Environmental Noise Feasibility Study

3016 Kirwin Avenue

Proposed Residential Development

Mississauga, Ontario

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Revision History

Revision #	Date	Description of Changes
1.0	December 19, 2017	Final Report for Submission
2.0	March 25, 2019	Final Update Report for Submission

TABLE OF CONTENTS

…/cont'd

TABLE OF CONTENTS (continued)

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

Environmental Noise Feasibility Study

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EXECUTIVE SUMMARY

Valcoustics Canada Ltd. (VCL) previously prepared an Environmental Noise Feasibility Study (dated December 19, 2017) as part of the submission for an Official Plan Amendment (OPA) and Zoning By-Law Amendment (ZBA) for the proposed residential development located to the northwest of the intersection of Dundas Street East and Kirwin Avenue, in the City of Mississauga. This updated report was prepared to address changes to the site plan, and comments from the City of Mississauga.

The proposed development will consist of three residential stacked townhouse blocks (Blocks A, B and C).

The transportation noise sources in the vicinity of the proposed development include road traffic on Kirwin Avenue and Dundas Street East. There are also stationary sources, the commercial plaza located immediately south of the proposed development on the north side of Dundas Street (99-131 Dundas Street East), and a commercial plaza located at the northeast corner of Kirwin Avenue and Dundas Street East (169 Dundas Street East).

The sound levels at the site have been determined and compared with the applicable Ministry of the Environment, Conservation and Parks (MECP) guideline limits to determine the requirements for noise mitigation.

To meet the applicable transportation source noise guideline limits:

- Blocks A, B and C require mandatory air conditioning;
- The following sound transmission class (STC) ratings for exterior walls and windows would be required to meet the indoor noise guidelines of the MECP:
    - Block A – wall construction meeting STC 37 with window construction meeting STC 29;
    - Block B – wall construction meeting STC 37 with window construction meeting STC 32 (alternatively, wall construction meeting STC 54 with window construction meeting STC 30 is also acceptable); and,

- Block C – wall construction meeting STC 37 with window construction meeting STC 25.

To meet the applicable stationary source noise guideline limits:

- The rooftop exhaust fan (C1_EF03) unit at the commercial building to the south must be replaced with a quieter unit having a maximum overall sound power level of 78 dBA or less (assuming the same unit height/location, refer to Figure 5);

- A 2.2 m high acoustic barrier is required along the retaining wall, south of the common outdoor amenity space (refer to Figure 5); and

- The south facade of Block C (facing Dundas Street East) has been designed such that it does not include windows to noise-sensitive spaces (i.e. no receptors were included along that facade).

1.0 INTRODUCTION

1.1 PROJECT SCOPE

VCL was retained by Nyx Capital Corp. to prepare an updated Environmental Noise Feasibility Study for the proposed residential development located at 3016 Kirwin Avenue to address updates to the site plan, and comments from the City of Mississauga.

The potential sound levels and noise mitigation measures required for the proposed development to comply with applicable MECP noise guideline limits are outlined herein.

1.2 CITY COMMENTS

VCL previously prepared an Environmental Noise Feasibility Study (herein referred to as the "Noise Report") for the proposed development dated December 19, 2017. The report outlined requirements to achieve the applicable MECP noise guideline limits with respect to both transportation noise sources, and stationary noise sources. The City of Mississauga provided the following comments related to the Noise Report:

The owner is to submit an updated Noise Study which is to include the following:

(1) Provide a table depicting a range of barrier heights and corresponding mitigated sound levels for the outdoor living areas;

(2) Clearly show the location of the rooftop parapets considered in the analysis;

(3) Provide cross-sections for the berm/fence combinations (including fence returns) to be implemented at this site to control noise levels; and

(4) Additionally, the owner is to confirm which option of the ones recommended on the Noise Report Figure 5 and 6, is to be implemented to mitigate the off-site stationary noise impacts caused by 99-131 Dundas Street East.

Comment (1) – The townhouses have been re-designed such that there are no rear yard OLAs associated with Blocks A and B. Thus, sound barriers are no longer required.

Comment (2) – The parapets are shown on Figures 3 to 5 and on the section drawings from the architectural drawing set included in Appendix A.

Comment (3) - As per the response to Comment (1) above, berm/fence combinations are no longer required.

Comment (4) - To address the stationary noise impacts, one of the exhaust fans on the roof of the commercial building to the south will be replaced with a unit that emits less noise. In addition, design changes have been made to Block C of the proposed development. The windows on the south facade have been removed, which has also eliminated points of reception from this facade. Elevation drawings for Block C are included in Appendix A. To mitigate noise at the common outdoor amenity area associated with Block C, a 2.2. m high sound barrier is required along a portion of the southern perimeter. With these changes, the predicted sound levels from the commercial development meets the sound level limits at the subject site.

1.3 SITE DESCRIPTION AND SURROUNDING AREA

The proposed residential development is located at the northwest corner of the intersection of Kirwin Avenue and Dundas Street East. The site is bounded by the following:

- A commercial/retail building and small vehicle service centre building to the south, with Dundas Street East beyond;
- Little John Lane to the west, with existing commercial and mid-rise residential buildings beyond;
- Public Park immediately to the north, with existing residential development beyond; and,
- Kirwin Avenue to the east, with commercial/retail development beyond.

A Key Plan showing the site location is provided as Figure 1.

The study is based on the Site Plan prepared by A & Associates Architects Inc, dated February 20, 2019 (“Issued for Review”). The Site Plan is included for reference in Appendix A and overlaid onto aerial imagery in Figure 2.

1.4 PROPOSED DEVELOPMENT

The proposed development will consist of three multi-level stacked townhouse blocks (Blocks A, B and C), an underground parking structure, and one common outdoor amenity space. Block A will consist of 28 units, Block B of 16 units, and Block C of 20 units. Each block will have a basement level and three levels above grade. Lands between Block C and Little John Lane are intended to be parkland that will be conveyed to the municipality at a later date.

There will be rooftop terraces at each building. At Townhouse Blocks A (north side only) and C (both east and west sides) the rooftop terraces will be greater than 4 m in depth. At Townhouse Block B, the rooftop terraces will be smaller and less than 4 m in depth.

Sunken terraces (south entrances of Block A, north entrances of Block B, and east entrances of Block C) are the intended private outdoor spaces for the lower units of each Block.

Each townhouse block will have balconies at the 1st and 2nd floors that will be less than 4 m in depth. Landscaped areas along the rear sides of the Blocks are not readily accessible for occupants (i.e. there are no access doors from the dwelling units to these spaces); the balconies on the rear sides of the Blocks also do not have stairs down to the landscaped areas.

2.0 TRANSPORTATION NOISE IMPACT ASSESSMENT

2.1 NOISE SOURCES

The transportation noise sources with potential to impact the proposed residential development include road traffic on Kirwin Avenue and Dundas Street East.

Hurontario Street is not expected to create a significant noise impact on the proposed development. It is located approximately 350 m to the west of Block C, with multiple rows of intervening high-density structures between. Thus, it was not considered further in the assessment. Traffic volumes along the internal condominium roadway are also anticipated to be minor with no significant noise impact, and as such have not been considered further in this assessment.

Ultimate road traffic data for the Dundas Street East and Kirwin Avenue were obtained from the City of Mississauga. Table 1 summarizes the traffic data used in the assessment. Appendix B contains correspondence regarding the road traffic data.

TABLE 1: ULTIMATE ROAD TRAFFIC DATA (1)

Roadway	AADT (2)	No. Lanes	% Trucks		Speed Limit (km/hr)	Day/ Night Split	%Grade
			Medium	Heavy			
Kirwin Avenue	20,000	4	1.65%	1.35%	50	90% / 10%	2
Dundas Street East	50,000	6	3.85%	3.15%	50	90% / 10%	2

Notes:

(1) Obtained from City of Mississauga (refer to Appendix B)
(2) AADT – Annual Average Daily Traffic (Ultimate, as provided by City of Mississauga)

2.2 ENVIRONMENTAL NOISE GUIDELINES

2.2.1 Ministry of the Environment, Conservation and Parks

The applicable noise guidelines for new residential developments are those in MECP Publication NPC-300, "*Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning*." The Region of Peel also has applicable noise guidelines for the assessment of transportation noise.

The environmental noise guidelines of the MECP as provided in the NPC-300 document, and those of the Region of Peel, are discussed briefly in the following sections. Additional information is provided in Appendix C for the NPC-300 guidelines.

2.2.1.1 Architectural Elements

During daytime and evening hours (0700 to 2300), the indoor criterion for road noise is a 16-hour $L_{eq,Day}$ of 45 dBA for sensitive spaces such as living/dining rooms, dens, and bedrooms. At night (2300 to 0700 hours), the indoor criterion for road noise is $L_{eq,Night}$ of 45 dBA for sensitive spaces such as living/dining rooms and dens, and 40 dBA for bedrooms and sleeping quarters.

The architectural design of the building envelopes (walls, windows, etc.) must provide adequate sound isolation to achieve these indoor sound level limits, based on the applicable outdoor sound levels predicted on the building facades.

2.2.1.2 Ventilation Requirements

In accordance with the MECP noise guidelines for transportation noise sources, if the daytime sound level ($L_{eq,Day}$) at the exterior face of a noise-sensitive window is greater than 65 dBA, means must be provided such that windows can be kept closed for noise control purposes, and central air conditioning is required. For daytime sound levels between 56 dBA and 65 dBA inclusive, there need only be the provision for adding central air conditioning at a later date. A warning clause advising the occupants of the potential noise interference with some activities is also required. At nighttime, air conditioning would be required when the sound level exceeds 60 dBA ($L_{eq,Night}$) at a noise sensitive window. The provision for adding air conditioning is required when the nighttime sound level is greater than 50 dBA.

2.2.1.3 Outdoor Living Areas

For outdoor amenity areas (OLAs), the guideline sound level limit is a daytime sound level ($L_{eq,Day}$) of 55 dBA, with an excess not more than 5 dBA (i.e. an upper allowable design limit of 60 dBA) considered acceptable if it is not feasible to achieve the 55 dBA objective for technical, economic or administrative reasons. In these cases, warning clauses must be provided and registered on title. Nighttime sound level limits are not applicable for OLA's.

It should be noted that for road traffic sources, a balcony/terrace is considered an OLA if it is elevated, is the only OLA for the occupant, and it is 4 m in depth or greater. As such, the sunken terraces were considered as OLAs in this assessment.

2.2.2 Region of Peel

The Region of Peel guidelines are similar to the MECP guidelines, except that the nighttime level for triggering the central air conditioning requirement is 1 dB more stringent than the level specified by the MECP. Specifically, mandatory air conditioning for nighttime sound levels of 60 dBA or greater trigger the requirement for central air conditioning, and the provision for adding air conditioning at a late date when nighttime sound levels are between 51 dBA and 59 dBA inclusive.

2.3 ANALYSIS METHOD

The equivalent sound energy levels in terms of $L_{eq,Day}$ and $L_{eq,Night}$ were determined using STAMSON V5.04, the computerized road and rail traffic noise prediction software of the MECP. This software implements the MECP's transportation noise prediction models, Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT).

Daytime and nighttime sound levels at the top floor windows of building facades (height of 9.0 m) were calculated using the road traffic data summarized in Table 1. The daytime OLA sound levels for rooftop terrace OLAs were calculated at a standing height of 1.5 m above the roof, at the approximate centre point of the terrace. For the sunken terraces, the daytime OLA sound levels were calculated at a height of 1.5 m above the basement slab elevation, at the approximate centre point of the terrace.

Inherent screening of each proposed building facade due to its orientation with respect to the noise source was included in the assessment. The assessment of the building facade sound levels does not account for screening from the existing residential homes to the north along Kirwin Avenue or the commercial buildings between the proposed development and Dundas Street East. This was does to be conservative. For the assessment of the sound levels in the common outdoor amenity space, screening from the commercial/retail building to the south was included.

There will be 1.5 m high rooftop parapets above the top of the roof around the perimeter of the rooftop terraces. These parapets were included as sound barriers in the assessment of these OLAs. At the eastern edges of the east-most sunken terraces of Blocks A and B there are 200 mm high curbs with glass railings atop. These curbs were included as sound barriers in the assessment. Section drawings showing the parapet wall heights, and plan drawings showing the curb locations/heights, are included in Appendix A.

Note, common outdoor amenity areas are technically only defined as OLAs for High-rise Multi-unit buildings, which the buildings in this development would not be considered. However, for comparison purposes, the sound level at the common outdoor space has been reported.

2.4 RESULTS

A summary of the building facade and OLA sound level prediction results is provided in Table 2.

For Block A, the highest unmitigated building facade daytime and nighttime sound levels of 67 dBA and 61 dBA, respectively, are predicted to occur at the east facade facing Kirwin Avenue at the southeast corner. The predicted daytime sound levels on the north rooftop terraces (greater than 4 m in depth) are predicted to be 56 dBA and below.

For Block B, the highest unmitigated building facade daytime and nighttime sound levels of 68 dBA and 62 dBA, respectively, are predicted to occur at the south facade, southeast corner, closest to Kirwin Avenue.

For Block C, the highest unmitigated building facade daytime and nighttime sound levels of 66 dBA and 59 dBA, respectively, are predicted to occur at the south facade facing Dundas Street East. The predicted sound levels on the rooftop terraces (greater than 4 m in depth) are predicted to be 58 dBA and below for the west side terraces, and 57 dBA and below for the east side terraces.

For the sunken terraces of Block A and Block B, the highest predicted sound level is 57 dBA, occurring at the eastern-most unit.

The unmitigated daytime OLA sound level at the common outdoor amenity space is predicted to be 55 dBA or less.

Sample calculations are provided in Appendix D.

TABLE 2: PREDICTED UNMITIGATED OUTDOOR SOUND LEVELS

Location	Source	Distance (m) (1)	$L_{eq\ Day}$ (dBA) (2)	$L_{eq\ Night}$ (dBA) (3)
Block A East Facade	Kirwin Avenue	16	66	59
	Dundas Street - Westbound	81	59	53
	Dundas Street - Eastbound	91	59	52
	TOTAL	**---**	**67**	**61**
Block A South Facade	Kirwin Avenue	16	63	56
	Dundas Street - Westbound	81	60	54
	Dundas Street - Eastbound	91	60	53
	TOTAL	**---**	**66**	**59**
Block B East Facade	Kirwin Avenue	17	66	59
	Dundas Street - Westbound	52	61	55
	Dundas Street - Eastbound	62	61	54
	TOTAL	**---**	**68**	**61**
Block B South Facade	Kirwin Avenue	17	63	56
	Dundas Street - Westbound	52	64	58
	Dundas Street - Eastbound	62	63	57
	TOTAL	**---**	**68**	**62**
Block C East Facade	Kirwin Avenue	69	55	49
	Dundas Street - Westbound	67	59	52
	Dundas Street - Eastbound	77	58	52
	TOTAL	**---**	**63**	**56**
Block C South Facade	Kirwin Avenue	69	55	49
	Dundas Street - Westbound	67	62	56
	Dundas Street - Eastbound	77	62	55
	TOTAL	**---**	**66**	**59**
Block A Northeast Rooftop Terrace	Kirwin Avenue	20	52	N/A
	Dundas Street - Westbound	93	50	N/A
	Dundas Street - Eastbound	103	50	N/A
	TOTAL	**---**	**56**	**N/A**
Block C Southwest Rooftop Terrace	Dundas Street - Westbound	71	55	N/A
	Dundas Street - Eastbound	82	55	N/A
	TOTAL	**---**	**58**	**N/A**
Outdoor Amenity Space	Kirwin Avenue	78	51	N/A
	Dundas Street - Westbound	63	50	N/A
	Dundas Street - Eastbound	73	49	N/A
	TOTAL	**---**	**55**	**N/A**
Block A Sunken Terrace - Easternmost	Kirwin Avenue	20	57	N/A
	Dundas Street - Westbound	80	46	N/A
	Dundas Street – Eastbound	90	45	N/A
	TOTAL	**---**	**57**	**N/A**
Block B Sunken Terrace - Easternmost	Kirwin Avenue	19	57	N/A

Notes:

(1) Distance to the OLA/building facade, respectively, from the centreline of the noise source
(2) Daytime sound levels for the for terrace OLAs estimated 1.5 m above roof level, 1.5 above grade for the Outdoor Amenity Spaces, and 1.5 m above the basement slab elevation for the sunken terraces. Daytime sound levels for the building facades apply at a third-storey window, on the closest exterior facade to the noise source.
(3) Nighttime sound levels applicable to the closest exterior building facade, at a third-storey bedroom window. OLA nighttime levels are not applicable (N/A).

2.5 NOISE CONTROL REQUIREMENTS

The noise control requirements can be generally classified into two categories which are interrelated, but which the designer can treat separately for the most part:

- Architectural elements to achieve acceptable indoor noise guideline limits; and,
- Design features to protects the OLAs.

The applicable noise control requirements are summarized in Table 3, and the notes to Table 3. Detailed information is provided in the following sections.

2.5.1 Architectural Elements

The indoor noise guidelines can be achieved by using appropriate construction for exterior walls, windows and doors. In determining the worst-case architectural requirements for the residential townhouse blocks, wall and window areas, as well as the floor area of the associated space were calculated based on the floor plan and elevation drawings prepared by A & Associates Architects Inc., dated February 20, 2019 (“Issued for Review”).

Based on the predicted sound levels, exterior wall construction meeting a minimum STC 37 will be sufficient to achieve the indoor noise guidelines of the MECP for Blocks A, B and C. Window construction meeting the following STC ratings are required for:

- Block A – STC 29;
- Block B – STC 32; and
- Block C – STC 25.

For walls, a typical exterior facade construction which meets the minimum non-acoustical requirements of the OBC would be expected to achieve the requirement of STC 37. The window STC requirements of 25, 29 and 32 are not considered onerous, and can be met with typical double-glazing window configurations. For Block B, an alternative combination of wall/window construction could include exterior facade construction meeting an STC rating of 54 (i.e. brick veneer), with window construction meeting an STC 30 rating.

It should be noted that the window frames themselves must also be designed to ensure that the overall sound isolation performance of the entire window unit meets the sound isolation requirements. This should be confirmed by the window manufacturer through the submission of acoustical test data.

