



Howe Gastmeier Chapnik Limited
2000 Argenta Road, Plaza One, Suite 203
Mississauga, Ontario, Canada L5N 1P7
t: 905.826.4044

TOWN OF CALEDON
PLANNING
RECEIVED
April 20, 2021

Noise and Vibration Feasibility Study Proposed Mixed-Use Development 12563 & 12599 Highway 50 Bolton, Ontario

Prepared for:
12599 HWY 50 LTD.
91 Parr Boulevard
Bolton, ON L7E 4E3

Prepared by:


Iouri Basmanov, BAsC, EIT

and




Brian Chapnik, PhD, PEng

March 4, 2021



Table of Contents

1	Introduction & Summary	1
2	Site Description & Noise Sources	2
3	Traffic Noise.....	3
3.1	Traffic Noise Criteria.....	3
3.2	Traffic Noise Assessment.....	5
3.2.1	Road Traffic Data	5
3.2.2	Rail Traffic Data	5
3.3	Traffic Noise Predictions.....	6
3.4	Traffic Noise Recommendations	8
3.4.1	Ventilation Requirements	8
3.4.2	Minimum Building Façade Constructions	8
3.4.3	Outdoor Living Areas	10
4	Stationary Noise Sources.....	10
4.1	Provincial Guidelines for Land Use Compatibility and Distance Separation	11
4.2	Criteria for Acceptable Sound Levels from Stationary Sources	13
4.3	Description/Inventory of Nearby Facilities	16
4.4	Predicted Noise Impact from Nearby Facilities.....	24
4.4.1	Assumed Operating Scenarios	25
4.4.2	Results.....	27
5	Warning Clauses.....	27
6	Summary of Recommendations.....	28
7	Conclusions	29
8	References	30

List of Figures and Appendices

Figure 1: Key Plan	31
Figure 2: Site Plan.....	32
Figure 3: Surrounding Uses.....	33
Figure 4: Surrounding Uses.....	34
Figure 5: Influence Areas According to MECP Guideline D-6	35
Figure 6: Steady Daytime Noise Sources.....	36
Figure 7: Steady Daytime Noise Sources.....	37
Figure 8: Steady Daytime Noise Sources.....	38
Figure 9: Steady Nighttime Noise Sources	39
Figure 10: Steady Nighttime Noise Sources	40
Figure 11: Steady Nighttime Noise Sources	41
Figure 12: Impulsive Daytime Noise Sources.....	42
Figure 13: Impulsive Daytime Noise Sources.....	43
Figure 14: Impulsive Daytime Noise Sources.....	44
Figure 15: Daytime Steady Sound Levels, L_{EQ} [dBA].....	45
Figure 16: Nighttime Steady Sound Levels, L_{EQ} [dBA].....	46
Figure 17: Impulsive Daytime Sound Levels from Bolton Community Recycling Centre, L_{LM} [dBAI].....	47
Figure 18: Impulsive Daytime Sound Levels from Benson Steel, L_{LM} [dBAI].....	48
Figure 19: Impulsive Daytime Sound Levels from Tri-Krete Coatings Co., L_{LM} [dBAI].....	49
Figure 20: Impulsive Daytime Sound Levels from PERI Formworks Systems Inc., L_{LM} [dBAI]	50

Appendix A –Traffic Data

Appendix B – STAMSON Calibration Output

1 Introduction & Summary

Howe Gastmeier Chapnik Limited (HGC Engineering) was retained by 12563 HWY 50 LTD. to conduct a noise and vibration feasibility study for a proposed mixed-use development to be located at 12563 and 12599 Highway 50, in Bolton, Ontario, which is a community within the Town of Caledon. The study is required by the Town of Caledon as part of an application for an official plan amendment and rezoning (OPA/ZBA).

The current analysis is based on drawings prepared by SRN Architects Inc. (dated December 9, 2020), and aerial photography of the area. The proposed development consists of five main blocks or structures. Structures B1 through B5 are indicated to have residential towers ranging from 18 to 32-storeys in height. The structures typically have a 13-storey podium below the residential towers, with B2 having a 10-storey tower podium. The development will include two levels of underground parking.

The subject area is an urbanized part of Bolton, where road traffic on Highway 50 is the primary source of road traffic noise with potential impact on the proposed site. Noise from the nearby Canadian Pacific (CP) rail corridor approximately 400 m from the north corner of the property line is also considered a source of transportation noise in the area. Relevant traffic data was obtained from Region of Peel and CP. The data was used to predict future traffic sound levels at the locations of the proposed building facades and outdoor amenity areas. The predicted sound levels were compared to the guidelines of the Ministry of Environment, Conservation and Parks (MECP) to develop associated traffic noise control recommendations for the proposed development.

Ground-borne vibrations from the rail corridor to the north are expected to be negligible, and additional control measures are not anticipated to be necessary. There are no evident sources of ground-borne vibration in the immediate vicinity of the site.

The results of the study indicate that the expected traffic noise impacts can be addressed by including standard design features within the development, as summarized conceptually herein. Details can be further specified as the building design is developed for tender and construction. Warning clauses for noise are required, and recommended wording for those clauses is provided herein.

A preliminary assessment of stationary noise impacts from the surrounding commercial/industrial facilities has also been conducted. A computer model of the area was created, using acoustic modelling software, in order to predict the sound levels from the surrounding commercial/industrial facilities on the proposed development. Given that the subject site is in close proximity to existing established stationary sources, in order to enhance compatibility in transitioning this area to mixed use, it is recommended that the site be classified as Class 4 under the MECP guidelines, which is subject to review and formal confirmation by the Town. Noise impacts from surrounding facilities are anticipated meet the more flexible MECP guideline Class 4 noise level limits at the development site under typical assumed operating scenarios, as described in detail herein, and would further allow for some expansion or modifications to surrounding equipment or processes, and/or different operating conditions than have been considered. In fact, most surrounding uses are anticipated to meet the more stringent default Class 1 criteria under the assumed operating scenarios, except for some sources associated with adjacent Canadian Tire which may contribute to noise excesses of up to 6 dB at the north and west facades of structure B4.

2 Site Description & Noise Sources

The subject site is located on the north side of Highway 50 in Bolton, Ontario. Figure 1 shows an aerial photograph illustrating the location of the subject site. The proposed site plan is included as Figure 2.

The proposed development includes five main blocks or structures, above two levels of shared underground parking. Block B1 features commercial/retail space fronting onto Highway 50, outdoor amenity space on the 8th, 10th, and 13th levels, and a 32-storey residential tower. Block B2 features commercial/retail space fronting onto Industrial Road, townhouse units at the northwest corner of the building, outdoor amenity space on the 10th and 13th levels, and a 26-storey residential tower. Block B3 features commercial/retail space fronting onto Industrial Road, shared workplace space, townhouse units at the northwest corner of the building, outdoor amenity space on the 10th and 13th levels, and a 24-storey residential tower. Block 4 features townhouse units on the west side and northeast corner of the building, outdoor amenity space on the 13th level, and two residential towers at 20-storeys (Tower A) and 23-storeys (Tower B) in height. Block 5 features

commercial/retail space fronting onto Highway 50, outdoor amenity space on the 8th and 10th levels, and an 18-storey residential tower.

Highway 50, south of the site, is a significant traffic artery that carries a large amount of road traffic, and is included in the analysis. There is a CP rail corridor approximately 400 m north of the site, with rail traffic travelling along this corridor also considered as a potential noise source impacting the development. Site visits were made by HGC Engineering personnel during December, 2020 to make observations of the acoustical environment and to identify the significant noise sources in the vicinity. Road traffic on Highway 50 was confirmed to be the dominant transportation noise source.

There are also multiple commercial/industrial facilities surrounding the subject site. Information on these facilities was obtained through observations conducted during the site visits, and review of aerial photography. For the purposes of this study, it was assumed that all facilities operate mainly during daytime and evening hours, except as specifically noted. Assumed operating scenarios for each facility are described in more detail below.

A screening assessment was conducted, in accordance with MECP guideline D-6, to identify the facilities with potential noise impact on the development site. Several facilities surrounding the site were identified to have potential impacts, and these were modelled in further detail.

3 Traffic Noise

3.1 Traffic Noise Criteria

Guidelines for acceptable levels of road and rail traffic noise impacting residential developments are given in the MECP publication NPC-300, “Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning” [1], release date October 21, 2013, and are listed in Table 1, below. The values in Table 1 are energy equivalent (average) sound levels [L_{EQ}] in units of A-weighted deciBels [dBA].

Table 1: MECP Road / Rail Traffic Noise Criteria [dBA]

Area	Day ($L_{EQ, 16hr}$) (7:00 – 23:00)	Night ($L_{EQ, 8hr}$) (23:00 – 7:00)
Outdoor Living Area	55 dBA	--

Area	Day (L _{EQ} , 16hr) (7:00 – 23:00)	Night (L _{EQ} , 8hr) (23:00 – 7:00)
Inside Living/Dining Rooms	45 / 40	45 / 40
Inside Bedrooms	45 / 40	40 / 35

Daytime refers to the period between 07:00 and 23:00, while nighttime refers to the period between 23:00 and 07:00. Living areas include dining rooms, dens, studies, etc. Corridors and washrooms are not considered to be noise-sensitive areas.

The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, a backyard, a terrace, a garden, or common areas associated with high-rise multi-unit buildings where passive outdoor recreation is expected to occur. Balconies and elevated terraces (e.g. rooftops) with a depth of less than 4 meters are not considered OLAs under MECP guidelines, and accordingly the noise criteria are not applicable there. Larger private terraces require consideration only if they are the only OLA for the occupant; in general, common outdoor amenity terraces associated with high-rise buildings are the only OLA that require consideration.

The guidelines in the MECP publication allow the sound level in an Outdoor Living Area to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the purchase and rental agreements to the property. Where OLA sound levels exceed 60 dBA (road and rail noise combined), physical mitigation is required to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as feasible. However, the Town of Caledon’s policy is not to accept the 5 dBA excess, with 55 dBA being the applicable sound level target for outdoor living areas.

With respect to the building envelope, no controls are required where traffic levels are under 50 dBA. Where the road or rail traffic noise levels (L_{EQ}) are greater than 60 dBA or 55 dBA at night, respectively (65 dBA or 60 dBA during the day), windows must be designed to achieve the indoor sound level criteria listed above. Otherwise, any glazing meeting the Ontario Building Code is considered adequate under MECP guidelines. Where the predicted nighttime and/or daytime sound levels exceed these thresholds, central air conditioning is required so that windows can remain closed against the noise. The indoor sound level limits for rail sources are 5 dB more stringent than for road sources, to account for the additional low-frequency (rumble) components of locomotives, hence the façade insulation requirements are calculated separately and then combined.

Warning clauses to notify future residents of possible noise excesses are also required when nighttime sound levels exceed 50 dBA at the plane of the bedroom or living/dining room window and daytime sound levels exceed 55 dBA in the outdoor living area and/or at the plane of the bedroom or living/dining room window due to road and/or rail traffic.

3.2 Traffic Noise Assessment

3.2.1 Road Traffic Data

Road traffic data for Highway 50, including day/night volume splits and commercial percentages, was obtained from the Region of Peel in the form of the ultimate Average Annual Daily Traffic (AADT) volume. Per the Town of Caledon Development Standards, Policies and Guidelines, the vehicle speed used in the traffic noise prediction is 10 km/h over the posted speed limit for the roadway.

Road traffic data for nearby roadways such as Albion Vaughan Road, Industrial Road, Commercial Road, and McEwan Drive were requested from the Town of Caledon but were not available. Accordingly, quantitative analysis of these roadways was not possible, but they were considered qualitatively in the results and recommendations below.

Table 2 summarizes the traffic volume data used in this study. Road traffic data is contained in Appendix A.

Table 2: Road Traffic Data

Road Name	Ultimate AADT	Day / Night Split (% / %)	Commercial Vehicle Percentages		Speed (km/h)
			Medium Truck % (Day/Night)	Heavy Truck % (Day/Night)	
Highway 50	32,400	88 / 12	1.1 / 5.3	0.9 / 7.0	70*

*Speed was increased 10 km/hr beyond the posted speed limit, per Town of Caledon policies.

3.2.2 Rail Traffic Data

It is currently the policy of CP rail not to provide rail data information, stating that “CP freight trains operate 24/7 and schedules/volumes are subject to change”. Rail traffic data from 2016 for the CP Mactier Subdivision was obtained from a recent study conducted in the vicinity of the

subject site. Correspondence with CP rail staff and historical rail data is contained in Appendix A. For the purposes of this study, traffic volumes were grown at a conservative rate of 2.5% per year, and average future volumes that will exist in ten years (2031) were then calculated, as required by MECP guidelines. The rail volumes used in the analysis are summarized in Table 3.

Table 3: 2031 Projected Rail Traffic Data

Type of Train	No. of Trains Daytime (07:00-23:00)	No. of Trains Nighttime (23:00-07:00)	No. of engines (max)	No. of cars (max)	Speed (mph)
CPR Freight	13	7	4	188	55

3.3 Traffic Noise Predictions

To assess the levels of traffic noise that will impact the site, an acoustic model of the development was created and predictions were made using a numerical computer modelling package (*CadnaA version 2021 MRI*). The model is based on the methods from ISO Standard 9613-2.2, “*Acoustics - Attenuation of Sound During Propagation Outdoors*”, which accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures.

The road noise source was included in the model as a line source producing an equivalent sound pressure level at a reference distance to those predicted by STAMSON 5.04, a computer algorithm developed by the MECP, based on the daytime and nighttime traffic volumes presented in Section 3.2.1. A calibration sheet from STAMSON for Highway 50 is included as Appendix B. The rail lines were modelled as line sources with sound power levels equivalent to those published by the US Department of Transportation Federal Transit Administration (FTA) in the publication entitled, “*Transit Noise and Vibration Impact Assessment Manual*”, published September, 2018.

The model was used to predict traffic noise levels at each of the building facades. A breakdown of the maximum sound levels from each traffic source, and the total maximum sound level, are shown for each building façade in Table 4 below. These results represent the maximum predicted sound levels at the facades adjacent to residential spaces in the development.

**Table 4: Road / Rail / Total Traffic Sound Level Predictions,
Typical Daytime and Nighttime Hours (dBA)**

Location	Time of Day	North	East	South	West
B1, Podium	Day (L_{Aeq,16hr})	46/52/52	66/50/66	70/47/70	67/51/67
	Night (L_{Aeq,8hr})	41/52/52	62/51/62	65/47/65	62/51/62
B1, Tower	Day (L_{Aeq,16hr})	46/57/58	59/53/60	62/49/62	59/57/61
	Night (L_{Aeq,8hr})	42/58/58	54/54/57	57/50/58	54/57/59
B2, Podium	Day (L_{Aeq,16hr})	44/54/54	59/53/60	61/44/61	53/54/56
	Night (L_{Aeq,8hr})	39/54/55	54/54/57	56/45/56	48/54/55
B2, Tower	Day (L_{Aeq,16hr})	46/57/57	59/53/59	60/49/60	54/56/58
	Night (L_{Aeq,8hr})	41/57/57	53/53/56	55/49/56	49/57/57
B3, Podium	Day (L_{Aeq,16hr})	41/58/58	55/54/57	56/44/56	46/57/57
	Night (L_{Aeq,8hr})	36/58/58	50/54/55	51/45/52	42/57/57
B3, Tower	Day (L_{Aeq,16hr})	42/57/57	57/53/58	58/49/59	50/57/57
	Night (L_{Aeq,8hr})	37/58/58	52/54/56	53/49/55	45/57/57
B4, Podium	Day (L_{Aeq,16hr})	43/58/58	54/54/57	58/50/59	58/57/60
	Night (L_{Aeq,8hr})	39/59/59	49/54/55	54/50/55	53/58/59
B4, Tower A	Day (L_{Aeq,16hr})	45/58/59	53/55/57	58/51/59	57/58/60
	Night (L_{Aeq,8hr})	40/59/59	48/55/56	53/51/55	52/58/59
B4, Tower B	Day (L_{Aeq,16hr})	41/58/58	55/54/57	57/50/58	55/56/59
	Night (L_{Aeq,8hr})	36/58/58	50/55/56	52/50/54	50/57/58
B5, Podium	Day (L_{Aeq,16hr})	53/55/57	66/45/66	70/49/70	67/56/67
	Night (L_{Aeq,8hr})	48/56/56	61/45/61	65/49/65	61/57/62
B5, Tower	Day (L_{Aeq,16hr})	53/56/57	61/51/62	65/50/65	63/56/63
	Night (L_{Aeq,8hr})	48/57/57	56/51/57	60/50/60	58/57/60

Outdoor amenity areas are included throughout the development, typically on the podium roofs of each structure. The outdoor living areas are represented herein by locations R1 through R12, shown in Figure 2. Note that the predictions include the effect of a typical 1.07 m high parapet or solid safety railing at the perimeter of each rooftop amenity area. The predicted sound levels at these locations are summarized in the table below.

