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10th Avenue Estates
Preliminary Noise Assessment

Proposed Residential Development
10th Avenue Estates, Owen Sound

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July 2024
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Executive Summary

R.J. Burnside & Associates Limited (Burnside) was retained by 10th Avenue Estates to prepare a Preliminary Noise Assessment for the 10th Avenue Estates residential development. The property is located at 2261 9th Avenue East, Owen Sound, Ontario.

The only significant road traffic noise source is 9th Avenue East. Sound levels from 9th Avenue E were modelled based on the future traffic volumes. The resulting future sound levels were compared to the applicable Ministry of the Environment, Conservation and Parks (MECP) limits in order to determine whether any noise control measures are required.

There are no rail traffic noise sources of concern within 300 m of the development.

The subject development is not located within the NEF/NEP noise contours of any airports. Therefore, aircraft noise is not considered a significant noise source for this development.

The assessment revealed that transportation sound levels at all locations are below MECP limits; therefore, no noise mitigation measures are required.

The nearby stationary noise sources of concern to the development include: Lewis Motor Sales Inc, Sprung's Transport & Movers, McDougall Energy, Owen Sound Excavation and Rentals, Sunbelt Rentals, Owen Sound Towing & Service, and Elma Steel & Equipment which contain movement of trucks and rental equipment. Sound levels from these sources were modelled based on MECP standards. The resulting future sound levels were compared to the applicable MECP limits for a Class 2 Area in order to determine whether any noise control measures are required.

The assessment revealed that the stationary sound levels at all points of reception on the proposed development are below MECP limits; therefore, no external stationary noise mitigation measures are required.

There are no proposed stationary noise sources of concern within the proposed development.

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Aerial Photography taken from Google Earth Professional, 2015.

In acoustics it is impossible to achieve no adverse effects for one hundred percent of the population. Certain persons are hypersensitive to noise and will find compliant noise situations to cause adverse effects.

1.0 Introduction

R.J. Burnside & Associates Limited (Burnside) was retained by 10th Avenue Estates to prepare a Preliminary Noise Assessment for the new 10th Avenue Estates residential development. The property is located at 2261 9th Avenue East, Owen Sound, Ontario.

The purpose of this assessment is to examine potential noise impacts relating to the proposed residences along 9th Avenue E, Owen Sound.

1.1 Objective

This report has been prepared in support of the new 10th Avenue Estates residential development. This report will be included in a submission for the Site Plan Approval. The potential noise impacts were assessed using the Ministry of the Environment, Conservation and Parks (MECP) traffic noise prediction model ORNAMENT, implemented through the STAMSON (version 5.04) computer program. Sound levels were predicted based on 10-year future traffic forecast for 9th Avenue E (see Table 2). The potential noise impacts were evaluated by comparing predicted sound levels at the representative points of reception with the MECP sound level limits.

1.2 Study Area

The proposed 10th Avenue Estates residential development is located southeast of 9th Avenue East and 26th Street East in Owen Sound, Ontario. The site location map is provided in Figure 1.

The Site Plan is shown in Figure 2. The proposed development is in an area currently zoned by Owen Sound as medium density residential. The zoning map is shown in Figure 3.

1.3 Site Visit

Burnside did not conduct a site visit as it was determined that all critical information about the site could be determined from publicly available aerial photographs and Streetview.

Burnside's review of the study area did not discover any unregulated noise sources of potential concern such as a dog park or daycare playground.

2.0 Applicable Noise Criteria

The proposed 10th Avenue Estates residential development is located in a Class 2 Urban Area.

2.1 MECP Noise Policies

Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning (NPC-300) is the MECP Publication which provides advice, sound level limits and guidance that maybe used when land use planning decisions are made under the Planning Act, and the Niagara Escarpment Planning and Development Act. This guidance is for land use planning authorities, developers, and consultants. It is intended to minimize the potential conflict between proposed noise sensitive land uses and sources of noise emissions.

2.1.1 Transportation Noise

2.1.1.1 Outdoor Living Areas

NPC-300 indicates that the sound level should be assessed in an outdoor living area (OLA). Where the noise exceeds the applicable sound level limits, mitigation measures 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 hours.

NPC-300 indicates that if the 16-hour equivalent sound level in the OLA is between 55 dBA and 60 dBA, noise control measures may be applied to reduce the sound level to 55 dBA; otherwise, a warning clause Type A should be issued. If the sound level 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.

2.1.1.2 Plane of a Window

If the sound level in the plane of a bedroom or living/dining room window is between 55 dBA and 65 dBA during daytime or between 50 dBA and 60 dBA during nighttime, the dwelling should be designed with a provision for the installation of central air conditioning in the future. Warning clause Type C is also recommended. If the sound level in the plane of a bedroom or living/dining room window is greater than 65 dBA during daytime or 60 dBA during nighttime, installation of central air conditioning should be implemented with a warning clause Type D.

The location and installation of any required outdoor air conditioning devices must comply with the MECP's publication: Residential Air Conditioning Devices (NPC-216). NPC-216 requires that the sound levels of the condensing units not exceed the maximum sound level of 55 dBA[1] at the neighbour's closest point of reception. Applicable points of reception are defined as the closest window or ground based outdoor living areas. Air conditioning units with a maximum Air-conditioning Refrigeration Institute (ARI) standard sound rating of greater than 7.6 Bels are also prohibited.

2.1.1.3 Indoor Living Areas

For road noise, the indoor sound level limit is 45 dBA for living/dining areas at any time and during daytime in the sleeping quarters. The sound level in the sleeping quarters should not exceed 40 dBA during nighttime.

2.1.1.4 Aircraft Noise

For aircraft noise, if the outdoor Noise Exposure Forecast / Noise Exposure Projection (NEF/NEP) value is less than 25, further assessment is not required. If the receptor is located between the NEF/NEP contours of 25 and 30, the dwelling should be designed with a provision for central air conditioning, along with warning clause Type C. In addition, the building components should be designed to achieve the indoor sound level limit of 0 NEF/NEP for sleeping quarters and 5 NEF/NEP for all other indoor living areas.

If the NEF/NEP value is greater than 30, municipal approval is required for a residential development proposal to proceed. If the municipality grants approval, then central air conditioning must be implemented, along with warning clauses Type B and Type D. In addition, the building components should be designed to achieve the indoor sound level limit of 0 NEF/NEP for sleeping quarters and 5 NEF/NEP for all other indoor living areas[2].

2.1.2 Stationary Noise

The applicable stationary noise criteria are dependent on the Class Area as well as the ambient sound levels present at each point of reception. The applicable criteria are the greater of the exclusion limits, provided in the MECP tables in Appendix B, or the lowest hourly ambient sound level predicted for a given point of reception.

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[1] 55 dBA is permissible for new land use developments when air conditioning is a mandatory requirement.

[2] The indoor NEF/NEP values 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 (MECP, NPC-300, Section C-6). Since NEF = $L_{eq\ (24)}$ – 32 dBA, NEF 0 corresponds to $L_{eq\ (24)}$ of 32 dBA and NEF 5 corresponds $L_{eq\ (24)}$ of 37 dBA.

The proposed 10th Avenue Estates residential development is located in a Class 2 Urban Area.

The MECP criteria for the outdoor receptors considered in this report are 50 dBA from 07:00 – 19:00 and 45 dBA from 19:00 – 23:00.

The MECP criteria for the plane of window receptors considered in this report are 50 dBA from 07:00 –23:00 and 45 dBA from 23:00 – 07:00.

MECP tables showing all criteria for all Classes of Urban Areas and all time periods are shown in Appendix B.

2.2 Regional and Municipal Policies

In addition to the preceding MECP noise criteria from NPC-300, the proposed development is also subject any regional and municipal requirements. However, neither County nor the City have published noise standards or bylaws for new developments.

3.0 Transportation Noise Sources and Receptors

3.1 Road Noise Sources

The road traffic noise source assessed for the potential impact on the new 10th Avenue Estates residential development is 9th Avenue East.

Traffic volume data was received as maximum hourly and daily values from Ontario Traffic Inc. To be conservative, the maximum hourly values were used in this assessment. The traffic volumes are presented in Table 1 and Table 2. Table 1 shows a summary of the current traffic volumes while Table 2 shows a break down of the 10-year predicted road traffic volumes. The road traffic data provided to Burnside for this report is included in Appendix A.

It is assumed that medium trucks make 12.5% of the total traffic and no heavy trucks are expected.

The day/night traffic volume was split 90%/10% as per the STAMSON Technical Document recommendation for regional roads.

The current posted speed limit is 50 km/h on 9th Avenue East. It was assumed to remain the same within the next 10 years. Given trends in traffic speeds in urban areas, the speed limit is most likely to decrease so choosing 50 km/h is a conservative approach.

3.2 Rail Noise Sources

There are no railway traffic noise sources of concern to the development as there are no railways located within 300 m of the proposed development.

3.3 Aircraft Noise Sources

The closest airport is the Owen Sound Airport at 203807 ON-26 which is approximately 6.5 km east of the Site. The subject development is not located within the NEF/NEP noise contours of any airports. Therefore, aircraft noise is not considered a significant noise source for this development.

3.4 Transportation Noise Receptors

The development will consist of 91 residential units provided by two apartment buildings and six townhouse blocks.

Sound levels at the points of reception are dependent on the separation distance from the road, and the level of shielding that exists from other structures. The highest sound levels will be experienced at the closest receptors to 9th Avenue East. Residential dwellings experiencing the same traffic volumes with larger separation distances are expected to have lower sound levels than the representative receptors used in the noise model. Using this premise, Burnside conducted calculations for sufficient receptors for the requirements applicable to all receptors to be interpolated for Plane of Window calculations (POW). For OLA calculations, results are presented for the units closest to the road until a result demonstrating the MECP objective sound level of 55 dBA is met without any mitigation.

The proposed 10th Avenue Estates residential development were each assigned a single representative plane of an open window points of reception. The predictable worst-case location of each façade was selected. Sound levels at all other plane of window receptors will be at or below the sound levels at these representative receptors. The point of reception was assumed to be at the top floor.

The proposed 10th Avenue Estates residential development also contains one OLA point of reception.

4.0 Transportation Noise Impact Assessment

4.1 Methodology

Sound levels associated with road traffic predicted with MECP traffic noise prediction methodology ORNAMENT, implemented through the STAMSON (version 5.04) computer program. The model calculates expected sound levels based on road traffic, distance to receptor, receptor height, and topographical features. In order to predict sound levels from road traffic, STAMSON requires:

- Source to receiver distance – between 15 m and 500 m.
- Minimum traffic volume – 40 vehicles per hour.
- Minimum vehicle speed – 50 km/h.

The assumptions below were used in the noise model:

- The road gradient was assumed to be 0%.
- Road pavement was assumed as a standard asphalt surface.
- Flat/gentle slope topography was selected.
- Intermediate surface was assumed to be absorptive.