The final sound isolation requirements with respect to architectural elements should be reviewed when final architectural plans are developed. Wall and window constructions should also be reviewed at this point to ensure that they will meet the sound isolation performances to achieve the indoor noise guideline requirements of the MECP. This is typically done during the building permit application stage.

2.5.2 Ventilation Requirements

Based on the predicted sound levels at the building facades, Blocks A, B and C will require central air conditioning to allow for windows to remain closed for noise control purposes. The ventilation requirements are shown on Figure 2 and summarized in Table 3.

2.5.3 Outdoor Living Area Requirements

For the rooftop terraces on the north side of Block A, 1.7 m high parapet/sound barriers would be required to meet 55 dBA. However, with the 1.5 m parapet walls included in the design of the development, the daytime sound level will be 56 dBA. A 1 dBA difference in sound level is minor and insignificant acoustically. Regardless, the 56 dBA predicted sound level is within the maximum allowable by the MECP, provided warning clauses are registered on title. Thus, the 1.5 m high parapet/sound barrier is considered sufficient.

For the rooftop terraces on the west and east sides of Block C, 2.0 m and 1.8 m high parapets/sound barriers, respectively, would be required to meet 55 dBA. With the 1.5 m parapet walls included in the design of the development, predicted daytime sound levels are 58 dBA or lower on the west side and 57 dBA or lower on the east side. These are within the maximum allowable by the MECP provided warning clauses are registered on title and are therefore considered sufficient.

The predicted daytime sound level in the common outdoor amenity space is 55 dBA or lower. Therefore, a sound barrier is not needed for noise control purposes.

For the sunken terraces at Blocks A and B, the curb heights next to the stairs would need to be 0.7 m above grade for the predicted sound levels to meet 55 dBA. With the 0.2 m curbs currently included in the design, the predicted sound levels are 57 dBA or lower. These sound levels are within the maximum allowable by the MECP, provided warning clauses are registered on title, and are therefore considered sufficient.

The sunken terraces analysis was based on the Site Grading Plan prepared by Lea Consulting Ltd., dated January 25, 2019, and should be reviewed if the grading plan is revised.

The rooftop parapet walls described above must be designed to be sound barriers. That is, they must be of solid construction with no gaps, cracks or holes and must have a minimum surface density of 20 kg/m^2.

2.6 WARNING CLAUSES

Warning clauses are a tool to inform prospective owners/occupants of potential annoyance due to existing/future noise sources. Where the sound level guidelines are exceeded, warning clauses should be registered on title, or included in the development agreement that is registered on title. The warning clauses should also be included in the agreements of Offers of Purchase and Sale and/or lease/rental agreements.

Applicable warning clauses for the proposed development are included in Table 3 and the Notes to Table 3.

TABLE 3: MINIMUM NOISE CONTROL MEASURES

Location	Air Conditioning (1)	Exterior Walls (2)	Exterior Windows (3)	Sound Barrier (4)	Warning Clauses (5)
Block A	Mandatory	STC 37	STC 29	---	A + B + C
Block B	Mandatory	STC 37	STC 32	---	A + B + C
		STC 54	STC 30		
Block C	Mandatory	STC 37	STC 25	---	A + B + C

Notes:

(1) Where means must be provided to allow windows to remain closed for road noise control purposes, a commonly used technique is that of air central conditioning.

(2) STC - Sound Transmission Class Rating (Reference ASTM-E413).

The requirements are based on calculated percentages of wall area to associated floor area from the architectural plans by A & Associates Architects Inc, dated February 20, 2019 ("Issued for Review").

(3) STC - Sound Transmission Class Rating (Reference ASTM-E413). A sliding glass walkout door should be considered as a window and be included in the percentage of glazing.

The requirements are based on calculated percentages window area to associated floor area from the architectural plans by A & Associates Architects Inc, dated February 20, 2019 ("Issued for Review").

(4) Acoustic fences/sound barriers must be of solid construction having a minimum face density of 20 kg/m^2 with no gaps, cracks or holes. A variety of materials are available, including concrete, masonry, glass, wood, specialty composite materials, or a combination of the above.

Sound barrier requirements were based on the Site Grading Plan prepared by Lea Consulting Ltd., dated January 25, 2019 ("Issued for Coordination") and should be reviewed if the Grading Plan is revised.

(5) Warning clauses to be included in Occupancy Agreements:

A. "Purchasers are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound level may exceed the noise guidelines of the Municipality and the Ministry of the Environment."

B. "This dwelling 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 noise criteria of the municipality and the Ministry of the Environment."

C. "Purchasers are advised that due to the proximity of the commercial/retail uses, noise from these facilities may at times be audible."

(6) Conventional ventilated attic roof construction meeting OBC requirements is satisfactory in all cases.

(7) All exterior doors shall be fully weather-stripped.

3.0 STATIONARY NOISE IMPACT ASSESSMENT

3.1 NOISE SOURCES

The stationary noise sources with potential for impact the proposed development are the commercial plazas located immediately to the south (99-131 Dundas Street East) and east (169 Dundas Street East) of the site. The main noise sources associated with these establishments are the mechanical rooftop units.

The noise sources are shown in Figures 3 to 5.

3.1.1 Commercial/Retail Plaza at 99-131 Dundas Street East

The commercial/retail plaza at 99-131 Dundas Street East is a two-storey building with several businesses on the first and second floors. The businesses within the plaza include a laundromat, restaurants, and other general services (i.e. jeweller, beauty and hair salons, electronics stores, convenience store, tattoo parlor, etc.).

The operating hours of the businesses vary, with some operating only during daytime hours (such as the J&D Organic Dry Cleaners). Restaurants operate during daytime, evening, and nighttime hours. Noise sources include rooftop exhaust fans, HVAC units, condensers, and building-side air conditioning units and exhaust fans.

VCL visited the site to do sound measurements on June 1, 2017. Acoustical data for the various noise sources were obtained by measurement. For the mechanical units that were not operating during the site visit, typical sound data of a similar unit and capacity were taken from the VCL database. Appendix E includes tables summarizing the sources modeled for this commercial development (Source IDs: C1_##), and the associated sound level data used in the assessment.

3.1.2 Commercial/Retail Plaza at 169 Dundas Street East

The commercial building at 169 Dundas Street East is a single-storey plaza with various types of retail uses including a bakery, convenience store, beauty salon, etc. Using aerial imagery, the rooftop mechanical equipment (such as exhaust fans and HVAC units, Source IDs: C2_##) were located. Generic acoustic emission data for the equipment was used to model these sources (summarized in Appendix E tables). The noise impact from this commercial/retail building was based on assumptions and operating scenarios for similar facilities obtained from previous projects completed by VCL.

In order to estimate the potential for noise impacts associated with the rooftop mechanical equipment, assumptions regarding the size of the rooftop HVAC units were necessary. The size of the rooftop HVAC units were determined based on the assumed total cooling requirement of the building divided by the number of rooftop mechanical equipment. The total cooling capacity in tons for the retail/commercial uses was determined based on the approximate relationship of one-ton of cooling per 350 ft^2 of floor area. Based on this, the HVAC requirements would be nine 4-ton units.

All HVAC units were assumed to be Lennox brand units. Manufacturer's sound data was used to model these sources. Refer to Appendix E Sample Calculations.

3.1.3 Other Commercial Uses

There is an existing auto shop located at 135 Dundas Street East immediately to the south of the site. The noise emission from this type of facility would be from vehicle maintenance activities within the building. The noise would be emitted to the exterior via entry/exit overhead bay doors. In this case, the overhead doors face toward Dundas Street East or Kirwin Avenue, and away from the site. As a result, the noise impact at the site would be expected to be minimal. Thus, noise emissions from this facility are not anticipated to be of concern.

Other commercial buildings along Dundas Street East are sufficiently setback from the site and are not expected to create significant noise impact on the proposed development. In addition, there are existing residential developments located closer or about the same distance to these commercial/retail uses than the proposed site. Thus, the noise guidelines would be expected to

be met on the site by default. The noise impact from these commercial/retail establishments has not been considered further in this assessment.

3.2 ENVIRONMENTAL NOISE GUIDELINES

The applicable noise guidelines for use in development applications for both stationary sources and sensitive land uses are those in MECP Publication NPC-300, *"Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning"*. The environmental noise guidelines of the MECP, as provided in Publication NPC-300, are discussed briefly below and summarized in Appendix C.

3.2.1 Sound Level Criteria

The site and lands around the site are considered Class 1 – i.e., an area where the ambient sound environment is dominated by "urban hum", primarily traffic noise in this case, 24 hours per day. This is due to the proximity to the area road network.

The MECP requires a predictable "worst case" one-hour operating scenario be analysed. This would typically occur when the background ambient sound level is at a minimum and the noise generated from the stationary noise sources is at a maximum. The predictable worst case is not the absolute worst-case operation that could occur on a site but is "a planned and predictable mode of operation".

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

MECP Publication NPC-300 states that the guideline limits shall be defined by the higher of the ambient sound level (typically due to road traffic noise), or the minimum exclusion limits, in any hour of the day. The minimum exclusion limits (summarized in Table 4) are 50 dBA during the daytime (0700 to 1900 hours) and evening (1900 to 2300 hours), and 45 dBA at night (2300 to 0700 hours). Sound levels are assessed using one-hour L_{eq} (dBA), the energy equivalent continuous sound level. The sound level limits apply at a noise sensitive plane of window (at all times) or at an outdoor point of reception in the daytime and evening only. The sound level limits do not apply to outdoor points of reception at night.

TABLE 4: MINIMUM EXCLUSION SOUND LIMITS FOR CLASS 1 AREAS

Time of Day	Outdoor Plane of Window One-Hour L_{eq} (dBA) Sound Limit	Outdoor Point of Reception One-Hour L_{eq} (dBA) Sound Limit
Daytime (0700 to 1900 hours)	50	50
Evening (1900 to 2300 hours)	50	50
Nighttime (2300 to 0700 hours)	45	-

Note, the limits contained in Publication NPC-300 do not apply to occasional movement of vehicles on the property such as infrequent delivery of goods to convenience stores.

3.2.2 Applicable Guideline Limits

At several of the receptor locations, the existing ambient due to road traffic on Kirwin Avenue and Dundas Street East is higher than the minimum exclusion limits. The existing background sound levels, therefore, define the applicable sound level limits for receptors most exposed to Dundas Street East or Kirwin Avenue.

Section 3.4 below describes the calculation procedure to predict the ambient sound levels.

3.3 ANALYSIS METHOD

A 3-D acoustic model of the proposed development and surrounding area was developed using CadnaA V2018 MR1 environmental noise modeling software, which follows the protocol of ISO Standard 9613-2, "*Acoustics – Attenuation of Sound During Propagation Outdoors*", to predict sound levels at each of the receptor locations.

Hard ground (G = 0) was used for the site, adjacent commercial plazas and roadways. Soft ground (G = 1) was used elsewhere. Two orders of sound reflection from the building facades were included in the acoustical model.

The sound level predictions at the proposed buildings were done using the building evaluation feature in the CadnaA acoustic model. This method calculates the sound levels on a grid of receivers over each building facade at each storey of the building. The point receptors shown in Figures 3 to 5 were added at the worst-case locations for ease of reporting. Sample calculations are provided in Appendix F.

3.4 AMBIENT SOUND LEVEL ASSESSMENT

Minimum ambient sound levels (daytime, evening and nighttime hours) due to road traffic at receptors most exposed to Kirwin Avenue and Dundas Street East were calculated using traffic count data provided by Lea Consulting Ltd. The peak AM/PM traffic count data applicable to the year 2017 provided were converted to 24-hour volumes by multiplying the peak counts by a factor of 10. The hourly traffic volumes were derived from the 24-hour data by applying the typical traffic distribution for well travelled roadways. The minimum hourly volumes for the three scenarios considered were:

- 1000 to 1100 hours in the daytime scenario, where 3.5% of the 24-hour traffic volume occurs;
- 2200 to 2300 hours in the evening scenario, where 2.5% of the 24-hour traffic volume occurs; and,
- 0400 to 0500 hours in the nighttime scenario, where 0.2% of the 24-hour traffic volume occurs.

Minimum ambient sound levels were calculated at the assessment receptors in terms of one-hour L_{eq}, for the indicated hours, using STAMSON V5.04 – ORNAMENT, the computerized road traffic noise prediction model of the MECP.

Tables 5 to 7 show the applicable guideline limits for each receptor in each time period.

The traffic data used for ambient calculations are included in Appendix B. A sample calculation is included in Appendix F.

3.5 OPERATING SCENARIOS

Two operating scenarios with different levels of activity were considered for each commercial development, according to the three criterion periods, daytime (0700 to 1900 hours), evening (1900 to 2300 hours) and nighttime (2300 to 0700 hours).

These scenarios reflect predictable worst-case operating conditions, as required by the MECP guidelines, that would not be expected to occur on a regular basis, and perhaps only occasionally. In practice, it is expected that actual operating activities will be less than considered in this report.

The two operating scenarios assessed are:

- Daytime and Evening Hours (any one-hour period between 0700 and 2300 hours)
  - all rooftop units/equipment operating at 100% duty cycle (each unit operates for the full hour).
- Nighttime Hours (any one-hour period between 2300 and 0700 hours)
  - all rooftop HVAC units operating at 50% duty cycle (each unit operates for 30 minutes per hour);
  - all condenser units operating at 100% duty cycle (C1_CU01 and C1_CU02); and
  - all rooftop exhaust fans (Source IDs: C1_EF01, C1_EF02, C1_EF03, C2_EF07, C2_EF08 and C2_EF09) operating for the full hour, and general service exhaust fans off.

3.6 ASSESSMENT RESULTS

3.6.1 Commercial/Retail Plaza at 99-131 Dundas Street East

Table 5 and Figure 3 show the predicted unmitigated sound levels at the proposed site due to the operation of the commercial plaza at 99-131 Dundas Street East.

The assessment shows minor sound levels excesses (up to 3 dBA) are predicted to occur at the southwest facade of Block B (R11, daytime/evening and nighttime); southeast facade of Block B (R10, nighttime only); northeast facade of Block C (R13, nighttime only) and common outdoor amenity area (R17, daytime/evening).

These excesses are mainly due to the rooftop exhaust fan (Source IDs: C1_EF03).

TABLE 5: UNMITIGATED HOURLY SOUND LEVELS – DUE TO 99-131 DUNDAS STREET EAST PLAZA

Receptor ID (1)	Description	Unmitigated Hourly Sound Levels (L_{eq1}, dBA)			Applicable Guideline Limits (L_{eq1}, dBA)		
		Day	Eve	Night (2)	Day	Eve	Night (2)
R01	Block A Receptor - SW Facade	44	44	43	50	50	45
R02	Block A Receptor - W Rooftop	39	39	---	50	50	---
R03	Block A Receptor - SE Facade	46	46	44	50	50	45
R04	Block A Receptor - E Rooftop	37	37	---	50	50	---
R05	Block A Receptor - SE Facade	41	41	40	59	57	46

TABLE 5: UNMITIGATED HOURLY SOUND LEVELS – DUE TO 99-131 DUNDAS STREET EAST PLAZA

Receptor ID (1)	Description	Unmitigated Hourly Sound Levels (L_{eq1}, dBA)			Applicable Guideline Limits (L_{eq1}, dBA)		
		Day	Eve	Night (2)	Day	Eve	Night (2)
R06	Block A Receptor - NE Facade	26	26	24	59	57	45
R07	Block B Receptor - NE Rooftop	34	34	---	50	50	---
R08	Block B Receptor - NE Facade	33	33	31	61	60	48
R09	Block B Receptor - SE Facade	46	46	44	61	60	48
R10	Block B Receptor - SE Facade	50	50	48	59	58	47
R11	Block B Receptor - SW Facade	51	51	48	50	50	45
R12	Block B Receptor - NW Rooftop	38	38	---	50	50	---
R13	Block C Receptor - NE Facade	48	48	46	50	50	45
R14	Block C Receptor - SE Rooftop	39	39	---	50	50	---
R15	Block C Receptor - SW Facade	46	46	45	50	50	45
R16	Block C Receptor - SW Rooftop	40	40	---	50	50	---
R17	Outdoor Amenity Space	52	52	---	50	50	---

Notes:

(1) See Figure 3.
(2) There are no source level limits for outdoor points of reception at night. As such, nighttime predicted sound levels are not reported for these locations.

3.6.2 Commercial/Retail Plaza at 169 Dundas Street East

The predicted unmitigated sound levels from the noise sources associated with the commercial plaza at 169 Dundas Street East are presented in Table 6, and shown in Figure 4. The results indicate that the sound levels at all receptors are predicted to meet the applicable sound level limits. Thus, noise mitigation measures are not required for this plaza.

TABLE 6: UNMITIGATED HOURLY SOUND LEVELS – DUE TO 169 DUNDAS STREET EAST PLAZA

Receptor ID (1)	Description	Unmitigated Hourly Sound Levels (L_{eq1}, dBA)			Applicable Guideline Limits (L_{eq1}, dBA)		
		Day	Eve	Night (2)	Day	Eve	Night (2)
R01	Block A Receptor - SW Facade	30	30	28	50	50	45
R02	Block A Receptor - W Rooftop	35	35	---	50	50	---
R03	Block A Receptor - SE Facade	39	39	37	50	50	45
R04	Block A Receptor - E Rooftop	39	39	---	50	50	---
R05	Block A Receptor - SE Facade	46	46	45	59	57	46

TABLE 6: UNMITIGATED HOURLY SOUND LEVELS – DUE TO 169 DUNDAS STREET EAST PLAZA

Receptor ID (1)	Description	Unmitigated Hourly Sound Levels (L_{eq1}, dBA)			Applicable Guideline Limits (L_{eq1}, dBA)		
		Day	Eve	Night (2)	Day	Eve	Night (2)
R06	Block A Receptor - NE Facade	46	46	45	59	57	45
R07	Block B Receptor - NE Rooftop	40	40	---	50	50	---
R08	Block B Receptor - NE Facade	49	49	48	61	60	48
R09	Block B Receptor - SE Facade	48	48	47	61	60	48
R10	Block B Receptor - SE Facade	45	45	45	59	58	47
R11	Block B Receptor - SW Facade	34	34	34	50	50	45
R12	Block B Receptor - NW Rooftop	36	36	---	50	50	---
R13	Block C Receptor - NE Facade	37	37	36	50	50	45
R14	Block C Receptor - SE Rooftop	35	35	---	50	50	---
R15	Block C Receptor - SW Facade	23	23	22	50	50	45
R16	Block C Receptor - SW Rooftop	23	23	---	50	50	---
R17	Outdoor Amenity Space	39	39	---	50	50	---

3.7 MITIGATION MEASURES

To mitigate the sound levels from 99-131 Dundas Street East to meet the applicable guideline limits, noise control measures are required.