Table 5: Predicted Traffic Sound Levels [dBA] at Outdoor Living Areas

Location	Description	Sound Level ($L_{Aeq,16hr}$)
R1	B1 – 8 th Level	56
R2	B1 – 10 th Level	55
R3	B1 – 13 th Level	53
R4	B2 – 10 th Level	55
R5	B2 – 13 th Level	54
R6	B3 – 10 th Level	54
R7	B3 – 13 th Level	54
R8	B4 – 13 th Level, East	54
R9	B4 – 13 th Level, North	53
R10	B4 – 13 th Level, South	55
R11	B5 – 8 th Level	56
R12	B5 – 10 th Level	57

3.4 Traffic Noise Recommendations

The results indicate that the future traffic sound levels are high enough on this site to warrant certain minimum noise control features. The following discussion outlines recommendations for air conditioning, upgraded building façade constructions, and protection of outdoor amenity areas to achieve the noise criteria stated in Table 1. Warning clauses are also discussed.

3.4.1 Ventilation Requirements

The predicted sound levels at some of the representative building facade locations evaluated exceed 65 dBA during the day or 60 dBA at night, and thus central air conditioning is required so that windows may remain closed, and is expected to be included in any event.

3.4.2 Minimum Building Façade Constructions

Future traffic sound levels at some façades will be greater than 65 dBA and 60 dBA during daytime and nighttime hours, respectively. MECP guidelines recommend that windows, walls and doors be designed so that indoor sound levels comply with MECP noise criteria.

Glazing Construction

Preliminary calculations have been performed to determine the glazing sound insulation requirements likely to be required to maintain indoor sound levels within MECP guidelines. The calculation methods were developed by the National Research Council (NRC), and are based on the predicted future sound levels at the building façades, and the areas of the glazing elements relative to the floor area of the adjacent room.

Since the floor plans and elevations have not yet been sufficiently developed at this early stage of design for a detailed acoustical specification of the building envelope, the assessment was based on the assumption that typical window-to-floor ratio for residential suites will be 80% (i.e., 60% fixed, 20% operable windows, including glazed sliding patio doors). Different window-to-floor ratios may result in different requirements. The results of the modelling suggest that fixed glazing with an installed performance of STC-33 is sufficient to meet sound insulation requirements based on achieving the criteria identified in Table 1 above. The awning windows, and swing or sliding doors to balconies should have tight seals sufficient to achieve similar acoustical performance ratings (within 2 points of the associated fixed window requirement). Although sound levels at the east portion of the site are expected to be lower (traffic data was not available for roadways to the east), it is suggested that the same glazing be included on all residential facades to help address any residual noises from “urban hum” and surrounding commercial/industrial facilities.

Exterior Wall Construction

The architectural drawings suggest that the exterior walls of the development will consist largely of metal or glass spandrel panels with some areas of precast concrete or masonry. Exterior walls that are not glazed should have sufficient acoustical insulation value such that the noise transmitted through is negligible in comparison with the windows. For this assumption to be true, spandrel or metal panel sections must have a drywall partition on separate framing behind. Further input regarding the design of the walls can be provided during detailed design, as required.

Exterior Doors

There will be glazed sliding doors and some swing doors for entry onto the balconies and terraces from the residential units. The glazing areas on the exterior doors is counted as part of the total

window glazing area. All exterior doors should include good weather seals to reduce air infiltration to the minimum achievable levels.

3.4.3 Outdoor Living Areas

Predictions indicate that sound levels at prediction locations R1, R11, and R12 will slightly exceed 55 dBA. These excesses must be addressed by including additional noise abatement, such as acoustic barriers or raised parapets, to comply with the Town and Caledon’s policies and MECP criteria outlined in Table 1. The required acoustic barrier heights to be installed at the perimeter of these areas are specified Table 6 below. For acoustical barriers to be effective, they must be gap free and have a surface density of no less than 20 kg/m². Details of the screen/barrier design should be reviewed by a qualified acoustical consultant as more developed drawings become available.

Table 6: Acoustic Barrier Height Requirements for Outdoor Living Areas

Location	Description	Acoustic Barrier Height (m)
R1	B1 – 8 th Level	1.1
R11	B5 – 8 th Level	1.5
R12	B5 – 10 th Level	1.4

Predictions indicate that future sound levels at the other outdoor living areas (prediction locations R2 through and R10) will be within 55 dBA. No acoustic mitigation measures (other than a minimum 1.07 m high solid parapet or railing around the rooftop outdoor amenity area) are required to protect these outdoor amenity spaces.

4 Stationary Noise Sources

Noise sources associated with industrial or commercial facilities are assessed separately from traffic sources under MECP Guidelines, and are classified as, “stationary sources of sound.” These facilities are considered to be “stationary sources of sound”, and criteria for their assessment are contained in the following section.

The site is located near various commercial/industrial facilities, surrounding the site. Some nearby facilities could be considered “industrial” in nature, and thus MECP Guideline D-6 (“Compatibility Between Industrial Facilities and Sensitive Land Uses”) is applied for these facilities.

HGC Engineering visited the subject site to observe the operations of the facilities in the area of the subject and identify potentially significant sources of sound. Based on our observations, there were some potentially significant noise sources relating to facilities surrounding the development site, as described below.

4.1 Provincial Guidelines for Land Use Compatibility and Distance Separation

MECP Guidelines D-1, “Land Use Compatibility” and D-6 “Compatibility Between Industrial Facilities and Sensitive Land Uses” were developed to address the potential incompatibility of industrial land uses and noise sensitive land uses in relation to land use approvals under the Planning Act. Those guidelines recommend that studies be conducted to investigate the feasibility of providing sufficient mitigation when noise sensitive land uses are proposed within the potential “zone of influence” of an existing industrial/commercial facility. The mitigation can be provided at the source, or can be incorporated on the development lands where the industrial/commercial facility is operating in compliance with legislated Ministry requirements.

In planning a sensitive land use near an existing industrial/commercial area, guideline D-6 suggests certain potential zones of influence for the industry, depending on the characterization of that industry. Three classes of industry are defined, as follows:

Class I Industrial Facility

A place of business for a small scale, self-contained plant or building which produces/stores a product which is contained in a package and has a low probability of fugitive emissions. Outputs are infrequent and could be point source or fugitive emissions for any of the following: noise, odour, dust and/or vibration. There are daytime operations only, with infrequent movement of products and/or heavy trucks and no outside storage.

Class II Industrial Facility

A place of business for medium scale processing and manufacturing with outdoor storage of wastes or materials (i.e. it has an open process) and/or there are periodic outputs of minor annoyance. There are occasional outputs of either point source or fugitive emissions for any of the following: noise, odour, dust and/or vibration, and low probability of fugitive emissions. Shift

operations are permitted and there is frequent movement of products and/or heavy trucks during daytime hours.

Class III Industrial Facility

A place of business for large scale manufacturing or processing, characterized by: large physical size, outside storage of raw and finished products, large production volumes and continuous movement of products and employees during daily shift operation. It has frequent outputs of major annoyance and there is high probability of fugitive emissions.

Screening Distances and Minimum Recommended Separation

For screening purposes, guideline D-6 outlines some potential influence areas for the different classes of industry, as follows. Outside these potential influence areas, it is unlikely that an industry which has been appropriately classified will have significant impact.

- Class I – 70 metres;
- Class II – 300 metres;
- Class III – 1000 metres.

Guideline D-6 acknowledges that the actual influence areas may be less, subject to site specific studies performed in accordance with guideline NPC-300, “Environmental Noise Guideline – Stationary and Transportation Sources – Approval and Planning”. Notwithstanding the actual influence area of an industry, in order to minimize the potential for future land use conflicts, Guideline D-6 recommends certain minimum separation distances, as follows:

- Class I – 20 metres;
- Class II – 70 metres;
- Class III – 300 metres.

The MECP recognizes that these minimum separation distances may not always be viable in certain cases, particularly in those cases of redevelopment, infilling and mixed-use areas, where the zoning or official plan has left no available land buffer. In those instances, the overall feasibility of the proposal is based on the anticipated adverse effects from the industrial/commercial use, including any mitigative measures that might be applied to address anticipated impacts.

4.2 Criteria for Acceptable Sound Levels from Stationary Sources

MECP Guideline NPC-300 is the applicable guideline for use in investigating Land Use Compatibility issues with regard to noise. Under this guideline, an industrial/commercial facility is classified as a stationary source of sound (as compared to sources such as traffic or construction, for example) for noise assessment purposes. A stationary noise source encompasses the noise from all the activities and equipment within the property boundary of a facility including regular on-site truck traffic, material handling, and mechanical equipment.

Commercial activities such as the occasional movement of customer/employee vehicles, deliveries to retail stores and restaurants and garbage collection are not of themselves considered to be significant noise sources in the MECP guidelines. Accordingly, these sources have not been considered in this study.

Receptor Classification – Class 1 versus Class 4

Under NPC-300, the sound level limits for stationary sources apply at the point of reception, and vary depending upon the background sound and the character of the surrounding acoustic environment. The facade of a residence (i.e., in the plane of a window), or any associated usable outdoor area is considered a point of reception. Background sound is defined to include road traffic and other man-made and natural sounds, excluding the stationary source(s) under assessment. Because the background sound at the site is dominated by man-made sounds during all daytime and nighttime hours, the vicinity is by default characterized as a Class 1 (urban) area under MECP guidelines.

However, the MECP noise guidelines provide for another type of receptor area, deemed a Class 4 area, which allows for greater minimum exclusionary sound limits and flexibility of receptor-based mitigation, subject to designation by the land use planning authority (i.e., the Town). A “Class 4 area” is defined in NPC-300 as an area or specific site that would otherwise be defined as Class 1 or 2 and which:

- is an area intended for development with new noise sensitive land use(s) that are not yet built;
- is in proximity to existing, lawfully established stationary source(s); and

- has formal confirmation from the land use planning authority with the Class 4 area classification which is determined during the land use planning process.

There are several good reasons for the Class 4 designation to be applied in order to better recognize the unique urban condition and land use context of this area, including but not limited to:

- providing a greater allowance for potential minor noise impacts from surrounding employment or commercial uses;
- allowing for future changes or additions to surrounding industrial/commercial facilities without resulting in minor excesses;
- reducing the sensitivity of the prediction results to minor deviations in the assumptions or noise modelling;
- allowing for more design flexibility to address receptor-based controls under the MECP guidelines.

Noise Level Limits for Steady Sound Sources

Table 7: Exclusion Limits, Steady Sound Sources (Class 1 / Class 4), L_{EQ} [dBA]

Receptor Location	Daytime & Evening (7:00 – 23:00)	Nighttime (23:00 – 7:00)
Plane of Window	50 / 60	45 / 55
Outdoor Living Area	50 / 55	--

In general, the minimum one-hour background sound levels during daytime and nighttime hours can be established via continuous, automated measurement over a period of at least 48 hours, or can be modelled from road traffic data in areas where the background sound is dominated by road traffic. For the purposes of this study, automated measurement of background sound was not appropriate, because of the possibility of contributions from the surrounding industries and commercial establishments, which must be excluded from the determination of background sound. Instead, it was possible to model the background sound from typical hourly traffic data for Highway 50 provided by the Region, assuming the same commercial percentages presented in Section 3.2.1. The traffic volumes for the minimum daytime and nighttime hours used to estimate the background sound levels are listed in Table 8 below.

Table 8: Minimum Hourly Road Traffic Volumes on Surrounding Roadways

Roadway	Hourly Volume	
	Day	Night
Highway 50	569	109

The road traffic noise predictions indicate that the minimum background sound levels during both daytime and nighttime hours are greater than the exclusionary minimum limits at facades with exposure to Highway 50. The results are the applicable noise criteria, subject to the minimum exclusionary criteria stated above in Table 7. Note that minimum exclusionary criteria are applicable to the facades facing the majority of the surrounding industrial/commercial facilities as these facades have little to no exposure to Highway 50. Considering additional road traffic on roadways to the east is unlikely to significantly change this result, as these are understood to be relatively low volume roadways and/or are fairly distant from the site.

Noise Level Limits for Impulsive Sound Sources

Impulsive sound is typically characterized by brief, sharp increases in the sound level (e.g. a discrete bang or thump). Under guideline NPC-300, the exclusion limits for impulsive sounds differ depending on how frequently the impulses occur, as summarized in the following table:

Table 9: Exclusion Limits, Impulsive Sound (Class 1 / Class 4), L_{LM} [dBAI]

Number of Impulses per Hour	Daytime & Evening (7:00 – 23:00)	Nighttime (23:00 – 7:00)
9 or more	50 / 60	45 / 55
7 to 8	55 / 65	50 / 60
5 to 6	60 / 70	55 / 65
4	65 / 75	60 / 70
3	70 / 80	65 / 75
2	75 / 85	70 / 80
1	80 / 90	75 / 85

The acceptability limits for frequently occurring sounds that are impulsive in character are the same as those for steady sounds, although the relevant parameter is different (average impulsive sound level, L_{LM} , versus average hourly sound level, L_{EQ} , for steady sources).

Town of Caledon Noise By-law

Notwithstanding the quantitative criteria recommended by the MECP, as outlined above, the Town of Caledon noise by-law 86-110 includes one prohibition relevant to this study and the assumed operational profiles of the commercial/industrial facilities considered herein, as outlined below:

3. Prohibitions by Time and Place

No person shall emit or cause or permit the emission of sound resulting from any act listed in Table 3-1 if clearly audible at a point of reception located in a Residential Area within a prohibited time shown in Table 3-1.

TABLE 3-1
PROHIBITIONS BY TIME AND PLACE

14. Loading, unloading, delivering, packing, unpacking, or otherwise handling any containers, products, materials, or refuse, whatsoever, unless necessary for the maintenance of essential services or the moving of private household effects.	11:00 p.m. one day to 7:00 a.m. the next day
--	--

As noted above, most of the operations of the commercial/industrial facilities surrounding the site were generally observed to occur during daytime hours, with little or no activity assumed to occur at night. Compliance with MECP criteria is anticipated to result in acceptable levels of sound at residential receptors; although there may be residual audibility during periods of low background sound (e.g. at night), these sounds are considered unlikely to disturb the peace and quiet of an adjacent neighbourhood. Some clarification may be required with respect to the Town's approach to enforcement of the noise by-law with respect to the above prohibition.

4.3 Description/Inventory of Nearby Facilities

For each facility within the potential radius of influence of the subject site, preliminary noise modelling was conducted. The modelling was based on a review of aerial photography, site visit observations and measurements, and associated source sound emission levels for similar equipment or operations (based on data in our files from measurements conducted by HGC Engineering for similar past projects). For the purposes of this feasibility assessment, no direct

contact with surrounding landowners or facility operators was made to verify specific equipment or operations.

Figure 3 and Figure 4, along with Table 10 below, identify the nearby facilities surrounding the development site, as well as our preliminary assessment of the appropriate industrial classifications that apply to each industrial facility within the potential area of influence as per the D-6 guidelines.

Table 10 also illustrates the various setback distances from the site in relation to the D-6 classification screening distances, and identifies those facilities having Certificates of Approval from the MECP, as listed in the Environmental Registry.

