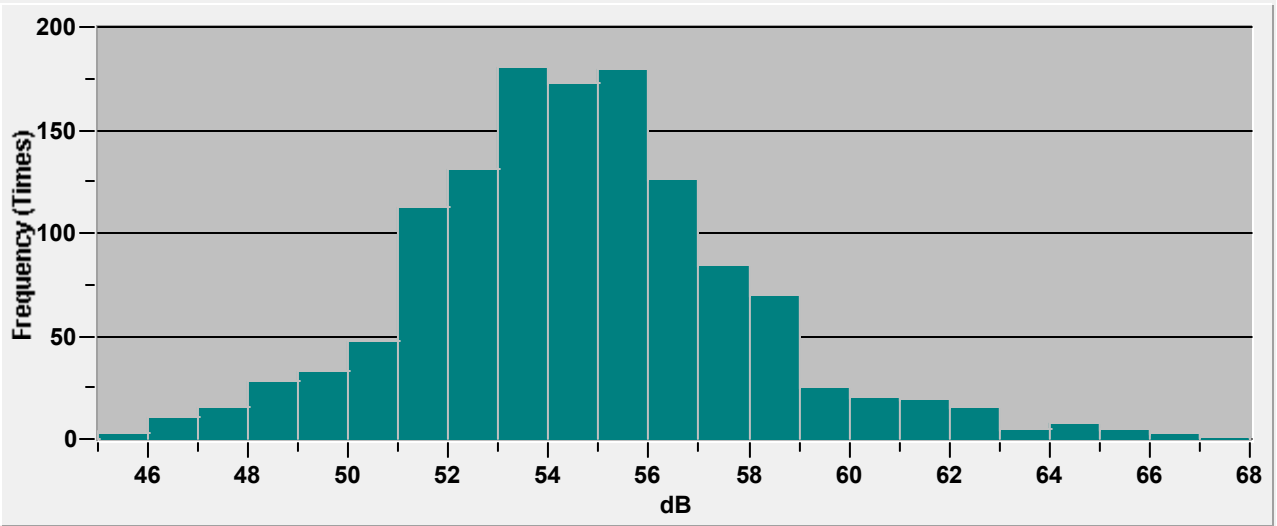
Ln	0	1	2	3	4	5	6	7	8	9
L(00)	77	70	69	68	68	67	67	67	67	66
L(10)	66	66	66	66	65	65	65	65	65	64
L(20)	64	64	64	64	64	63	63	63	63	63
L(30)	63	63	62	62	62	62	62	62	62	61
L(40)	61	61	61	61	61	61	60	60	60	60
L(50)	60	60	59	59	59	59	59	59	59	58
L(60)	58	58	58	58	58	58	57	57	57	57
L(70)	57	57	57	57	57	57	57	56	56	56
L(80)	56	56	56	56	55	55	55	55	55	55
L(90)	55	55	54	54	54	54	53	53	53	52

NOISE MONITOR C



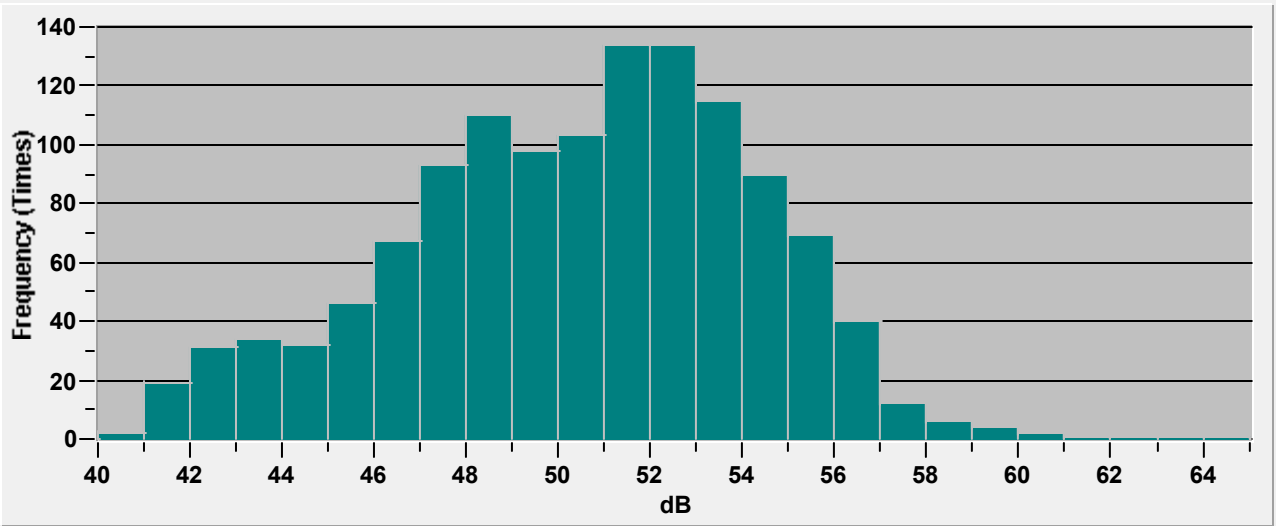
Ln	0	1	2	3	4	5	6	7	8	9
L(00)	68	64	63	62	61	61	60	60	59	59
L(10)	59	59	58	58	58	58	58	58	58	58
L(20)	57	57	57	57	57	57	57	57	57	56
L(30)	56	56	56	56	56	56	56	56	56	56
L(40)	55	55	55	55	55	55	55	55	55	54
L(50)	54	54	54	54	54	54	54	54	54	53
L(60)	53	53	53	53	53	53	53	53	52	52
L(70)	52	52	52	52	52	52	51	51	51	51
L(80)	51	51	51	51	50	50	50	50	50	49
L(90)	49	48	48	47	47	46	46	45	44	44