Outdoor Living Area points of reception were taken 3 m away from the building and 1.5 m above grade. Plane of Windows points of reception were taken at the building façade and 1.5/4.5 m above the grade, representing the 1st/2nd floor, depending on building height.

4.2 Predicted Sound Levels – Plane of Window (POW)

Following the methodology presented above, Burnside has predicted sound levels at two representative receptors which provide sufficient information to determine the requirements for the entire development site. Each point was taken at the northwest corner or facade, at the height of the top residential floor. These results are summarized in Table 3. A sample modeling printout is included in Appendix C (Description: POW1 9th Avenue). The worst case predicted level was 49 dBA during the daytime, and 43 dBA during the nighttime.

Based on the calculations, all blocks are not required to have any mitigation, as the predicted sound levels are at or below 55 dBA during the daytime and 50 dBA during the nighttime.

4.3 Predicted Sound Levels – Outdoor Living Area (OLA)

Following the methodology presented in Section 4.1, and the results described above in Section 4.2, Burnside has predicted OLA sound levels using one OLA representative receptor that provides sufficient information to determine the requirements for the whole development site. The point was taken at a height of 1.5 m, and 3 m back from the centre of the rear façades. These results are summarized in Table 3. A sample modeling printout is included in Appendix C (Description: OLA along 9th Avenue). The worst case predicted level was 45 dBA during the daytime.

The predicted sound level for the single OLA is at or below 55 dBA during the daytime and 50 dBA during the nighttime.

4.4 Predicted Sound Levels – Indoor Living Areas

A preliminary building component assessment is required if the daytime sound levels at the plane of window exceed 65 dBA or the nighttime sound levels at the plane of window exceed 60 dBA. As the sound levels at all blocks did not exceeded these criteria, the assessment was not required and Standard Sound Transmission Class (STC) window and wall designs will be acceptable for all blocks.

5.0 Stationary Noise Sources and Receptors

5.1 External Stationary Noise

External stationary noise is defined as the off-site stationary noise with potential to impact the proposed development. The potential impact of external stationary noise is assessed at all worst-case predictable noise sensitive locations within the proposed development itself.

5.1.1 External Stationary Noise Sources

The proposed 10th Avenue Estates residential development is in proximity to the following businesses/operations with potential noise impact on the proposed development:

Lewis Motor Sales

A truck sales and repair company located on the northern portion of 2100 16th Avenue, which is located 197 m south of the proposed development. Noise sources include:

- Movement of transport trucks:
  - During the daytime up to three trucks may arrive at Lewis during any one hour.
  - No trucks arrive or leave Lewis Motors during the evening or nighttime hours.

- Idling of transport trucks:
  - To be conservative, it is assumed that all trucks arriving at Lewis idle for 5 minutes before shutting down.
  - Through negotiations with AWG Properties, the owner of the proposed 10th Avenue Estates residential development, Lewis has agreed to enforce that any idling of trucks arriving at the facility take place at the east side of the facility without a line of sight to the development at 9th Avenue.
- Revving of truck engines during a Diesel Particulate Filter (DPF) regeneration repair:
  - DPF repairs only occur during the daytime hours. Typically, only one such event would occur in a single worst-case hour. For a DPF repair, a truck is parked immediately outside one of the four Lewis garage doors. The engine is then set to a high idle setting for up to 45 minutes to cause the filter to run hot and clean the soot build up. Burnside measured this activity on December 11, 2019, and determined the sound power level to be 112 dBA.
- Repair noise from garage:
  - Lewis conducts repairs in their garage on site during the daytime hours. However, this potential noise source was not considered as it was determined to be insignificant when compared to the DPF regeneration repair activities.

The above operational details were determined through discussions with the Site Manager of Lewis Motor Sales in 2020.

Sprung's Transport & Movers Ltd.

A truck transport company located on the southern portion of 2100 16th Avenue East, which is located 197 m south of the proposed development. Noise sources include:

- Movement of transport trucks:
  - During the daytime up to ten trucks may arrive at Sprung during any one hour. During the evening up to two trucks may arrive at Sprung during any one hour.[3] During the nighttime up to four trucks may arrive at Sprung during any one hour.
- Idling of transport trucks:
  - During the daytime and evening, to be conservative, it is assumed that all trucks arriving to Sprung idle for five minutes before shutting down.

[3] The evening worst-case truck movements are confirmed by Sprung to be lower than the nighttime truck movements. Evening truck activity is from trucks arriving to Sprung later than business hours. The nighttime truck activity is from trucks arriving early to Sprung to await the 8AM opening.

  - Particularly in the winter, a truck may arrive to Sprung during nighttime hours and idle the full hour to keep the truck warm. Sprung informed Burnside that up to two trucks idling for 60 minutes is the worst case predictable nighttime hour.[4]

- Through negotiations with AWG Properties, the owner of the proposed 10th Avenue Estates residential development, Sprung agreed to enforce that any idling would satisfy one of the following two conditions:

  1. The trucks be located along the south property line and restricted to an idling time of ten minutes each (in keeping with Owen Sound's Noise Bylaw).[5]

  2. Locating idling trucks in the southeast corner of Sprung's parking lot and restricting idling time to 45 minutes for one truck and 30 minutes for the second truck.

- Repair noise from garage:
  - Sprung does conduct repairs in their garage on site, this repair only occurs during the daytime hours. However, this potential noise source was not considered as it was determined to be insignificant when compared to the DPF regeneration repair activities of Lewis Motors.

The above operational details were determined through discussions with the owner and operator of Sprung's Transport & Movers Ltd. in 2020.

McDougall Energy Inc.

- McDougal Energy Inc. is located at 2297 and 2257 16th Avenue East; 140 m south of the proposed residential development. McDougal Energy Inc. is a distributor of propane, gasoline, diesel fuel, and commercial lubricants as well as an Esso retailer.
- The facility operates 24 hours per day and can expect a maximum of 15-20 trucks per hour loading and off-loading fuels or lubricants. There are existing residential dwellings on 10th Avenue East within a shorter distance than the proposed development to this facility; therefore, any potential adverse impact from this industrial operation should have been addressed at the existing residences. However, we did not observe any noise barriers which would have been the standard mitigation from the developer's side.
- Despite expecting the impacts to be negligible, the traffic was modelled in the Stationary model.

[4] Trucks arriving early to Sprung during the nighttime hours may choose to idle to stay warm in the winter while waiting for the business to open. Trucks arriving during the evening hours would go home for the night or to a hotel, rather than idling at the property until 8AM.
[5] It should be noted that there is an Idling Bylaw in Owen sound that further limits idling time to 5 minutes. However, the noise model was done to show compliance with a 10-minute idle time.

Owen Sound Excavation and Rentals

- Owen Sound Excavation and Rentals is located at 1745 23rd Street East; 130 m south of the proposed residential development.
- During the worst-case hour, a conservative estimate of three trucks will drive on/off the property. Burnside has assumed a sound power of 96 dBA, which is the MECP standard level for truck movements.

SunBelt Rentals

- SunBelt Rentals is located at 1795 23rd Street East; 145 m southeast of the proposed residential development. SunBelt Rentals provides general construction equipment rentals, including delivery and pickup
- During the worst-case hour, a conservative estimate of three trucks will drive on/off the property. Burnside has assumed a sound power of 96 dBA, which is the MECP standard level for truck movements.

Owen Sound Towing & Service

- Owen Sound Towing & Service is located at 2230 18th Avenue East; 227 m southeast of the proposed residential development. Owen Sound Towing & Service provides roadside assistance and towing services.
- During the worst-case hour, a conservative estimate of three trucks will drive on/off the property. Burnside has assumed a sound power of 96 dBA, which is the MECP standard level for truck movements.

Elma Steel & Equipment

- Elma Steel & Equipment is located at 2275 18th Avenue East; 264 m southeast of the proposed residential development. Elma Steel & Equipment provides HSS tubing, made-to-order columns, and rebar bending.
- During the worst-case hour, a conservative estimate of three trucks will drive on/off the property. Burnside has assumed a sound power of 96 dBA, which is the MECP standard level for truck movements.

5.1.2 External Stationary Noise Points of Reception

The impact of the facilities described above have been assessed for their impact on the proposed 10th Avenue Estates residential development. The following worst-case predictable points of reception were selected for the analysis:

- POR01: Apartment building A2
- POR02: Apartment building A1
- POR03: single story 4-plex
- POR04: single story 3-plex

- POR05: single story 3-plex
- OPOR05: Outdoor point of reception for POR05
- POR06: single story 4-plex
- POR07: single story 4-plex
- POR08: single story 4-plex
- OPOR01: Proposed Park Area

6.0 Stationary Noise Impact Assessment

6.1 Methodology

Sound levels associated with stationary noise are predicted with Softnoise GmbH Predictor software, version 2024.1 (64 bit) (Predictor) noise modeling software. Predictor follows the ISO 9613/2 method of sound level calculation as implemented in the ISO 17534-3 Quality Assurance standard.

The following settings are used:

- Calculation height: 4.5 m
- Default Ground attenuation Factor: 0
- No Barrier effect for direct sight – Active
- Dmax According to ISO 9613 – Active
- Avoid overestimating barrier effect – Active
- Terrain model: Use full DTM
- Temperature: 283.15 K (10 °C)
- Pressure: 101.33 kPa
- Air humidity: 70%[6]

6.2 Predicted Ambient Sound Levels & Applicable Criteria

As the proposed development is not located near any major roads no ambient sound levels were calculated. Instead, the MECP exclusion limits for a Class 1 area will be used. The applicable sound level criteria for stationary noise are presented in Table 4.

6.3 Predicted External Stationary Sound Levels

The predicted external stationary sound levels of the neighbouring stationary sources onto the proposed development are presented in Table 5. Note that this assessment calculates the impact of all stationary sources simultaneously on the proposed development. MECP standard practice requires individual assessments; however,

[6] ISO 9613 Requirement

because all the sources together show compliance with the exclusion limits, each individual source is guaranteed to show compliance.

The unmitigated external stationary noise contours for daytime, evening, and nighttime are shown in Figure 6, Figure 7, and Figure 8 respectively, with each contour calculated at 4.5 m.

Therefore, as the unmitigated external stationary sound levels are compliant with the applicable sound level criteria for all PORs mitigation is not required.

7.0 Noise Mitigation Measures

Based on the predicted sound levels it was determined that noise mitigation measures are not required for any blocks within this residential development. The typically required topics are summarized in Table 6 and in the paragraphs below.

7.1 Ventilation Requirements

All blocks in the proposed 10th Avenue Estates residential development do not have any ventilation requirements.

7.2 Acoustic Barrier Requirements

All blocks in the proposed 10th Avenue Estates residential development do not have any acoustic barrier recommendations or requirements.