VCL understands that Nyx Capital Corp. has contacted the operator of the commercial space at 127 Dundas Street East, and it was confirmed that the rooftop exhaust fan (Source ID: C1_EF03) will be replaced. As outlined in the previous Noise Report, the unit must be replaced with a quieter unit having a maximum overall sound power level of 78 dBA. This assumes the new unit is installed in the same location (height and position) as the existing unit.

To mitigate the sound levels in the Outdoor Amenity Space to 50 dBA or lower, a 2.2 m acoustic barrier along the retaining wall is required as shown in Figure 5.

Mitigation measures have been implemented as part of the development design for Block C. There are no windows on the south facade facing Dundas Street East and the commercial building. The condominium declaration, zoning by law or other binding documentation should include this restriction to prevent future home owners from adding windows to noise sensitive spaces on this facade.

With the replacement exhaust fan (C1_EF03m) and the sound barrier for the common outdoor amenity space, the predicted sound levels from 99- 131 Dundas Street East are shown on Figure 5 and in Table 7.

TABLE 7: MITIGATED HOURLY SOUND LEVELS – DUE TO 99-131 DUNDAS STREET EAST PLAZA

Receptor ID (1)	Description	Unmitigated Hourly Sound Levels (L_{eq1}, dBA)			Applicable Guideline Limits (L_{eq1}, dBA)		
		Day	Eve	Night (2)	Day	Eve	Night (2)
R01	Block A Receptor - SW Facade	42	42	39	50	50	45
R02	Block A Receptor - W Rooftop	37	37	---	50	50	---
R03	Block A Receptor - SE Facade	44	44	40	50	50	45
R04	Block A Receptor - E Rooftop	36	36	---	50	50	---
R05	Block A Receptor - SE Facade	41	41	39	59	57	46
R06	Block A Receptor - NE Facade	25	25	23	59	57	45
R07	Block B Receptor - NE Rooftop	32	32	---	50	50	---
R08	Block B Receptor - NE Facade	31	31	28	61	60	48
R09	Block B Receptor - SE Facade	45	45	41	61	60	48
R10	Block B Receptor - SE Facade	48	48	44	59	58	47
R11	Block B Receptor - SW Facade	49	49	45	50	50	45
R12	Block B Receptor - NW Rooftop	36	36	---	50	50	---
R13	Block C Receptor - NE Facade	45	45	42	50	50	45
R14	Block C Receptor - SE Rooftop	38	38	---	50	50	---
R15	Block C Receptor - SW Facade	46	46	45	50	50	45
R16	Block C Receptor - SW Rooftop	39	39	---	50	50	---
R17	Outdoor Amenity Space	49	49	---	50	50	---

Notes:

(1) See Figure 5.
(2) Nighttime sound levels are not applicable for outdoor points of reception.

4.0 CONCLUSIONS

With appropriate design and recommendations outlined in this report, the proposed residential development is considered feasible and a suitable acoustical environment can be provided for the occupants of the dwellings. The applicable MECP transportation noise guideline requirements can be met.

Noise mitigation measures are needed at 99- 131 Dundas Street East, including replacement of one of the rooftop exhaust fans and a sound barrier at the common outdoor amenity space. This also assumes that the facade of Block C facing towards Dundas Street East will not include windows to noise-sensitive spaces, as shown on the drawings included in Appendix A.

Future occupants will be made aware of the potential noise impacts through warning clauses, as per MECP guidelines.

5.0 REFERENCES

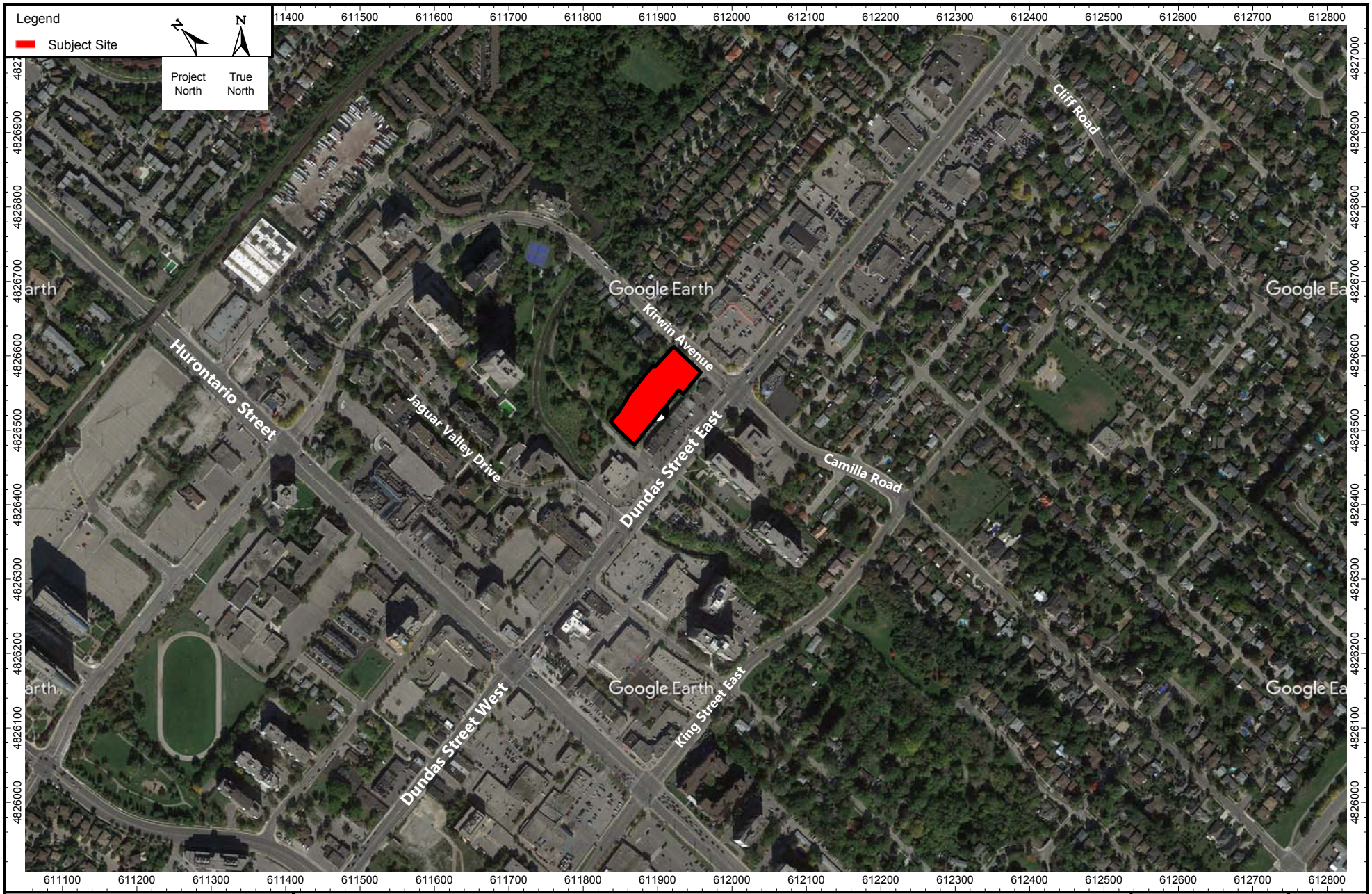
1. PC STAMSON 5.04, "Computer Program for Road Traffic Noise Assessment", Ontario Ministry of the Environment and Climate Change.

2. Building Practice Note No. 56: "Controlling Sound Transmission into Building", by J.D. Quirt, Division of Building Research, National Council of Canada, September 1985.

3. "Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning", MOE Publication NPC-300, October 2013.

4. "Environmental Noise Feasibility Study – 3016 Kirwin Avenue – Proposed Residential Development", Valcoustics Canada Ltd., December 19, 2017.

KM\ML\hd
J:\2017\1170071\100\Reports\3016 Kirwin Avenue_Noise Study_V2_0.docx



VALCOUSTICS Canada Ltd.
consulting acoustical engineers

Title: **Key Plan**	Date: **2019-03-25**	Figure: **1**
Project Name: **3016 Kirwin Avenue/Mississauga - Noise Update**	Project No.: **117-0071.100**	

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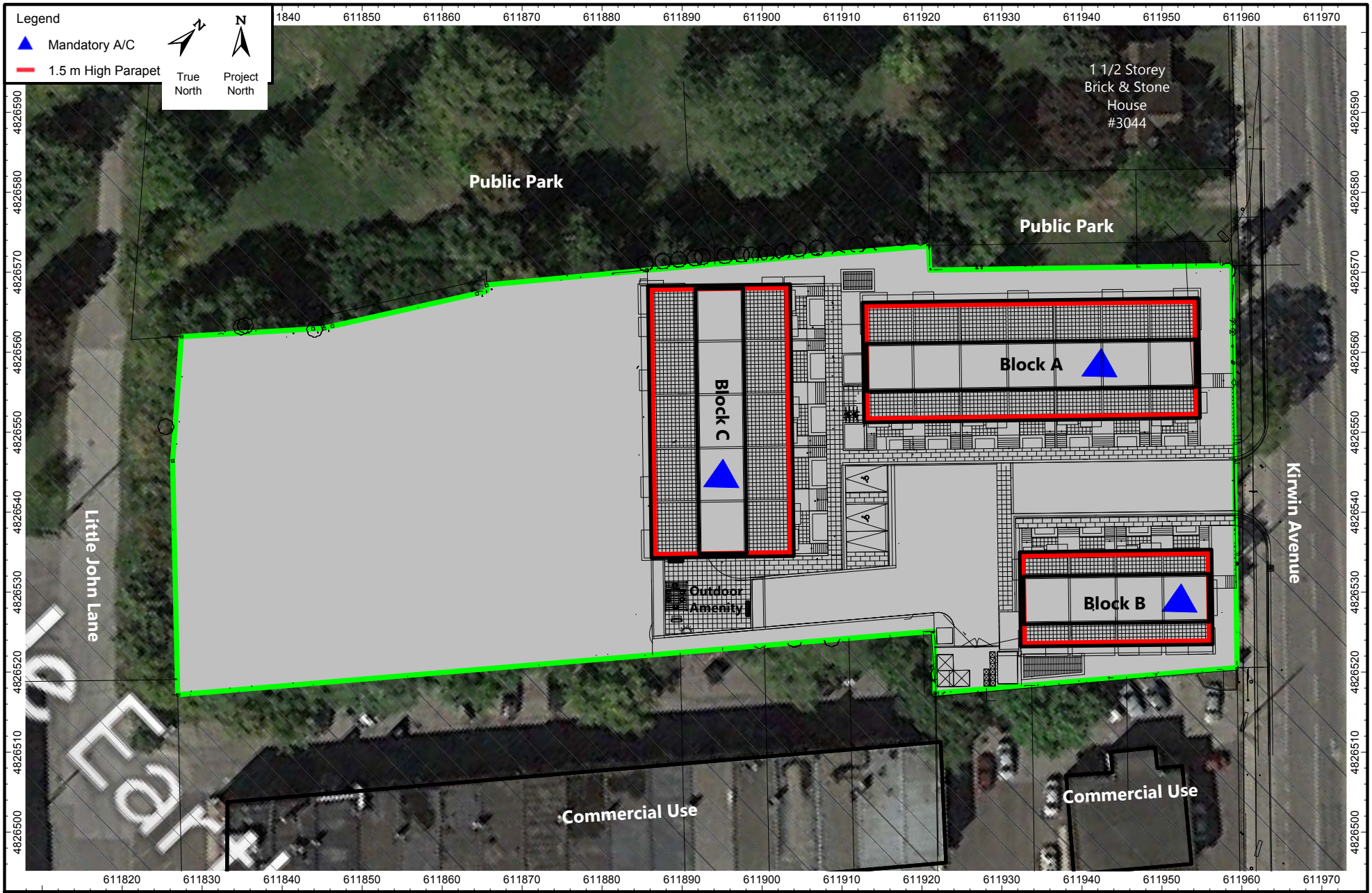
Date Plotted: 25.03.19



VALCOUSTICS Canada Ltd.
consulting acoustical engineers

Title: **Site Plan and Minimum Noise Control Requirements (Transportation Noise)**	Date: **2019-03-25**
Project Name: **3016 Kirwin Avenue/Mississauga - Noise Update**	Project No.: **117-0071.100**
	Figure: **2**

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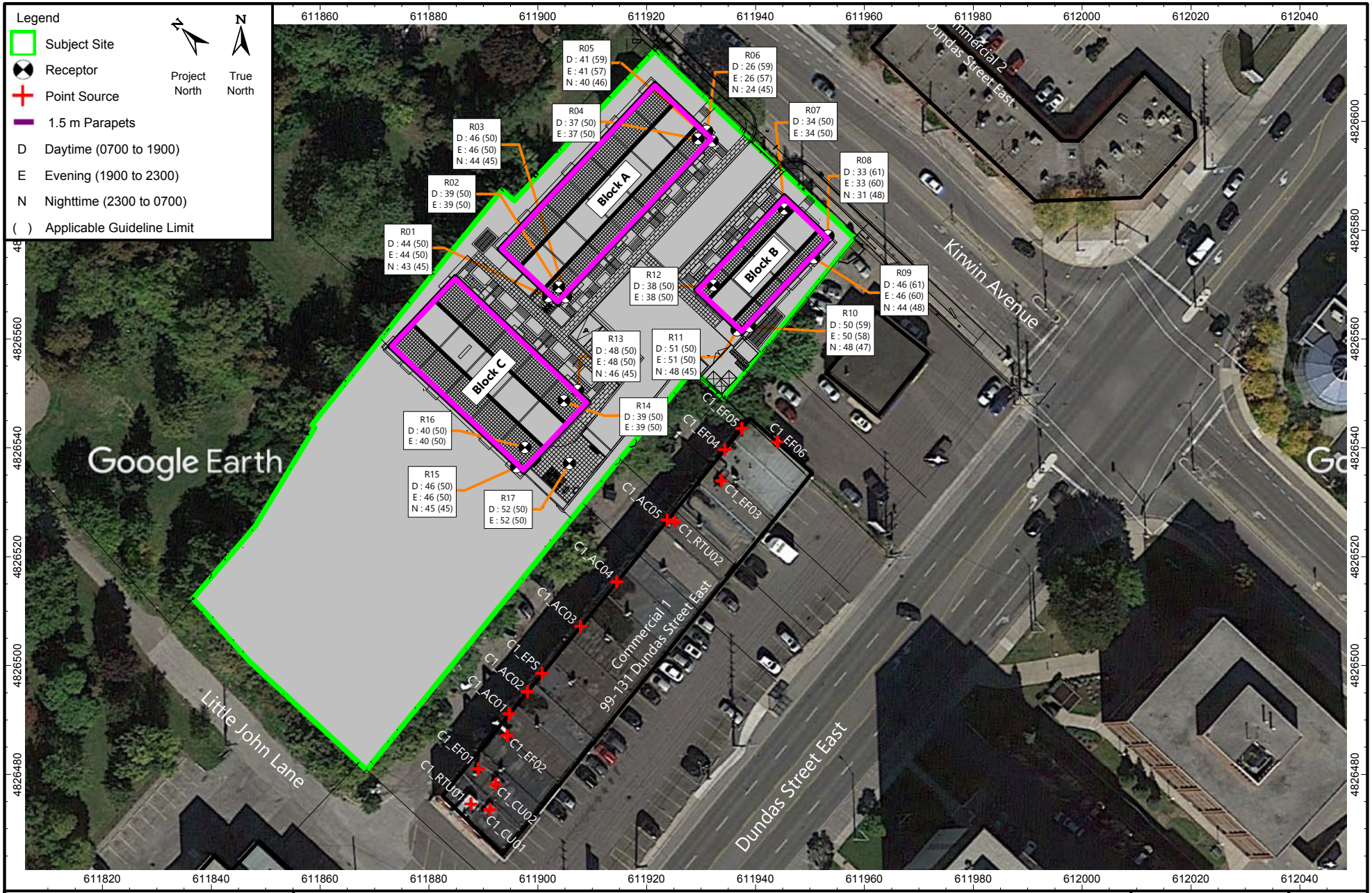

VALCOUSTICS Canada Ltd.
consulting acoustical engineers

Title: **Unmitigated Hourly Sound Levels (dBA) - Due to 99-131 Dundas Street East**	Date: **2019-03-25**	Figure: **3**
Project Name: **3016 Kirwin Avenue/Mississauga - Noise Update**	Project No.: **117-0071.100**	