NOISE MONITOR D



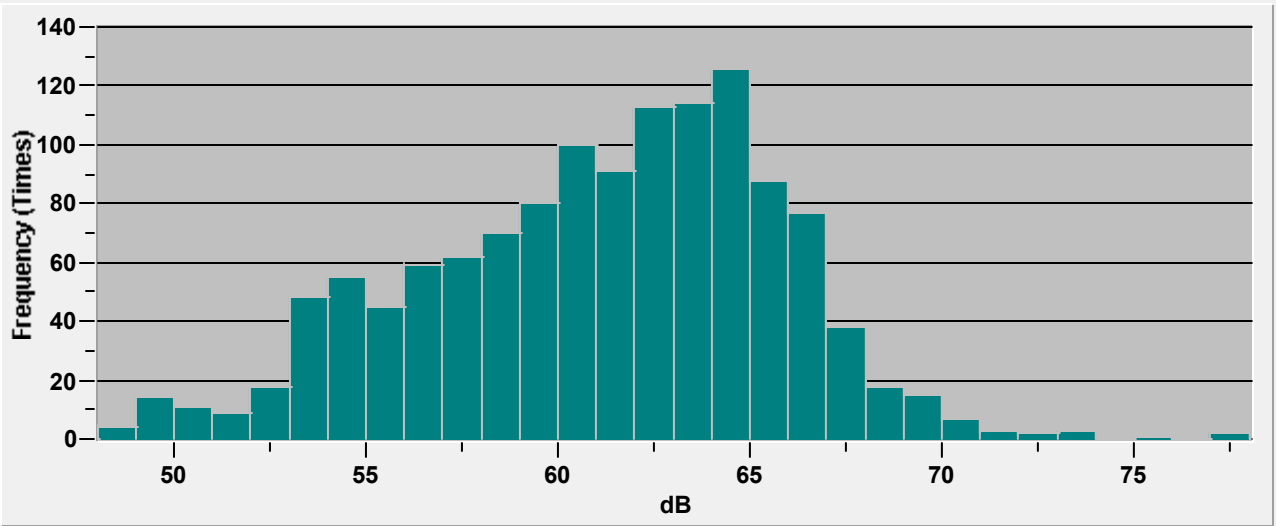
Ln	0	1	2	3	4	5	6	7	8	9
L(00)	65	63	62	61	61	60	59	59	58	58
L(10)	58	58	58	57	57	57	57	57	57	57
L(20)	56	56	56	56	56	56	56	56	56	56
L(30)	55	55	55	55	55	55	55	55	55	55
L(40)	55	55	55	54	54	54	54	54	54	54
L(50)	54	54	54	54	54	54	54	53	53	53
L(60)	53	53	53	53	53	53	53	53	53	53
L(70)	53	52	52	52	52	52	52	52	52	52
L(80)	52	51	51	51	51	51	51	51	51	50
L(90)	50	50	50	49	49	49	48	48	47	46

NOISE MONITOR E



Ln	0	1	2	3	4	5	6	7	8	9
L(00)	61	58	56	56	56	56	55	55	55	55
L(10)	55	54	54	54	54	54	54	54	53	53
L(20)	53	53	53	53	53	53	53	53	52	52
L(30)	52	52	52	52	52	52	52	52	51	51
L(40)	51	51	51	51	51	51	51	51	51	50
L(50)	50	50	50	50	50	50	50	49	49	49
L(60)	49	49	49	49	49	48	48	48	48	48
L(70)	48	48	48	48	47	47	47	47	47	47
L(80)	47	46	46	46	46	46	46	45	45	45
L(90)	45	44	44	43	43	43	42	42	41	41