7.3 STC Requirements

All blocks in the proposed development will achieve the minimum MECP indoor sound levels by incorporating standard requirements for the exterior walls and doors as per the Ontario Building Code. The windows required to meet the minimum MECP indoor sound level are of a commonly available STC rating. Minimum ratings for windows are discussed in Section 4.4, which are applicable to all dwellings requiring AC (which are listed in Section 7.1).

7.4 External Stationary Noise Mitigation Requirements

The assessment of the nearby stationary noise sources to the proposed 10th Avenue Estates determined that the cumulative impact of all stationary sources complied with the applicable MECP noise standards without mitigation. Note that this assessment calculates the impact of all stationary sources simultaneously on the proposed development. MECP standard practice requires individual assessments; however,

because all the sources together show compliance with the exclusion limits, each individual source is guaranteed to show compliance.

8.0 Implementation Procedures

The following implementation procedures are recommended to ensure that each requirement of this study is implemented at the correct stage of the development process:

- Although air conditioning was not required for this development, prior to Issuance of a Building Permit, an Acoustical Consultant should be retained to assess or determine the locations and Bel ratings of any developer installed air conditioning units for compliance with NPC-216. Improperly installed air conditioning units can result in being required to install acoustic jackets, relocate or fully replace any noncomplying units.

9.0 Conclusion

The results of 10th Avenue Estates residential development Preliminary Noise Assessment demonstrate that if all noise mitigation measures prescribed in Table 6 are implemented, sound levels at all developed lots will meet the Ministry of the Environment, Conservation and Parks noise guideline requirements. The Implementation Procedures as outlined in Section 8.0 should be followed carefully to ensure that no requirements of the noise study are overlooked during the development and construction process.

10.0 References

Computer Program STAMSON Version 5.04. Ministry of the Environment, Conservation and Parks.

Controlling Sound Transmission into Buildings by J.D. Quirt. National Research Council Canada, September 1985.

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Tables

Table 1: Traffic Data

Road	9th Avenue E
Location	South of 26th St E
Current Peak Hourly	495
"Current" Daily Traffic	4,950
"Current" Year	2024
Assumed Growth Rate	2.50%
"Future" Year	2034
10-Year Daily Traffic[1]	6,337
No. of Lanes	2
Posted Speed	50
% Heavy Trucks	-
% Medium Trucks	12.50%
Day/Night Split	90/10

[1] Traffic growth Formula:

$$Future\ traffic = Present\ Traffic * (1 + growth\ \%)^{Years}$$

Table 2: 10-year Predicted Road Traffic Volumes

Road	Maximum Hourly Traffic			
	Total	**# of Light Vehicles**	**# of Medium Trucks**	**# of Heavy Trucks**
9th Ave E	6,337	5,545	792	0

Table 3: Predicted Daytime and Nighttime Sound Levels for the Forecasted 10-Year Traffic Volumes

Receptor ID	Lot #	Area	Predicted Sound Levels (dBA)	
			Daytime	**Nighttime**
POW01	A2	POW	49	43
POW02	A1	POW	44	38
OLA01	A2	OLA	45	-

Notes:

- Outdoor Living Area (OLA) points of assessment were taken:
  - 3 m from the building façade;
  - 1.5 m above grade; and
  - aligned with the midpoint of the subject façade.
- Plane of Window (PofW) points of assessment were taken:
  - at the building façade; and
  - 4.5 m above grade.

Table 4: Applicable Stationary Sound Level Criteria

POR #	Time of Day	NPC-300 Exclusion Limit	Applicable Sound Level Criteria
POR1	Daytime	50 dBA	50 dBA
	Evening	50 dBA	50 dBA
	Nighttime	45 dBA	45 dBA
POR2	Daytime	50 dBA	50 dBA
	Evening	50 dBA	50 dBA
	Nighttime	45 dBA	45 dBA
POR3	Daytime	50 dBA	50 dBA
	Evening	50 dBA	50 dBA
	Nighttime	45 dBA	45 dBA
POR4	Daytime	50 dBA	50 dBA
	Evening	50 dBA	50 dBA
	Nighttime	45 dBA	45 dBA
POR5	Daytime	50 dBA	50 dBA
	Evening	50 dBA	50 dBA
	Nighttime	45 dBA	45 dBA
POR6	Daytime	50 dBA	50 dBA
	Evening	50 dBA	50 dBA
	Nighttime	45 dBA	45 dBA
POR7	Daytime	50 dBA	50 dBA
	Evening	50 dBA	50 dBA
	Nighttime	45 dBA	45 dBA
POR8	Daytime	50 dBA	50 dBA
	Evening	50 dBA	50 dBA
	Nighttime	45 dBA	45 dBA
POR9	Daytime	50 dBA	50 dBA
	Evening	50 dBA	50 dBA
	Nighttime	45 dBA	45 dBA
OPOR01	Daytime	50 dBA	50 dBA
	Evening	45 dBA	45 dBA
	Nighttime	-	-
OPOR05	Daytime	50 dBA	50 dBA
	Evening	45 dBA	45 dBA
	Nighttime	-	-

Table 5: Predicted External Stationary Sound Levels (Unmitigated)

POR #	Time of Day	Impact	Criteria	Compliance?
POR1	Daytime	50	50 dBA	Yes

POR #	Time of Day	Impact	Criteria	Compliance?
	Evening	36	50 dBA	Yes
	Nighttime	39	45 dBA	Yes
POR2	Daytime	48	50 dBA	Yes
	Evening	35	50 dBA	Yes
	Nighttime	37	45 dBA	Yes
POR3	Daytime	44	50 dBA	Yes
	Evening	28	50 dBA	Yes
	Nighttime	31	45 dBA	Yes
POR4	Daytime	50	50 dBA	Yes
	Evening	34	50 dBA	Yes
	Nighttime	36	45 dBA	Yes
POR5	Daytime	47	50 dBA	Yes
	Evening	32	50 dBA	Yes
	Nighttime	34	45 dBA	Yes
POR6	Daytime	49	50 dBA	Yes
	Evening	33	50 dBA	Yes
	Nighttime	35	45 dBA	Yes
POR7	Daytime	44	50 dBA	Yes
	Evening	28	50 dBA	Yes
	Nighttime	31	45 dBA	Yes
POR8	Daytime	48	50 dBA	Yes
	Evening	34	50 dBA	Yes
	Nighttime	35	45 dBA	Yes
OPOR01	Daytime	45	50 dBA	Yes
	Evening	34	45 dBA	Yes
	Nighttime	34	45 dBA	Yes
OPOR05	Daytime	48	50 dBA	Yes
	Evening	36	45 dBA	Yes
	Nighttime	37	45 dBA	Yes

Table 6: Minimum Noise Mitigation Measures

Receptor ID	Lot #	Air Conditioning[1]	Exterior Wall STC Rating [2]	Window STC Rating[2]	Door STC Rating[2]	Acoustic Barrier Height (m)[3]	Warning Clause[4]
POR01	A2	-	Standard[5]	Standard[6]	Standard[5]	-	-
POR02	A1	-	Standard[5]	Standard[6]	Standard[5]	-	-
POR03		-	Standard[5]	Standard[6]	Standard[5]	-	-
POR04		-	Standard[5]	Standard[6]	Standard[5]	-	-
POR05		-	Standard[5]	Standard[6]	Standard[5]	-	-
POR06		-	Standard[5]	Standard[6]	Standard[5]	-	-
POR07		-	Standard[5]	Standard[6]	Standard[5]	-	-
POR08		-	Standard[5]	Standard[6]	Standard[5]	-	-

Notes:

[1] "Provision for adding" means that building must be built so that the occupant can install conditioning in the future, at their discretion. Required means that the building must be built with central air conditioning installed.

[2] STC – Sound Transmission Class rating. STC values are based upon the assumption that all wall and window areas are 80% and 30%, respectively, of the corresponding room floor area.

[3] height of an acoustic barrier with no gaps underneath or in the wall.

[4] Notification to potential purchaser of a potential annoyance due to an existing source of environmental noise. Warning clauses should be included in agreements of Offers of Purchase and Sale.

[5] Achievable using standard construction methods.

[6] Minimum window STC unless detailed window STC analysis is undertaken by a qualified acoustic consultant.

Warning Clauses - Transportation Sources

Type A

"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

"Purchasers/tenants are advised that despite the inclusion of noise mitigation 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

"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

"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."

Warning Clauses - Stationary Sources

Type E

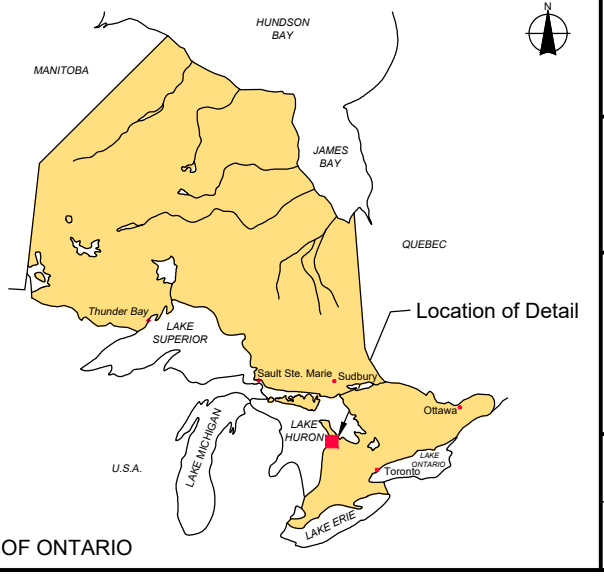
"Purchasers/tenants are advised that due to the proximity of the adjacent industry (facility) (utility), noise from the industry (facility) (utility) may at times be audible."

Warning Clauses – Class 4 Area Notification

Type F

> *"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."*

Figures



KEY MAP OF ONTARIO

BURNSIDE

Client

Clarence H. Graham Design & Construction Ltd.