Table 10: Inventory of Neighbouring Facilities

ID	Facility	Description of Operations	D-6 Industrial Class	Approximate Minimum Distance from Site (Property-Line to Property-Line) (m)	D-6 Recommended Minimum Separation Distance (m)	D-6 Potential Area of Influence (m)	Certificate of Approval/Environmental Compliance Approval Number
1	Vince's Autobody, 12533 Hwy 50	Automotive service	I	<20	20	70	3962-62VLH9
2	Midas, 12543 Hwy 50	Automotive service	I	<20	20	70	2150-4UBQXB
3	Various Auto Businesses, 12621 Hwy 50	Automotive service	I	<20	20	70	-
4	Canadian Tire Retail Store, 99 McEwan Drive East	Commercial	-	<20	-	-	-
5	Sibia Collision/Sibia Towing, 68 Commercial Road	Automotive service	I	<20	20	70	-
6	Skyview Lanes, 3 Industrial Road	Commercial	-	<20	-	-	-
7	The Autoshow, 12525 Hwy 50	Commercial	-	<20	-	-	-
8	Tru-Spark Tooling Ltd., 55 Industrial Road	Manufacturer	I	21	20	70	-
9	Connect Church, 12495 Hwy 50	Place of worship	-	27	-	-	-
10	Commercial Plaza, 12612 Hwy 50	Commercial	-	48	-	-	-
11	Armstrong Industrial Services, 50 Commercial Road	Propane distribution	I	59	20	70	6003-95YKUP
12	Bolton Community Recycling Centre, 109 Industrial Road	Materials storage	II	76	70	300	A680247
13	Canadian Tire Gas Station & Carwash, 59 McEwan Drive E	Commercial	-	116	-	-	-
14	Cella Auto, 12473 Hwy 50	Automotive service	I	121	20	70	-



ACOUSTICS



NOISE



VIBRATION

ID	Facility	Description of Operations	D-6 Industrial Class	Approximate Minimum Distance from Site (Property-Line to Property-Line) (m)	D-6 Recommended Minimum Separation Distance (m)	D-6 Potential Area of Influence (m)	Certificate of Approval/Environmental Compliance Approval Number
15	Benson Steel, 72 Commercial Road	Steel manufacturing	II	130	70	300	R-010-3110166735
16	Henderson-Oliver Sales & Marketing Ltd., 45 Commercial Road	Commercial	-	145	-	-	-
17	Motorhome Vacations Canada, 12465 Hwy 50	Commercial	-	150	-	-	-
18	Canadian Precast Ltd., 12530 Albion Vaughan Road	Concrete manufacturing	II	155	70	300	-
19	Titan Formwork Systems, 131 Industrial Road	Formwork manufacturing	II	166	70	300	-
20	Bilt-Rite Disposal Equipment Ltd., 143 Industrial Road	Recycling equipment	I	176	20	70	-
21	Tri-Krete Coatings Co., 94 Commercial Road	Metal finishing	II	212	70	300	3339-5W3JYM
22	Dibico Underground, 135 Commercial Road	Construction	I	215	20	70	-
23	Commercial Plaza, 10/20/30/40 McEwan Drive East	Commercial	-	220	-	-	-
24	PERI Formwork Systems Inc., 45 Nixon Road	Formwork manufacturing	II	220	70	300	-
25	Diamond Auto Collision Ltd., 159-1 Industrial Road	Automotive service	I	224	20	70	1526-6EMR72
26	Commercial Plaza, 12684/12700 Hwy 50	Commercial	-	226	-	-	-
27	Kingdom Hall of Jehovah's Witnesses, 3 Loring Drive	Place of worship	-	227	-	-	-
28	Countryside Montessori & Private School, 1 Loring Drive	Commercial/Institutional	-	249	-	-	-



ACOUSTICS



NOISE



VIBRATION

ID	Facility	Description of Operations	D-6 Industrial Class	Approximate Minimum Distance from Site (Property-Line to Property-Line) (m)	D-6 Recommended Minimum Separation Distance (m)	D-6 Potential Area of Influence (m)	Certificate of Approval/Environmental Compliance Approval Number
29	United Hoist Equipment Inc., 106 Commercial Road	Hoist elevator rental	I	259	20	70	-
30	Commercial Plaza, 10 McEwan Drive West	Commercial	-	268	-	-	-
31	Oil Changers, 8895 George Bolton Pkwy	Automotive service	I	283	20	70	-
32	Rafat General Contracting, 8850 George Bolton Parkway	Construction	I	284	20	70	2766-5T3NXG
33	Orbit Express Inc./World Wide Carriers, 124 Commercial Road	Transportation	II	>300	70	300	-
34	Green Valley Steel Ltd., 36 Nixon Road	Steel manufacturing	II	>300	70	300	-
35	Paramount Structures Ltd., 46 Nixon Road	Formwork manufacturing	II	>300	70	300	-
36	Avenue Building Corporation, 50 Nixon Road	Formwork manufacturing	II	>300	70	300	-
37	Pactiv Canada Inc., 70 Pillsworth Road	Produce wholesaler	II	>300	70	300	-
38	Monterra Lumber Mills Limited, 12833 Hwy 50	Lumber mill	II	>300	70	300	2978-58NL5Q
39	Stella Jones, 37 Simpson Road	Lumber mill	II	>300	70	300	-
40	Big M Steel Inc., 77 Healey Road	Steel manufacturing	II	>300	70	300	-
41	Keena Truck Leasing & Transport, 27 Simpson Road	Transportation	II	>300	70	300	-
42	BHJ Canada Meat Products Inc., 24 Nixon Road	Produce wholesaler	II	>300	70	300	-
43	FabShop by Cambria, 36 Simpson Road	Manufacturing	II	>300	70	300	-



ACOUSTICS



NOISE



VIBRATION

ID	Facility	Description of Operations	D-6 Industrial Class	Approximate Minimum Distance from Site (Property-Line to Property-Line) (m)	D-6 Recommended Minimum Separation Distance (m)	D-6 Potential Area of Influence (m)	Certificate of Approval/Environmental Compliance Approval Number
44	Aluma Systems/Adrian Steel of Canada Inc., 44 Simpson Road	Metal manufacturing	II	>300	70	300	-
45	Titanium Transportation Group Inc., 32 Simpson Road	Transportation	II	>300	70	300	-
46	Omori North America Inc., 28 Simpson Road	Packaging machinery manufacturing	II	>300	70	300	-
47	Tek-Mor Incorporated, 20 Simpson Road	Sheet metal manufacturing	II	>300	70	300	9046-66URJT



ACOUSTICS



NOISE



VIBRATION

The majority of facilities near to the site are categorized as either Class I industries or commercial operations. There are also several facilities (IDs # 12, 15, 18, 19, 21, and 24) which are considered to be Class II and are within the 300 m potential zone of influence. A preliminary analysis of potential noise impacts from all industrial facilities within the associated potential zone of influence has been conducted, and is described below. One commercial facility (Canadian Tire) has also been included in the analysis due to its potential for noise impact and proximity to the subject site.

Vince's Autobody

Vince's Autobody is located immediately east and south of the site. The facility provides automotive maintenance and repair, and is assumed to operate during daytime (and possibly evening) hours only. There are three small exhaust stacks and one medium exhaust stack on this building which were considered.

Midas

Midas is located east and immediately south of the site. The facility provides automotive maintenance and repair, and is assumed to operate during daytime (and possibly evening) hours only. There are three small exhaust stacks and two HVAC units on this building which were considered.

Various Auto Businesses (12621 Highway 50)

12621 Highway 50 is located immediately west of the site. The businesses in this plaza provide automotive maintenance services and repair, and are assumed to operate during daytime (and possibly evening) hours only. The east building at this facility features a manual carwash. There are two small exhaust stacks and four HVAC units at the west building which were considered.

Canadian Tire Retail Store

Canadian Tire is located immediately to the north and east of the site. This retail store is not classified as an industrial facility under D-6 guidelines, but includes rooftop HVAC units and an indoor loading bay with waste handling equipment at the southwest corner of the building. There are 11 rooftop HVAC units, one recycling compactor, and one garbage compactor which were considered. In addition, the movement of trucks to and from the store has been modelled.



Sibia Collision/Sibia Towing

Sibia Collision/Sibia Towing is located immediately north of the site. The facility is assumed to operate during daytime (and possibly evening) hours only. The facility is involved with automotive collision repair and towing services. There are three small exhaust stacks and seven HVAC units at this facility which were considered. In addition, the movement of trucks to and from the facility has been modelled.

Tru-Spark Tooling Limited

Tru-Spark Tooling Limited is located east of the site. The facility is involved with the manufacturing of tools for the automotive industry, and is assumed to operate during daytime (and possibly evening) hours only. There are small exhaust stacks and two HVAC units on the roof and one at-grade HVAC unit at the south of the building which were considered.

Armstrong Industrial Services

Armstrong Industrial Services is located east of the site. The facility is involved with the distribution of propane and the provision of propane equipment services and is assumed to operate during daytime (and possibly evening) hours only. There are two small exhaust stacks on the roof. In addition, the movement and idling of trucks travelling to and from the facility has been modelled.

Bolton Community Recycling Centre

Bolton Community Recycling Centre is located south of the site. The facility is involved with the storage and recycling of refuse materials. The storage of scrap metal and other recycled material occurs outdoors; the facility is therefore classified as Class II in the study, and is less than 300 m away from the site. Thus, under D-6 guidelines, the development falls within the potential zone of influence of this facility. The facility operates during daytime hours only. Noise associated with the dumping of scrap metal into a metal bin (which occurs occasionally) and ventilation fans and rooftop units have been considered. Additionally, the movement of a front-end loader, which occasionally compacts the material in the storage bins, has been considered. It was observed that noise from the movement of the front-end loader significantly exceeded the noise from the handling or compaction of the recycled material, therefore the handling or compaction of the recycled material has not been included in the analysis.

Benson Steel

Benson Steel is located north of the site. The facility is involved with the design and manufacture of structural steel and was observed to operate during daytime and evening hours only. The storage of finished and scrap steel occurs outdoors; the facility is therefore classified as Class II in the study, and is less than 300 m away from the site. Thus, under D-6 guidelines, the development falls within the potential zone of influence of this facility. The fabrication of steel occurs indoors and the material is transported outdoors via an overhead crane, which was considered. The movement and idling of one truck travelling to and from the main loading bay is included in the analysis. Noise associated with the dumping of scrap metal into a metal bin (not observed directly but assumed to occur occasionally) and ventilation fans and rooftop units have also been considered.

Canadian Precast Ltd.

Canadian Precast Ltd. is located northeast of the site. The facility is involved in the fabrication of precast concrete, which occurs indoors; the finished product is stored outdoors. The facility is assumed to operate during daytime and evening hours only. The facility is therefore classified as Class II in the study, and is less than 300 m away from the site. Thus, under D-6 guidelines, the development falls within the potential zone of influence of this facility. The facility was observed to include both an overhead crane, and a tower crane. There are also two dust collection systems located at the south side of the building on site. These sources, as well as rooftop HVAC units and a ventilation fan have been included in the analysis. In addition, the movement and idling of trucks travelling to and from the facility has been modelled.

Titan Formwork Systems

The Titan Formwork Systems Canada yard is located east of the site. The facility is involved in the outdoor storage of formwork and scaffolding materials, and operates during daytime hours only. The facility is therefore classified as Class II in the study, and is less than 300 m away from the site. Thus, under D-6 guidelines, the development falls within the potential zone of influence of this facility. Noise associated with the HVAC units mounted on the sides of the trailers on site has been considered. The movement and idling of trucks on site have also been included in the analysis.

Tri-Krete Coatings Co.

Tri-Krete Coatings Co. is located north of the site. The facility is involved in the finishing and coating of metal, and is assumed to operate during daytime and evening hours only. The storage of finished and scrap metal occurs outdoors; the facility is therefore classified as Class II in the study, and is less than 300 m away from the site. Thus, under D-6 guidelines, the development falls within the potential zone of influence of this facility. The finishing of metal occurs indoors and the material is transported outdoors via an overhead crane, which was considered. The movement and idling of one truck travelling to and from the main loading bay, as well as the movement of fork lift trucks at the facility has also been included in the analysis. Noise associated with the dumping of scrap metal into a metal bin (assumed to occur occasionally) and ventilation fans and rooftop units have also been considered.

PERI Formwork Systems Inc.

PERI Formworks Systems Inc. is located south of the site. The facility is involved with providing formwork and scaffolding material for construction and is assumed to operate during daytime and evening hours only. The storage of scaffolding and formwork material occurs outdoors; the facility is therefore classified as Class II in the study, and is less than 300 m away from the site. Thus, under D-6 guidelines, the development falls within the potential zone of influence of this facility. Noise associated with the dumping of scrap metal into a metal bin (assumed to occur occasionally) and ventilation fans and rooftop units have been considered. The movement and idling of trucks to and from the various loading bays, as well as the movement of fork lift trucks around the entire outdoor yard has also been included in the analysis.

Other Facilities

As indicated in Table 10, and illustrated in Figure 5, the development is not within the potential zone of influence of any other industrial facilities. There are other commercial facilities within 70 m of the subject site (e.g., Skyview Lanes, 3 Industrial Road, ID#6) which have not been included in the assessment, as no significant noise sources have been identified at these facilities.

4.4 Predicted Noise Impact from Nearby Facilities

The model was used to predict noise levels from each facility within the potential zone of influence of the development site, based on the observed operational characteristics described above, and the more specific assumptions outlined below. For greater certainty, the assumptions of the modelling would need to be verified with the representatives of the surrounding facilities to ensure that the assessment reflects realistic equipment and/or operating parameters.

As described above, the potentially significant noise sources associated with each facility are related to trucking/loading activities, rooftop HVAC units, exhaust stacks and building ventilation fans. There are several facilities within the potential zone of influence where noise from the occasional dump of scrap metal has been modelled. There are a few facilities with crane equipment, and one facility that was identified to have dust collection systems. There is one facility with outdoor waste handling equipment (compaction). As noted, sound data for these sources were based on measurements conducted during the site visit or measurements of similar equipment on past projects. The sound data applied for these sources is presented the table below.

Table 11: Source Sound Power Levels (dB re 10-12 W) for Steady Sound Sources

Source	Octave Band Centre Frequency [Hz]								
	63	125	250	500	1k	2k	4k	8k	A
Truck Passby	101	100	94	96	97	95	91	86	101
Idling Truck	96	91	88	88	91	90	81	70	95
Front End Loader	106	108	107	99	99	98	93	86	105
Fork Lift Trucks	89	82	81	84	82	82	79	77	87
Rooftop HVAC Unit, 3-ton	-	63	66	70	71	68	62	53	75
Rooftop HVAC Unit, 10-ton	89	90	88	85	83	78	73	69	88
Rooftop HVAC Unit, 20-ton	102	102	92	85	87	80	75	70	92
Small Exhaust Stack	61	69	73	74	65	47	45	30	73
Medium Exhaust Stack	92	95	88	85	81	74	65	55	87
Building Ventilation Fan	78	84	80	80	79	76	73	67	84
Overhead Crane	112	105	93	88	80	85	82	75	94
Tower Crane	115	108	96	91	83	88	85	78	97
Small Dust Collector	95	98	99	93	88	84	79	72	95
Waste Compactor	87	87	84	82	82	78	72	69	86
Scrap Metal Dump (impulsive)	111	114	113	112	116	113	108	105	119

4.4.1 Assumed Operating Scenarios

The analysis considers the following sound sources and operating assumptions for a predictable worst-case-hour based on site observations and measurements, aerial imagery around the site, and typical operating scenarios for similar facilities.

Rooftop HVAC units are assumed to operate for the full hour during daytime and evening hours, and for 15 minutes per hour during nighttime hours when a facility is closed (i.e. units on setback). The other sources are assumed to operate during daytime and evening hours only (i.e. off at night). Loading, unloading and delivery activities are generally assumed to occur during daytime hours only (07:00 - 23:00), and truck noise emissions have been considered as such in the analysis.

Vince's Autobody

- 3 small exhaust stacks
- 1 medium exhaust stack.

Midas

- 4 small exhaust stacks
- 1 3-ton rooftop HVAC unit
- 1 10- ton rooftop HVAC unit.

Various Auto Businesses (12621 Highway 50)

- 2 small exhaust stacks
- 3 3-ton rooftop HVAC units
- 1 10-ton rooftop HVAC unit.

Canadian Tire Retail Store

- 4 10-ton rooftop HVAC units
- 7 20-ton rooftop HVAC units
- 2 daytime-hour truck movements
- 1 recycling compactor and 1 garbage compactor (10 minutes each per daytime-hour).

Sibia Collision/Sibia Towing

- 3 small exhaust stacks
- 7 3-ton rooftop HVAC units
- 2 daytime-hour truck movements.

Tru-Spark Tooling Limited

- 3 small exhaust stacks
- 2 3-ton rooftop HVAC unit
- 1 20-ton at-grade HVAC unit.

Armstrong Industrial Services

- 2 medium exhaust stacks
- 3 daytime-hour truck movements
- 3 idling trucks (5 minutes per daytime-hour)
- 1 10-ton rooftop HVAC unit
- 1 20-ton at-grade HVAC unit.

Bolton Community Recycling Centre

- 2 daytime-hour front end loader movements
- 3 small exhaust stacks
- 3 building ventilation fans
- 1 3-ton rooftop HVAC unit
- 1 10-ton rooftop HVAC unit
- Dump of scrap metal into bin at south end of the site (three times per daytime-hour).

Benson Steel

- 1 daytime-hour truck movement
- 1 idling truck (5 minutes per daytime-hour)
- Overhead crane operation (15 minutes per daytime-hour)
- 3 small exhaust stacks
- 8 3-ton rooftop HVAC units
- Dump of scrap metal bin at the north yard of the facility (once per daytime-hour).

Canadian Precast Ltd.

- 2 daytime-hour truck movements
- 2 idling trucks (5 minutes per daytime-hour)
- Overhead crane operation (15 minutes per daytime-hour)
- Tower crane operation (15 minutes per daytime-hour)
- Operation of two small dust collectors (continuous during daytime hours)

Titan Formwork Systems

- 2 daytime-hour truck movements
- 2 idling trucks (5 minutes per daytime-hour)
- 2 3-ton side-mounted HVAC units (for trailers).

Tri-Krete Coatings Co.

- 1 daytime-hour truck movement
- 1 idling truck (5 minutes per daytime-hour)
- Overhead crane operation (15 minutes per daytime-hour)
- 1 medium exhaust stack
- 1 3-ton rooftop HVAC unit
- 6 building ventilation fans
- Movement of 2 fork lift trucks at main yard of facility (30 minutes per daytime-hours)
- Dump of scrap metal bin at the rear of the facility (once per daytime-hour).