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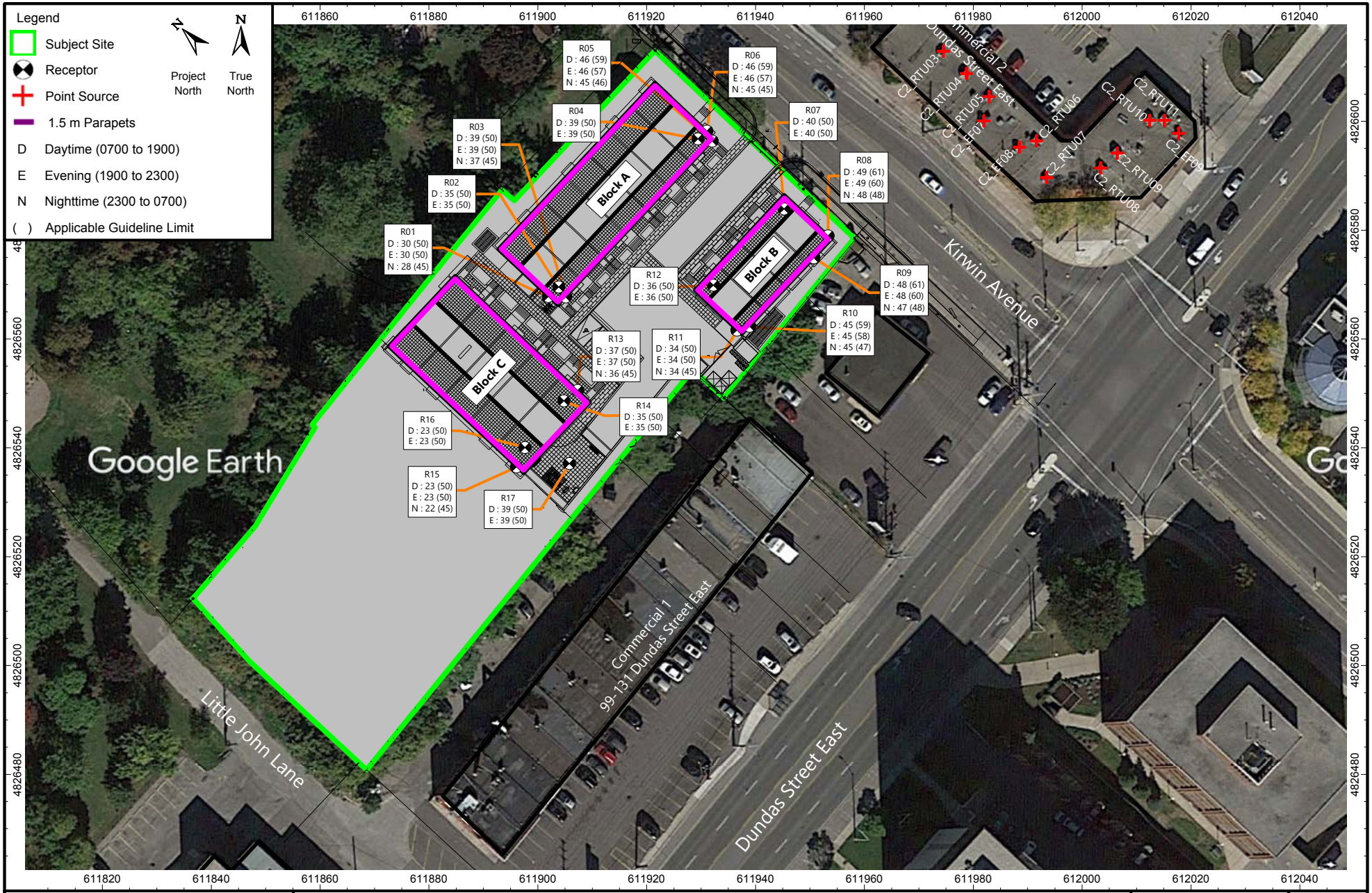
Date Plotted: 25.03.19



VALCOUSTICS Canada Ltd.
consulting acoustical engineers

Title	Date	Figure
Unmitigated Hourly Sound Levels (dBA) - Due to 169 Dundas Street East	**2019-03-25**	**4**
Project Name: **3016 Kirwin Avenue/Mississauga - Noise Update**	Project No.: **117-0071.100**	

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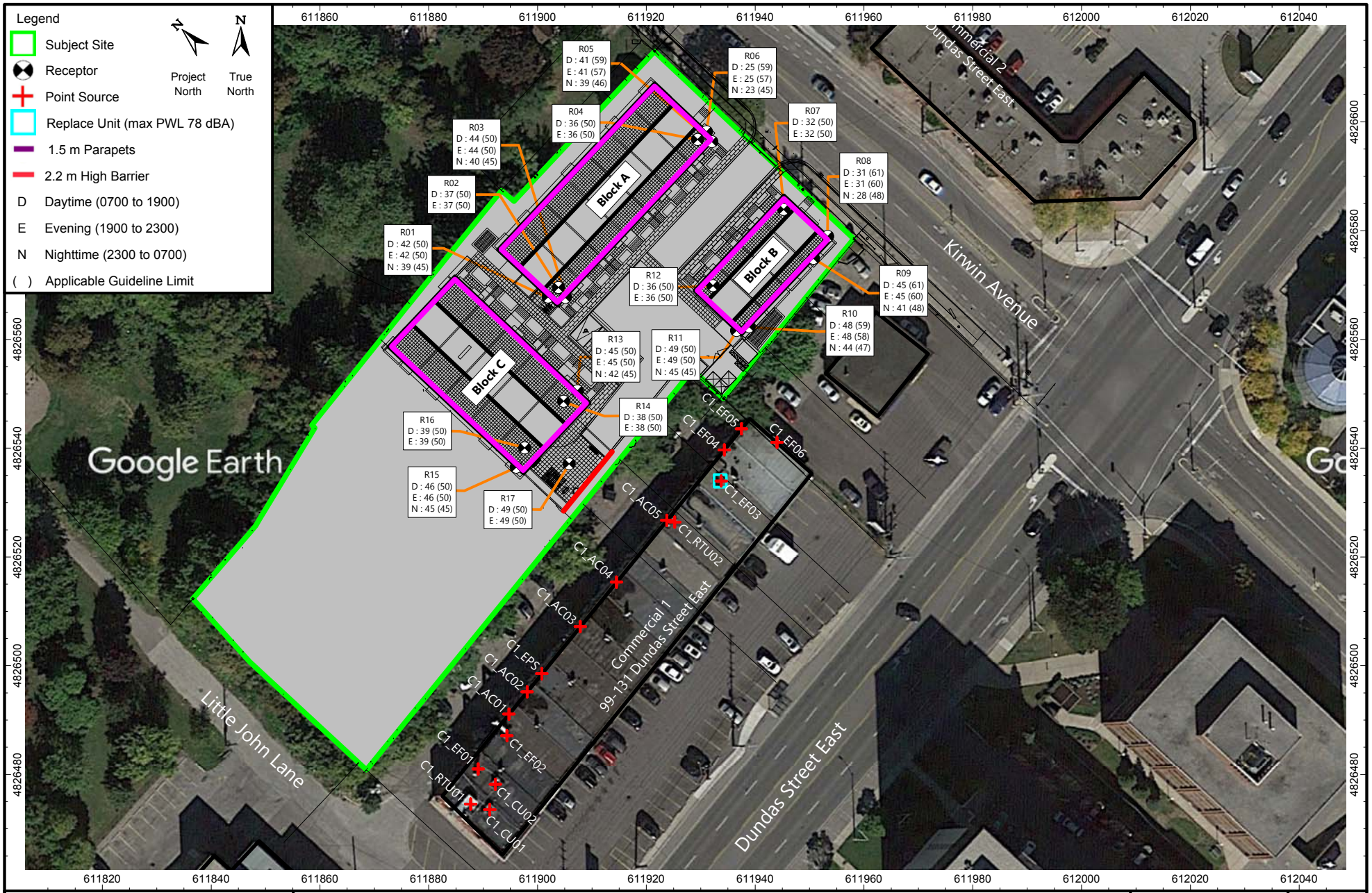
Date Plotted: 25.03.19



VALCOUSTICS Canada Ltd.
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Title: **Mitigated Hourly Sound Levels (dBA) - Due to 99-131 Dundas Street East**	Date: **2019-03-25**	Figure: **5**
Project Name: **3016 Kirwin Avenue/Mississauga - Noise Update**	Project No.: **117-0071.100**	

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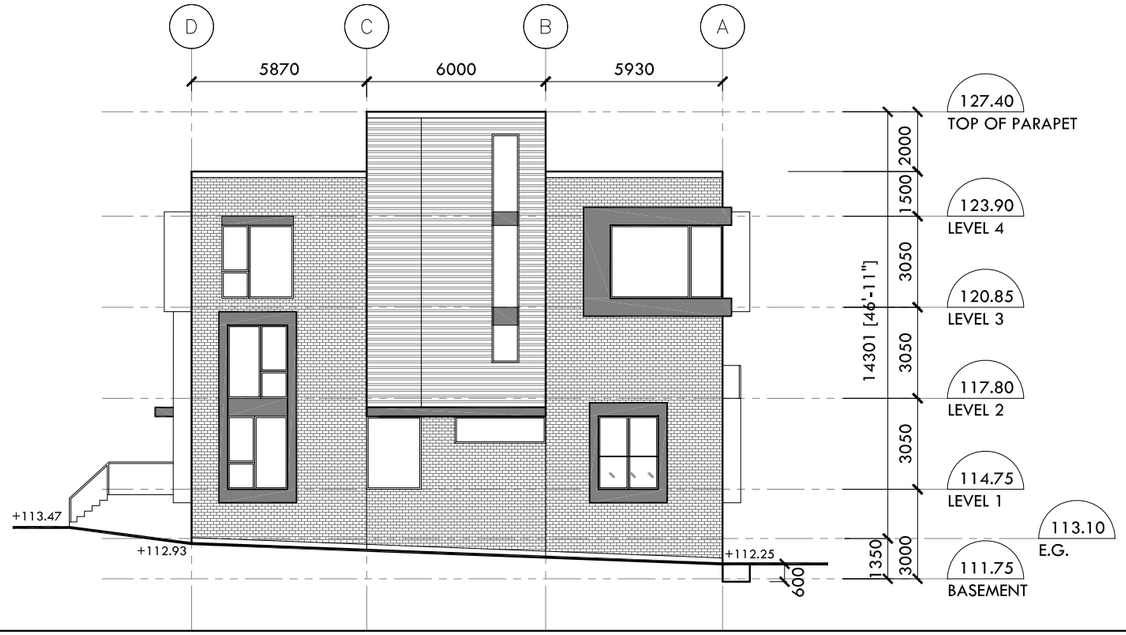
Date Plotted: 25.03.19

APPENDIX A

SITE PLAN AND DRAWINGS



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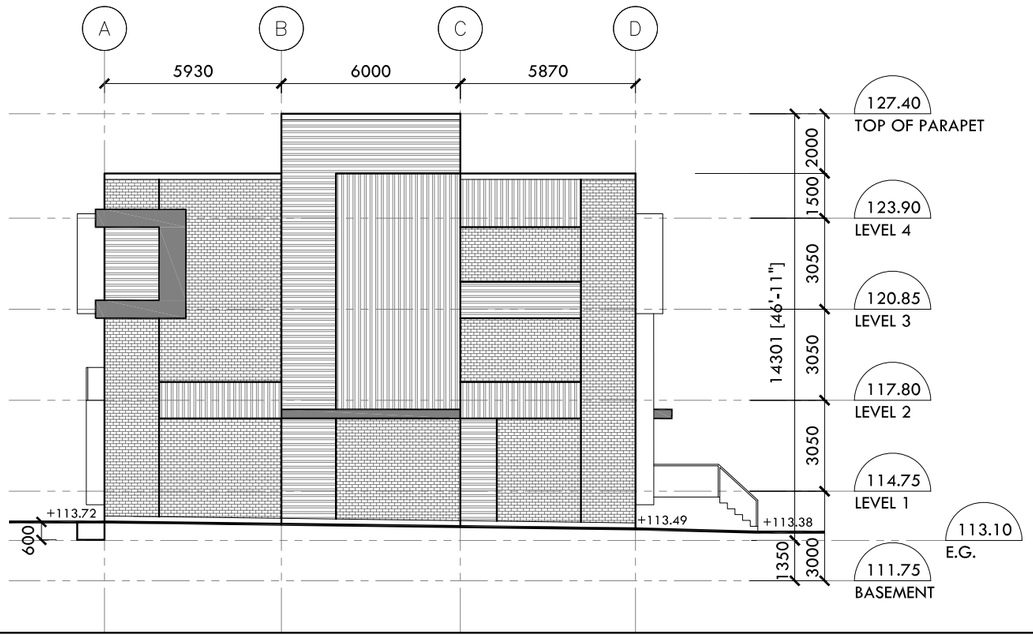

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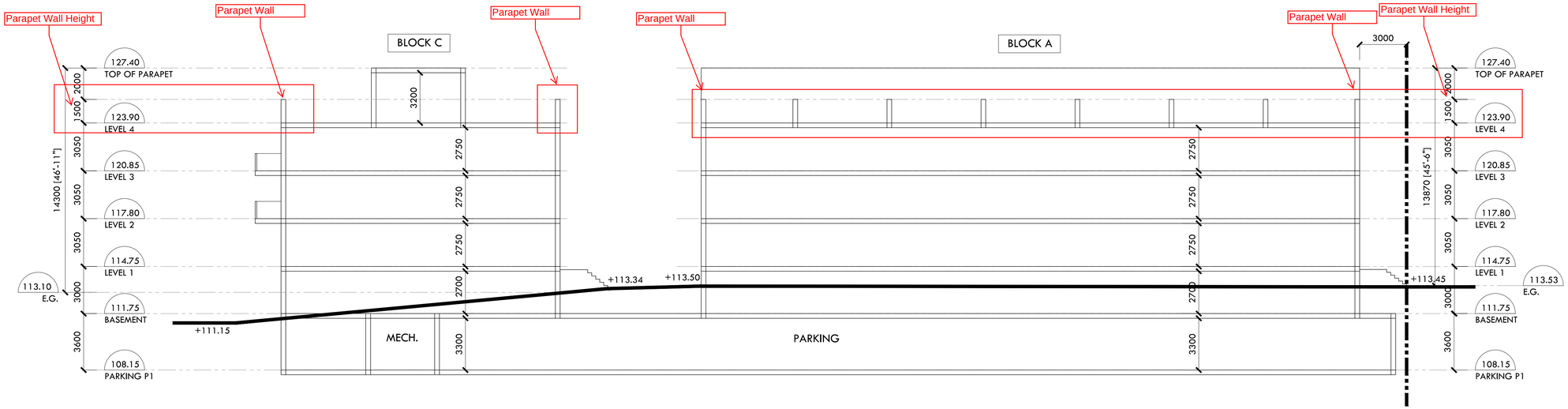
02	ISSUED FOR REVIEW	27/10/2017
03	ISSUED FOR REVIEW	13/11/2017

PROJECT NAME: 3016 KIRWIN AVENUE
PROJECT NO.: 17-109
TITLE: ELEVATIONS

ADDRESS: 3016 KIRWIN AVENUE, MISSISSAUGA, ON
DATE: JUNE 2017
SCALE: 1:200

A& Architects
A & Associates Architects Inc.
Six Carlaw Ave, Suite 205,
Toronto, Ontario, M4M 2R5
T: (416) 466-0100
www.aarchitects.ca

A405



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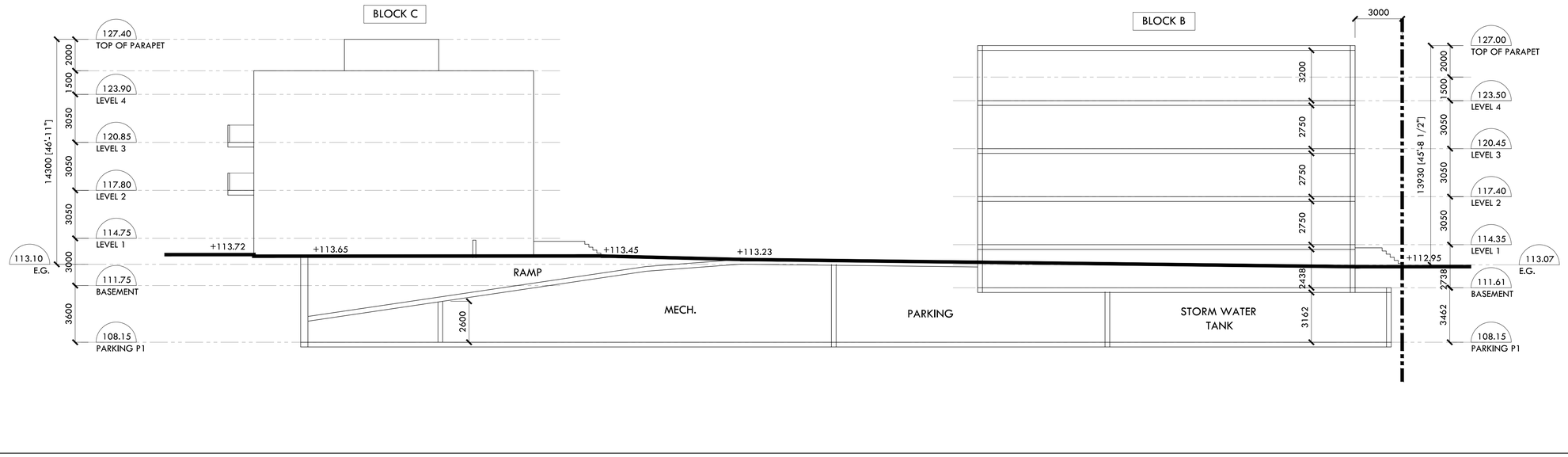

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DRAFT

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01	ISSUED FOR OPA/ZBA Application	2018 03 09
No.	REVISIONS	Date

A& Architects
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Six Carlaw Ave, Suite 205 B,Toronto,Ontario,M4M 2R5
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3016 Kirwin Avenue