Figure Title

Preliminary Noise Assessment

Site Location Map

Drawn	Checked	Date	Figure No.
DJ	HW	July 2024	1
Scale		Project No.	
1:50,000		300057339.0020	

File: C:\Users\DJay\RJB\057339 - 10th Ave Estates Development - Documents\02_Tech Proj Doc\Air Group\Noise\dwg fig maps\RJB_Fig Titleblock_8.5x11 (216x279).dwg Date Plotted: July 3, 2024 - 9:47 AM

BURNSIDE

Figure Title

Preliminary Noise Assessment

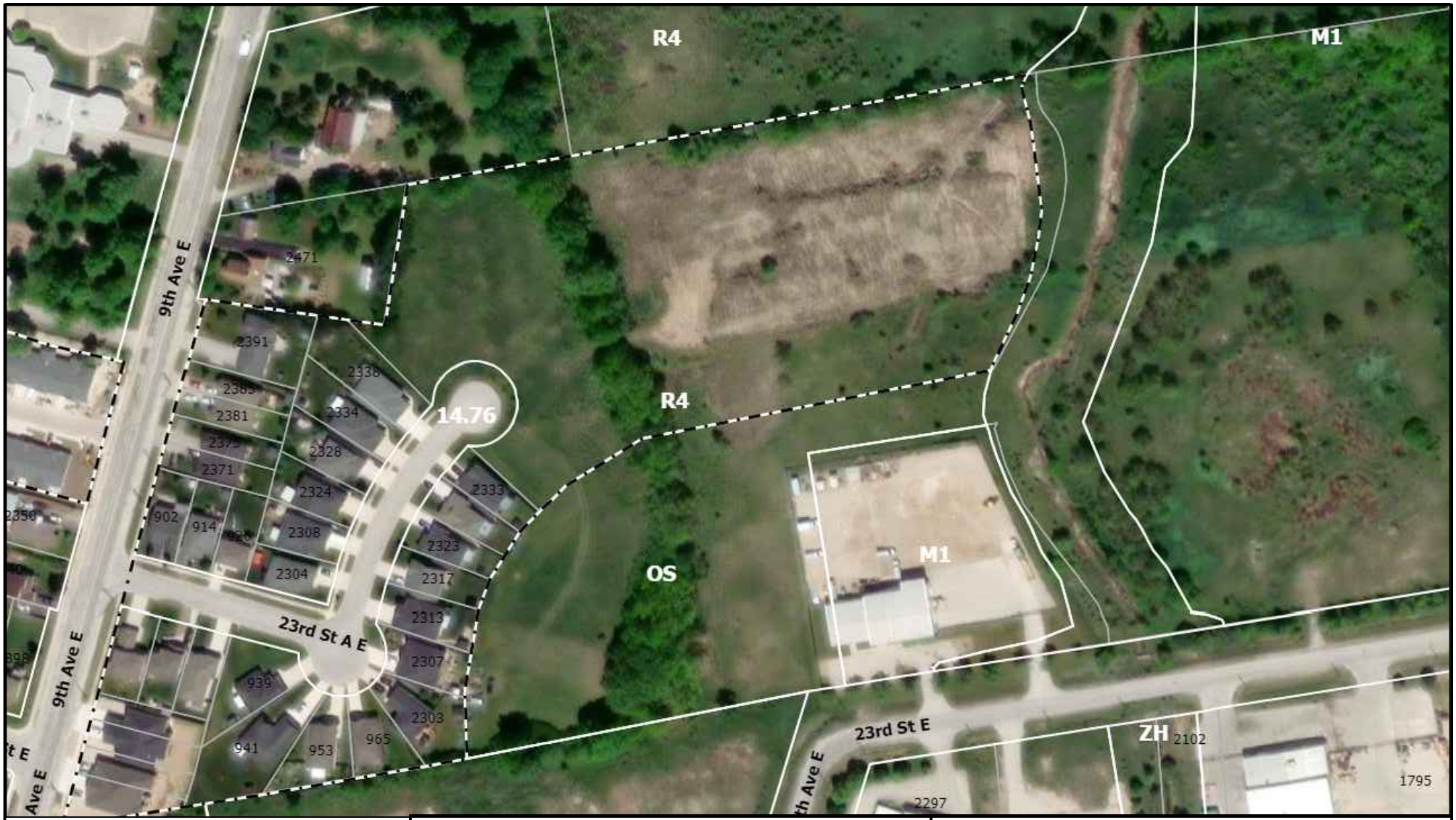
Site Plan

Client

Clarence H. Graham Design & Construction Ltd.

Drawn	Checked	Date	Figure No.
DJ	HW	July 2024	**2**
Scale		Project No.	
1:1500		300057339.0020	

File: C:\Users\DJay\RJB\057339 - 10th Ave Estates Development - Documents\02_Tech Proj Doc\Air Group\Noise\dwg fig maps\RJB_Fig Titleblock_8.5x11 (216x279).dwg Date Plotted: July 9, 2024 - 10:59 AM



BURNSIDE

Figure Title

Preliminary Noise Assessment

Zoning Map

Client

Clarence H. Graham Design & Construction Ltd.

Drawn	Checked	Date	Figure No.
DJ	HW	July 2024	**3**
Scale		Project No.	
NA		300057339.0020	

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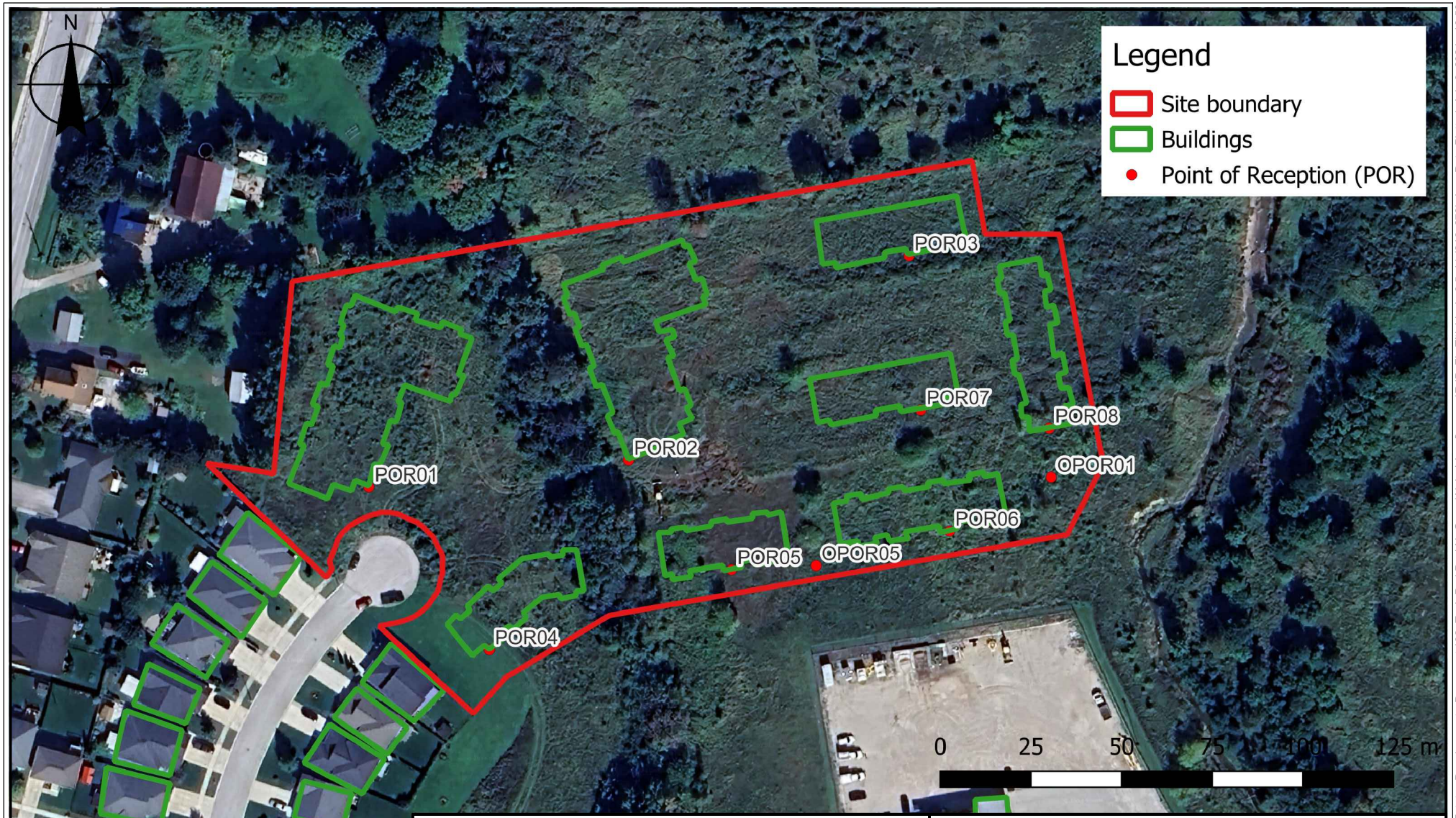

BURNSIDE

Figure Title

Preliminary Noise Assessment

Stationary Noise - Points of Reception

Client

Clarence H. Graham Design & Construction Ltd.

Drawn	Checked	Date	Figure No.
DJ	HW	July 2024	**4**
Scale		Project No.	
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File: C:\Users\DJay\RJB\057339 - 10th Ave Estates Development - Documents\02_Tech Proj Doc\Air Group\Noise\dwg fig maps\RJB_Fig Titleblock_8.5x11 (216x279).dwg Date Plotted: July 9, 2024 - 10:59 AM

BURNSIDE

Figure Title

Preliminary Noise Assessment

External Stationary Noises Sources

Client

Clarence H. Graham Design & Construction Ltd.

Drawn	Checked	Date	Figure No.
DJ	HW	July 2024	**5**
Scale		Project No.	
1:4000		300057339.0020	

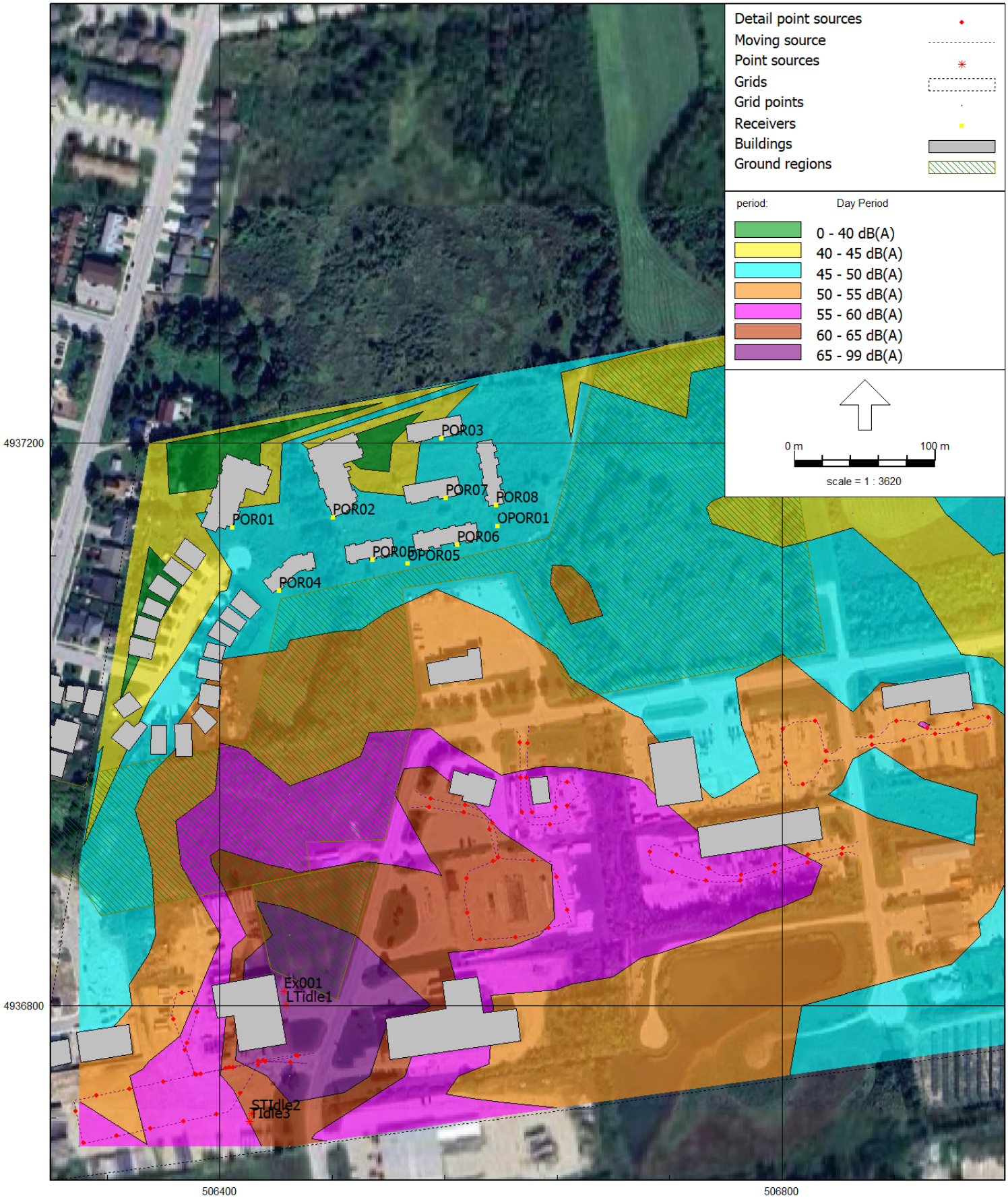
File: C:\Users\DJay\RJB\057339 - 10th Ave Estates Development - Documents\02_Tech Proj Doc\Air Group\Noise\dwg fig maps\RJB_Fig Titleblock_8.5x11 (216x279).dwg Date Plotted: July 3, 2024 - 9:50 AM