PERI Formwork Systems Inc.

- 4 daytime-hour truck movements
- 4 idling trucks (5 minutes per daytime-hour)
- 3 medium exhaust stacks
- 7 3-ton rooftop HVAC units
- 1 10-ton rooftop HVAC unit
- Movement of 6 fork lift trucks in yard (continuous during daytime hours)
- Dump of scrap metal bin at the rear of the facility (once per daytime-hour).

The locations of the steady noise sources are presented in Figures 6 through 11. The locations of the impulsive noise sources (scrap metal dumps) for the Bolton Community Recycling Centre, Benson Steel, Tri-Krete Coatings Co., and PERI Formwork Systems Inc. are presented in Figures 12 through 14.

4.4.2 Results

Maximum predicted daytime and nighttime sound levels from steady sound sources impacting the development site (cumulative total) are shown in Figure 15 and Figure 16. These levels are within the projected minimum background sound levels from road traffic and/or Class 4 exclusionary limits at the building facades. However, predicted sound levels are anticipated to exceed the Class 1 criteria by up to 6 dB at the nearest facades of the B4 building. The steady sound sources that are most dominant are the large rooftop HVAC units on the adjacent Canadian Tire retail store building.

Maximum predicted daytime impulsive sound levels from occasional dumping of scrap metal at Bolton Community Recycling Centre, Benson Steel, Tri-Krete Coatings Co., and PERI Formworks Systems Inc. are shown in Figures 17 through 20. The predicted sound levels from are within the more stringent Class 1 criteria for an occasional impulse noise (in fact, several such loud sounds could occur in a given hour before the criterion limits are exceeded).

Predicted daytime sound levels (steady and impulsive) at all outdoor amenity areas are also within Class 1 criteria.

5 Warning Clauses

MECP guidelines recommend that appropriate warning clauses be used in the Development Agreements and in purchase, sale and lease agreements (typically by reference to the Development

Agreements), to inform future owners and occupants about noise concerns in the area. The following clauses are recommended for all dwelling units in the development.

Type A:

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

Type B:

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 Ministry of Environment, Conservation and Parks.

Type C:

Purchasers/tenants are advised that due to the proximity of the nearby commercial/industrial facilities, sound from those facilities may at times be audible.

These sample clauses are provided by the MECP as examples and can be modified by the owner's legal representative, in consultation with the Town of Caledon, as required.

6 Summary of Recommendations

The following preliminary recommendations are provided in regard to noise mitigation.

Transportation Noise

1. Central air conditioning is anticipated to be required for the entire development.
2. Standard building envelope constructions will be required for all buildings on the development site. Preliminary recommendations for the minimum acoustical performance of glazing constructions are provided in Section 3.4.2.
3. Warning clauses should be included in the property and tenancy agreements and offers of purchase and sale to inform the future owners/residents of noise from the roadways and rail corridor.

Stationary Noise

4. Preliminary assessment based on observations and typical assumptions indicates that the applicable noise level limits are likely to be met at the proposed development under Class 4 criteria. Excesses of up to 6 dB are predicted at the north and west facades of structure B4 under Class 1 criteria. If the Town does not classify this site as Class 4, as recommended,

consideration may need to be given to providing noise controls for some sources at this facility, subject to separate agreement with the owner/operator.

5. Warning clauses should be included in the property and tenancy agreements and offers of purchase and sale for the dwelling units in the residential buildings to inform the future owners/occupants of potential audible noise from nearby commercial/industrial uses.

The reader is referred to the previous sections of the report where these recommendations are discussed in more detail.

7 Conclusions

Based on the assessment presented herein, the development proposal is considered feasible from a noise and vibration perspective. Transportation noise can be mitigated by standard building envelope assemblies, and by including reasonable barriers to shield the common outdoor amenity terraces on the podium rooftops.

A preliminary acoustical analysis of the surrounding commercial/industrial facilities, based on aerial imagery of the area, and measurements and observations during site visits, indicates that predicted sound levels under typical daytime and nighttime operating scenarios are expected to comply with the applicable MECP limits for steady and impulsive sounds at the future residential receptors in the development under the recommended Class 4 receptor classification. Impacts of up to 6 dB (specifically from steady sound sources associated with the neighbouring Canadian Tire retail store) are predicted under the default Class 1 classification. It is recommended that the Town strongly consider a Class 4 classification for this site, to help facilitate the transition of the area to mixed use.

8 References

1. Ontario Ministry of the Environment, Conservation and Parks Publication NPC-300, *Environmental Noise Guideline, Stationary and Transportation Sources - Approval and Planning*, August, 2013.
2. International Organization for Standardization, *Acoustics – Attenuation of Sound during Propagation Outdoors – Part 2: General Method of Calculation*, ISO-9613-2, Switzerland, 1996.
3. “Transit Noise and Vibration Impact Assessment Manual”, US Department of Transportation, Federal Transit Administration, September 2018.
4. Google Maps and Aerial Imagery, Internet application: maps.google.com.