3016 Kirwin Avenue

Mississauga, Ontario

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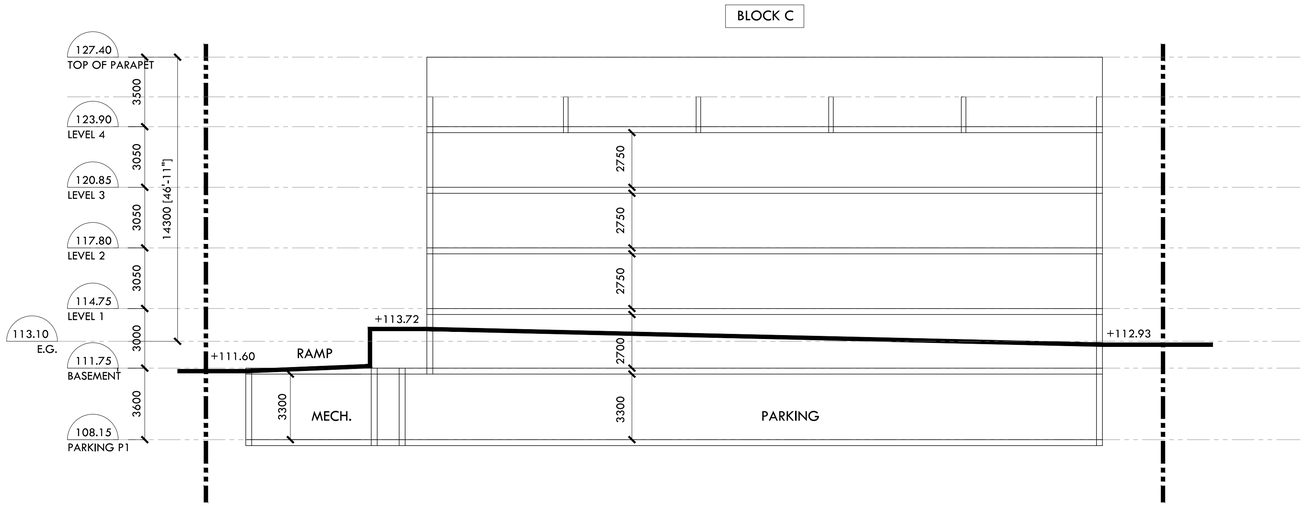
Checked: AL	Date: JUNE 2017

Title: SECTIONS

Project No.: 17-109	Drawing No.: A410



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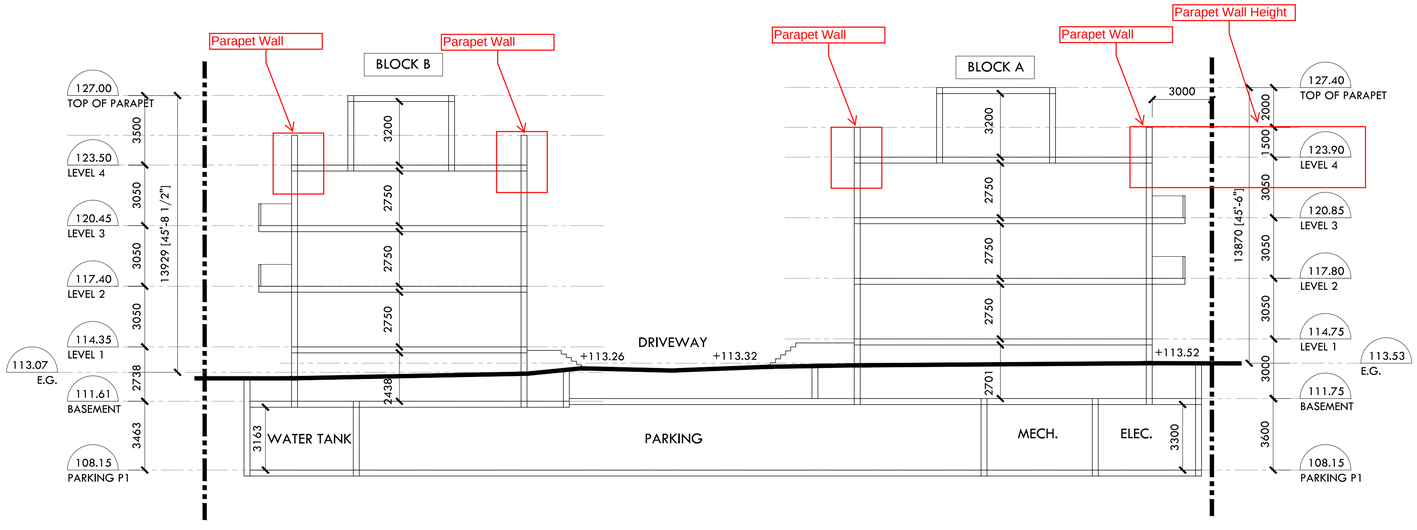

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DRAFT

No.	REVISIONS	Date
02	ISSUED FOR REVIEW	2019 02 20
01	ISSUED FOR OPA/ZBA Application	2018 03 09

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3016 Kirwin Avenue

3016 Kirwin Avenue

Mississauga, Ontario

Drawn	Scale
LO	1:150
Checked	Date
AL	JUNE 2017

Title

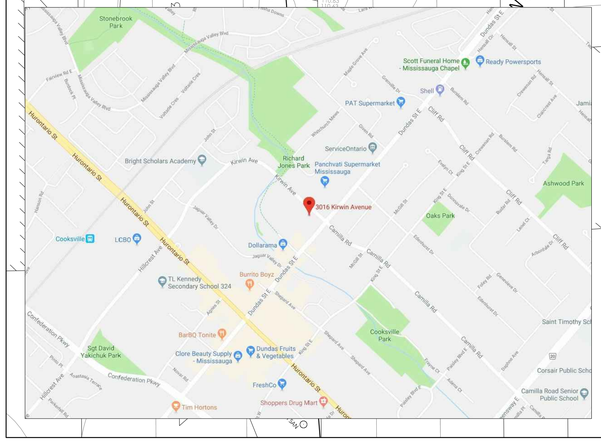
SECTIONS

Project No.	Drawing No.
17-109	A411

NOTES:

* PROPERTY IS CURRENTLY VACANT WITH NO EXISTING BUILDINGS OF STRUCTURES.
* THERE ARE NO EASEMENTS AFFECTING THE SUBJECT LANDS.
* THE PROPOSED AMENDMENT TO THE OFFICIAL PLAN IS TO PERMIT RESIDENTIAL USE NOT IN COMBINATION WITH ANOTHER PERMITTED USE IN THE MIXED USE DESIGNATION. THE PROPOSED AMENDMENT TO THE ZONING BY-LAW IS TO PERMIT HORIZONTAL MULTIPLE DWELLINGS.

DRAFT



APPLICANT:
NYX Capital Corp
1131A Leslie Street, North York, M3C 3L8
T: (416) 548-5590

No.	REVISIONS	Date
02	ISSUED FOR REVIEW	2019 02 20
01	ISSUED FOR OPA/ZBA Application	2018 03 09

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A & Associates Architects Inc.
Six Carlaw Ave, Suite 205 B,Toronto,Ontario,M4M 2R5
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3016 Kirwin Avenue

3016 Kirwin Avenue

Mississauga, Ontario

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Checked: AL	Date: JUNE 2017

Title: CONTEXT MAP/ CONCEPT PLAN

Project No.	Drawing No.
17-109	A111


PUBLIC PARK
PUBLIC PARK
COMMERCIAL USE
COMMERCIAL USE
LAND TO BE DEDICATED TO PARKLAND
LAND TO BE DEDICATED FOR ROAD WIDENING
KIRWIN AVENUE
DRAFT
BLOCK A
BLOCK B
BLOCK C
TH-A1
TH-A2
TH-A3
TH-A4
TH-A5
TH-A6
TH-A7
TH-B1
TH-B2
TH-B3
TH-B4
TH-C1
TH-C2
TH-C3
TH-C4
TH-C5
DRIVEWAY/FIRE ROUTE
DRIVEWAY ENTRANCE
PARKING ENTRANCE
PROPOSED CONC. PAVERS
CURB & GUTTER
EXHAUST SHAFT
SPRINKLER ROOM
MAIL
BIKE RACKS
OUTDOOR AMENITY 136.0 SQ.M.
2X2M PAD TRANSFORMER
GARBAGE
INTAKE SHAFT
PROPOSED 1.8m HT WOOD PRIVACY FENCE
WINDOW WELL
PROPOSED DETECTOR CHECK VALVE IN CHAMBER
PROVIDE LOUVER FOR INTAKE SHAFT AT GARAGE DOOR
4 CUBIC FOR 64 UNITS (NON-COMPACTED)
9 RECYCLING CART (7/UNIT)
NEW PROPERTY LINE FENCE TO BE PROVIDED
OUTDOOR AMENITY/RAMP
Railing 1100 mm
Wall
Stairs
200 mm above stairs access
There will be a wall and a glass railing besides the stairs
02 ISSUED FOR REVIEW 2019 03 11
01 ISSUED FOR OPA/ZBA Application 2018 03 09
No. REVISIONS Date
"ALL DRAWINGS, SPECIFICATIONS AND RELATED DOCUMENTS ARE THE COPYRIGHT PROPERTY OF THE ARCHITECT AND MUST BE RETURNED UPON REQUEST. REPRODUCTION OF DRAWINGS, SPECIFICATIONS AND RELATED DOCUMENTS IN PART OR WHOLE IS FORBIDDEN WITHOUT THE ARCHITECT'S WRITTEN PERMISSION."
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3016 Kirwin Avenue
Mississauga, Ontario
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Scale 1:150
Checked AL
Date JUNE 2017
Title LEVEL 1 FLOOR PLAN
Project No. 17-109
Drawing No. A202

APPENDIX B
ROAD TRAFFIC DATA

Date:	23-Mar-17

NOISE REPORT FOR PROPOSED DEVELOPMENT

REQUESTED BY:	
Name:	Anthony Amarra
Company	Valacoustics

PREPARED BY:	
Name:	Jacqueline Hunter
Tel#:	(905) 615-3200

Location:	Dundas Street near Kirwin Avenue & Hurontario Street
Look Up ID#:	368

ON SITE TRAFFIC DATA

Specific	***Street Names***				
	Dundas Street	Kirwin Avenue	Hurontario Street		
AADT:	50,000	20,000	48,000		
# of Lanes:	6 lanes	4 lanes	4 lanes		
% Trucks:	7%	3%	10%		
Medium/Heavy Trucks Ratio:	55/45	55/45	55/45		
Day/Night Traffic Split:	90/10	90/10	90/10		
Posted Speed Limit:	50 /h	50 km/h	60 km/h		
Gradient of Road:	<2%	<2%	<2%		
Ultimate R O W:	35m	26m	35m		

Comments:	
	* Ultimate Traffic Only (2041 ADT)
	Ultimate Data is based on the proposed LRT project along Hurontario Street with existing lanes
	converted from 6 to 4 lanes with 2 LRT lines in middle/both sides
	. For more details, please call Matthew Williams (905) 615- 3200 ext. 5834

Appendix B - Traffic Data (Peak Data - Dundas and Kirwin - AM)

Start Date: 30/05/2017
Start Time: 7:00:00 AM

CARS

	Kirwin Avenue Southbound				Dundas Street East Westbound				Camillia Road Northbound				Dundas Street East Eastbound			
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
07:00 AM	46	10	2	2	4	79	16	1	4	7	9	0	3	223	3	1
07:15 AM	37	11	3	3	6	89	14	2	3	8	12	0	2	287	10	3
07:30 AM	54	8	1	2	5	85	17	4	3	13	11	1	0	324	6	4
07:45 AM	61	19	4	3	11	85	25	2	4	20	13	3	0	342	5	4
08:00 AM	49	22	4	1	3	127	30	1	11	22	9	5	0	324	21	4
08:15 AM	47	22	4	2	10	113	19	1	12	28	16	5	2	281	24	6
08:30 AM	78	8	6	1	7	134	28	0	13	23	16	5	2	310	20	0
08:45 AM	62	20	6	6	13	151	33	0	12	20	16	2	1	262	27	7
TOTAL	**236**	**72**	**20**	10	**33**	**525**	**110**	2	**48**	**93**	**57**	17	**5**	**1177**	**92**	17

TRUCKS

	Kirwin Avenue Southbound				Dundas Street East Westbound				Camillia Road Northbound				Dundas Street East Eastbound			
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
07:00 AM	1	0	0	0	0	9	3	0	0	0	0	0	0	9	0	1
07:15 AM	0	0	0	0	0	8	0	1	0	0	0	0	0	11	2	0
07:30 AM	0	1	0	0	0	6	0	1	0	0	0	1	0	15	1	1
07:45 AM	0	2	1	0	2	10	1	1	1	0	2	1	2	5	0	0
08:00 AM	0	1	1	0	0	8	2	0	2	1	0	0	1	11	3	0
08:15 AM	2	1	1	1	0	7	0	0	2	2	1	0	0	7	2	0
08:30 AM	0	0	0	1	0	11	0	1	0	0	1	0	2	6	0	0
08:45 AM	0	2	0	1	0	5	1	2	1	0	0	0	0	10	0	1
TOTAL	**2**	**4**	**2**	3	**0**	**31**	**3**	3	**5**	**3**	**2**	0	**3**	**34**	**5**	1

BUSES

	Kirwin Avenue Southbound				Dundas Street East Westbound				Camillia Road Northbound				Dundas Street East Eastbound			
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
07:00 AM	0	0	0	0	0	3	0	1	0	0	0	0	0	2	0	0
07:15 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0
07:30 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0
07:45 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0
08:00 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	0
08:15 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0
08:30 AM	0	0	0	0	0	2	0	0	0	0	0	0	0	3	0	0
08:45 AM	0	0	0	0	0	3	0	0	0	0	0	0	0	4	0	0
TOTAL	**0**	**0**	**0**	0	**0**	**10**	**0**	0	**0**	**0**	**0**	0	**0**	**12**	**0**	0

Appendix B - Traffic Data (Peak Data - Dundas and Kirwin - PM)

Start Date: 30/05/2017
Start Time: 4:00:00 PM

CARS

	Kirwin Avenue Southbound				Dundas Street East Westbound				Camillia Road Northbound				Dundas Street East Eastbound			
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
04:00 PM	44	26	4	6	28	290	68	3	15	19	25	7	4	198	8	6
04:15 PM	36	16	10	5	26	297	88	5	9	28	12	4	5	189	12	3
04:30 PM	41	21	7	8	28	301	96	1	15	23	18	5	11	180	11	5
04:45 PM	54	23	6	5	30	308	88	6	12	34	13	7	6	196	8	7
05:00 PM	46	16	4	8	28	237	103	5	18	39	18	2	8	189	12	10
05:15 PM	43	24	10	0	19	287	89	0	11	24	15	1	11	218	11	3
05:30 PM	44	25	5	2	19	313	95	2	16	49	17	5	11	226	15	5
05:45 PM	47	30	15	6	32	273	108	6	12	24	21	7	10	206	16	6
TOTAL	**180**	**95**	**34**	16	**98**	**1110**	**395**	13	**57**	**136**	**71**	15	**40**	**839**	**54**	24

TRUCKS

	Kirwin Avenue Southbound				Dundas Street East Westbound				Camillia Road Northbound				Dundas Street East Eastbound			
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
04:00 PM	1	0	0	0	0	6	2	0	0	3	0	0	0	11	1	1
04:15 PM	0	1	0	0	0	4	3	1	0	1	1	0	0	3	0	0
04:30 PM	0	0	0	0	0	3	1	0	0	0	0	0	0	3	0	0
04:45 PM	0	1	0	0	0	5	2	1	0	1	2	1	0	8	0	0
05:00 PM	3	0	0	0	0	2	2	2	0	0	0	0	0	5	0	1
05:15 PM	0	0	0	0	2	5	1	0	0	1	0	0	0	5	0	0
05:30 PM	1	0	0	0	0	3	2	0	0	0	1	0	0	6	0	2
05:45 PM	0	1	0	0	0	4	0	0	0	0	0	2	0	6	1	0
TOTAL	**4**	**1**	**0**	0	**2**	**14**	**5**	2	**0**	**1**	**1**	2	**0**	**22**	**1**	3

BUSES

	Kirwin Avenue Southbound				Dundas Street East Westbound				Camillia Road Northbound				Dundas Street East Eastbound			
Start Time	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds	Left	Thru	Right	Peds
04:00 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	3	0	0
04:15 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	2	0	0
04:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	1	0	0
04:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	4	0	0
05:00 PM	0	0	0	0	0	4	1	0	0	0	0	0	0	3	0	0
05:15 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	5	0	0
05:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	1	0	0
05:45 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	3	0	0
TOTAL	**0**	**0**	**0**	0	**0**	**12**	**1**	0	**0**	**0**	**0**	0	**0**	**12**	**0**	0

APPENDIX C
ENVIRONMENTAL NOISE GUIDELINES

ENVIRONMENTAL NOISE GUIDELINES

MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MECP)

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

SPACE	SOURCE	TIME PERIOD	CRITERION
Living/dining, den areas of residences, hospitals, nursing homes, schools, daycare centres, etc.	Road Rail Aircraft	07:00 to 23:00 07:00 to 23:00 24-hour period	45 dBA 40 dBA NEF/NEP 5
Living/dining, den areas of residences, hospitals, nursing homes, etc. (except schools or daycare centres)	Road Rail Aircraft	23:00 to 07:00 23:00 to 07:00 24-hour period	45 dBA 40 dBA NEF/NEP 5
Sleeping quarters	Road Rail Aircraft	07:00 to 23:00 07:00 to 23:00 24-hour period	45 dBA 40 dBA NEF/NEP 0
Sleeping quarters	Road Rail Aircraft	23:00 to 07:00 23:00 to 07:00 24-hour period	40 dBA 35 dBA NEF/NEP 0
Outdoor Living Areas	Road and Rail	07:00 to 23:00	55 dBA up to 60 dBA allowed in some cases
Outdoor Point of Reception	Aircraft Stationary Source Class 1 Area Class 2 Area Class 3 Area Class 4 Area	24-hour period 07:00 to 19:00(1) 19:00 to 23:00(1) 07:00 to 19:00(2) 19:00 to 23:00(2) 07:00 to 19:00(3) 19:00 to 23:00(3) 07:00 to 19:00(4) 19:00 to 23:00(4)	NEF/NEP 30# 50* dBA 50* dBA 50* dBA 45* dBA 45* dBA 40* dBA 55* dBA 55* dBA

...../cont'd

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

Notes:

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

APPENDIX D

SAMPLE CALCULATIONS – TRANSPORTATION NOISE ANALYSIS

```
STAMSON 5.04        NORMAL REPORT        Date: 18-03-2019 18:00:51
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: bb_ef.te             Time Period: Day/Night 16/8 hours
```
Description: Block B - East Facade (Southeast Corner)

```
Road data, segment # 1: Kirwin (day/night)
----------------------------------------
Car traffic volume  : 17460/1940  veh/TimePeriod  *
Medium truck volume :   297/33    veh/TimePeriod  *
Heavy truck volume  :   243/27    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  20000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   1.65
    Heavy Truck  % of Total Volume     :   1.35
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 1: Kirwin (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  :  16.70 / 16.70  m
Receiver height           :   9.00 / 9.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Dundas WB (day/night)
----------------------------------------
Car traffic volume  : 20925/2325  veh/TimePeriod  *
Medium truck volume :   866/96    veh/TimePeriod  *
Heavy truck volume  :   709/79    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  25000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.85
    Heavy Truck  % of Total Volume     :   3.15
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: Dundas WB (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   5.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.80 / 51.80  m
Receiver height           :   9.00 / 9.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: Dundas EB (day/night)
---------------------------------------------
Car traffic volume  : 20925/2325  veh/TimePeriod  *
Medium truck volume :   866/96    veh/TimePeriod  *
Heavy truck volume  :   709/79    veh/TimePeriod  *
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  25000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   3.85
    Heavy Truck  % of Total Volume     :   3.15
    Day (16 hrs) % of Total Volume     :  90.00

Data for Segment # 3: Dundas EB (day/night)
-------------------------------------------
Angle1   Angle2           : -90.00 deg   5.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  62.30 / 62.30  m
Receiver height           :   9.00 / 9.00   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Kirwin (day)
---------------------------------

Source height = 1.08 m

ROAD (0.00 + 65.70 + 0.00) = 65.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  66.17   0.00  -0.47   0.00   0.00   0.00   0.00  65.70
-------------------------------------------------------------------------------

Segment Leq : 65.70 dBA
```

```
Results segment # 2: Dundas WB (day)
-----------------------------------

Source height = 1.33 m

ROAD (0.00 + 61.40 + 0.00) = 61.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      5   0.00  69.56   0.00  -5.38  -2.78   0.00   0.00   0.00  61.40
-------------------------------------------------------------------------------

Segment Leq : 61.40 dBA

Results segment # 3: Dundas EB (day)
-----------------------------------

Source height = 1.33 m

ROAD (0.00 + 60.60 + 0.00) = 60.60 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      5   0.00  69.56   0.00  -6.18  -2.78   0.00   0.00   0.00  60.60
-------------------------------------------------------------------------------

Segment Leq : 60.60 dBA

Total Leq All Segments: 67.95 dBA

Results segment # 1: Kirwin (night)
-----------------------------------

Source height = 1.08 m

ROAD (0.00 + 59.17 + 0.00) = 59.17 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.00  59.64   0.00  -0.47   0.00   0.00   0.00   0.00  59.17
-------------------------------------------------------------------------------

Segment Leq : 59.17 dBA

Results segment # 2: Dundas WB (night)
-------------------------------------

Source height = 1.33 m

ROAD (0.00 + 54.88 + 0.00) = 54.88 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      5   0.00  63.03   0.00  -5.38  -2.78   0.00   0.00   0.00  54.88
-------------------------------------------------------------------------------

Segment Leq : 54.88 dBA
```

```
Results segment # 3: Dundas EB (night)
-----------------------------------

Source height = 1.33 m

ROAD (0.00 + 54.07 + 0.00) = 54.07 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90      5   0.00  63.03   0.00  -6.18  -2.78   0.00   0.00   0.00  54.07
-------------------------------------------------------------------------------

Segment Leq : 54.07 dBA

Total Leq All Segments: 61.43 Dba

TOTAL Leq FROM ALL SOURCES (DAY): 67.95
                           (NIGHT): 61.43
```

```
STAMSON 5.04        NORMAL REPORT        Date: 19-03-2019 10:47:20
MINISTRY OF ENVIRONMENT, CONSERVATIONS AND PARKS / NOISE ASSESSMENT

Filename: ba_neoS.te           Time Period: 16 hours
```
Description: Block A - Northeast Rooftop Terrace

```
Road data, segment # 1: Kirwin
------------------------------
Car traffic volume  : 17460 veh/TimePeriod
Medium truck volume :   297 veh/TimePeriod
Heavy truck volume  :   243 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Kirwin
----------------------------
Angle1   Angle2           : -90.00 deg   42.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  19.70 m
Receiver height           :   1.50 m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 42.00 deg
Barrier height            :   1.50 m
Elevation                 :  10.40 m
Barrier receiver distance :   2.80 m
Source elevation          :   0.00 m
Receiver elevation        :  10.40 m
Barrier elevation         :  10.40 m
Reference angle           :   0.00

Road data, segment # 2: Dundas WB
---------------------------------
Car traffic volume  : 20925 veh/TimePeriod
Medium truck volume :   866 veh/TimePeriod
Heavy truck volume  :   709 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Dundas WB
-------------------------------
Angle1   Angle2           : -90.00 deg   -47.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  92.60 m
Receiver height           :   1.50 m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -47.00 deg
Barrier height            :   1.50 m
Elevation                 :  10.40 m
Barrier receiver distance :   3.00 m
Source elevation          :   0.00 m
Receiver elevation        :  10.40 m
Barrier elevation         :  10.40 m
Reference angle           :   0.00
```

```
Road data, segment # 3: Dundas EB
---------------------------------
Car traffic volume  : 20925 veh/TimePeriod
Medium truck volume :   866 veh/TimePeriod
Heavy truck volume  :   709 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 3: Dundas EB
-------------------------------
Angle1   Angle2           : -90.00 deg   -47.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  : 103.10 m
Receiver height           :   1.50 m
Topography                :      4       (Elevated; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : -47.00 deg
Barrier height            :   1.50 m
Elevation                 :  10.40 m
Barrier receiver distance :   3.00 m
Source elevation          :   0.00 m
Receiver elevation        :  10.40 m
Barrier elevation         :  10.40 m
Reference angle           :   0.00

Results segment # 1: Kirwin
---------------------------

Source height = 1.08 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.08 !        1.50 !       -0.04 !        10.36

ROAD (0.00 + 52.31 + 0.00) = 52.31 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     42   0.00  66.17   0.00  -1.18  -1.35   0.00   0.00 -11.33  52.31
-------------------------------------------------------------------------------

Segment Leq : 52.31 dBA

Results segment # 2: Dundas WB
------------------------------

Source height = 1.33 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.33 !        1.50 !        1.16 !        11.56
```

```
ROAD (0.00 + 50.08 + 0.00) = 50.08 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -47   0.00  69.56   0.00  -7.91  -6.22   0.00   0.00  -5.36  50.08
-------------------------------------------------------------------------------

Segment Leq : 50.08 dBA

Results segment # 3: Dundas EB
------------------------------

Source height = 1.33 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.33 !        1.50 !        1.19 !        11.59

ROAD (0.00 + 49.68 + 0.00) = 49.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90    -47   0.00  69.56   0.00  -8.37  -6.22   0.00   0.00  -5.29  49.68
-------------------------------------------------------------------------------

Segment Leq : 49.68 dBA

Total Leq All Segments: 55.62 dBA

TOTAL Leq FROM ALL SOURCES:       55.62
```

APPENDIX E

SAMPLE CALCULATIONS – STATIONARY SOURCE ANALYSIS

```
STAMSON 5.04        NORMAL REPORT        Date: 19-03-2019 12:28:28
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: bb_sf_d2.te          Time Period: 1 hours
Description: Block B - South Facade - Daytime Ambient (R09)

Road data, segment # 1: Kirwin
------------------------------
Car traffic volume  :   188 veh/TimePeriod
Medium truck volume :     3 veh/TimePeriod
Heavy truck volume  :     3 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: Kirwin
----------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  16.70 m
Receiver height           :   9.00 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Dundas - WB
-----------------------------------
Car traffic volume  :   320 veh/TimePeriod
Medium truck volume :    13 veh/TimePeriod
Heavy truck volume  :    11 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: Dundas - WB
---------------------------------
Angle1   Angle2           : -90.00 deg   56.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  51.80 m
Receiver height           :   9.00 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: Dundas - EB
-----------------------------------
Car traffic volume  :   320 veh/TimePeriod
Medium truck volume :    13 veh/TimePeriod
Heavy truck volume  :    11 veh/TimePeriod
Posted speed limit  :    50 km/h
Road gradient       :     2 %
Road pavement       :     1 (Typical asphalt or concrete)
```

```
Data for Segment # 3: Dundas - EB
---------------------------------
Angle1   Angle2           : -90.00 deg   56.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      2       (Reflective ground surface)
Receiver source distance  :  62.30 m
Receiver height           :   9.00 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: Kirwin
---------------------------

Source height = 1.12 m

ROAD (0.00 + 55.32 + 0.00) = 55.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.00  58.79   0.00  -0.47  -3.01   0.00   0.00   0.00  55.32
-------------------------------------------------------------------------------

Segment Leq : 55.32 dBA

Results segment # 2: Dundas - WB
--------------------------------

Source height = 1.34 m

ROAD (0.00 + 57.18 + 0.00) = 57.18 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     56   0.00  63.47   0.00  -5.38  -0.91   0.00   0.00   0.00  57.18
-------------------------------------------------------------------------------

Segment Leq : 57.18 dBA

Results segment # 3: Dundas - EB
--------------------------------

Source height = 1.34 m

ROAD (0.00 + 56.38 + 0.00) = 56.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     56   0.00  63.47   0.00  -6.18  -0.91   0.00   0.00   0.00  56.38
-------------------------------------------------------------------------------

Segment Leq : 56.38 dBA

Total Leq All Segments: 61.13 dBA

TOTAL Leq FROM ALL SOURCES:       61.13
```

Calculation Configuration

Configuration	
Parameter	Value
General	
Country	(user defined)
Max. Error (dB)	0.00
Max. Search Radius (#(Unit,LEN))	2000.00
Min. Dist Src to Rcvr	0.00
Partition	
Raster Factor	0.50
Max. Length of Section (#(Unit,LEN))	1000.00
Min. Length of Section (#(Unit,LEN))	1.00
Min. Length of Section (%)	0.00
Proj. Line Sources	On
Proj. Area Sources	On
Ref. Time	
Reference Time Day (min)	60.00
Reference Time Night (min)	60.00
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	0.00
Night-time Penalty (dB)	0.00
DTM	
Standard Height (m)	0.00
Model of Terrain	Triangulation
Reflection	
max. Order of Reflection	2
Search Radius Src	100.00
Search Radius Rcvr	100.00
Max. Distance Source - Rcvr	1000.00 1000.00
Min. Distance Rvcr - Reflector	1.00 1.00
Min. Distance Source - Reflector	0.10
Industrial (ISO 9613)	
Lateral Diffraction	some Obj
Obst. within Area Src do not shield	On
Screening	Excl. Ground Att. over Barrier
	Dz with limit (20/25)
Barrier Coefficients C1,2,3	3.0 20.0 0.0
Temperature (#(Unit,TEMP))	10
rel. Humidity (%)	70
Ground Absorption G	0.00
Wind Speed for Dir. (#(Unit,SPEED))	3.0
Roads (RLS-90)	
Strictly acc. to RLS-90	
Railways (Schall 03 (1990))	
Strictly acc. to Schall 03 / Schall-Transrapid	
Aircraft (???)	
Strictly acc. to AzB	

Point Source Table

Name	M.	ID	Result. PWL			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Height		Coordinates		
			Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night						X	Y	Z
			(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		(m)		(m)	(m)	(m)
Air Conditioner #01		C1_AC01	75.6	75.6	75.6	Lw	Lennox_4T		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	2.90	r	611894.75	4826491.13	2.90
Air Conditioner #02		C1_AC02	75.6	75.6	75.6	Lw	Lennox_4T		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	2.90	r	611898.07	4826495.20	2.90
Air Conditioner #03		C1_AC03	75.6	75.6	75.6	Lw	Lennox_4T		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	3.20	r	611907.86	4826507.21	3.20
Air Conditioner #04		C1_AC04	75.6	75.6	75.6	Lw	Lennox_4T		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	2.70	r	611914.52	4826515.39	2.70
Air Conditioner #05		C1_AC05	75.6	75.6	75.6	Lw	Lennox_4T		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	2.90	r	611923.76	4826526.73	2.90
Rooftop Condenser Unit #01		C1_CU01	69.2	69.2	69.2	Lw	RCU01		0.0	0.0	0.0							0.0		(none)	1.20	g	611891.24	4826473.52	7.20
Rooftop Condenser Unit #02		C1_CU02	63.8	63.8	63.8	Lw	RCU02		0.0	0.0	0.0							0.0		(none)	1.20	g	611892.24	4826478.19	7.20
Rooftop Exhaust Fan #1		C1_EF01	83.7	83.7	83.7	Lw	EF		0.0	0.0	0.0							0.0		(none)	1.75	g	611889.11	4826481.02	7.75
Rooftop Exhaust Fan #2		C1_EF02	83.7	83.7	83.7	Lw	EF		0.0	0.0	0.0							0.0		(none)	1.75	g	611894.35	4826487.16	7.75
Rooftop Exhaust Fan #3		C1_EF03	83.7	83.7	83.7	Lw	EF		0.0	0.0	0.0							0.0		(none)	1.75	g	611933.76	4826533.96	7.75
NW Facade Exhaust Fan #04		C1_EF04	75.4	75.4	75.4	Lw	NW_EF04		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	2.10	r	611934.32	4826539.68	2.10
NW Facade Exhaust Fan #05		C1_EF05	78.5	78.5	78.5	Lw	NW_EF05		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	2.00	r	611937.48	4826543.57	2.00
NE Facade Exhaust Fan #06		C1_EF06	68.1	68.1	68.1	Lw	NE_EF		0.0	0.0	0.0				60.00	60.00	0.00	0.0		(none)	1.50	r	611944.00	4826541.08	1.50
Exhaust Pipe System		C1_EPS	71.6	71.6	71.6	Lw	EPS		0.0	0.0	0.0							0.0		(none)	1.60	r	611900.79	4826498.54	1.60
Rooftop HVAC Unit #01		C1_RTU01	79.7	79.7	79.7	Lw	ICP_HVAC		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	1.35	g	611887.69	4826474.56	7.35
Rooftop HVAC Unit #02		C1_RTU02	73.4	73.4	73.4	Lw	RTU02		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	0.50	g	611925.21	4826526.42	6.50
Exhaust Fan #01	~	C2_EF07	83.7	83.7	83.7	Lw	XRUB_141_7_6		0.0	0.0	0.0							0.0		(none)	1.50	g	611981.94	4826600.07	6.00
Exhaust Fan #02	~	C2_EF08	83.7	83.7	83.7	Lw	XRUB_141_7_6		0.0	0.0	0.0							0.0		(none)	1.50	g	611988.48	4826595.25	6.00
Exhaust Fan #03	~	C2_EF09	83.7	83.7	83.7	Lw	EF		0.0	0.0	0.0							0.0		(none)	1.50	g	612017.73	4826597.78	6.00
Rooftop Unit #03	~	C2_RTU03	75.6	75.6	75.6	Lw	Lennox_4T		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	1.20	g	611974.50	4826612.89	5.70
Rooftop Unit #04	~	C2_RTU04	75.6	75.6	75.6	Lw	Lennox_4T		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	1.20	g	611978.76	4826608.79	5.70
Rooftop Unit #05	~	C2_RTU05	75.6	75.6	75.6	Lw	Lennox_4T		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	1.20	g	611982.88	4826604.52	5.70
Rooftop Unit #06	~	C2_RTU06	75.6	75.6	75.6	Lw	Lennox_4T		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	1.20	g	611991.57	4826596.42	5.70
Rooftop Unit #07	~	C2_RTU07	75.6	75.6	75.6	Lw	Lennox_4T		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	1.20	g	611993.46	4826589.66	5.70
Rooftop Unit #08	~	C2_RTU08	75.6	75.6	75.6	Lw	Lennox_4T		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	1.20	g	612003.39	4826591.41	5.70
Rooftop Unit #09	~	C2_RTU09	75.6	75.6	75.6	Lw	Lennox_4T		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	1.20	g	612006.45	4826594.18	5.70
Rooftop Unit #10	~	C2_RTU10	75.6	75.6	75.6	Lw	Lennox_4T		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	1.20	g	612012.42	4826600.15	5.70
Rooftop Unit #11	~	C2_RTU11	75.6	75.6	75.6	Lw	Lennox_4T		0.0	0.0	0.0				60.00	60.00	30.00	0.0		(none)	1.20	g	612015.11	4826600.15	5.70
Rooftop Exhaust Fan #1	~	Opt1_EF01	83.7	83.7	83.7	Lw	EF		0.0	0.0	0.0							0.0		(none)	1.75	g	611889.11	4826481.02	7.75
Rooftop Exhaust Fan #2	~	Opt1_EF02	83.7	83.7	83.7	Lw	EF		0.0	0.0	0.0							0.0		(none)	1.75	g	611894.35	4826487.16	7.75
Rooftop Exhaust Fan #3	~	Opt1_EF03	78.0	78.0	78.0	Lw	EF	78.0	0.0	0.0	0.0							0.0		(none)	1.75	g	611933.76	4826533.96	7.75

Sound Level Library

Name	ID	Type	Oktave Spectrum (dB)												Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
ICP Heating/Cooling Rooftop HVAC Unit #01	ICP_HVAC	Lw			62.2	69.3	71.5	74.7	76.2	72.9	68.7	61.5	79.7	80.9	Manufacturer's Data - PGH Series
Rooftop Exhaust Fans - Delhi	EF	Lw		81.3	82.7	88.2	81.8	81.0	77.3	75.9	73.4	68.5	83.7	91.4	VCL Measurement - 2017-06-01
Rooftop Condenser Unit #01	RCU01	Lw		73.5	78.7	69.6	65.7	64.7	65.8	61.1	55.0	48.8	69.2	80.7	VCL Measurement - 2017-06-01
Rooftop Condenser Unit #02	RCU02	Lw		67.1	72.8	68.3	62.4	59.9	60.6	52.8	47.5	39.9	63.8	75.4	VCL Measurement - 2017-06-01
Rheen Rooftop HVAC Unit #02	RTU02	Lw		75.8	74.9	74.7	72.1	70.0	68.2	65.2	62.9	57.4	73.4	81.4	VCL Measurement - 2017-06-01
Northeast Building Side Exhaust Fan	NE_EF	Lw		72.0	75.5	73.2	67.9	65.1	62.9	59.4	53.4	46.5	68.1	79.3	VCL Measurement - 2017-06-01
At-Grade Exhaust Pipe System	EPS	Lw		72.2	70.0	68.9	73.3	67.8	67.5	62.4	55.6	48.3	71.6	78.4	VCL Measurement - 2017-06-01
Northwest Building Facade Exhaust Fan #04	NW_EF04	Lw		78.2	79.2	78.3	74.2	72.2	70.5	67.5	62.6	56.8	75.4	84.5	VCL Measurement - 2017-06-01
Northwest Building Facade Exhaust Fan #05	NW_EF05	Lw		76.6	81.6	81.7	81.6	76.6	72.2	66.9	59.9	55.8	78.5	87.4	VCL Measurement - 2017-06-01
Rooftop Unit - 4 ton - Lennox	Lennox_4T	Lw				79.1	74.6	73.2	71.0	66.8	61.0	54.1	75.6	81.8	Lennox manufacturer's data LGH 048
Exhaust Stack	ExF	Lw		101.9	94.2	93.0	94.2	91.8	86.9	82.5	74.9	66.3	92.8	104.0	2017-03-22 VCL measurements
Accurex XRUB-141-7-6	XRUB_141_7_6	Lw (c)		80.9	75.9	92.6	81.3	82.1	77.3	73.5	68.5	65.0	83.7	93.7	Sound Measurements - Feb 5, 2013