Figure 6: Unmitigated Daytime External Stationary Noise

RJ Burnside & Associates Limited, Canada

External Stationary Noise - Unmitigated

9 Jul 2024, 10:53



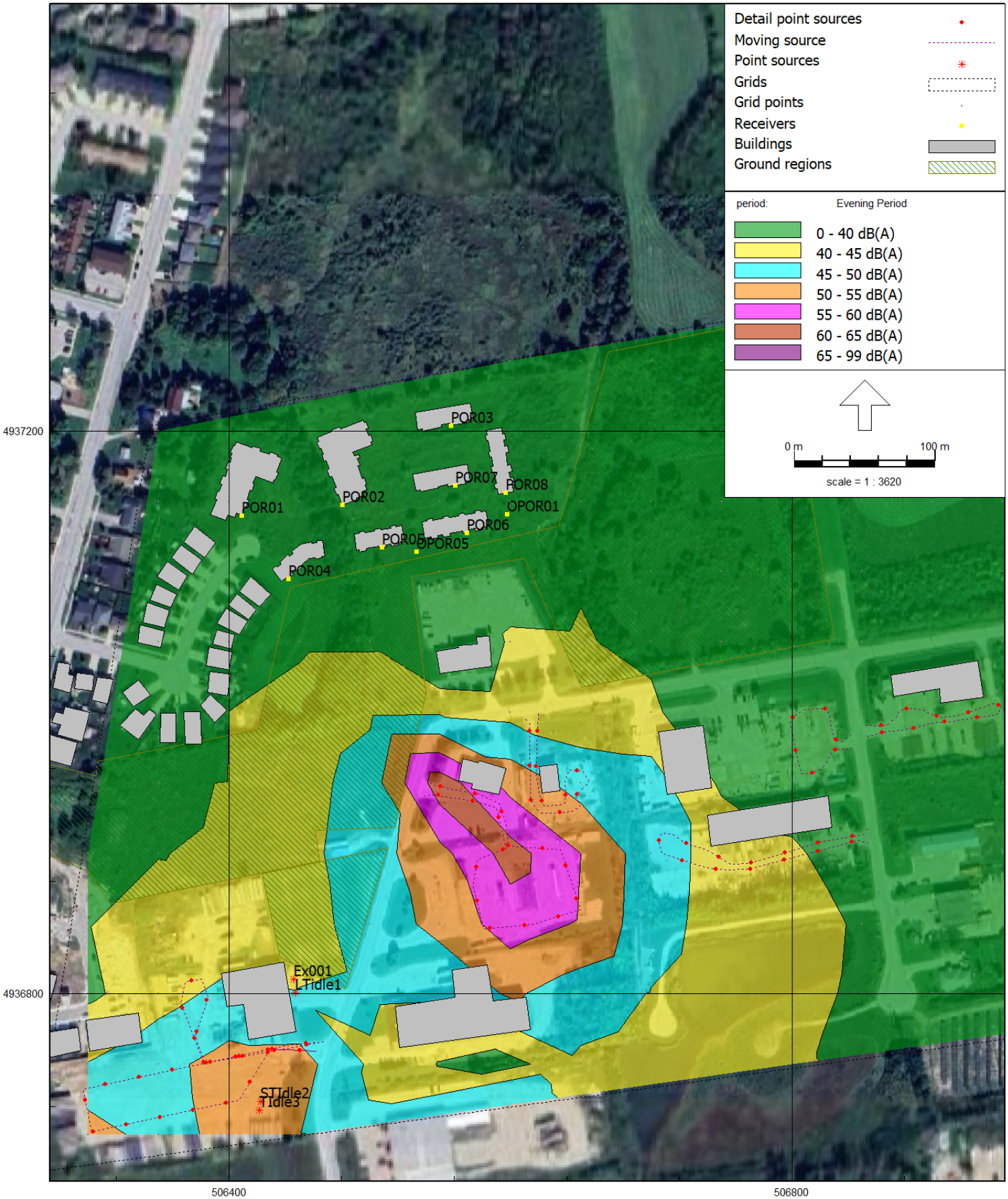
ISO 9613, [Normal Operations - External Stationary Noise - Unmitigated] , Predictor V2024 rev 1 Licensed to RJ Burnside & Associates Limited, Canada

Figure 7: Unmitigated Evening External Stationary Noise

RJ Burnside & Associates Limited, Canada

External Stationary Noise - Unmitigated

9 Jul 2024, 10:55



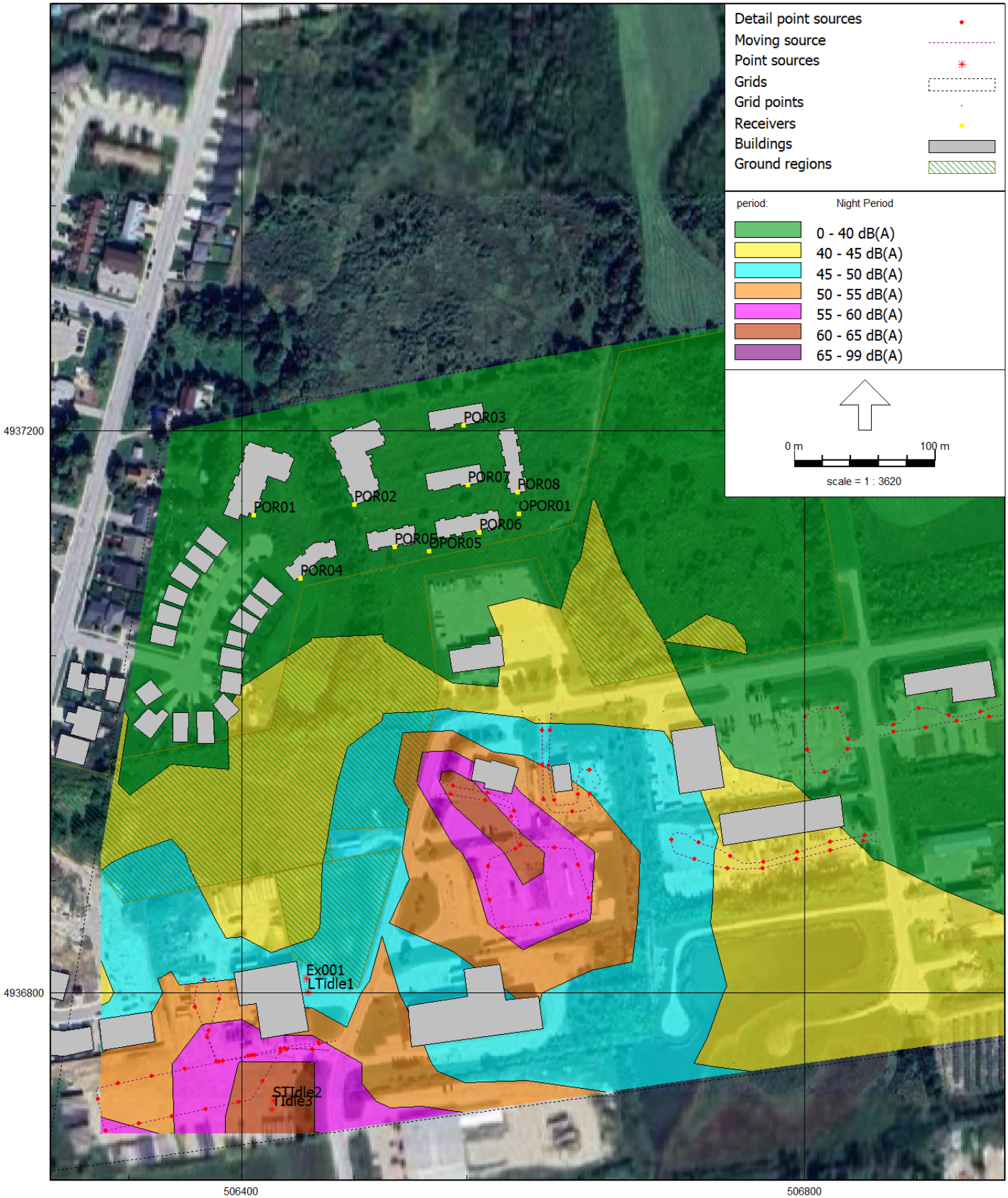
ISO 9613, [Normal Operations - External Stationary Noise - Unmitigated] , Predictor V2024 rev 1 Licensed to RJ Burnside & Associates Limited, Canada

Figure 8: Unmitigated Nighttime External Stationary Noise

RJ Burnside & Associates Limited, Canada

External Stationary Noise - Unmitigated

9 Jul 2024, 10:56



ISO 9613, [Normal Operations - External Stationary Noise - Unmitigated] , Predictor V2024 rev 1 Licensed to RJ Burnside & Associates Limited, Canada

BURNSIDE

[THE DIFFERENCE IS OUR PEOPLE]