Figure 1: Key Plan

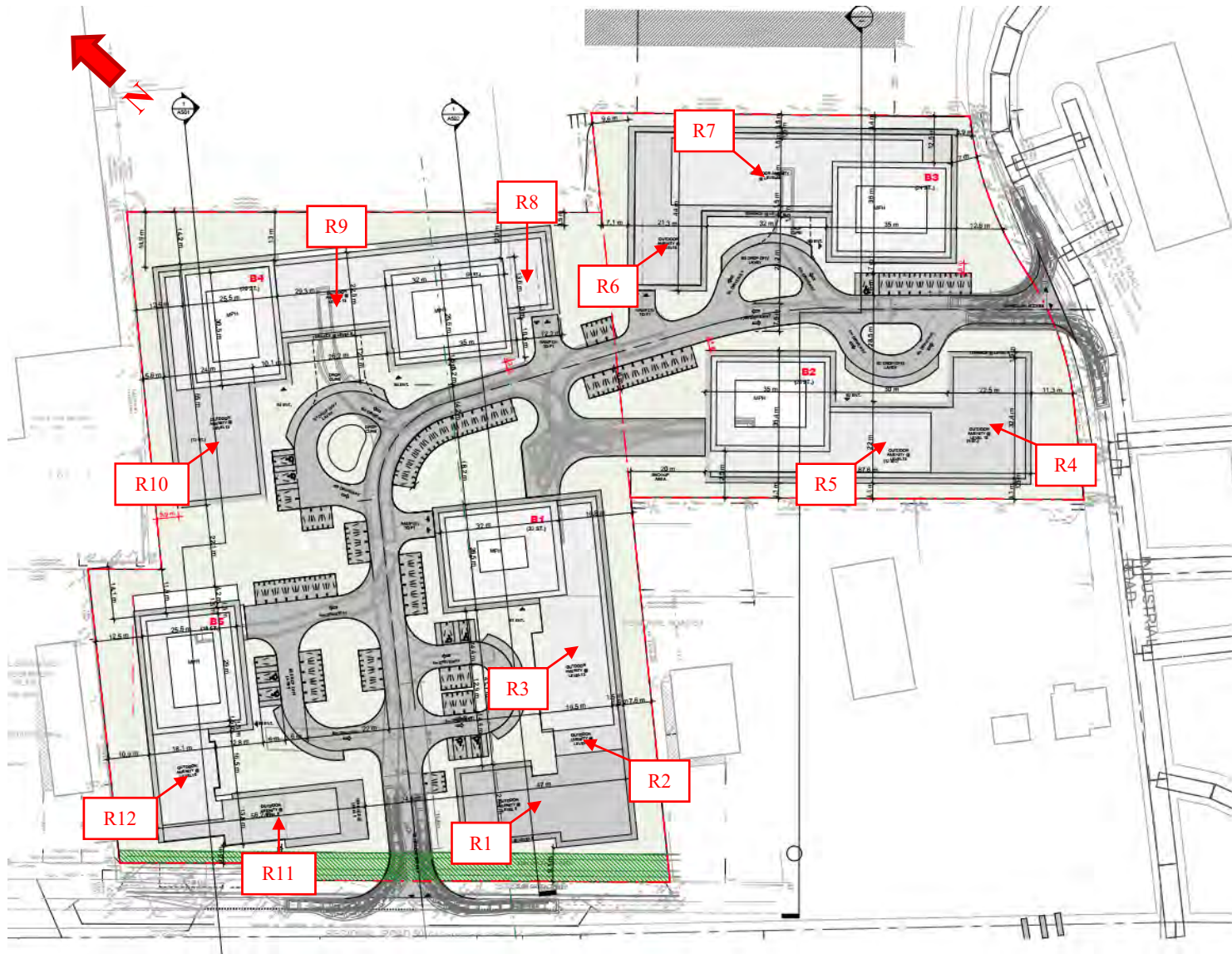


Figure 2: Site Plan

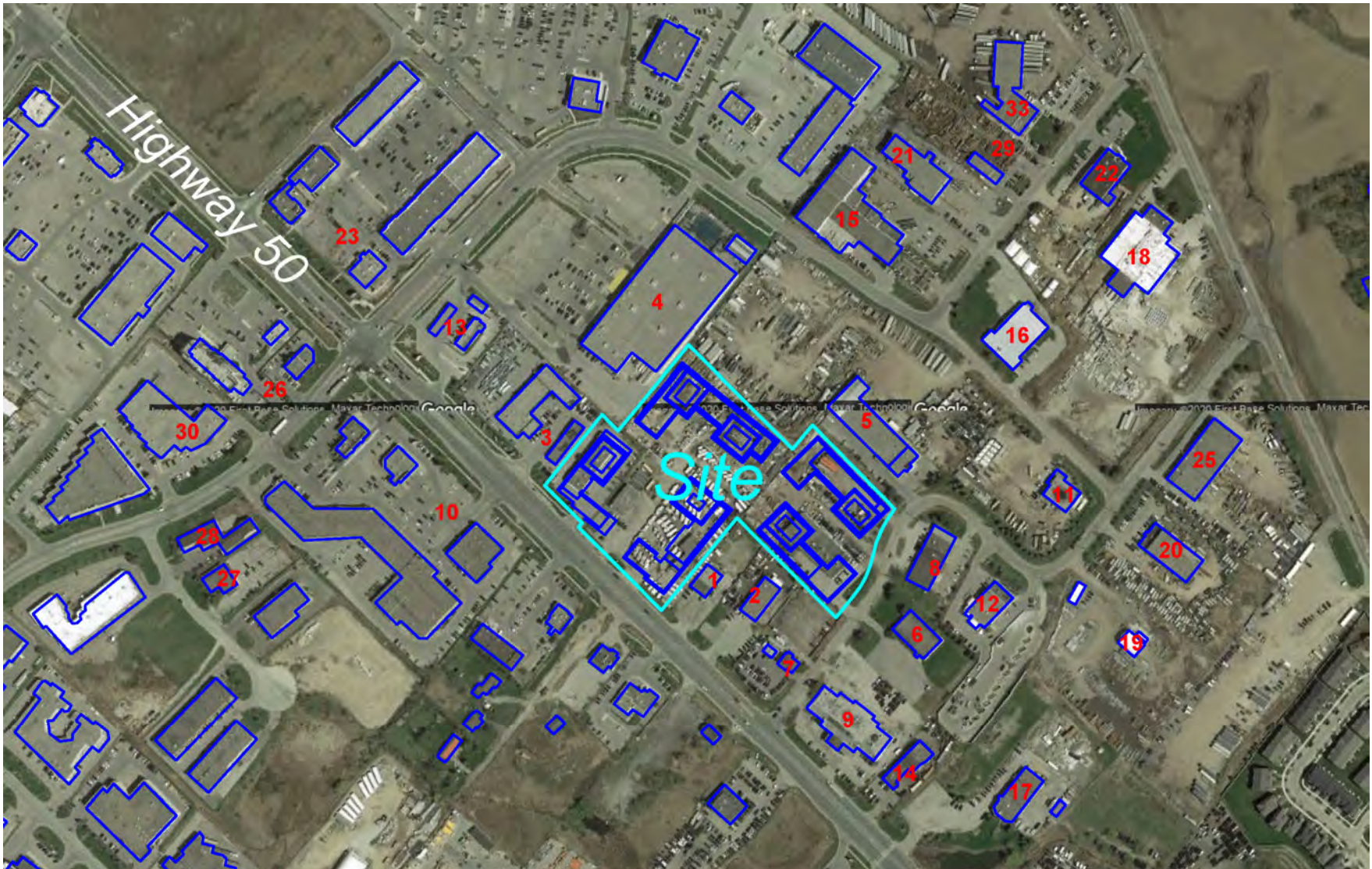


Figure 3: Surrounding Uses

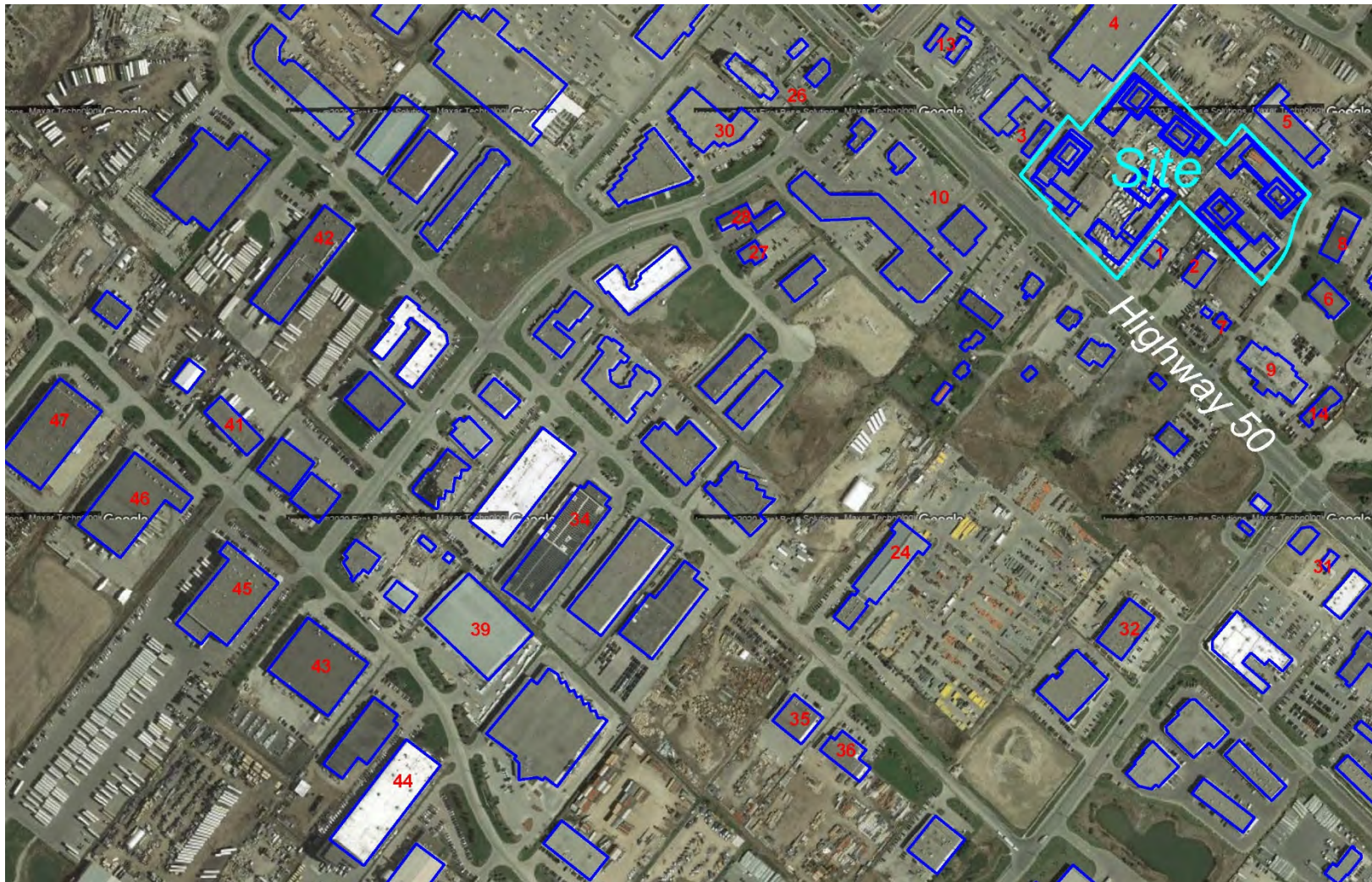


Figure 4: Surrounding Uses



ACOUSTICS



NOISE



VIBRATION

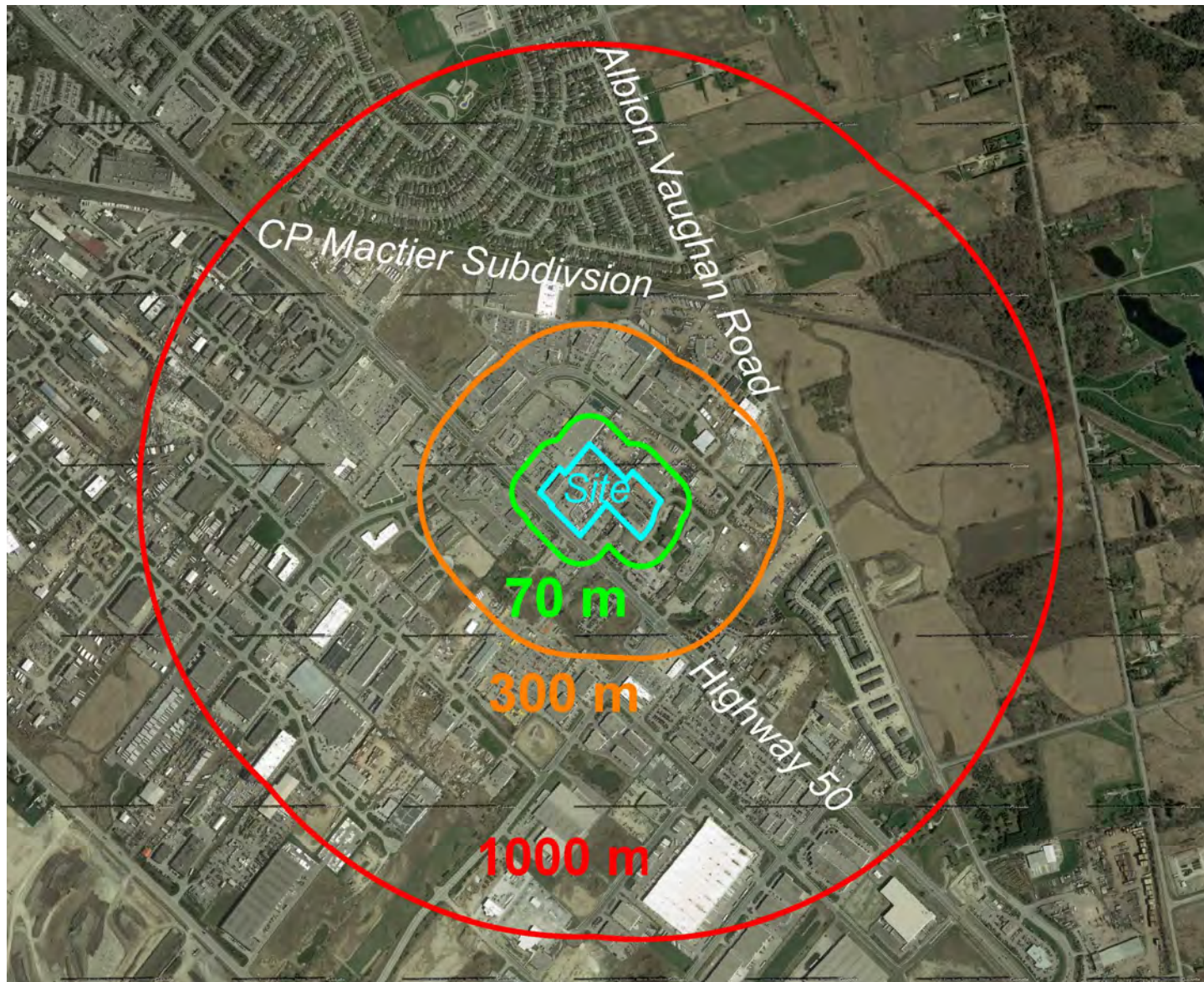


Figure 5: Influence Areas According to MECP Guideline D-6



ACOUSTICS



NOISE



VIBRATION



ID	Facility
1	Vince's Autobody, 12533 Hwy 50
2	Midas, 12543 Hwy 50
8	Tru-Spark Tooling Ltd., 55 Industrial Road
12	Bolton Community Recycling Centre, 109 Industrial Road
19	Titan Formwork Systems, 131 Industrial Road

Figure 6: Steady Daytime Noise Sources



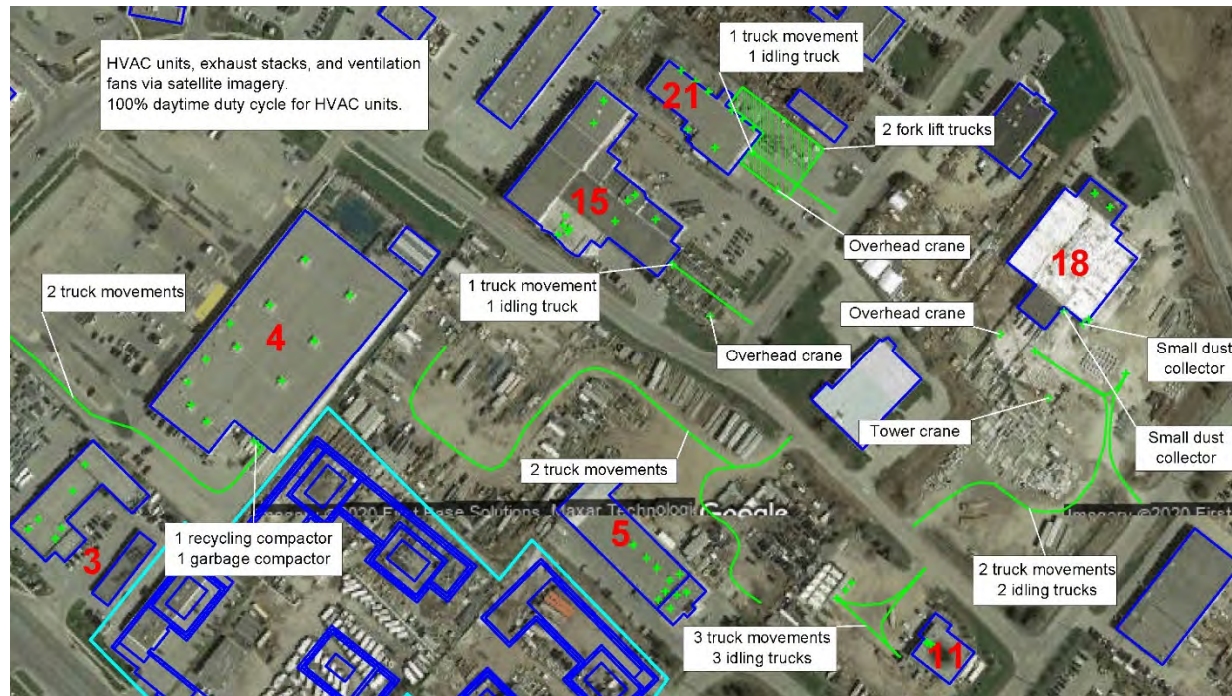
ACOUSTICS



NOISE



VIBRATION



ID	Facility
3	Various Auto Businesses, 12621 Hwy 50
4	Canadian Tire Retail Store, 99 McEwan Drive East
5	Sibia Collision/Sibia Towing, 68 Commercial Road
11	Tru-Spark Tooling Ltd., 55 Industrial Road
15	Benson Steel, 72 Commercial Road
18	Canadian Precast Ltd., 12530 Albion Vaughan Road
19	Titan Formwork Systems, 131 Industrial Road
21	Tri-Krete Coatings Co., 94 Commercial Road

Figure 7: Steady Daytime Noise Sources



ACOUSTICS



NOISE



VIBRATION



ID	Facility
24	PERI Formwork Systems Inc., 45 Nixon Road

Figure 8: Steady Daytime Noise Sources



ID	Facility
1	Vince's Autobody, 12533 Hwy 50
2	Midas, 12543 Hwy 50
8	Tru-Spark Tooling Ltd., 55 Industrial Road
12	Bolton Community Recycling Centre, 109 Industrial Road
19	Titan Formwork Systems, 131 Industrial Road

Figure 9: Steady Nighttime Noise Sources



ACOUSTICS



NOISE



VIBRATION



ID	Facility
3	Various Auto Businesses, 12621 Hwy 50
4	Canadian Tire Retail Store, 99 McEwan Drive East
5	Sibia Collision/Sibia Towing, 68 Commercial Road
11	Tru-Spark Tooling Ltd., 55 Industrial Road
15	Benson Steel, 72 Commercial Road
18	Canadian Precast Ltd., 12530 Albion Vaughan Road
19	Titan Formwork Systems, 131 Industrial Road
21	Tri-Krete Coatings Co., 94 Commercial Road

Figure 10: Steady Nighttime Noise Sources



ACOUSTICS



NOISE



VIBRATION



ID	Facility
24	PERI Formwork Systems Inc., 45 Nixon Road

Figure 11: Steady Nighttime Noise Sources



ACOUSTICS



NOISE



VIBRATION



Figure 12: Impulsive Daytime Noise Sources



ACOUSTICS



NOISE



VIBRATION

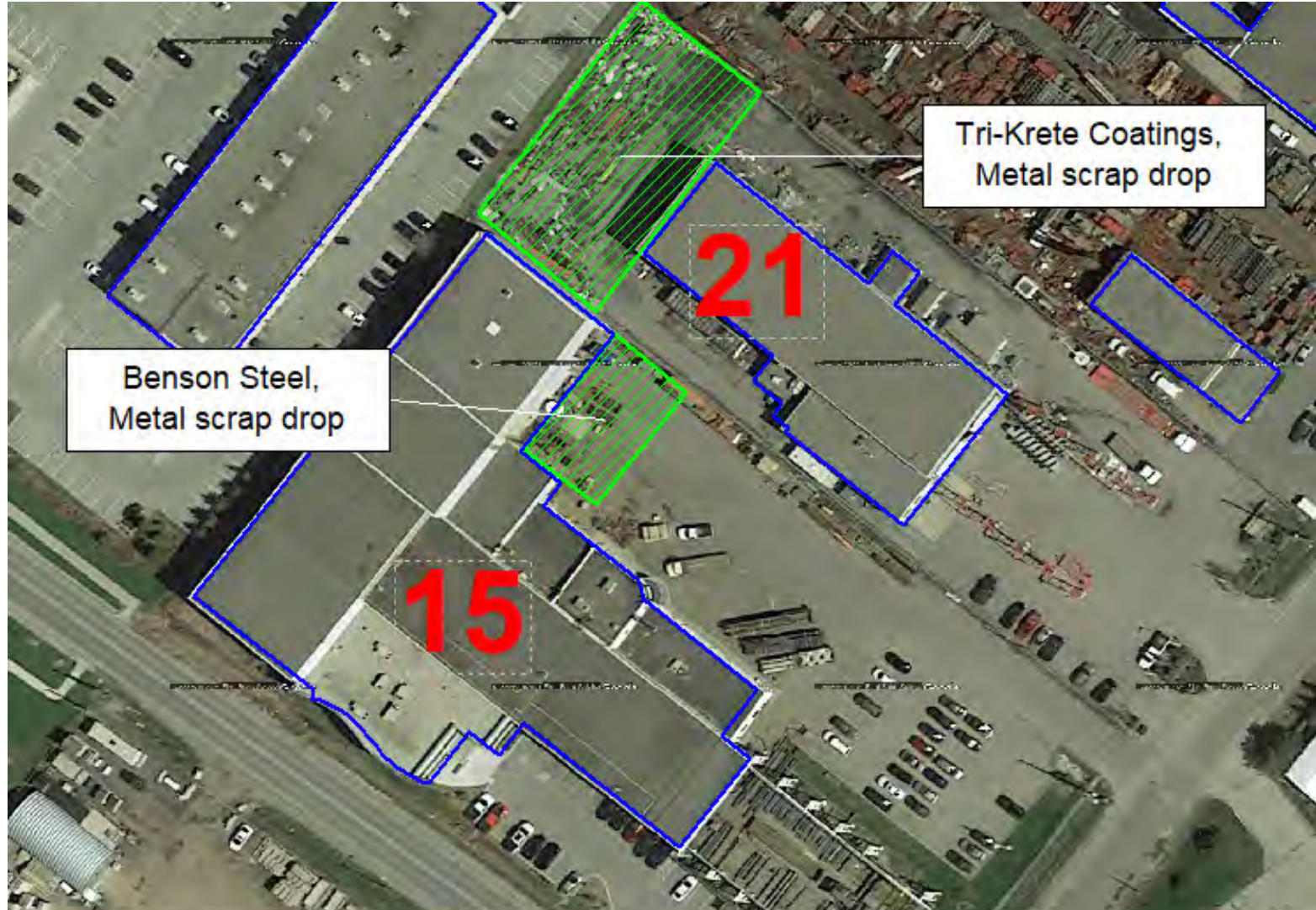


Figure 13: Impulsive Daytime Noise Sources



ACOUSTICS



NOISE



VIBRATION



Figure 14: Impulsive Daytime Noise Sources



ACOUSTICS



NOISE



VIBRATION

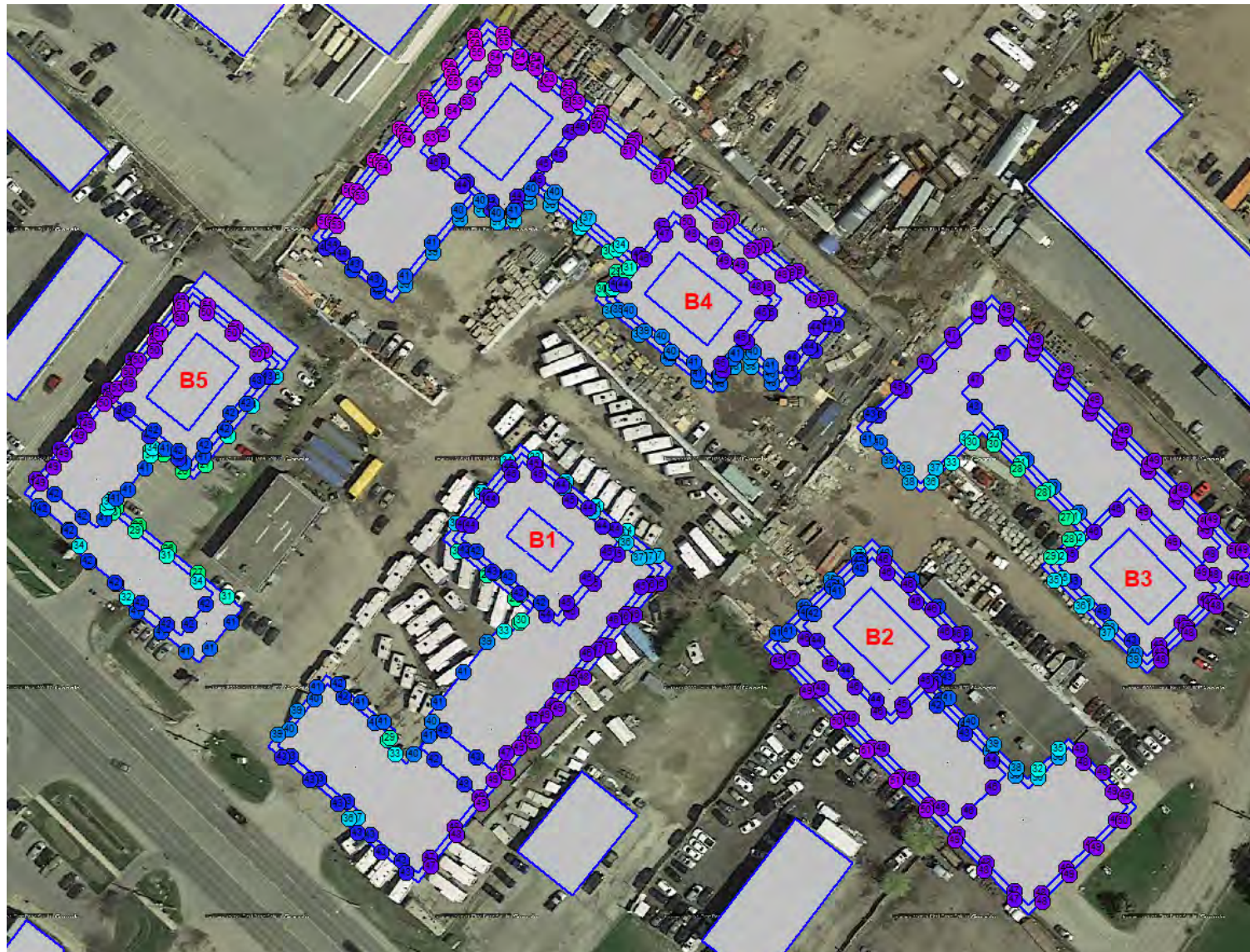


Figure 15: Daytime Steady Sound Levels, L_{EQ} [dBA]