Receiver Table - Unmitigated - Due to 99-131 Dundas Street East

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Evening	Night	Day	Evening	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
Block A Receptor - SW Facade		R01	44	44	43	0.0	0.0	0.0		x	Total	9.00	r	611901.94	4826567.80	9.00
Block A Receptor - W Rooftop		R02	39	39	38	0.0	0.0	0.0		x	Total	1.50	g	611903.83	4826569.57	12.05
Block A Receptor - SE Facade		R03	46	46	44	0.0	0.0	0.0		x	Total	9.00	r	611905.10	4826567.71	9.00
Block A Receptor - E Rooftop		R04	37	37	35	0.0	0.0	0.0		x	Total	1.50	g	611929.43	4826596.79	12.05
Block A Receptor - SE Facade		R05	41	41	40	0.0	0.0	0.0		x	Total	9.00	r	611932.04	4826596.37	9.00
Block A Receptor - NE Facade		R06	26	26	24	0.0	0.0	0.0		x	Total	9.00	r	611931.06	4826598.22	9.00
Block B Receptor - NE Rooftop		R07	34	34	33	0.0	0.0	0.0		x	Total	1.50	g	611945.24	4826583.92	12.05
Block B Receptor - NE Facade		R08	33	33	31	0.0	0.0	0.0		x	Total	9.00	r	611953.33	4826578.96	9.00
Block B Receptor - SE Facade		R09	46	46	44	0.0	0.0	0.0		x	Total	9.00	r	611950.72	4826574.90	9.00
Block B Receptor - SE Facade		R10	50	50	48	0.0	0.0	0.0		x	Total	9.00	r	611938.90	4826562.34	9.00
Block B Receptor - SW Facade		R11	51	51	48	0.0	0.0	0.0		x	Total	9.00	r	611936.57	4826561.62	9.00
Block B Receptor - NW Rooftop		R12	38	38	36	0.0	0.0	0.0		x	Total	1.50	g	611932.24	4826569.87	12.05
Block C Receptor - NE Facade		R13	48	48	46	0.0	0.0	0.0		x	Total	9.00	r	611907.30	4826550.54	9.00
Block C Receptor - SE Rooftop		R14	39	39	38	0.0	0.0	0.0		x	Total	1.50	g	611904.79	4826548.62	12.05
Block C Receptor - SW Facade		R15	46	46	45	0.0	0.0	0.0		x	Total	9.00	r	611896.08	4826536.52	9.00
Block C Receptor - SW Rooftop		R16	40	40	40	0.0	0.0	0.0		x	Total	1.50	g	611897.65	4826540.07	12.05
Outdoor Amenity Space		R17	52	52	50	0.0	0.0	0.0		x	Total	1.50	r	611905.79	4826537.12	1.50

Receiver Table - Unmitigated - Due to 169 Dundas Street East

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Evening	Night	Day	Evening	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
Block A Receptor - SW Facade		R01	30	30	28	0.0	0.0	0.0		x	Total	9.00	r	611901.94	4826567.80	9.00
Block A Receptor - W Rooftop		R02	35	35	34	0.0	0.0	0.0		x	Total	1.50	g	611903.83	4826569.57	12.05
Block A Receptor - SE Facade		R03	39	39	37	0.0	0.0	0.0		x	Total	9.00	r	611905.10	4826567.71	9.00
Block A Receptor - E Rooftop		R04	39	39	38	0.0	0.0	0.0		x	Total	1.50	g	611929.43	4826596.79	12.05
Block A Receptor - SE Facade		R05	46	46	45	0.0	0.0	0.0		x	Total	9.00	r	611932.04	4826596.37	9.00
Block A Receptor - NE Facade		R06	46	46	45	0.0	0.0	0.0		x	Total	9.00	r	611931.06	4826598.22	9.00
Block B Receptor - NE Rooftop		R07	40	40	39	0.0	0.0	0.0		x	Total	1.50	g	611945.24	4826583.92	12.05
Block B Receptor - NE Facade		R08	49	49	48	0.0	0.0	0.0		x	Total	9.00	r	611953.33	4826578.96	9.00
Block B Receptor - SE Facade		R09	48	48	47	0.0	0.0	0.0		x	Total	9.00	r	611950.72	4826574.90	9.00
Block B Receptor - SE Facade		R10	45	45	45	0.0	0.0	0.0		x	Total	9.00	r	611938.90	4826562.34	9.00
Block B Receptor - SW Facade		R11	34	34	34	0.0	0.0	0.0		x	Total	9.00	r	611936.57	4826561.62	9.00
Block B Receptor - NW Rooftop		R12	36	36	35	0.0	0.0	0.0		x	Total	1.50	g	611932.24	4826569.87	12.05
Block C Receptor - NE Facade		R13	37	37	36	0.0	0.0	0.0		x	Total	9.00	r	611907.30	4826550.54	9.00
Block C Receptor - SE Rooftop		R14	35	35	34	0.0	0.0	0.0		x	Total	1.50	g	611904.79	4826548.62	12.05
Block C Receptor - SW Facade		R15	23	23	22	0.0	0.0	0.0		x	Total	9.00	r	611896.08	4826536.52	9.00
Block C Receptor - SW Rooftop		R16	23	23	23	0.0	0.0	0.0		x	Total	1.50	g	611897.65	4826540.07	12.05
Outdoor Amenity Space		R17	39	39	38	0.0	0.0	0.0		x	Total	1.50	r	611905.79	4826537.12	1.50

Receiver Table - Mitigated - Due to 99-131 Dundas Street East

Name	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
			Day	Evening	Night	Day	Evening	Night	Type	Auto	Noise Type			X	Y	Z
			(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
Block A Receptor - SW Facade		R01	42	42	39	0.0	0.0	0.0		x	Total	9.00	r	611901.94	4826567.80	9.00
Block A Receptor - W Rooftop		R02	37	37	33	0.0	0.0	0.0		x	Total	1.50	g	611903.83	4826569.57	12.05
Block A Receptor - SE Facade		R03	44	44	40	0.0	0.0	0.0		x	Total	9.00	r	611905.10	4826567.71	9.00
Block A Receptor - E Rooftop		R04	36	36	34	0.0	0.0	0.0		x	Total	1.50	g	611929.43	4826596.79	12.05
Block A Receptor - SE Facade		R05	41	41	39	0.0	0.0	0.0		x	Total	9.00	r	611932.04	4826596.37	9.00
Block A Receptor - NE Facade		R06	25	25	23	0.0	0.0	0.0		x	Total	9.00	r	611931.06	4826598.22	9.00
Block B Receptor - NE Rooftop		R07	32	32	30	0.0	0.0	0.0		x	Total	1.50	g	611945.24	4826583.92	12.05
Block B Receptor - NE Facade		R08	31	31	28	0.0	0.0	0.0		x	Total	9.00	r	611953.33	4826578.96	9.00
Block B Receptor - SE Facade		R09	45	45	41	0.0	0.0	0.0		x	Total	9.00	r	611950.72	4826574.90	9.00
Block B Receptor - SE Facade		R10	48	48	44	0.0	0.0	0.0		x	Total	9.00	r	611938.90	4826562.34	9.00
Block B Receptor - SW Facade		R11	49	49	45	0.0	0.0	0.0		x	Total	9.00	r	611936.57	4826561.62	9.00
Block B Receptor - NW Rooftop		R12	36	36	34	0.0	0.0	0.0		x	Total	1.50	g	611932.24	4826569.87	12.05
Block C Receptor - NE Facade		R13	45	45	42	0.0	0.0	0.0		x	Total	9.00	r	611907.30	4826550.54	9.00
Block C Receptor - SE Rooftop		R14	38	38	35	0.0	0.0	0.0		x	Total	1.50	g	611904.79	4826548.62	12.05
Block C Receptor - SW Facade		R15	46	46	45	0.0	0.0	0.0		x	Total	9.00	r	611896.08	4826536.52	9.00
Block C Receptor - SW Rooftop		R16	39	39	39	0.0	0.0	0.0		x	Total	1.50	g	611897.65	4826540.07	12.05
Outdoor Amenity Space		R17	49	49	48	0.0	0.0	0.0		x	Total	1.50	r	611905.79	4826537.12	1.50

Receiver
Name: Block B Receptor - SW Facade - Mitigated
ID: R11
X: 611936.57 m
Y: 4826561.62 m
Z: 9.00 m

Point Source, ISO 9613, Name: "Rooftop Exhaust Fan #3", ID: "Opt1_EF03"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
750	611933.76	4826533.96	7.75	0	DEN	A	78.0	0.0	0.0	0.0	0.0	39.9	0.3	-3.0	0.0	0.0	0.0	0.0	0.0	40.9
754	611933.76	4826533.96	7.75	1	DEN	A	78.0	0.0	0.0	0.0	0.0	49.3	0.6	-2.9	0.0	0.0	16.3	0.0	2.1	12.7
757	611933.76	4826533.96	7.75	1	DEN	A	78.0	0.0	0.0	0.0	0.0	48.4	0.6	-2.9	0.0	0.0	0.0	0.0	2.0	29.9
761	611933.76	4826533.96	7.75	1	DEN	A	78.0	0.0	0.0	0.0	0.0	48.5	0.6	-2.9	0.0	0.0	11.5	0.0	2.0	18.2

Point Source, ISO 9613, Name: "NW Facade Exhaust Fan #05", ID: "C1_EF05"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
764	611937.48	4826543.57	2.00	0	D	A	78.5	0.0	0.0	0.0	0.0	36.7	0.1	-3.0	0.0	0.0	0.0	0.0	0.0	44.7
764	611937.48	4826543.57	2.00	0	N	A	78.5	0.0	-188.0	0.0	0.0	36.7	0.1	-3.0	0.0	0.0	0.0	0.0	0.0	-143.3
764	611937.48	4826543.57	2.00	0	E	A	78.5	0.0	0.0	0.0	0.0	36.7	0.1	-3.0	0.0	0.0	0.0	0.0	0.0	44.7
768	611937.48	4826543.57	2.00	1	D	A	78.5	0.0	0.0	0.0	0.0	48.7	0.3	-3.0	0.0	0.0	19.1	0.0	2.1	11.3
768	611937.48	4826543.57	2.00	1	N	A	78.5	0.0	-188.0	0.0	0.0	48.7	0.3	-3.0	0.0	0.0	19.1	0.0	2.1	-176.7
768	611937.48	4826543.57	2.00	1	E	A	78.5	0.0	0.0	0.0	0.0	48.7	0.3	-3.0	0.0	0.0	19.1	0.0	2.1	11.3
771	611937.48	4826543.57	2.00	2	D	A	78.5	0.0	0.0	0.0	0.0	49.8	0.3	-2.8	0.0	0.0	17.6	0.0	4.1	9.5
771	611937.48	4826543.57	2.00	2	N	A	78.5	0.0	-188.0	0.0	0.0	49.8	0.3	-2.8	0.0	0.0	17.6	0.0	4.1	-178.5
771	611937.48	4826543.57	2.00	2	E	A	78.5	0.0	0.0	0.0	0.0	49.8	0.3	-2.8	0.0	0.0	17.6	0.0	4.1	9.5
773	611937.48	4826543.57	2.00	2	D	A	78.5	0.0	0.0	0.0	0.0	49.9	0.3	-2.8	0.0	0.0	20.7	0.0	4.2	6.2
773	611937.48	4826543.57	2.00	2	N	A	78.5	0.0	-188.0	0.0	0.0	49.9	0.3	-2.8	0.0	0.0	20.7	0.0	4.2	-181.8
773	611937.48	4826543.57	2.00	2	E	A	78.5	0.0	0.0	0.0	0.0	49.9	0.3	-2.8	0.0	0.0	20.7	0.0	4.2	6.2
776	611937.48	4826543.57	2.00	1	D	A	78.5	0.0	0.0	0.0	0.0	47.8	0.2	-3.0	0.0	0.0	0.0	0.0	2.0	31.5
776	611937.48	4826543.57	2.00	1	N	A	78.5	0.0	-188.0	0.0	0.0	47.8	0.2	-3.0	0.0	0.0	0.0	0.0	2.0	-156.5
776	611937.48	4826543.57	2.00	1	E	A	78.5	0.0	0.0	0.0	0.0	47.8	0.2	-3.0	0.0	0.0	0.0	0.0	2.0	31.5
778	611937.48	4826543.57	2.00	2	D	A	78.5	0.0	0.0	0.0	0.0	49.1	0.3	-2.8	0.0	0.0	0.0	0.0	4.0	27.9
778	611937.48	4826543.57	2.00	2	N	A	78.5	0.0	-188.0	0.0	0.0	49.1	0.3	-2.8	0.0	0.0	0.0	0.0	4.0	-160.1
778	611937.48	4826543.57	2.00	2	E	A	78.5	0.0	0.0	0.0	0.0	49.1	0.3	-2.8	0.0	0.0	0.0	0.0	4.0	27.9
780	611937.48	4826543.57	2.00	2	D	A	78.5	0.0	0.0	0.0	0.0	49.2	0.3	-2.8	0.0	0.0	17.0	0.0	4.1	10.8
780	611937.48	4826543.57	2.00	2	N	A	78.5	0.0	-188.0	0.0	0.0	49.2	0.3	-2.8	0.0	0.0	17.0	0.0	4.1	-177.2
780	611937.48	4826543.57	2.00	2	E	A	78.5	0.0	0.0	0.0	0.0	49.2	0.3	-2.8	0.0	0.0	17.0	0.0	4.1	10.8
783	611937.48	4826543.57	2.00	1	D	A	78.5	0.0	0.0	0.0	0.0	47.9	0.2	-3.0	0.0	0.0	15.1	0.0	2.1	16.2
783	611937.48	4826543.57	2.00	1	N	A	78.5	0.0	-188.0	0.0	0.0	47.9	0.2	-3.0	0.0	0.0	15.1	0.0	2.1	-171.8
783	611937.48	4826543.57	2.00	1	E	A	78.5	0.0	0.0	0.0	0.0	47.9	0.2	-3.0	0.0	0.0	15.1	0.0	2.1	16.2
785	611937.48	4826543.57	2.00	2	D	A	78.5	0.0	0.0	0.0	0.0	49.2	0.3	-2.8	0.0	0.0	14.3	0.0	4.1	13.4
785	611937.48	4826543.57	2.00	2	N	A	78.5	0.0	-188.0	0.0	0.0	49.2	0.3	-2.8	0.0	0.0	14.3	0.0	4.1	-174.6
785	611937.48	4826543.57	2.00	2	E	A	78.5	0.0	0.0	0.0	0.0	49.2	0.3	-2.8	0.0	0.0	14.3	0.0	4.1	13.4
787	611937.48	4826543.57	2.00	2	D	A	78.5	0.0	0.0	0.0	0.0	49.3	0.3	-2.8	0.0	0.0	20.2	0.0	4.2	7.4
787	611937.48	4826543.57	2.00	2	N	A	78.5	0.0	-188.0	0.0	0.0	49.3	0.3	-2.8	0.0	0.0	20.2	0.0	4.2	-180.6

Point Source, ISO 9613, Name: "NW Facade Exhaust Fan #05", ID: "C1_EF05"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
787	611937.48	4826543.57	2.00	2	E	A	78.5	0.0	0.0	0.0	0.0	49.3	0.3	-2.8	0.0	0.0	20.2	0.0	4.2	7.4

Point Source, ISO 9613, Name: "Rooftop Exhaust Fan #2", ID: "Opt1_EF02"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
791	611894.35	4826487.16	7.75	0	DEN	A	83.7	0.0	0.0	0.0	0.0	49.7	0.7	-3.0	0.0	0.0	0.0	0.0	0.0	36.4

Point Source, ISO 9613, Name: "NW Facade Exhaust Fan #04", ID: "C1_EF04"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
799	611934.32	4826539.68	2.10	0	D	A	75.4	0.0	0.0	0.0	0.0	38.3	0.2	-3.0	0.0	0.0	0.0	0.0	0.0	40.0
799	611934.32	4826539.68	2.10	0	N	A	75.4	0.0	-188.0	0.0	0.0	38.3	0.2	-3.0	0.0	0.0	0.0	0.0	0.0	-148.0
799	611934.32	4826539.68	2.10	0	E	A	75.4	0.0	0.0	0.0	0.0	38.3	0.2	-3.0	0.0	0.0	0.0	0.0	0.0	40.0
803	611934.32	4826539.68	2.10	1	D	A	75.4	0.0	0.0	0.0	0.0	48.8	0.5	-2.9	0.0	0.0	20.4	0.0	2.3	6.4
803	611934.32	4826539.68	2.10	1	N	A	75.4	0.0	-188.0	0.0	0.0	48.8	0.5	-2.9	0.0	0.0	20.4	0.0	2.3	-181.6
803	611934.32	4826539.68	2.10	1	E	A	75.4	0.0	0.0	0.0	0.0	48.8	0.5	-2.9	0.0	0.0	20.4	0.0	2.3	6.4
808	611934.32	4826539.68	2.10	1	D	A	75.4	0.0	0.0	0.0	0.0	47.9	0.4	-2.9	0.0	0.0	0.0	0.0	2.0	27.9
808	611934.32	4826539.68	2.10	1	N	A	75.4	0.0	-188.0	0.0	0.0	47.9	0.4	-2.9	0.0	0.0	0.0	0.0	2.0	-160.1
808	611934.32	4826539.68	2.10	1	E	A	75.4	0.0	0.0	0.0	0.0	47.9	0.4	-2.9	0.0	0.0	0.0	0.0	2.0	27.9
824	611934.32	4826539.68	2.10	1	D	A	75.4	0.0	0.0	0.0	0.0	48.0	0.4	-2.9	0.0	0.0	16.2	0.0	2.1	11.4
824	611934.32	4826539.68	2.10	1	N	A	75.4	0.0	-188.0	0.0	0.0	48.0	0.4	-2.9	0.0	0.0	16.2	0.0	2.1	-176.6
824	611934.32	4826539.68	2.10	1	E	A	75.4	0.0	0.0	0.0	0.0	48.0	0.4	-2.9	0.0	0.0	16.2	0.0	2.1	11.4