Appendix A

Traffic Data

Peak Hour Diagram

Specified Period
From: 07:00:00
To: 09:00:00

One Hour Peak
From: 08:00:00
To: 09:00:00

Intersection: 9th Ave E & 23rd St A E
Site Code: 2416800001
Count Date: Apr 16, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: 9th Ave E runs N/S

North Approach

	Out	In	Total
Cars	201	233	434
Trucks	33	32	65
Bicycles	0	0	0
	234	**265**	**499**

9th Ave E

Bicycles	0	0	0
Trucks	25	8	0
Cars	176	25	0
Totals	**201**	**33**	**0**

Peds: 14

Peds: 0

Peds: 0

Peds: 3

Totals	**244**	**17**	**0**
Cars	218	14	0
Trucks	26	3	0
Bicycles	0	0	0

9th Ave E

East Approach

	Out	In	Total
Cars	27	39	66
Trucks	7	11	18
Bicycles	0	0	0
	34	**50**	**84**

23rd St A E

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	21	15	6	0
	13	12	1	0

South Approach

	Out	In	Total
Cars	232	188	420
Trucks	29	26	55
Bicycles	0	0	0
	261	**214**	**475**

- Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: 9th Ave E & 23rd St A E
Site Code: 2416800001
Count Date: Apr 16, 2024
Period: 07:00 - 09:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach 9th Ave E						South Approach 9th Ave E						East Approach 23rd St A E						West Approach						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
08:00	9	31		0	1	40		48	2	0	0	50	2		3	0	0	5					0		95
08:15	10	39		0	8	49		58	5	0	2	63	6		2	0	0	8					0		120
08:30	11	64		0	1	75		72	5	0	0	77	2		11	0	0	13					0		165
08:45	3	67		0	4	70		66	5	0	1	71	3		5	0	0	8					0		149
Grand Total	**33**	**201**		**0**	**14**	**234**		**244**	**17**	**0**	**3**	**261**	**13**		**21**	**0**	**0**	**34**					**0**	**0**	**529**
Approach %	14.1	85.9		0		-		93.5	6.5	0		-	38.2		61.8	0		-						-	
Totals %	6.2	38		0		44.2		46.1	3.2	0		49.3	2.5		4	0		6.4						0	
PHF	**0.75**	**0.75**		**0**		**0.78**		**0.85**	**0.85**	**0**		**0.85**	**0.54**		**0.48**	**0**		**0.65**						**0**	**0.8**
Cars	25	176		0		201		218	14	0		232	12		15	0		27						0	460
% Cars	75.8	87.6		0		85.9		89.3	82.4	0		88.9	92.3		71.4	0		79.4						0	87
Trucks	8	25		0		33		26	3	0		29	1		6	0		7						0	69
% Trucks	24.2	12.4		0		14.1		10.7	17.6	0		11.1	7.7		28.6	0		20.6						0	13
Bicycles	0	0		0		0		0	0	0		0	0		0	0		0						0	0
% Bicycles	0	0		0		0		0	0	0		0	0		0	0		0						0	0
Peds					14	-					3	-					0	-					0	-	17
% Peds					82.4	-					17.6	-					0	-					0	-	

Peak Hour Diagram

Specified Period
From: 15:00:00
To: 18:00:00

One Hour Peak
From: 15:00:00
To: 16:00:00

Intersection: 9th Ave E & 23rd St A E
Site Code: 2416800001
Count Date: Apr 16, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: 9th Ave E runs N/S

North Approach

	Out	In	Total
Cars	228	182	410
Trucks	6	13	19
Bicycles	0	1	1
	234	**196**	**430**

9th Ave E

Bicycles	0	0	0
Trucks	5	1	0
Cars	217	11	0
Totals	**222**	**12**	**0**

Peds: 1

Peds: 0

Peds: 0

Peds: 3

Totals	**175**	**20**	**0**
Cars	165	18	0
Trucks	9	1	0
Bicycles	1	1	0

9th Ave E

East Approach

	Out	In	Total
Cars	27	29	56
Trucks	5	2	7
Bicycles	0	1	1
	32	**32**	**64**

23rd St A E

	Totals	Cars	Trucks	Bicycles
	0	0	0	0
	21	17	4	0
	11	10	1	0

South Approach

	Out	In	Total
Cars	183	227	410
Trucks	10	6	16
Bicycles	2	0	2
	195	**233**	**428**

- Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection:	9th Ave E & 23rd St A E
Site Code:	2416800001
Count Date:	Apr 16, 2024
Period:	15:00 - 18:00

Peak Hour Data (15:00 - 16:00)

Start Time	North Approach 9th Ave E						South Approach 9th Ave E						East Approach 23rd St A E						West Approach						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
15:00	3	66		0	0	69		46	10	0	0	56	4		8	0	0	12					0		137
15:15	4	69		0	0	73		52	5	0	3	57	4		5	0	0	9					0		139
15:30	0	47		0	0	47		41	2	0	0	43	0		3	0	0	3					0		93
15:45	5	40		0	1	45		36	3	0	0	39	3		5	0	0	8					0		92
Grand Total	**12**	**222**		**0**	**1**	**234**		**175**	**20**	**0**	**3**	**195**	**11**		**21**	**0**	**0**	**32**					**0**	**0**	**461**
Approach %	5.1	94.9		0		-		89.7	10.3	0		-	34.4		65.6	0		-						-	
Totals %	2.6	48.2		0		50.8		38	4.3	0		42.3	2.4		4.6	0		6.9						0	
PHF	**0.6**	**0.8**		**0**		**0.8**		**0.84**	**0.5**	**0**		**0.86**	**0.69**		**0.66**	**0**		**0.67**						**0**	**0.83**
Cars	11	217		0		228		165	18	0		183	10		17	0		27						0	438
% Cars	91.7	97.7		0		97.4		94.3	90	0		93.8	90.9		81	0		84.4						0	95
Trucks	1	5		0		6		9	1	0		10	1		4	0		5						0	21
% Trucks	8.3	2.3		0		2.6		5.1	5	0		5.1	9.1		19	0		15.6						0	4.6
Bicycles	0	0		0		0		1	1	0		2	0		0	0		0						0	2
% Bicycles	0	0		0		0		0.6	5	0		1	0		0	0		0						0	0.4
Peds					1	-					3	-					0	-					0	-	4
% Peds					25	-					75	-					0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

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

Intersection: 9th Ave E & 23rd St E
Site Code: 2416800002
Count Date: Apr 16, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: 9th Ave E runs N/S

North Approach

	Out	In	Total
Cars	188	232	420
Trucks	26	29	55
Bicycles	0	0	0
	214	**261**	**475**

9th Ave E

Bicycles	0	0	0
Trucks	0	26	0
Cars	5	183	0
Totals	**5**	**209**	**0**

Peds: 0

23rd St E

			Totals
0	0	0	**0**
0	0	2	**2**
0	0	2	**2**

Peds: 0

Peds: 0

Peds: 0

West Approach

	Out	In	Total
Cars	4	6	10
Trucks	0	0	0
Bicycles	0	0	0
	4	**6**	**10**

Totals	**1**	**259**	**0**
Cars	1	230	0
Trucks	0	29	0
Bicycles	0	0	0

9th Ave E

South Approach

	Out	In	Total
Cars	231	185	416
Trucks	29	26	55
Bicycles	0	0	0
	260	**211**	**471**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: 9th Ave E & 23rd St E
Site Code: 2416800002
Count Date: Apr 16, 2024
Period: 07:00 - 09:00

Peak Hour Data (08:00 - 09:00)

Start Time	North Approach 9th Ave E						South Approach 9th Ave E						East Approach						West Approach 23rd St E						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
08:00		31	2	0	0	33	0	49		0	0	49					0		1		0	0	0	1	83
08:15		43	2	0	0	45	0	62		0	0	62					0		1		0	0	0	1	108
08:30		66	0	0	0	66	0	77		0	0	77					0		0		1	0	0	1	144
08:45		69	1	0	0	70	1	71		0	0	72					0		0		1	0	0	1	143
Grand Total		**209**	**5**	**0**	**0**	**214**	**1**	**259**		**0**	**0**	**260**					**0**	**0**	**2**		**2**	**0**	**0**	**4**	**478**
Approach %		97.7	2.3	0		-	0.4	99.6		0		-						-	50		50	0		-	
Totals %		43.7	1	0		44.8	0.2	54.2		0		54.4						0	0.4		0.4	0		0.8	
PHF		**0.76**	**0.63**	**0**		**0.76**	**0.25**	**0.84**		**0**		**0.84**						**0**	**0.5**		**0.5**	**0**		**1**	**0.83**
Cars		183	5	0		188	1	230		0		231						0	2		2	0		4	423
% Cars		87.6	100	0		87.9	100	88.8		0		88.8						0	100		100	0		100	88.5
Trucks		26	0	0		26	0	29		0		29						0	0		0	0		0	55
% Trucks		12.4	0	0		12.1	0	11.2		0		11.2						0	0		0	0		0	11.5
Bicycles		0	0	0		0	0	0		0		0						0	0		0	0		0	0
% Bicycles		0	0	0		0	0	0		0		0						0	0		0	0		0	0
Peds					0	-					0	-					0	-					0	-	0
% Peds					0	-					0	-					0	-					0	-	

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Diagram

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

Intersection: 9th Ave E & 23rd St E
Site Code: 2416800002
Count Date: Apr 16, 2024

Weather conditions: Clear

**** Unsignalized Intersection ****

Major Road: 9th Ave E runs N/S

North Approach

	Out	In	Total
Cars	227	182	409
Trucks	6	10	16
Bicycles	0	2	2
	233	**194**	**427**

9th Ave E

Bicycles	0	0	0
Trucks	0	6	0
Cars	4	223	0
Totals	**4**	**229**	**0**

Peds: 1

23rd St E

			Totals
0	0	0	**0**
0	0	6	**6**
0	0	0	**0**

Peds: 0

Peds: 0

Peds: 0

West Approach

	Out	In	Total
Cars	6	5	11
Trucks	0	0	0
Bicycles	0	0	0
	6	**5**	**11**

Totals	**1**	**188**	**0**
Cars	1	176	0
Trucks	0	10	0
Bicycles	0	2	0

9th Ave E

South Approach

	Out	In	Total
Cars	177	223	400
Trucks	10	6	16
Bicycles	2	0	2
	189	**229**	**418**

Cars - Trucks - Bicycles

Comments

Ontario Traffic Inc.
Traffic Monitoring • Services & Products

Peak Hour Summary

Intersection: 9th Ave E & 23rd St E
Site Code: 2416800002
Count Date: Apr 16, 2024
Period: 15:00 - 18:00

Peak Hour Data (15:00 - 16:00)