ACOUSTICS



NOISE



VIBRATION

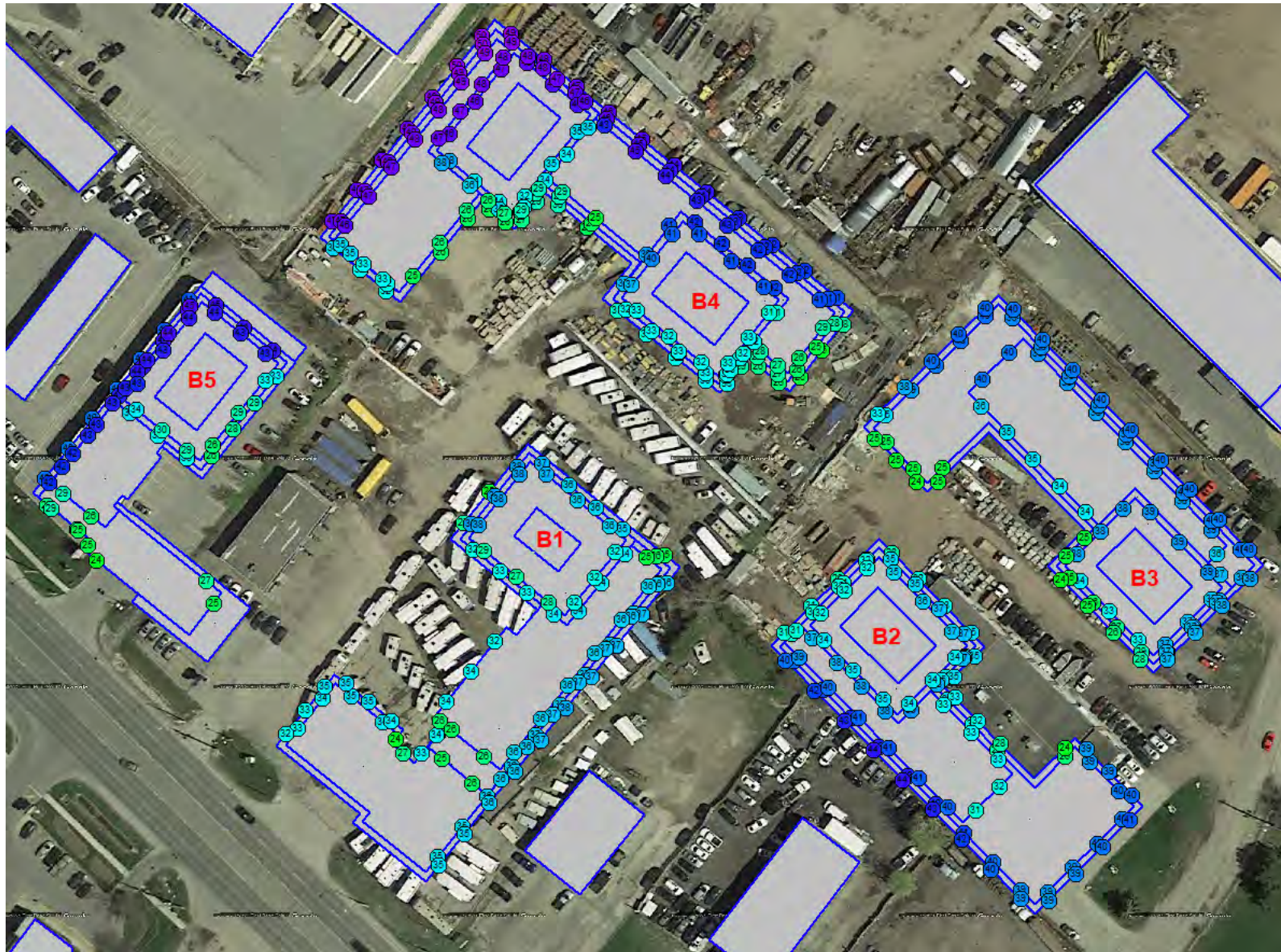


Figure 16: Nighttime Steady Sound Levels, L_{EQ} [dBA]



ACOUSTICS



NOISE



VIBRATION



Figure 17: Impulsive Daytime Sound Levels from Bolton Community Recycling Centre, L_{LM} [dBAI]



ACOUSTICS



NOISE



VIBRATION

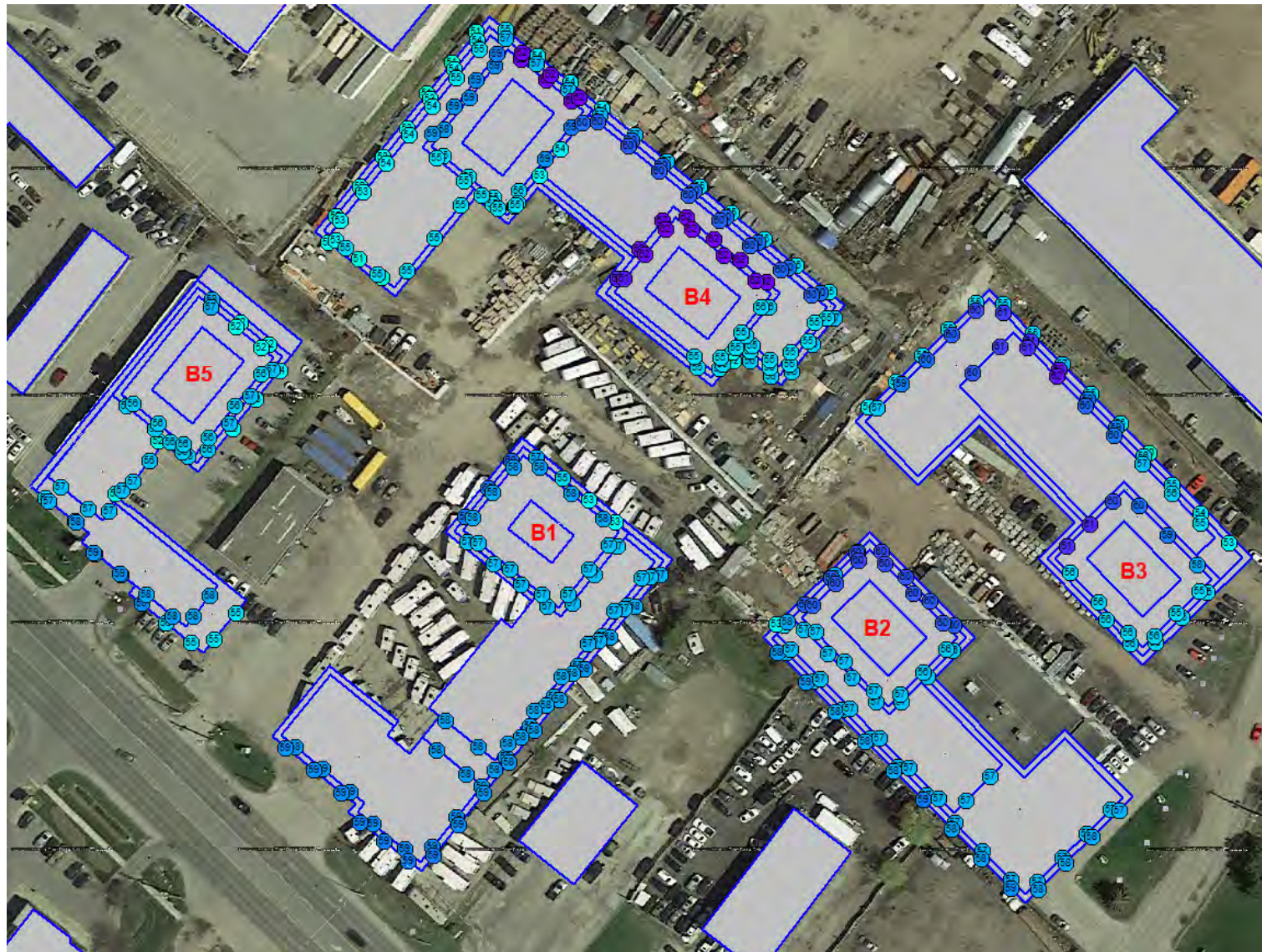


Figure 18: Impulsive Daytime Sound Levels from Benson Steel, L_{LM} [dBAI]



ACOUSTICS



NOISE



VIBRATION

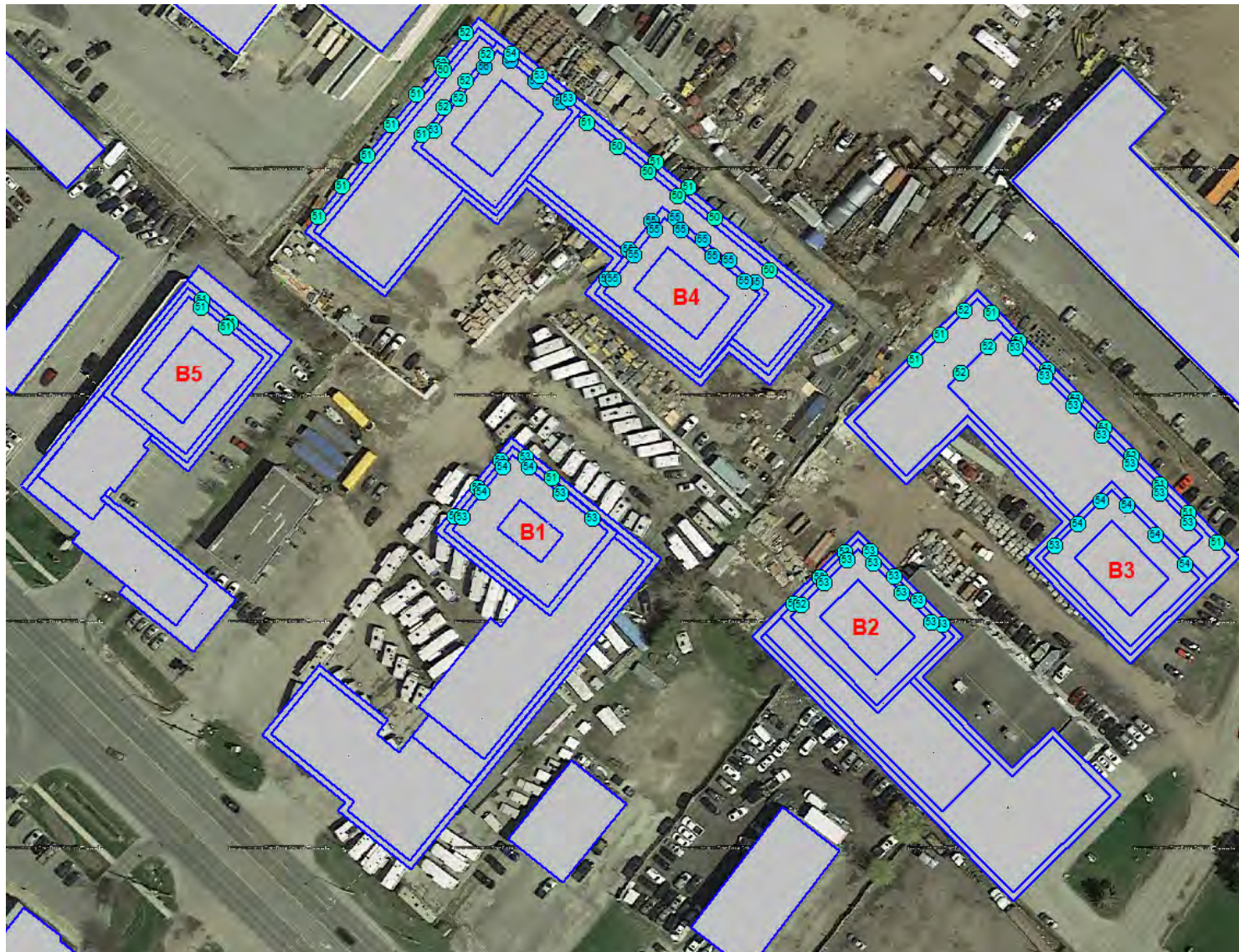


Figure 19: Impulsive Daytime Sound Levels from Tri-Krete Coatings Co., L_{LM} [dBAI]



ACOUSTICS



NOISE



VIBRATION



Figure 20: Impulsive Daytime Sound Levels from PERI Formworks Systems Inc., L_{LM} [dBAI]

APPENDIX A

TRAFFIC DATA



ACOUSTICS



NOISE



VIBRATION

Date: November 6, 2020
 From: Iouri Basmanov, HGC Engineering
 Re: Traffic Data Request – Highway 50 (200 m North of George Bolton Road)

Iouri,
 As per your request, we are providing the following 2019 traffic data:

	Existing	Ultimate
24 Hour Traffic Volume	32,102	32,400
# of Lanes	4	4
Day/Night Split	88/12	88/12
Day Trucks (% of Total Volume)	1.05% Medium 5.30% Heavy	1.05% Medium 5.30% Heavy
Night Trucks (% of Total Volume)	0.94% Medium 6.96% Heavy	0.94% Medium 6.96% Heavy
Right-of-Way Width	45 meters	
Posted Speed Limit	60 km/h	

Please note:

1. The current volume is not the Annual Average Daily Traffic, but the averaged raw volumes over three data collection days. If you need the Annual Average Traffic Volume, please visit the Peel Open Data website below:
<http://opendata.peelregion.ca/data-categories/transportation/traffic-count-stations.aspx>
2. The ultimate volume is the planned volume during a level of service 'D' where a 2 second vehicle headway and a volume to capacity ratio of 0.9 is assumed. Traffic signals and hourly variations in traffic are also incorporated into the ultimate volume.

If you require further assistance, please contact me at (905) 791-7800 ext. 4810.

Regards,

Tiggy Chen
 Co-op Student, Transportation System Planning
 Transportation Division, Public Works Services, Region of Peel
 10 Peel Centre Drive, Suite B, 4th Floor
 Brampton, ON L6T 4B9
 W: (905) 791-7800 x4810 C: (647) 918-2827
 E: tiggy.chen@peelregion.ca

Report-3.1 Directions ----->	Location :		5013364NS		Hwy 50 - 200m North of George Bolton Road		Road :			
	Dates :		5/14/2019							
	North Volume	%	South Volume	%	East Volume	%	West Volume	%	Total Volume	%
00:00 0:15	22	0.2%	37	0.2%					59	0.2%
0:15 0:30	18	0.1%	18	0.1%					36	0.1%
0:30 0:45	25	0.2%	24	0.1%					49	0.2%
0:45 1:00	16	0.1%	22	0.1%					38	0.1%
00:00 1:00	81	0.6%	101	0.6%					182	0.6%
1:00 1:15	20	0.1%	16	0.1%					36	0.1%
1:15 1:30	17	0.1%	17	0.1%					34	0.1%
1:30 1:45	8	0.1%	14	0.1%					22	0.1%
1:45 2:00	11	0.1%	7	0.0%					18	0.1%
1:00 2:00	56	0.4%	54	0.3%					110	0.4%
2:00 2:15	18	0.1%	19	0.1%					37	0.1%
2:15 2:30	10	0.1%	16	0.1%					26	0.1%
2:30 2:45	6	0.0%	12	0.1%					18	0.1%
2:45 3:00	9	0.1%	9	0.1%					18	0.1%
2:00 3:00	43	0.3%	56	0.3%					99	0.3%
3:00 3:15	12	0.1%	19	0.1%					31	0.1%
3:15 3:30	5	0.0%	20	0.1%					25	0.1%
3:30 3:45	12	0.1%	34	0.2%					46	0.1%
3:45 4:00	11	0.1%	17	0.1%					28	0.1%
3:00 4:00	40	0.3%	90	0.5%					130	0.4%
4:00 4:15	9	0.1%	27	0.2%					36	0.1%
4:15 4:30	10	0.1%	36	0.2%					46	0.1%
4:30 4:45	27	0.2%	65	0.4%					92	0.3%
4:45 5:00	33	0.2%	52	0.3%					85	0.3%
4:00 5:00	79	0.6%	180	1.0%					259	0.8%
5:00 5:15	46	0.3%	111	0.6%					157	0.5%
5:15 5:30	63	0.5%	142	0.8%					205	0.7%
5:30 5:45	94	0.7%	200	1.1%					294	0.9%
5:45 6:00	108	0.8%	225	1.3%					333	1.1%
5:00 6:00	311	2.3%	678	3.8%					989	3.2%
6:00 6:15	90	0.7%	260	1.5%					350	1.1%
6:15 6:30	123	0.9%	266	1.5%					389	1.2%
6:30 6:45	147	1.1%	317	1.8%					464	1.5%
6:45 7:00	160	1.2%	298	1.7%					458	1.5%
6:00 7:00	520	3.9%	1141	6.4%					1661	5.3%
7:00 7:15	154	1.1%	356	2.0%					510	1.6%
7:15 7:30	156	1.2%	353	2.0%					509	1.6%
7:30 7:45	182	1.3%	330	1.9%					512	1.6%
7:45 8:00	209	1.5%	325	1.8%					534	1.7%
7:00 8:00	701	5.2%	1364	7.7%					2065	6.6%
8:00 8:15	161	1.2%	367	2.1%					528	1.7%
8:15 8:30	170	1.3%	344	1.9%					514	1.6%
8:30 8:45	189	1.4%	314	1.8%					503	1.6%
8:45 9:00	185	1.4%	320	1.8%					505	1.6%
8:00 9:00	705	5.2%	1345	7.6%					2050	6.6%
9:00 9:15	190	1.4%	285	1.6%					475	1.5%
9:15 9:30	170	1.3%	286	1.6%					456	1.5%
9:30 9:45	146	1.1%	274	1.5%					420	1.3%
9:45 10:00	144	1.1%	270	1.5%					414	1.3%
9:00 10:00	650	4.8%	1115	6.3%					1765	5.6%
10:00 10:15	194	1.4%	250	1.4%					444	1.4%
10:15 10:30	161	1.2%	280	1.6%					441	1.4%
10:30 10:45	161	1.2%	239	1.3%					400	1.3%
10:45 11:00	184	1.4%	268	1.5%					452	1.4%
10:00 11:00	700	5.2%	1037	5.8%					1737	5.6%
11:00 11:15	181	1.3%	279	1.6%					460	1.5%
11:15 11:30	175	1.3%	260	1.5%					435	1.4%
11:30 11:45	167	1.2%	260	1.5%					427	1.4%
11:45 12:00	194	1.4%	274	1.5%					468	1.5%
11:00 12:00	717	5.3%	1073	6.0%					1790	5.7%