NOISE MONITOR F



Ln	0	1	2	3	4	5	6	7	8	9
L(00)	73	70	69	68	67	67	67	66	66	66
L(10)	66	66	66	65	65	65	65	65	65	65
L(20)	64	64	64	64	64	64	64	64	64	64
L(30)	63	63	63	63	63	63	63	63	63	62
L(40)	62	62	62	62	62	62	62	62	61	61
L(50)	61	61	61	61	61	60	60	60	60	60
L(60)	60	60	60	59	59	59	59	59	59	58
L(70)	58	58	58	58	58	57	57	57	57	56
L(80)	56	56	56	56	55	55	55	55	54	54
L(90)	54	54	53	53	53	53	52	51	50	49

```
STAMSON 5.0        NORMAL REPORT        Date: 14-05-2025 09:21:32
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: alvl1.te             Time Period: 90%/10%
Description:



Road data, segment # 1: HOWARD
------------------------------
Car traffic volume  : 15653 veh/TimePeriod
Medium truck volume :   300 veh/TimePeriod
Heavy truck volume  :   300 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: HOWARD
------------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Impervious ground surface)
Receiver source distance  :  17.50 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00




Road data, segment # 2: OTTAWA
------------------------------
Car traffic volume  :  4013 veh/TimePeriod
Medium truck volume :    33 veh/TimePeriod
Heavy truck volume  :    33 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: OTTAWA
------------------------------
Angle1   Angle2           :   0.00 deg   80.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Impervious ground surface)
Receiver source distance  :  16.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.0
```

Results segment # 1: HOWARD

Source height = 1.17 m

ROAD (0.00 + 60.31 + 0.00) = 60.31 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.66	65.89	0.00	-1.11	-4.47	0.00	0.00	0.00	60.31

Segment Leq : 60.31 dBA

Results segment # 2: OTTAWA

Source height = 0.95 m

ROAD (0.00 + 53.30 + 0.00) = 53.30 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	80	0.66	58.36	0.00	-0.47	-4.60	0.00	0.00	0.00	53.30

Segment Leq : 53.30 dBA

Total Leq All Segments: 61.10 dBA

TOTAL Leq FROM ALL SOURCES: 61.10

```
STAMSON 5.0        NORMAL REPORT        Date: 14-05-2025 09:27:44
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: blvl1.te             Time Period: 90%/10%
Description:


Road data, segment # 1: HOWARD
------------------------------
Car traffic volume  : 15653 veh/TimePeriod
Medium truck volume :   300 veh/TimePeriod
Heavy truck volume  :   300 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: HOWARD
----------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Impervious ground surface)
Receiver source distance  :  72.50 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00




Road data, segment # 2: OTTAWA
------------------------------
Car traffic volume  :  4013 veh/TimePeriod
Medium truck volume :    33 veh/TimePeriod
Heavy truck volume  :    33 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: OTTAWA
----------------------------
Angle1   Angle2           :   0.00 deg   80.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Impervious ground surface)
Receiver source distance  :  15.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00



Results segment # 1: HOWARD
```

Source height = 1.17 m

ROAD (0.00 + 50.07 + 0.00) = 50.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.66	65.89	0.00	-11.36	-4.47	0.00	0.00	0.00	50.07

Segment Leq : 50.07 dBA

Results segment # 2: OTTAWA

Source height = 0.95 m

ROAD (0.00 + 53.76 + 0.00) = 53.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	80	0.66	58.36	0.00	0.00	-4.60	0.00	0.00	0.00	53.76

Segment Leq : 53.76 dBA

Total Leq All Segments: 55.31 dBA

TOTAL Leq FROM ALL SOURCES: 55.31

```
STAMSON 5.0        NORMAL REPORT        Date: 14-05-2025 09:29:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: clvl1.te             Time Period: 90%/10%
Description:


Road data, segment # 1: HOWARD
------------------------------
Car traffic volume  : 15653 veh/TimePeriod
Medium truck volume :   300 veh/TimePeriod
Heavy truck volume  :   300 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: HOWARD
----------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Impervious ground surface)
Receiver source distance  :  72.50 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00




Road data, segment # 2: OTTAWA
------------------------------
Car traffic volume  :  4013 veh/TimePeriod
Medium truck volume :    33 veh/TimePeriod
Heavy truck volume  :    33 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: OTTAWA
----------------------------
Angle1   Angle2           :   0.00 deg   80.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Impervious ground surface)
Receiver source distance  :  35.50 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00



Results segment # 1: HOWARD
```

Source height = 1.17 m

ROAD (0.00 + 50.07 + 0.00) = 50.07 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.66	65.89	0.00	-11.36	-4.47	0.00	0.00	0.00	50.07

Segment Leq : 50.07 dBA

Results segment # 2: OTTAWA

Source height = 0.95 m

ROAD (0.00 + 47.55 + 0.00) = 47.55 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	80	0.66	58.36	0.00	-6.21	-4.60	0.00	0.00	0.00	47.55