Start Time	North Approach 9th Ave E						South Approach 9th Ave E						East Approach						West Approach 23rd St E						Total Vehicles
					Peds	Total					Peds	Total					Peds	Total					Peds	Total	
15:00		68	2	0	0	70	0	54		0	0	54					0		2		0	0	0	2	126
15:15		73	0	0	1	73	1	56		0	0	57					0		1		0	0	0	1	131
15:30		47	0	0	0	47	0	41		0	0	41					0		2		0	0	0	2	90
15:45		41	2	0	0	43	0	37		0	0	37					0		1		0	0	0	1	81
Grand Total		**229**	**4**	**0**	**1**	**233**	**1**	**188**		**0**	**0**	**189**					**0**	**0**	**6**		**0**	**0**	**0**	**6**	**428**
Approach %		98.3	1.7	0		-	0.5	99.5		0		-						-	100		0	0		-	
Totals %		53.5	0.9	0		54.4	0.2	43.9		0		44.2						0	1.4		0	0		1.4	
PHF		**0.78**	**0.5**	**0**		**0.8**	**0.25**	**0.84**		**0**		**0.83**						**0**	**0.75**		**0**	**0**		**0.75**	**0.82**
Cars		223	4	0		227	1	176		0		177						0	6		0	0		6	410
% Cars		97.4	100	0		97.4	100	93.6		0		93.7						0	100		0	0		100	95.8
Trucks		6	0	0		6	0	10		0		10						0	0		0	0		0	16
% Trucks		2.6	0	0		2.6	0	5.3		0		5.3						0	0		0	0		0	3.7
Bicycles		0	0	0		0	0	2		0		2						0	0		0	0		0	2
% Bicycles		0	0	0		0	0	1.1		0		1.1						0	0		0	0		0	0.5
Peds					1	-					0	-					0	-					0	-	1
% Peds					100	-					0	-					0	-					0	-	

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Appendix B

MECP Sound Level Limits

APPENDIX B

Table B-1: Sound Level Limit for Outdoor Living Areas – Road and Rail

Time Period	L_{eq}(16)(dBA)
16-hour, 07:00 – 23:00	55

Table B-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
Sleeping quarters	23:00 – 07:00	40	35

Table B-3: Road Noise Control Measures – Outdoor Living Areas

Sound Levels	Measures
≤ 55 dBA	Noise control measures may not be required.
> 55 dBA and ≤ 60 dBA	Noise control measures may be applied, otherwise warning clause Type A.
> 60 dBA	Noise control measures should be implemented to reduce the levels to 55 dBA, otherwise warning clause Type B.

Table B-4: Plane of a Window – Ventilation Requirements

Daytime Period, 07:00 – 23:00 Hours

Sound Levels	Measures
≤ 55 dBA	Noise control measures may not be required.
> 55 dBA and ≤ 65 dBA	The dwelling should be designed with a provision of for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Type C is also recommended.
> 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 B-2.

Table B-5: Plane of a Window – Ventilation Requirements

Nighttime Period, 23:00 – 07.00 Hours

Sound Levels	Measures
≤ 50 dBA	Noise control measures may not be required.
> 50 dBA and ≤ 60 dBA	The dwelling should be designed with a provision of for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Type C is also recommended.
> 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 B-2.

Table B-6: Indoor Living Areas – Building Components

Sound Levels	Measures
> 60 dBA nighttime > 65 dBA daytime	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 B-2. The acoustical performance of the building components (windows, doors and walls) should be specified.

Table B-7: MECP Table C-5 of NPC-300: Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA) Outdoor Points of Reception

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

Table B-8: MECP Table C-6 of NPC-300: Exclusion Limit Values of One-Hour Equivalent Sound Level (Leq, dBA) Plane of Window of Noise Sensitive Spaces

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

Table B-9: MECP Table C-7 of NPC-300: Exclusion Limit Values of Impulsive Sound Level (LLM, dBAI) Outdoor Points of Reception

Time of Day	Actual number of impulses in Period of one hour	Class 1 Area	Class 2 Area	Class 3 Area	Class 4 Area
07:00 – 23:00	9 or more	50	50	45	55
07:00 – 23:00	7 to 8	55	55	50	60
07:00 – 23:00	5 to 6	60	60	55	65
07:00 – 23:00	4	65	65	60	70
07:00 – 23:00	3	70	70	65	75
07:00 – 23:00	2	75	75	70	80
07:00 – 23:00	1	80	80	75	85

Table B-10: MECP Table C-8 of NPC-300: Exclusion Limit Values of Impulsive Sound Level (LLM, dBAI) Plane of Window – Noise Sensitive Spaces (Day/Night)

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

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Appendix C

Sample Transportation Noise Modeling Printouts

STAMSON 5.0 NORMAL REPORT Date: 09-07-2024 09:29:35
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: ola01.te Time Period: Day/Night 16/8 hours Description: OLA along 9th Ave

Road data, segment # 1: 9th (day/night)

Car traffic volume : 4990/554 veh/TimePeriod *
Medium truck volume : 713/79 veh/TimePeriod *
Heavy truck volume : 0/0 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 4950
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 12.50
Heavy Truck % of Total Volume : 0.00
Day (16 hrs) % of Total Volume : 90.00
Data for Segment # 1: 9th (day/night)

Angle1 Angle2 : -90.00 deg -15.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface) Receiver source distance : 92.00 / 92.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier) Barrier angle1 : -90.00 deg Angle2 : -15.00 deg
Barrier height : 3.00 m
Barrier receiver distance : 60.00 / 60.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

Road data, segment # 2: 9th (day/night)

Car traffic volume : 4990/554 veh/TimePeriod *
Medium truck volume : 713/79 veh/TimePeriod *
Heavy truck volume : 0/0 veh/TimePeriod * Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 4950
Percentage of Annual Growth : 2.50

Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 12.50
Heavy Truck % of Total Volume : 0.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 2: 9th (day/night)

Angle1 Angle2 : -15.00 deg 35.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface) Receiver source distance : 92.00 / 92.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier) Reference angle : 0.00

Road data, segment # 3: 9th (day/night)

Car traffic volume : 4990/554 veh/TimePeriod *
Medium truck volume : 713/79 veh/TimePeriod *
Heavy truck volume : 0/0 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 4950
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 12.50
Heavy Truck % of Total Volume : 0.00
Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 3: 9th (day/night)

Angle1 Angle2 : 35.00 deg 55.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0 Surface : 1 (Absorptive ground surface) Receiver source distance : 114.00 / 114.00 m
Receiver height : 1.50 / 1.50 m
Topography : 2 (Flat/gentle slope; with barrier) Barrier angle1 : 35.00 deg
Angle2 : 55.00 deg
Barrier height : 6.00 m
Barrier receiver distance : 58.00 / 58.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Reference angle : 0.00

Road data, segment # 4: 9th (day/night)

Car traffic volume : 4990/554 veh/TimePeriod *
Medium truck volume : 713/79 veh/TimePeriod *

Heavy truck volume : 0/0 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:
  24 hr Traffic Volume (AADT or SADT): 4950
 Percentage of Annual Growth : 2.50
 Number of Years of Growth : 10.00
 Medium Truck % of Total Volume : 12.50
 Heavy Truck % of Total Volume : 0.00
 Day (16 hrs) % of Total Volume : 90.00

Data for Segment # 4: 9th (day/night)

Angle1 Angle2 : 55.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface) Receiver source distance : 115.00 / 115.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier) Reference angle : 0.00

Results segment # 1: 9th (day)

Source height = 0.50 m

Barrier height for grazing incidence

Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m) ---
+---+---+---
 0.50 ! 1.50 ! 0.85 ! 0.85

ROAD (0.00 + 37.40 + 0.00) = 37.40 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 -15 0.51 61.95 0.00 -11.89 -5.27 0.00 0.00 -7.38 37.40

Segment Leq : 37.40 dBA

Results segment # 2: 9th (day)

Source height = 0.50 m

ROAD (0.00 + 43.17 + 0.00) = 43.17 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-15 35 0.66 61.95 0.00 -13.08 -5.70 0.00 0.00 0.00 43.17

```
--------------------------------------------------------------------------------
 Segment Leq : 43.17 dBA


Results segment # 3: 9th (day)
------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m) ------------
+-------------+-------------+--------------
 0.50 ! 1.50 ! 0.99 ! 0.99

ROAD (0.00 + 27.54 + 0.00) = 27.54 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
--------------------------------------------------------------------------------
35 55 0.33 61.95 0.00 -11.71 -10.05 0.00 0.00 -12.64 27.54
--------------------------------------------------------------------------------

Segment Leq : 27.54 dBA


Results segment # 4: 9th (day)
------------------------------

Source height = 0.50 m

ROAD (0.00 + 36.46 + 0.00) = 36.46 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
--------------------------------------------------------------------------------
55 90 0.66 61.95 0.00 -14.68 -10.81 0.00 0.00 0.00 36.46
--------------------------------------------------------------------------------

Segment Leq : 36.46 dBA

Total Leq All Segments: 44.95 dBA


Results segment # 1: 9th (night)
--------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m) ------------
+-------------+-------------+--------------
 0.50 ! 1.50 ! 0.85 ! 0.85

ROAD (0.00 + 30.86 + 0.00) = 30.86 dBA
```

```
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-------------------------------------------------------------------------------
-90 -15 0.51 55.41 0.00 -11.89 -5.27 0.00 0.00 -7.38 30.86
-------------------------------------------------------------------------------

Segment Leq : 30.86 dBA


Results segment # 2: 9th (night)
---------------------------------

Source height = 0.50 m

ROAD (0.00 + 36.63 + 0.00) = 36.63 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-------------------------------------------------------------------------------
-15 35 0.66 55.41 0.00 -13.08 -5.70 0.00 0.00 0.00 36.63
-------------------------------------------------------------------------------

Segment Leq : 36.63 dBA


Results segment # 3: 9th (night)
---------------------------------

Source height = 0.50 m

Barrier height for grazing incidence
------------------------------------
Source ! Receiver ! Barrier ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m) ------------
+-------------+-------------+--------------
 0.50 ! 1.50 ! 0.99 ! 0.99
 ROAD (0.00 + 21.00 + 0.00) = 21.00 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-------------------------------------------------------------------------------
35 55 0.33 55.41 0.00 -11.71 -10.05 0.00 0.00 -12.64 21.00
-------------------------------------------------------------------------------

Segment Leq : 21.00 dBA


Results segment # 4: 9th (night)
---------------------------------

Source height = 0.50 m

ROAD (0.00 + 29.92 + 0.00) = 29.92 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-------------------------------------------------------------------------------
55 90 0.66 55.41 0.00 -14.68 -10.81 0.00 0.00 0.00 29.92
-------------------------------------------------------------------------------

Segment Leq : 29.92 dBA
```

Total Leq All Segments: 38.41 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 44.95
 (NIGHT): 38.41

STAMSON 5.0 NORMAL REPORT Date: 26-06-2024 16:04:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: POW1.te Time Period: Day/Night 16/8 hours Description: POW1 9th Ave

Road data, segment # 1: 9th (day/night)

Car traffic volume : 4990/554 veh/TimePeriod *
Medium truck volume : 713/79 veh/TimePeriod *
Heavy truck volume : 0/0 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