Point Source, ISO 9613, Name: "Rooftop Exhaust Fan #1", ID: "Opt1_EF01"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
826	611889.11	4826481.02	7.75	0	DEN	A	83.7	0.0	0.0	0.0	0.0	50.4	0.7	-3.0	0.0	0.0	0.0	0.0	0.0	35.6

Point Source, ISO 9613, Name: "Air Conditioner #05", ID: "C1_AC05"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
832	611923.76	4826526.73	2.90	0	D	A	75.6	0.0	0.0	0.0	0.0	42.5	0.2	-3.0	0.0	0.0	0.0	0.0	0.0	35.9
832	611923.76	4826526.73	2.90	0	N	A	75.6	0.0	-3.0	0.0	0.0	42.5	0.2	-3.0	0.0	0.0	0.0	0.0	0.0	32.9
832	611923.76	4826526.73	2.90	0	E	A	75.6	0.0	0.0	0.0	0.0	42.5	0.2	-3.0	0.0	0.0	0.0	0.0	0.0	35.9
834	611923.76	4826526.73	2.90	1	D	A	75.6	0.0	0.0	0.0	0.0	49.5	0.4	-2.9	0.0	0.0	19.6	0.0	2.0	7.1
834	611923.76	4826526.73	2.90	1	N	A	75.6	0.0	-3.0	0.0	0.0	49.5	0.4	-2.9	0.0	0.0	19.6	0.0	2.0	4.1
834	611923.76	4826526.73	2.90	1	E	A	75.6	0.0	0.0	0.0	0.0	49.5	0.4	-2.9	0.0	0.0	19.6	0.0	2.0	7.1
836	611923.76	4826526.73	2.90	1	D	A	75.6	0.0	0.0	0.0	0.0	48.7	0.4	-2.9	0.0	0.0	0.0	0.0	2.0	27.4
836	611923.76	4826526.73	2.90	1	N	A	75.6	0.0	-3.0	0.0	0.0	48.7	0.4	-2.9	0.0	0.0	0.0	0.0	2.0	24.4
836	611923.76	4826526.73	2.90	1	E	A	75.6	0.0	0.0	0.0	0.0	48.7	0.4	-2.9	0.0	0.0	0.0	0.0	2.0	27.4
838	611923.76	4826526.73	2.90	1	D	A	75.6	0.0	0.0	0.0	0.0	48.8	0.4	-2.9	0.0	0.0	15.1	0.0	2.0	12.2
838	611923.76	4826526.73	2.90	1	N	A	75.6	0.0	-3.0	0.0	0.0	48.8	0.4	-2.9	0.0	0.0	15.1	0.0	2.0	9.2
838	611923.76	4826526.73	2.90	1	E	A	75.6	0.0	0.0	0.0	0.0	48.8	0.4	-2.9	0.0	0.0	15.1	0.0	2.0	12.2
840	611923.76	4826526.73	2.90	1	D	A	75.6	0.0	0.0	0.0	0.0	58.5	1.0	-3.0	0.0	0.0	0.0	0.0	5.1	14.0
840	611923.76	4826526.73	2.90	1	N	A	75.6	0.0	-3.0	0.0	0.0	58.5	1.0	-3.0	0.0	0.0	0.0	0.0	5.1	11.0
840	611923.76	4826526.73	2.90	1	E	A	75.6	0.0	0.0	0.0	0.0	58.5	1.0	-3.0	0.0	0.0	0.0	0.0	5.1	14.0

Point Source, ISO 9613, Name: "Rooftop HVAC Unit #02", ID: "C1_RTU02"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
842	611925.21	4826526.42	6.50	0	D	A	73.4	0.0	0.0	0.0	0.0	42.4	0.3	-3.0	0.0	0.0	0.0	0.0	0.0	33.7
842	611925.21	4826526.42	6.50	0	N	A	73.4	0.0	-3.0	0.0	0.0	42.4	0.3	-3.0	0.0	0.0	0.0	0.0	0.0	30.7
842	611925.21	4826526.42	6.50	0	E	A	73.4	0.0	0.0	0.0	0.0	42.4	0.3	-3.0	0.0	0.0	0.0	0.0	0.0	33.7
844	611925.21	4826526.42	6.50	1	D	A	73.4	0.0	0.0	0.0	0.0	49.6	0.6	-2.9	0.0	0.0	17.7	0.0	2.1	6.3
844	611925.21	4826526.42	6.50	1	N	A	73.4	0.0	-3.0	0.0	0.0	49.6	0.6	-2.9	0.0	0.0	17.7	0.0	2.1	3.3
844	611925.21	4826526.42	6.50	1	E	A	73.4	0.0	0.0	0.0	0.0	49.6	0.6	-2.9	0.0	0.0	17.7	0.0	2.1	6.3
846	611925.21	4826526.42	6.50	1	D	A	73.4	0.0	0.0	0.0	0.0	48.8	0.6	-2.9	0.0	0.0	0.0	0.0	2.0	24.8
846	611925.21	4826526.42	6.50	1	N	A	73.4	0.0	-3.0	0.0	0.0	48.8	0.6	-2.9	0.0	0.0	0.0	0.0	2.0	21.8
846	611925.21	4826526.42	6.50	1	E	A	73.4	0.0	0.0	0.0	0.0	48.8	0.6	-2.9	0.0	0.0	0.0	0.0	2.0	24.8
847	611925.21	4826526.42	6.50	1	D	A	73.4	0.0	0.0	0.0	0.0	48.9	0.6	-2.9	0.0	0.0	12.7	0.0	2.1	12.0
847	611925.21	4826526.42	6.50	1	N	A	73.4	0.0	-3.0	0.0	0.0	48.9	0.6	-2.9	0.0	0.0	12.7	0.0	2.1	9.0
847	611925.21	4826526.42	6.50	1	E	A	73.4	0.0	0.0	0.0	0.0	48.9	0.6	-2.9	0.0	0.0	12.7	0.0	2.1	12.0

Point Source, ISO 9613, Name: "Air Conditioner #04", ID: "C1_AC04"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
850	611914.52	4826515.39	2.70	0	D	A	75.6	0.0	0.0	0.0	0.0	45.3	0.3	-3.0	0.0	0.0	0.0	0.0	0.0	33.1
850	611914.52	4826515.39	2.70	0	N	A	75.6	0.0	-3.0	0.0	0.0	45.3	0.3	-3.0	0.0	0.0	0.0	0.0	0.0	30.1
850	611914.52	4826515.39	2.70	0	E	A	75.6	0.0	0.0	0.0	0.0	45.3	0.3	-3.0	0.0	0.0	0.0	0.0	0.0	33.1
854	611914.52	4826515.39	2.70	1	D	A	75.6	0.0	0.0	0.0	0.0	58.0	1.0	-3.0	0.0	0.0	0.0	0.0	5.1	14.6
854	611914.52	4826515.39	2.70	1	N	A	75.6	0.0	-3.0	0.0	0.0	58.0	1.0	-3.0	0.0	0.0	0.0	0.0	5.1	11.6
854	611914.52	4826515.39	2.70	1	E	A	75.6	0.0	0.0	0.0	0.0	58.0	1.0	-3.0	0.0	0.0	0.0	0.0	5.1	14.6

Point Source, ISO 9613, Name: "Air Conditioner #03", ID: "C1_AC03"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
855	611907.86	4826507.21	3.20	0	D	A	75.6	0.0	0.0	0.0	0.0	46.8	0.3	-3.0	0.0	0.0	0.0	0.0	0.0	31.5
855	611907.86	4826507.21	3.20	0	N	A	75.6	0.0	-3.0	0.0	0.0	46.8	0.3	-3.0	0.0	0.0	0.0	0.0	0.0	28.5
855	611907.86	4826507.21	3.20	0	E	A	75.6	0.0	0.0	0.0	0.0	46.8	0.3	-3.0	0.0	0.0	0.0	0.0	0.0	31.5
859	611907.86	4826507.21	3.20	1	D	A	75.6	0.0	0.0	0.0	0.0	57.6	0.9	-3.0	0.0	0.0	0.0	0.0	5.0	15.1
859	611907.86	4826507.21	3.20	1	N	A	75.6	0.0	-3.0	0.0	0.0	57.6	0.9	-3.0	0.0	0.0	0.0	0.0	5.0	12.1
859	611907.86	4826507.21	3.20	1	E	A	75.6	0.0	0.0	0.0	0.0	57.6	0.9	-3.0	0.0	0.0	0.0	0.0	5.0	15.1

Point Source, ISO 9613, Name: "Rooftop HVAC Unit #01", ID: "C1_RTU01"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
860	611887.69	4826474.56	7.35	0	D	A	79.7	0.0	0.0	0.0	0.0	51.0	0.8	-3.0	0.0	0.0	0.0	0.0	0.0	31.0
860	611887.69	4826474.56	7.35	0	N	A	79.7	0.0	-3.0	0.0	0.0	51.0	0.8	-3.0	0.0	0.0	0.0	0.0	0.0	28.0
860	611887.69	4826474.56	7.35	0	E	A	79.7	0.0	0.0	0.0	0.0	51.0	0.8	-3.0	0.0	0.0	0.0	0.0	0.0	31.0

Point Source, ISO 9613, Name: "NE Facade Exhaust Fan #06", ID: "C1_EF06"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
864	611944.00	4826541.08	1.50	0	D	A	68.1	0.0	0.0	0.0	0.0	38.3	0.1	-3.0	0.0	0.0	0.0	0.0	0.0	32.7
864	611944.00	4826541.08	1.50	0	N	A	68.1	0.0	-188.0	0.0	0.0	38.3	0.1	-3.0	0.0	0.0	0.0	0.0	0.0	-155.3
864	611944.00	4826541.08	1.50	0	E	A	68.1	0.0	0.0	0.0	0.0	38.3	0.1	-3.0	0.0	0.0	0.0	0.0	0.0	32.7
867	611944.00	4826541.08	1.50	1	D	A	68.1	0.0	0.0	0.0	0.0	49.3	0.4	-3.0	0.0	0.0	19.2	0.0	2.4	-0.3
867	611944.00	4826541.08	1.50	1	N	A	68.1	0.0	-188.0	0.0	0.0	49.3	0.4	-3.0	0.0	0.0	19.2	0.0	2.4	-188.3

Point Source, ISO 9613, Name: "NE Facade Exhaust Fan #06", ID: "C1_EF06"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
867	611944.00	4826541.08	1.50	1	E	A	68.1	0.0	0.0	0.0	0.0	49.3	0.4	-3.0	0.0	0.0	19.2	0.0	2.4	-0.3
869	611944.00	4826541.08	1.50	2	D	A	68.1	0.0	0.0	0.0	0.0	50.5	0.4	-2.8	0.0	0.0	26.3	0.0	5.5	-11.9
869	611944.00	4826541.08	1.50	2	N	A	68.1	0.0	-188.0	0.0	0.0	50.5	0.4	-2.8	0.0	0.0	26.3	0.0	5.5	-199.9
869	611944.00	4826541.08	1.50	2	E	A	68.1	0.0	0.0	0.0	0.0	50.5	0.4	-2.8	0.0	0.0	26.3	0.0	5.5	-11.9
871	611944.00	4826541.08	1.50	2	D	A	68.1	0.0	0.0	0.0	0.0	50.5	0.4	-2.8	0.0	0.0	26.3	0.0	4.4	-10.8
871	611944.00	4826541.08	1.50	2	N	A	68.1	0.0	-188.0	0.0	0.0	50.5	0.4	-2.8	0.0	0.0	26.3	0.0	4.4	-198.8
871	611944.00	4826541.08	1.50	2	E	A	68.1	0.0	0.0	0.0	0.0	50.5	0.4	-2.8	0.0	0.0	26.3	0.0	4.4	-10.8
872	611944.00	4826541.08	1.50	1	D	A	68.1	0.0	0.0	0.0	0.0	48.5	0.4	-3.0	0.0	0.0	0.0	0.0	2.1	20.2
872	611944.00	4826541.08	1.50	1	N	A	68.1	0.0	-188.0	0.0	0.0	48.5	0.4	-3.0	0.0	0.0	0.0	0.0	2.1	-167.8
872	611944.00	4826541.08	1.50	1	E	A	68.1	0.0	0.0	0.0	0.0	48.5	0.4	-3.0	0.0	0.0	0.0	0.0	2.1	20.2
874	611944.00	4826541.08	1.50	1	D	A	68.1	0.0	0.0	0.0	0.0	48.6	0.4	-3.0	0.0	0.0	15.4	0.0	2.3	4.4
874	611944.00	4826541.08	1.50	1	N	A	68.1	0.0	-188.0	0.0	0.0	48.6	0.4	-3.0	0.0	0.0	15.4	0.0	2.3	-183.6
874	611944.00	4826541.08	1.50	1	E	A	68.1	0.0	0.0	0.0	0.0	48.6	0.4	-3.0	0.0	0.0	15.4	0.0	2.3	4.4

Point Source, ISO 9613, Name: "Air Conditioner #02", ID: "C1_AC02"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
876	611898.07	4826495.20	2.90	0	D	A	75.6	0.0	0.0	0.0	0.0	48.7	0.4	-3.0	0.0	0.0	0.0	0.0	0.0	29.5
876	611898.07	4826495.20	2.90	0	N	A	75.6	0.0	-3.0	0.0	0.0	48.7	0.4	-3.0	0.0	0.0	0.0	0.0	0.0	26.5
876	611898.07	4826495.20	2.90	0	E	A	75.6	0.0	0.0	0.0	0.0	48.7	0.4	-3.0	0.0	0.0	0.0	0.0	0.0	29.5
880	611898.07	4826495.20	2.90	1	D	A	75.6	0.0	0.0	0.0	0.0	56.2	0.8	-3.0	0.0	0.0	0.0	0.0	5.0	16.6
880	611898.07	4826495.20	2.90	1	N	A	75.6	0.0	-3.0	0.0	0.0	56.2	0.8	-3.0	0.0	0.0	0.0	0.0	5.0	13.6
880	611898.07	4826495.20	2.90	1	E	A	75.6	0.0	0.0	0.0	0.0	56.2	0.8	-3.0	0.0	0.0	0.0	0.0	5.0	16.6

Point Source, ISO 9613, Name: "Air Conditioner #01", ID: "C1_AC01"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
881	611894.75	4826491.13	2.90	0	D	A	75.6	0.0	0.0	0.0	0.0	49.3	0.4	-3.0	0.0	0.0	0.0	0.0	0.0	28.9
881	611894.75	4826491.13	2.90	0	N	A	75.6	0.0	-3.0	0.0	0.0	49.3	0.4	-3.0	0.0	0.0	0.0	0.0	0.0	25.9
881	611894.75	4826491.13	2.90	0	E	A	75.6	0.0	0.0	0.0	0.0	49.3	0.4	-3.0	0.0	0.0	0.0	0.0	0.0	28.9
885	611894.75	4826491.13	2.90	1	D	A	75.6	0.0	0.0	0.0	0.0	56.0	0.8	-3.0	0.0	0.0	0.0	0.0	2.9	18.9
885	611894.75	4826491.13	2.90	1	N	A	75.6	0.0	-3.0	0.0	0.0	56.0	0.8	-3.0	0.0	0.0	0.0	0.0	2.9	15.9
885	611894.75	4826491.13	2.90	1	E	A	75.6	0.0	0.0	0.0	0.0	56.0	0.8	-3.0	0.0	0.0	0.0	0.0	2.9	18.9

Point Source, ISO 9613, Name: "Exhaust Pipe System", ID: "C1_EPS"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
887	611900.79	4826498.54	1.60	0	DEN	A	71.6	0.0	0.0	0.0	0.0	48.3	0.3	-3.0	0.0	0.0	0.0	0.0	0.0	26.0
891	611900.79	4826498.54	1.60	1	DEN	A	71.6	0.0	0.0	0.0	0.0	56.4	0.8	-3.0	0.0	0.0	0.0	0.0	10.7	6.6
893	611900.79	4826498.54	1.60	1	DEN	A	71.6	0.0	0.0	0.0	0.0	57.1	0.8	-3.0	0.0	0.0	7.8	0.0	4.8	4.1

Point Source, ISO 9613, Name: "Rooftop Condenser Unit #01", ID: "C1_CU01"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
895	611891.24	4826473.52	7.20	0	DEN	A	69.2	0.0	0.0	0.0	0.0	50.9	0.5	-3.0	0.0	0.0	0.0	0.0	0.0	20.7

Point Source, ISO 9613, Name: "Rooftop Condenser Unit #02", ID: "C1_CU02"																				
Nr.	X	Y	Z	Refl.	DEN	Freq.	Lw	l/a	Optime	K0	Di	Adiv	Aatm	Agr	Afol	Ahous	Abar	Cmet	RL	Lr
	(m)	(m)	(m)			(Hz)	dB(A)	dB	dB	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	(dB)	dB(A)
898	611892.24	4826478.19	7.20	0	DEN	A	63.8	0.0	0.0	0.0	0.0	50.5	0.4	-3.0	0.0	0.0	0.0	0.0	0.0	15.9