12:00	12:15	219	1.6%	267	1.5%			486	1.6%
12:15	12:30	195	1.4%	301	1.7%			496	1.6%
12:30	12:45	210	1.6%	301	1.7%			511	1.6%
12:45	13:00	206	1.5%	309	1.7%			515	1.6%
12:00	13:00	830	6.2%	1178	6.6%			2008	6.4%
13:00	13:15	185	1.4%	284	1.6%			469	1.5%
13:15	13:30	190	1.4%	286	1.6%			476	1.5%
13:30	13:45	200	1.5%	255	1.4%			455	1.5%
13:45	14:00	185	1.4%	219	1.2%			404	1.3%
13:00	14:00	760	5.6%	1044	5.9%			1804	5.8%
14:00	14:15	218	1.6%	256	1.4%			474	1.5%
14:15	14:30	218	1.6%	276	1.6%			494	1.6%
14:30	14:45	215	1.6%	271	1.5%			486	1.6%
14:45	15:00	212	1.6%	218	1.2%			430	1.4%
14:00	15:00	863	6.4%	1021	5.7%			1884	6.0%
15:00	15:15	232	1.7%	235	1.3%			467	1.5%
15:15	15:30	236	1.7%	251	1.4%			487	1.6%
15:30	15:45	270	2.0%	267	1.5%			537	1.7%
15:45	16:00	275	2.0%	268	1.5%			543	1.7%
15:00	16:00	1013	7.5%	1021	5.7%			2034	6.5%
16:00	16:15	295	2.2%	327	1.8%			622	2.0%
16:15	16:30	281	2.1%	291	1.6%			572	1.8%
16:30	16:45	268	2.0%	301	1.7%			569	1.8%
16:45	17:00	264	2.0%	248	1.4%			512	1.6%
16:00	17:00	1108	8.2%	1167	6.6%			2275	7.3%
17:00	17:15	280	2.1%	296	1.7%			576	1.8%
17:15	17:30	281	2.1%	248	1.4%			529	1.7%
17:30	17:45	282	2.1%	234	1.3%			516	1.6%
17:45	18:00	265	2.0%	230	1.3%			495	1.6%
17:00	18:00	1108	8.2%	1008	5.7%			2116	6.8%
18:00	18:15	281	2.1%	246	1.4%			527	1.7%
18:15	18:30	270	2.0%	199	1.1%			469	1.5%
18:30	18:45	213	1.6%	212	1.2%			425	1.4%
18:45	19:00	258	1.9%	203	1.1%			461	1.5%
18:00	19:00	1022	7.6%	860	4.8%			1882	6.0%
19:00	19:15	205	1.5%	199	1.1%			404	1.3%
19:15	19:30	210	1.6%	199	1.1%			409	1.3%
19:30	19:45	161	1.2%	157	0.9%			318	1.0%
19:45	20:00	147	1.1%	158	0.9%			305	1.0%
19:00	20:00	723	5.4%	713	4.0%			1436	4.6%
20:00	20:15	175	1.3%	176	1.0%			351	1.1%
20:15	20:30	137	1.0%	153	0.9%			290	0.9%
20:30	20:45	152	1.1%	155	0.9%			307	1.0%
20:45	21:00	116	0.9%	147	0.8%			263	0.8%
20:00	21:00	580	4.3%	631	3.5%			1211	3.9%
21:00	21:15	120	0.9%	155	0.9%			275	0.9%
21:15	21:30	126	0.9%	95	0.5%			221	0.7%
21:30	21:45	97	0.7%	88	0.5%			185	0.6%
21:45	22:00	100	0.7%	93	0.5%			193	0.6%
21:00	22:00	443	3.3%	431	2.4%			874	2.8%
22:00	22:15	106	0.8%	105	0.6%			211	0.7%
22:15	22:30	70	0.5%	79	0.4%			149	0.5%
22:30	22:45	72	0.5%	65	0.4%			137	0.4%
22:45	23:00	57	0.4%	58	0.3%			115	0.4%
22:00	23:00	305	2.3%	307	1.7%			612	2.0%
23:00	23:15	41	0.3%	66	0.4%			107	0.3%
23:15	23:30	25	0.2%	39	0.2%			64	0.2%
23:30	23:45	29	0.2%	48	0.3%			77	0.2%
23:45	00:00	34	0.3%	26	0.1%			60	0.2%
23:00	00:00	129	1.0%	179	1.0%			308	1.0%
Total		13487		17794				31281	100.0%
		43.1%		56.9%				100.0%	
AM PEAK		209		367				534	
period		7:45		8:00				7:45	
% of class		1.5%		2.1%				1.7%	
PM PEAK		295		327				622	
period		16:00		16:00				16:00	
% of class		2.2%		1.8%				2.0%	

Report-3.2	Location :		5013364NS		Hwy 50 - 200m North of George Bolton Road		Road :				
	Dates :		5/15/2019								
	Directions ----->		North		South		East		West		Total
		Volume	%	Volume	%	Volume	%	Volume	%	Volume	%
00:00	0:15	31	0.2%	27	0.2%					58	0.2%
0:15	0:30	27	0.2%	26	0.1%					53	0.2%
0:30	0:45	22	0.2%	24	0.1%					46	0.1%
0:45	1:00	15	0.1%	21	0.1%					36	0.1%
00:00	1:00	95	0.7%	98	0.6%					193	0.6%
1:00	1:15	17	0.1%	38	0.2%					55	0.2%
1:15	1:30	11	0.1%	15	0.1%					26	0.1%
1:30	1:45	10	0.1%	11	0.1%					21	0.1%
1:45	2:00	11	0.1%	13	0.1%					24	0.1%
1:00	2:00	49	0.4%	77	0.4%					126	0.4%
2:00	2:15	14	0.1%	21	0.1%					35	0.1%
2:15	2:30	12	0.1%	17	0.1%					29	0.1%
2:30	2:45	10	0.1%	22	0.1%					32	0.1%
2:45	3:00	6	0.0%	11	0.1%					17	0.1%
2:00	3:00	42	0.3%	71	0.4%					113	0.4%
3:00	3:15	6	0.0%	14	0.1%					20	0.1%
3:15	3:30	6	0.0%	18	0.1%					24	0.1%
3:30	3:45	10	0.1%	25	0.1%					35	0.1%
3:45	4:00	11	0.1%	20	0.1%					31	0.1%
3:00	4:00	33	0.2%	77	0.4%					110	0.4%
4:00	4:15	10	0.1%	32	0.2%					42	0.1%
4:15	4:30	10	0.1%	40	0.2%					50	0.2%
4:30	4:45	29	0.2%	54	0.3%					83	0.3%
4:45	5:00	45	0.3%	77	0.4%					122	0.4%
4:00	5:00	94	0.7%	203	1.2%					297	1.0%
5:00	5:15	38	0.3%	110	0.6%					148	0.5%
5:15	5:30	64	0.5%	152	0.9%					216	0.7%
5:30	5:45	76	0.6%	187	1.1%					263	0.8%
5:45	6:00	104	0.8%	207	1.2%					311	1.0%
5:00	6:00	282	2.1%	656	3.7%					938	3.0%
6:00	6:15	98	0.7%	260	1.5%					358	1.2%
6:15	6:30	101	0.7%	257	1.5%					358	1.2%
6:30	6:45	135	1.0%	319	1.8%					454	1.5%
6:45	7:00	153	1.1%	308	1.8%					461	1.5%
6:00	7:00	487	3.6%	1144	6.5%					1631	5.3%
7:00	7:15	145	1.1%	328	1.9%					473	1.5%
7:15	7:30	122	0.9%	312	1.8%					434	1.4%
7:30	7:45	179	1.3%	386	2.2%					565	1.8%
7:45	8:00	193	1.4%	390	2.2%					583	1.9%
7:00	8:00	639	4.7%	1416	8.1%					2055	6.6%
8:00	8:15	182	1.3%	309	1.8%					491	1.6%
8:15	8:30	142	1.1%	291	1.7%					433	1.4%
8:30	8:45	173	1.3%	342	2.0%					515	1.7%
8:45	9:00	189	1.4%	349	2.0%					538	1.7%
8:00	9:00	686	5.1%	1291	7.4%					1977	6.4%
9:00	9:15	178	1.3%	280	1.6%					458	1.5%
9:15	9:30	179	1.3%	311	1.8%					490	1.6%
9:30	9:45	162	1.2%	285	1.6%					447	1.4%
9:45	10:00	190	1.4%	270	1.5%					460	1.5%
9:00	10:00	709	5.3%	1146	6.5%					1855	6.0%
10:00	10:15	152	1.1%	250	1.4%					402	1.3%
10:15	10:30	153	1.1%	264	1.5%					417	1.3%
10:30	10:45	165	1.2%	253	1.4%					418	1.3%
10:45	11:00	180	1.3%	235	1.3%					415	1.3%
10:00	11:00	650	4.8%	1002	5.7%					1652	5.3%
11:00	11:15	168	1.2%	236	1.3%					404	1.3%
11:15	11:30	200	1.5%	264	1.5%					464	1.5%
11:30	11:45	190	1.4%	254	1.5%					444	1.4%
11:45	12:00	193	1.4%	251	1.4%					444	1.4%
11:00	12:00	751	5.6%	1005	5.7%					1756	5.7%

12:00	12:15	232	1.7%	272	1.6%			504	1.6%
12:15	12:30	195	1.4%	300	1.7%			495	1.6%
12:30	12:45	250	1.9%	300	1.7%			550	1.8%
12:45	13:00	204	1.5%	306	1.7%			510	1.6%
12:00	13:00	881	6.5%	1178	6.7%			2059	6.6%
13:00	13:15	204	1.5%	295	1.7%			499	1.6%
13:15	13:30	194	1.4%	236	1.3%			430	1.4%
13:30	13:45	186	1.4%	282	1.6%			468	1.5%
13:45	14:00	168	1.2%	269	1.5%			437	1.4%
13:00	14:00	752	5.6%	1082	6.2%			1834	5.9%
14:00	14:15	192	1.4%	244	1.4%			436	1.4%
14:15	14:30	212	1.6%	253	1.4%			465	1.5%
14:30	14:45	225	1.7%	293	1.7%			518	1.7%
14:45	15:00	217	1.6%	240	1.4%			457	1.5%
14:00	15:00	846	6.3%	1030	5.9%			1876	6.0%
15:00	15:15	215	1.6%	268	1.5%			483	1.6%
15:15	15:30	235	1.7%	265	1.5%			500	1.6%
15:30	15:45	226	1.7%	264	1.5%			490	1.6%
15:45	16:00	288	2.1%	268	1.5%			556	1.8%
15:00	16:00	964	7.1%	1065	6.1%			2029	6.5%
16:00	16:15	277	2.1%	287	1.6%			564	1.8%
16:15	16:30	284	2.1%	240	1.4%			524	1.7%
16:30	16:45	319	2.4%	315	1.8%			634	2.0%
16:45	17:00	291	2.2%	279	1.6%			570	1.8%
16:00	17:00	1171	8.7%	1121	6.4%			2292	7.4%
17:00	17:15	316	2.3%	295	1.7%			611	2.0%
17:15	17:30	296	2.2%	246	1.4%			542	1.7%
17:30	17:45	308	2.3%	231	1.3%			539	1.7%
17:45	18:00	281	2.1%	215	1.2%			496	1.6%
17:00	18:00	1201	8.9%	987	5.6%			2188	7.1%
18:00	18:15	270	2.0%	207	1.2%			477	1.5%
18:15	18:30	229	1.7%	193	1.1%			422	1.4%
18:30	18:45	263	1.9%	195	1.1%			458	1.5%
18:45	19:00	211	1.6%	187	1.1%			398	1.3%
18:00	19:00	973	7.2%	782	4.5%			1755	5.7%
19:00	19:15	182	1.3%	199	1.1%			381	1.2%
19:15	19:30	173	1.3%	178	1.0%			351	1.1%
19:30	19:45	210	1.6%	144	0.8%			354	1.1%
19:45	20:00	156	1.2%	143	0.8%			299	1.0%
19:00	20:00	721	5.3%	664	3.8%			1385	4.5%
20:00	20:15	136	1.0%	158	0.9%			294	0.9%
20:15	20:30	134	1.0%	129	0.7%			263	0.8%
20:30	20:45	154	1.1%	119	0.7%			273	0.9%
20:45	21:00	132	1.0%	132	0.8%			264	0.9%
20:00	21:00	556	4.1%	538	3.1%			1094	3.5%
21:00	21:15	107	0.8%	147	0.8%			254	0.8%
21:15	21:30	119	0.9%	100	0.6%			219	0.7%
21:30	21:45	107	0.8%	90	0.5%			197	0.6%
21:45	22:00	84	0.6%	77	0.4%			161	0.5%
21:00	22:00	417	3.1%	414	2.4%			831	2.7%
22:00	22:15	87	0.6%	94	0.5%			181	0.6%
22:15	22:30	61	0.5%	71	0.4%			132	0.4%
22:30	22:45	57	0.4%	46	0.3%			103	0.3%
22:45	23:00	66	0.5%	50	0.3%			116	0.4%
22:00	23:00	271	2.0%	261	1.5%			532	1.7%
23:00	23:15	71	0.5%	73	0.4%			144	0.5%
23:15	23:30	67	0.5%	57	0.3%			124	0.4%
23:30	23:45	52	0.4%	54	0.3%			106	0.3%
23:45	00:00	41	0.3%	24	0.1%			65	0.2%
23:00	00:00	231	1.7%	208	1.2%			439	1.4%
Total		13501		17516				31017	100.0%
		43.5%		56.5%				100.0%	
AM PEAK		200		390				583	
period		11:15		7:45				7:45	
% of class			1.5%		2.2%				1.9%
PM PEAK		319		315				634	
period		16:30		16:30				16:30	
% of class			2.4%		1.8%				2.0%