* Refers to calculated road volumes based on the following input:

24 hr Traffic Volume (AADT or SADT): 4950
Percentage of Annual Growth : 2.50
Number of Years of Growth : 10.00
Medium Truck % of Total Volume : 12.50
Heavy Truck % of Total Volume : 0.00
Day (16 hrs) % of Total Volume : 90.00
Data for Segment # 1: 9th (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface) Receiver source distance : 95.00 / 95.00 m
Receiver height : 9.00 / 9.00 m
Topography : 1 (Flat/gentle slope; no barrier) Reference angle : 0.00

Results segment # 1: 9th (day)

Source height = 0.50 m

ROAD (0.00 + 49.10 + 0.00) = 49.10 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
---
-90 90 0.47 61.95 0.00 -11.74 -1.11 0.00 0.00 0.00 49.10

Segment Leq : 49.10 dBA

Total Leq All Segments: 49.10 dBA

Results segment # 1: 9th (night)

Source height = 0.50 m

ROAD (0.00 + 42.56 + 0.00) = 42.56 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.47	55.41	0.00	-11.74	-1.11	0.00	0.00	0.00	42.56

Segment Leq : 42.56 dBA

Total Leq All Segments: 42.56 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 49.10
 (NIGHT): 42.56

Required Sound Transmission Class (STC) Calculation - Daytime

Predicted Outdoor sound level (dBA)	50
Required indoor sound level (dBA)	45
Room Absorption	Intermediate
Noise spectrum type	D - Mixed Road traffic, D
Sound comes from	0 to 90
Room floor area (m2)	30
Total area of wall that is receiving sound (m2)	22
Area of that wall that is window (in wall above) (m2)	6
Area of 2nd wall that is a door (m2)	2
Wall component category	d. Sealed thick windov
Window component category	b. Double exterior doo
Door component category	a. Single exterior door
Reflection from the building (adjustment to predicted noise) (dB)	3

1	Outdoor sound level (dBA)		53	
	Indoor sound level (dBA)		45	
2	Sound comes from (deg angle)		0 to 90	
		Correction from Table 2 (dB)	0	
	Required noise reduction (dB)			**8**

Wall component:

3	% of Surface area impacted by noise source (%)		72.7	
		Correction from Table 3 (dB)		1
4	Wall Component area (m2)		16	
	Room floor area (m2)		30	
	Wall Component area (% floor area)		53.33	
	Room absorption category		Intermediate	
		Correction from Table 4 (dB)		-2
5	Noise spectrum type (see Figure 1)		D	
	Wall Component category (Table 5)		d	
		Correction from Table 5 (dB)		7
			Wall Required STC	**14**

Window component:

3	% of Surface area impacted by noise source (%)		27.3	
		Correction from Table 3 (dB)		6
4	Window Component area (m2)		6	
	Room floor area (m2)		30	
	Window Component area (% floor area)		20	
	Room absorption category		Intermediate	
		Correction from Table 4 (dB)		-6
5	Noise spectrum type (see Figure 1)		D	
	Window Component category (Table 5)		b	
		Correction from Table 5 (dB)		2
			Window Required STC	**10**

Door component:

3	% of Surface area impacted by noise source (%)		9.1	
		Correction from Table 3 (dB)		10
4	Door Component area (m2)		2	
	Room floor area (m2)		30	
	Door Component area (% floor area)		6.67	
	Room absorption category		Intermediate	
		Correction from Table 4 (dB)		-11
5	Noise spectrum type (see Figure 1)		D	
	Door Component category (Table 5)		a	
		Correction from Table 5 (dB)		1
			Door Required STC	**8**

Source:
Controlling Sound Transmission into Buildings, NRCC 1985
L:\Reference Docs\Noise\Controlling Sound Transmission into Building - NRCC - 1985.pdf

Required Sound Transmission Class (STC) Calculation - Nighttime

Predicted Outdoor sound level (dBA)	38
Required indoor sound level (dBA)	40
Room Absorption	Intermediate
Noise spectrum type	D - Mixed Road traffic, D
Sound comes from	0 to 90
Room floor area (m2)	30
Total area of wall that is receiving sound (m2)	22
Area of that wall that is window (in wall above) (m2)	6
Area of 2nd wall that is a door (m2)	2
Wall component category	d. Sealed thick windov
Window component category	b. Double exterior doo
Door component category	a. Single exterior door
Reflection from the building (adjustment to predicted noise) (dB)	3

1	Outdoor sound level (dBA)		41	
	Indoor sound level (dBA)		40	
2	Sound comes from (deg angle)		0 to 90	
		Correction from Table 2 (dB)	0	
	Required noise reduction (dB)			**1**

Wall component:

3	% of Surface area impacted by noise source (%)		72.7	
		Correction from Table 3 (dB)		1
4	Wall Component area (m2)		16	
	Room floor area (m2)		30	
	Wall Component area (% floor area)		53.33	
	Room absorption category		Intermediate	
		Correction from Table 4 (dB)		-2
5	Noise spectrum type (see Figure 1)		D	
	Wall Component category (Table 5)		d	
		Correction from Table 5 (dB)		7
			Wall Required STC	**7**

Window component:

3	% of Surface area impacted by noise source (%)		27.3	
		Correction from Table 3 (dB)		6
4	Window Component area (m2)		6	
	Room floor area (m2)		30	
	Window Component area (% floor area)		20	
	Room absorption category		Intermediate	
		Correction from Table 4 (dB)		-6
5	Noise spectrum type (see Figure 1)		D	
	Window Component category (Table 5)		b	
		Correction from Table 5 (dB)		2
			Window Required STC	**3**

Door component:

3	% of Surface area impacted by noise source (%)		9.1	
		Correction from Table 3 (dB)		10
4	Door Component area (m2)		2	
	Room floor area (m2)		30	
	Door Component area (% floor area)		6.67	
	Room absorption category		Intermediate	
		Correction from Table 4 (dB)		-11
5	Noise spectrum type (see Figure 1)		D	
	Door Component category (Table 5)		a	
		Correction from Table 5 (dB)		1
			Door Required STC	**1**

Source:
Controlling Sound Transmission into Buildings, NRCC 1985
L:\Reference Docs\Noise\Controlling Sound Transmission into Building - NRCC - 1985.pdf

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Appendix D

Sample External Stationary Noise Modeling Printouts

Day — Limit 100 Sources, 88 PORs

Group / source	Reduct [dB]	OPOR0 result	OPOR01 corr.	POR01 result	POR01 corr.	POR01 result	POR01_B corr.	POR01_C result	POR01_C corr.	POR02_A result	POR02_A corr.	POR02_B result	POR02_B corr.
Group - Lewis	0	44.8	44.8	44.9	44.9	48.4	48.4	50.1	50.1	48.5	48.5	47.3	47.3
Group - McDougall	0	33.5	33.5	32.8	32.8	35.8	35.8	35.7	35.7	32.5	32.5	34.2	34.2
Group - Owen Sound ...	0	30.5	30.5	22.9	22.9	26.7	26.7	26.6	26.6	17.5	17.5	21.2	21.2
Group - SunBelt	0	22.7	22.7	21.2	21.2	24.4	24.4	23.9	23.9	19.1	19.1	22.9	22.9
Group - Owen Sound ...	0	20.3	20.3	19.4	19.4	21.2	21.2	21.6	21.6	16.9	16.9	20.2	20.2
Group - Elma	0	21	21	19.1	19.1	22.3	22.3	21.9	21.9	17.3	17.3	21.5	21.5
Total		45.4	45.4	45.2	45.2	48.7	48.7	50.3	50.3	48.6	48.6	47.6	47.6

Evening — Limit 100 Sources

Group / source	Reduct [dB]	OPOR0 result	OPOR01 corr.	POR01 result	POR01 corr.	POR01 result	POR01_B corr.	POR01_C result	POR01_C corr.	POR02_A result	POR02_A corr.	POR02_B result	POR02_B corr.
Group - Lewis	0	18.8	18.8	22	22	23.8	23.8	26.4	26.4	23.6	23.6	23.3	23.3
Group - McDougall	0	33.5	33.5	32.8	32.8	35.8	35.8	35.7	35.7	32.5	32.5	34.2	34.2
Group - Owen Sound ...	0	--	--	--	--	--	--	--	--	--	--	--	--
Group - SunBelt	0	--	--	--	--	--	--	--	--	--	--	--	--
Group - Owen Sound ...	0	--	--	--	--	--	--	--	--	--	--	--	--
Group - Elma	0	--	--	--	--	--	--	--	--	--	--	--	--
Total		33.7	33.7	33.2	33.2	36	36	36.2	36.2	33	33	34.6	34.6
(no category)		--	--	--	--	--	--	--	--	--	--	--	--
Exceeding		--	--	--	--	--	--	--	--	--	--	--	--

Night — Limit 100 Sources

Group / source	Reduct [dB]	OPOR0 result	OPOR01 corr.	POR01 result	POR01 corr.	POR01 result	POR01_B corr.	POR01_C result	POR01_C corr.	POR02_A result	POR02_A corr.	POR02_B result	POR02_B corr.
Group - Lewis	0	27.1	27.1	30.6	30.6	32.6	32.6	35.5	35.5	32.2	32.2	31.8	31.8
Group - McDougall	0	33.5	33.5	32.8	32.8	35.8	35.8	35.7	35.7	32.5	32.5	34.2	34.2
Group - Owen Sound ...	0	--	--	--	--	--	--	--	--	--	--	--	--
Group - SunBelt	0	--	--	--	--	--	--	--	--	--	--	--	--
Group - Owen Sound ...	0	--	--	--	--	--	--	--	--	--	--	--	--
Group - Elma	0	--	--	--	--	--	--	--	--	--	--	--	--
Total		34.4	34.4	34.9	34.9	37.5	37.5	38.6	38.6	35.3	35.3	36.2	36.2
(no category)		--	--	--	--	--	--	--	--	--	--	--	--
Exceeding		--	--	--	--	--	--	--	--	--	--	--	--

Limit of 88

Description	Group	X	Y	Height	Day	Evenin	Night	Li
	--	506598	5E+06	1.5	45.4	33.7	34.4	54.9
	--	506534	5E+06	1.5	47.5	35.8	36.8	53.9
	--	506409	5E+06	1.5	45.2	33.2	34.9	52.6
	--	506409	5E+06	4.5	48.7	36	37.5	55.6
	--	506409	5E+06	7.5	50.3	36.2	38.6	56.2
	--	506481	5E+06	1.5	48.6	33	35.3	53.4
	--	506481	5E+06	4.5	47.6	34.6	36.2	54.1
	--	506481	5E+06	7.5	47.5	34.7	36.5	54.1
	--	506481	5E+06	10.5	47.4	34.6	36.4	54.1
	--	506558	5E+06	1.5	44	28.3	30.8	51.5

R.J. Burnside & Associates Limited