Segment Leq : 47.55 dBA

Total Leq All Segments: 52.00 dBA

TOTAL Leq FROM ALL SOURCES: 52.00

```
STAMSON 5.0        NORMAL REPORT        Date: 14-05-2025 09:29:34
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: dlvl1.te             Time Period: 90%/10%
Description:


Road data, segment # 1: HOWARD
------------------------------
Car traffic volume  : 15653 veh/TimePeriod
Medium truck volume :   300 veh/TimePeriod
Heavy truck volume  :   300 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: HOWARD
----------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Impervious ground surface)
Receiver source distance  :  38.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00




Road data, segment # 2: OTTAWA
------------------------------
Car traffic volume  :  4013 veh/TimePeriod
Medium truck volume :    33 veh/TimePeriod
Heavy truck volume  :    33 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: OTTAWA
----------------------------
Angle1   Angle2           :   0.00 deg   80.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Impervious ground surface)
Receiver source distance  :  36.50 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00



Results segment # 1: HOWARD
```

Source height = 1.17 m

ROAD (0.00 + 54.72 + 0.00) = 54.72 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.66	65.89	0.00	-6.70	-4.47	0.00	0.00	0.00	54.72

Segment Leq : 54.72 dBA

Results segment # 2: OTTAWA

Source height = 0.95 m

ROAD (0.00 + 47.35 + 0.00) = 47.35 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	80	0.66	58.36	0.00	-6.41	-4.60	0.00	0.00	0.00	47.35

Segment Leq : 47.35 dBA

Total Leq All Segments: 55.45 dBA

TOTAL Leq FROM ALL SOURCES: 55.45

```
STAMSON 5.0        NORMAL REPORT        Date: 14-05-2025 09:30:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: elvl1.te             Time Period: 90%/10%
Description:


Road data, segment # 1: HOWARD
------------------------------
Car traffic volume  : 15653 veh/TimePeriod
Medium truck volume :   300 veh/TimePeriod
Heavy truck volume  :   300 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: HOWARD
----------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Impervious ground surface)
Receiver source distance  :  44.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00




Road data, segment # 2: OTTAWA
------------------------------
Car traffic volume  :  4013 veh/TimePeriod
Medium truck volume :    33 veh/TimePeriod
Heavy truck volume  :    33 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: OTTAWA
----------------------------
Angle1   Angle2           :   0.00 deg   80.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Impervious ground surface)
Receiver source distance  :  52.50 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00



Results segment # 1: HOWARD
```

Source height = 1.17 m

ROAD (0.00 + 53.67 + 0.00) = 53.67 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.66	65.89	0.00	-7.76	-4.47	0.00	0.00	0.00	53.67

Segment Leq : 53.67 dBA

Results segment # 2: OTTAWA

Source height = 0.95 m

ROAD (0.00 + 44.73 + 0.00) = 44.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	80	0.66	58.36	0.00	-9.03	-4.60	0.00	0.00	0.00	44.73

Segment Leq : 44.73 dBA

Total Leq All Segments: 54.19 dBA

TOTAL Leq FROM ALL SOURCES: 54.19

```
STAMSON 5.0        NORMAL REPORT        Date: 14-05-2025 09:30:51
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: flvl1.te             Time Period: 90%/10%
Description:


Road data, segment # 1: HOWARD
------------------------------
Car traffic volume  : 15653 veh/TimePeriod
Medium truck volume :   300 veh/TimePeriod
Heavy truck volume  :   300 veh/TimePeriod
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: HOWARD
----------------------------
Angle1   Angle2           : -90.00 deg   0.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Impervious ground surface)
Receiver source distance  :  15.50 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00




Road data, segment # 2: OTTAWA
------------------------------
Car traffic volume  :  4013 veh/TimePeriod
Medium truck volume :    33 veh/TimePeriod
Heavy truck volume  :    33 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: OTTAWA
----------------------------
Angle1   Angle2           :   0.00 deg   80.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Impervious ground surface)
Receiver source distance  :  49.00 m
Receiver height           :   1.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00



Results segment # 1: HOWARD
```

Source height = 1.17 m

ROAD (0.00 + 61.19 + 0.00) = 61.19 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	0	0.66	65.89	0.00	-0.24	-4.47	0.00	0.00	0.00	61.19

Segment Leq : 61.19 dBA

Results segment # 2: OTTAWA

Source height = 0.95 m

ROAD (0.00 + 45.23 + 0.00) = 45.23 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	80	0.66	58.36	0.00	-8.53	-4.60	0.00	0.00	0.00	45.23

Segment Leq : 45.23 dBA

Total Leq All Segments: 61.30 dBA

TOTAL Leq FROM ALL SOURCES: 61.30