Report-3.3	Location :		5013364NS		Hwy 50 - 200m North of George Bolton Road		Road :				
	Dates :		5/16/2019								
	Directions ----->		North		South		East		West		Total
		Volume	%	Volume	%	Volume	%	Volume	%	Volume	%
00:00	0:15	23	0.2%	24	0.1%					47	0.1%
0:15	0:30	36	0.3%	28	0.2%					64	0.2%
0:30	0:45	17	0.1%	19	0.1%					36	0.1%
0:45	1:00	24	0.2%	19	0.1%					43	0.1%
00:00	1:00	100	0.7%	90	0.5%					190	0.6%
1:00	1:15	14	0.1%	16	0.1%					30	0.1%
1:15	1:30	18	0.1%	15	0.1%					33	0.1%
1:30	1:45	16	0.1%	14	0.1%					30	0.1%
1:45	2:00	12	0.1%	12	0.1%					24	0.1%
1:00	2:00	60	0.4%	57	0.3%					117	0.4%
2:00	2:15	16	0.1%	22	0.1%					38	0.1%
2:15	2:30	10	0.1%	12	0.1%					22	0.1%
2:30	2:45	7	0.1%	17	0.1%					24	0.1%
2:45	3:00	13	0.1%	19	0.1%					32	0.1%
2:00	3:00	46	0.3%	70	0.4%					116	0.4%
3:00	3:15	8	0.1%	20	0.1%					28	0.1%
3:15	3:30	7	0.1%	16	0.1%					23	0.1%
3:30	3:45	10	0.1%	26	0.1%					36	0.1%
3:45	4:00	9	0.1%	19	0.1%					28	0.1%
3:00	4:00	34	0.2%	81	0.4%					115	0.4%
4:00	4:15	13	0.1%	30	0.2%					43	0.1%
4:15	4:30	24	0.2%	46	0.2%					70	0.2%
4:30	4:45	17	0.1%	81	0.4%					98	0.3%
4:45	5:00	39	0.3%	66	0.4%					105	0.3%
4:00	5:00	93	0.7%	223	1.2%					316	1.0%
5:00	5:15	36	0.3%	95	0.5%					131	0.4%
5:15	5:30	67	0.5%	144	0.8%					211	0.7%
5:30	5:45	86	0.6%	207	1.1%					293	0.9%
5:45	6:00	106	0.8%	221	1.2%					327	1.0%
5:00	6:00	295	2.2%	667	3.6%					962	3.0%
6:00	6:15	98	0.7%	270	1.5%					368	1.1%
6:15	6:30	105	0.8%	277	1.5%					382	1.2%
6:30	6:45	120	0.9%	300	1.6%					420	1.3%
6:45	7:00	194	1.4%	332	1.8%					526	1.6%
6:00	7:00	517	3.8%	1179	6.3%					1696	5.2%
7:00	7:15	137	1.0%	302	1.6%					439	1.4%
7:15	7:30	138	1.0%	325	1.7%					463	1.4%
7:30	7:45	160	1.2%	319	1.7%					479	1.5%
7:45	8:00	194	1.4%	343	1.8%					537	1.7%
7:00	8:00	629	4.6%	1289	6.9%					1918	5.9%
8:00	8:15	170	1.2%	345	1.9%					515	1.6%
8:15	8:30	167	1.2%	327	1.8%					494	1.5%
8:30	8:45	172	1.3%	299	1.6%					471	1.5%
8:45	9:00	188	1.4%	362	1.9%					550	1.7%
8:00	9:00	697	5.1%	1333	7.2%					2030	6.3%
9:00	9:15	174	1.3%	308	1.7%					482	1.5%
9:15	9:30	153	1.1%	299	1.6%					452	1.4%
9:30	9:45	176	1.3%	307	1.7%					483	1.5%
9:45	10:00	161	1.2%	295	1.6%					456	1.4%
9:00	10:00	664	4.8%	1209	6.5%					1873	5.8%
10:00	10:15	154	1.1%	259	1.4%					413	1.3%
10:15	10:30	153	1.1%	251	1.3%					404	1.3%
10:30	10:45	182	1.3%	257	1.4%					439	1.4%
10:45	11:00	170	1.2%	250	1.3%					420	1.3%
10:00	11:00	659	4.8%	1017	5.5%					1676	5.2%
11:00	11:15	163	1.2%	267	1.4%					430	1.3%
11:15	11:30	190	1.4%	266	1.4%					456	1.4%
11:30	11:45	207	1.5%	260	1.4%					467	1.4%
11:45	12:00	197	1.4%	257	1.4%					454	1.4%
11:00	12:00	757	5.5%	1050	5.6%					1807	5.6%

12:00	12:15	248	1.8%	261	1.4%			509	1.6%
12:15	12:30	210	1.5%	295	1.6%			505	1.6%
12:30	12:45	247	1.8%	295	1.6%			542	1.7%
12:45	13:00	214	1.6%	278	1.5%			492	1.5%
12:00	13:00	919	6.7%	1129	6.1%			2048	6.3%
13:00	13:15	234	1.7%	325	1.7%			559	1.7%
13:15	13:30	221	1.6%	307	1.7%			528	1.6%
13:30	13:45	226	1.6%	304	1.6%			530	1.6%
13:45	14:00	237	1.7%	292	1.6%			529	1.6%
13:00	14:00	918	6.7%	1228	6.6%			2146	6.6%
14:00	14:15	159	1.2%	257	1.4%			416	1.3%
14:15	14:30	236	1.7%	278	1.5%			514	1.6%
14:30	14:45	207	1.5%	294	1.6%			501	1.6%
14:45	15:00	232	1.7%	273	1.5%			505	1.6%
14:00	15:00	834	6.1%	1102	5.9%			1936	6.0%
15:00	15:15	233	1.7%	284	1.5%			517	1.6%
15:15	15:30	272	2.0%	302	1.6%			574	1.8%
15:30	15:45	250	1.8%	324	1.7%			574	1.8%
15:45	16:00	291	2.1%	334	1.8%			625	1.9%
15:00	16:00	1046	7.6%	1244	6.7%			2290	7.1%
16:00	16:15	306	2.2%	343	1.8%			649	2.0%
16:15	16:30	228	1.7%	277	1.5%			505	1.6%
16:30	16:45	319	2.3%	299	1.6%			618	1.9%
16:45	17:00	255	1.9%	289	1.6%			544	1.7%
16:00	17:00	1108	8.1%	1208	6.5%			2316	7.2%
17:00	17:15	292	2.1%	312	1.7%			604	1.9%
17:15	17:30	296	2.2%	332	1.8%			628	1.9%
17:30	17:45	280	2.0%	268	1.4%			548	1.7%
17:45	18:00	267	1.9%	261	1.4%			528	1.6%
17:00	18:00	1135	8.3%	1173	6.3%			2308	7.1%
18:00	18:15	272	2.0%	259	1.4%			531	1.6%
18:15	18:30	243	1.8%	216	1.2%			459	1.4%
18:30	18:45	243	1.8%	244	1.3%			487	1.5%
18:45	19:00	224	1.6%	230	1.2%			454	1.4%
18:00	19:00	982	7.2%	949	5.1%			1931	6.0%
19:00	19:15	213	1.6%	227	1.2%			440	1.4%
19:15	19:30	197	1.4%	177	1.0%			374	1.2%
19:30	19:45	167	1.2%	187	1.0%			354	1.1%
19:45	20:00	160	1.2%	149	0.8%			309	1.0%
19:00	20:00	737	5.4%	740	4.0%			1477	4.6%
20:00	20:15	154	1.1%	199	1.1%			353	1.1%
20:15	20:30	154	1.1%	162	0.9%			316	1.0%
20:30	20:45	144	1.1%	126	0.7%			270	0.8%
20:45	21:00	139	1.0%	143	0.8%			282	0.9%
20:00	21:00	591	4.3%	630	3.4%			1221	3.8%
21:00	21:15	115	0.8%	128	0.7%			243	0.8%
21:15	21:30	122	0.9%	122	0.7%			244	0.8%
21:30	21:45	114	0.8%	91	0.5%			205	0.6%
21:45	22:00	82	0.6%	100	0.5%			182	0.6%
21:00	22:00	433	3.2%	441	2.4%			874	2.7%
22:00	22:15	98	0.7%	91	0.5%			189	0.6%
22:15	22:30	56	0.4%	67	0.4%			123	0.4%
22:30	22:45	54	0.4%	64	0.3%			118	0.4%
22:45	23:00	62	0.5%	72	0.4%			134	0.4%
22:00	23:00	270	2.0%	294	1.6%			564	1.7%
23:00	23:15	55	0.4%	43	0.2%			98	0.3%
23:15	23:30	58	0.4%	65	0.3%			123	0.4%
23:30	23:45	41	0.3%	50	0.3%			91	0.3%
23:45	00:00	36	0.3%	38	0.2%			74	0.2%
23:00	00:00	190	1.4%	196	1.1%			386	1.2%
Total		13714		18599				32313	100.0%
		42.4%		57.6%				100.0%	
AM PEAK		207		362				550	
period		11:30		8:45				8:45	
% of class			1.5%		1.9%				1.7%
PM PEAK		319		343				649	
period		16:30		16:00				16:00	
% of class			2.3%		1.8%				2.0%



April 22, 2016

Via e-mail: Anthony@valcoustics.com

Valcoustics Canada Ltd.
30 Wertheim Court, Unit 25
Richmond Hill, Ontario L4B 1B9

Dear Sir/Madam:

**Re: Rail Traffic Volumes, CP Mileage 20.48, Mactier Subdivision
Highway 50/Queen Street, Town of Caledon (Bolton), ON**

This is in reference to your request for rail traffic data for a noise study in the vicinity of where Highway 50 intersects with the CP Rail corridor, being mile 20.48 of our Mactier Subdivision. The Mactier Subdivision is classified as a Principal Main Line.

The information requested is as follows:

1. Number of freight trains 0700 to 2300: 9
Number of freight trains 2300 to 0700: 5
2. Average number of cars per train freight: 80
Maximum cars per train freight: 188
3. Number of Locomotives per train: 2 (4 max)
4. Maximum permissible speed: 55 mph (88 kph)
5. The whistle signal is not routinely through the study area. Please note that the whistle may be sounded if deemed necessary by the train crew for safety reasons at any location.
6. There is one main line track with welded joints in the vicinity of the study area and one passing track with bolted joints along with an additional siding track north of the study area. Due to the additional tracks, trains will meet numerous times a day at in this area which may cause longer than usual train idling time while awaiting other trains to pass by.

The information provided is based on rail traffic over the past month to date. Variations of the above may exist on a day-to-day basis. Specific measurements may also vary significantly depending on customer needs.

Yours truly,

Josie Tomei
Specialist Real Estate Sales
& Acquisitions – Ontario
905-803-3429. josie_tomei@cpr.ca

Iouri Basmanov

From: Frank Gulas <Frank_Gulas@cpr.ca>
Sent: November-20-20 01:24 PM
To: Iouri Basmanov
Subject: RE: Rail Data Request - 12563 Highway 50, Bolton

Good Afternoon Iouri,

In reference to your request, please note that CP Real Estate has changed its position regarding the sharing of train information and will no longer provide Rail Data information.

We appreciate that this is a change to what was previously provided by our group.

CP freight trains operate 24/7 and scheduled/volumes are subject to change.

The attached link provides some basic information related to train information for any given corridor.

<https://www.cpr.ca/en/community/living-near-the-railway>

To be clear, CP is not in favour of residential uses adjacent to its rail facilities and/or operations.

Recommend a clause be inserted in all offers of purchase and sale or lease and in the title deed or lease of each dwelling within 300m of the railway right of way, warning prospective purchasers or tenants of the existence of the Railway's operating right-of-way; the possibility of alterations including the possibility that the Railway may expand its operations, which expansion may affect the living environment of the residents notwithstanding the inclusion of noise and vibration attenuating measures in the design of the subdivision and the individual units, and that the Railway will not be responsible for complaints or claims arising from the use of its facilities and/or operations.

Sincerely,



Frank Gulas
Manager Real Estate –
Ontario & Manitoba
O 403-319-3436
F 403-319-3727
7550 Ogden Dale Road SE
Calgary AB T2C 4X9

From: Iouri Basmanov <ibasmanov@hgcengineering.com>
Sent: Thursday, November 19, 2020 11:36 AM
To: Frank Gulas <Frank_Gulas@cpr.ca>
Cc: Simon Deschamps <Simon_Deschamps@cpr.ca>
Subject: RE: Rail Data Request - 12563 Highway 50, Bolton

This email did not originate from Canadian Pacific. Please exercise caution with any links or attachments.

Hi Frank,

Any update on this traffic volume request?

Thanks!

Iouri Basmanov, BAsc, EIT
HGC Engineering NOISE / VIBRATION / ACOUSTICS
Howe Gastmeier Chapnik Limited
t: 905.826.4044

From: Simon Deschamps [mailto:Simon_Deschamps@cpr.ca]
Sent: November-06-20 13:12
To: Frank Gulas <Frank_Gulas@cpr.ca>
Cc: Iouri Basmanov <ibasmanov@hgcengineering.com>
Subject: FW: Rail Data Request - 12563 Highway 50, Bolton

Frank,

For you to handle.

Thanks
Simon

From: Iouri Basmanov <ibasmanov@hgcengineering.com>
Sent: Friday, November 6, 2020 1:09 PM
To: Simon Deschamps <Simon_Deschamps@cpr.ca>
Subject: Rail Data Request - 12563 Highway 50, Bolton

This email did not originate from Canadian Pacific. Please exercise caution with any links or attachments.

Hi Simon,

HGC Engineering is performing a noise study for a proposed development at 12563 Highway 50 in Bolton, ON. The site is located south of a rail corridor understood to be operated by CP.

Please find attached a Google link for your reference.

<https://www.google.com/maps/place/38+Fieldway+Rd,+Etobicoke,+ON+M8Z+3L2/@43.6416231,-79.5310496,17z/data=!4m5!3m4!1s0x882b37baf999c8b5:0xde8d0a4625e0022d!8m2!3d43.6416231!4d-79.5288609?hl=en>

Can you please provide us with the latest train traffic data?

Many thanks,

Iouri Basmanov, BAsc, EIT
Project Consultant

HGC Engineering **NOISE / VIBRATION / ACOUSTICS**
Howe Gastmeier Chapnik Limited

2000 Argentia Road, Plaza One, Suite 203, Mississauga, Ontario, Canada L5N 1P7

t: 905.826.4044 e: ibasmanov@hgcengineering.com

Visit our new website: www.hgcengineering.com Follow Us – [LinkedIn](#) | [Twitter](#) | [YouTube](#)

This e-mail and any attachments may contain confidential and privileged information. If you are not the intended recipient, please notify the sender immediately by return e-mail, delete this e-mail and destroy any copies. Any dissemination or use of this information by a person other than the intended recipient is unauthorized and may be illegal.

----- IMPORTANT NOTICE - AVIS IMPORTANT ----- Computer viruses can be transmitted via email. Recipient should check this email and any attachments for the presence of viruses. Sender and sender company accept no liability for any damage caused by any virus transmitted by this email. This email transmission and any accompanying attachments contain confidential information intended only for the use of the individual or entity named above. Any dissemination, distribution, copying or action taken in reliance on the contents of this email by anyone other than the intended recipient is strictly prohibited. If you have received this email in error please immediately delete it and notify sender at the above email address. Le courrier électronique peut être porteur de virus informatiques. Le destinataire doit donc passer le présent courriel et les pièces qui y sont jointes au détecteur de virus. L'expéditeur et son employeur déclinent toute responsabilité pour les dommages causés par un virus contenu dans le courriel. Le présent message et les pièces qui y sont jointes contiennent des renseignements confidentiels destinés uniquement à la personne ou à l'organisme nommé ci-dessus. Toute diffusion, distribution, reproduction ou utilisation comme référence du contenu du message par une autre personne que le destinataire est formellement interdite. Si vous avez reçu ce courriel par erreur, veuillez le détruire immédiatement et en informer l'expéditeur à l'adresse ci-dessus. ----- IMPORTANT NOTICE - AVIS IMPORTANT -----

----- IMPORTANT NOTICE - AVIS IMPORTANT ----- Computer viruses can be transmitted via email. Recipient should check this email and any attachments for the presence of viruses. Sender and sender company accept no liability for any damage caused by any virus transmitted by this email. This email transmission and any accompanying attachments contain confidential information intended only for the use of the individual or entity named above. Any dissemination, distribution, copying or action taken in reliance on the contents of this email by anyone other than the intended recipient is strictly prohibited. If you have received this email in error please immediately delete it and notify sender at the above email address. Le courrier électronique peut être porteur de virus informatiques. Le destinataire doit donc passer le présent courriel et les pièces qui y sont jointes au détecteur de virus. L'expéditeur et son employeur déclinent toute responsabilité pour les dommages causés par un virus contenu dans le courriel. Le présent message et les pièces qui y sont jointes contiennent des renseignements confidentiels destinés uniquement à la personne ou à l'organisme nommé ci-dessus. Toute diffusion, distribution, reproduction ou utilisation comme référence du contenu du message par une autre personne que le destinataire est formellement interdite. Si vous avez reçu ce courriel par erreur, veuillez le détruire immédiatement et en informer l'expéditeur à l'adresse ci-dessus. ----- IMPORTANT NOTICE - AVIS IMPORTANT -----

APPENDIX B
STAMSON CALIBRATION OUTPUT



ACOUSTICS



NOISE



VIBRATION

Filename: hwy50_10.te Time Period: Day/Night 16/8 hours
 Description: Highway50

Road data, segment # 1: Hwy50 (day/night)

 Car traffic volume : 26701/3641 veh/TimePeriod
 Medium truck volume : 299/37 veh/TimePeriod
 Heavy truck volume : 1511/271 veh/TimePeriod
 Posted speed limit : 70 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Hwy50 (day/night)

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0 / 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 15.00 / 15.00 m
 Receiver height : 0.00 / 0.00 m
 Topography : 0 (Define your own alpha.)
 Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
 Barrier height : 0.00 m
 Barrier receiver distance : 10.00 / 10.00 m
 Source elevation : 0.00 m
 Receiver elevation : 0.00 m
 Barrier elevation : 0.00 m
 Alpha : 0.00
 Reference angle : 0.00

↑
 Results segment # 1: Hwy50 (day)

 Source height = 1.52 m

ROAD (0.00 + 73.74 + 0.00) = 73.74 dBA
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

 -90 90 0.00 73.74 0.00 0.00 0.00 0.00 0.00 0.00 73.74

Segment Leq : 73.74 dBA

Total Leq All Segments: 73.74 dBA

↑
Results segment # 1: Hwy50 (night)

Source height = 1.62 m

ROAD (0.00 + 68.90 + 0.00) = 68.90 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	68.90	0.00	0.00	0.00	0.00	0.00	0.00	68.90

Segment Leq : 68.90 dBA

Total Leq All Segments: 68.90 dBA

↑

TOTAL Leq FROM ALL SOURCES (DAY): 73.74
(NIGHT): 68.90

↑

↑