Environmental Noise Feasibility Study

Argo Macville and Humberking

Proposed Residential Subdivision

Town of Caledon

June 23, 2023
Project: 121-0094

Prepared for

**Argo Macville I Corporation,
Argo Macville II Corporation, Robert Speirs,
Argo Macville V Corporation and
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2.0	December 13, 2021	Revised report issued to client for ROPA 30
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5.0	June 23, 2023	Revised based on changes to Draft Plan

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EXECUTIVE SUMMARY

Valcoustics Canada Ltd. (VCL) prepared an Environmental Noise Feasibility Study, dated February 8, 2022, in support of the proposed residential development. This updated report has been prepared in support of a Draft Plan of Subdivision ('DPS') and Zoning By-law Amendment ('ZBA' or 'Amendment') resubmission.

Since the preparation of our February 8, 2022 report, the site has increased in size extending southward to King Street bringing the proposed development closer to existing stationary noise sources to the south of King Street and to the west of Humber Station Road.

The proposed development will consist of 580 lots for detached dwellings, 16 blocks for standard townhouses, 72 blocks for back-to-back townhouses, 156 blocks for rear lane townhouses, 5 blocks for dual-frontage townhouses, 16 blocks for medium density residential, 5 blocks for mixed use development, 15 blocks for parks and 3 blocks for elementary schools. There will also be several residential reserve part blocks that will be combined with the adjacent development proposals to create full blocks.

The noise sources assessed in this study are road traffic, rail traffic and stationary noise sources in the area. The site lies outside airport noise influence areas (i.e., areas at NEF/NEP 25 or higher). Thus, aircraft noise was not considered further in this study.

The sound levels on site have been determined and compared with the applicable Ministry of the Environment, Conservation and Parks (MECP), Region of Peel and Town of Caledon noise guideline limits to determine the need for noise mitigation.

To meet the transportation noise guideline limits:

- Mandatory air conditioning is required for the dwellings on Lots 175 to 202, 553 and 554 and the dwellings on Blocks 643 to 645, 650 to 652, 804, 814, 824 to 829 and 886.
- The provision for adding air conditioning is required at dwellings throughout the development. The dwellings requiring the provision for adding air conditioning are shown on Figures 3B to 3D and are listed in Table 6.

- Upgraded exterior wall construction meeting Sound Transmission Class (STC) 54 and upgraded windows with ratings up to STC 29 are recommended for Lots 175 to 202, Blocks 643 to 645 and 650 to 652.
- For all other dwellings, exterior wall construction meeting STC 37 and exterior windows with ratings up to STC 28 are expected to be sufficient to meet the indoor noise criteria.
- The STC requirements were calculated using assumed (typical) room dimensions and wall and window areas. Exterior wall and window STC requirements should be checked once detailed building plans are available.
- The minimum sound barrier height requirements are:
  - 2.3 m for the dwellings on Lots 553 and 554.
  - 1.8 m for the dwellings on Lots 571 and 572.
  - 1.8 m for dwellings that side towards Streets “A”, “I” and “JJ”.

  See Figures 3A to 3D for the locations of the sound barriers.
- Plans are not yet available for the proposed medium density and mixed-use blocks within the development. These blocks must be designed to comply with the MECP transportation and stationary noise source guideline limits. Detailed noise studies of these blocks should be done as a condition of their site plan approval.

To meet the stationary source sound level limits, the intent is to have a portion of the site deemed Class 4 by the Municipality. The dwellings in this portion of the site will need a special warning clause and will need to be provided with air conditioning.

1.0 INTRODUCTION

Valcoustics Canada Ltd. (VCL) has been retained by Argo Macville I Corporation, Argo Macville II Corporation, Robert Speirs, Argo Macville V Corporation and Argo Humberking Corporation (herein referred to as the ‘Owners’) to continue to advance the applications for Draft Plan of Subdivision (21T-22001) and for Amendment to the Zoning By-Law (RZ 2022-0002) which were originally submitted in March 2022. These applications seek planning approvals to implement redevelopment of the lands legally described as Part of Lots 11, 12 and 13, Concession 4 (Albion), Town of Caledon (the ‘Subject Lands’) and are generally located in between The Gore Road and Humber Station Road, north of King Street.

It is important to note that the original applications submitted in March 2022 related to the ROPA 30 lands only and consisted of approximately 30.37 ha (75.05 ac) and were generally in the eastern portion of the future Caledon Station Secondary Plan lands. Since the applications were submitted in March 2022, the Region of Peel 2051 Official Plan was approved by the Province (Nov., 2022) and surrounding lands have been added to the 2051 Urban Area, including additional lands owned by the Owners noted above. Accordingly, the overall Subject Lands now consist of 107.19 ha (264.87 ac). and are now part of the subject Draft Plan of Subdivision and Rezoning applications.

The Subject Lands are entirely within the Region of Peel’s Urban Area (ROP, Nov 2022) with the eastern portion of the Subject Lands being within the Region’s Major Transit Station Area (MTSA). As well, the Subject Lands are currently part of the Caledon Station Secondary Plan process

(POPA-2021-0002). The effect of the Secondary Plan will be to apply land use designations to the Subject Lands, including Low Density Residential, Medium Density Residential, Mixed Use, Institutional, Open Space Policy Area. The subject Draft Plan of Subdivision and Zoning By-Law Amendment for the Subject Lands will ensure the creation of a compact, pedestrian and transit-oriented development through implementation of the Secondary Plan policies.

It is also important to note that on March 5, 2021, the Province of Ontario issued a Ministerial Zoning Order ('MZO') under Ontario Regulation 171 / 21 ('O. Reg. 171 / 21') for the eastern portion of the Subject Lands. This MZO established zoning for the eastern portion of the Subject Lands as a 'Mixed Use Residential Zone'. This Zone permits a range of detached, semi-detached and townhouse dwellings as well as a range of mid-rise residential and commercial uses.

This Environmental Noise Feasibility Study has been prepared on behalf of the Owners in support of a Draft Plan of Subdivision ('DPS') and Zoning By-law Amendment ('ZBA' or 'Amendment') resubmission to facilitate the development of the Draft Plan of Subdivision consisting of a mixture of land uses, various built forms and densities.

The potential sound levels from the environmental noise sources have been predicted on site and compared to the applicable MECP, Region of Peel and Town of Caledon noise guideline limits. Where sound level excesses above these guideline limits occur, noise mitigation measures have been recommended.

1.1 THE SITE AND SURROUNDING AREA

The site is located between The Gore Road and Humber Station Road, to the north of King Street, in the Town of Caledon. The site is bounded by:

- Existing agricultural land to the north;
- Humber Station Road, with existing agricultural land and residential dwellings (proposed for future mixed-use development) and the Canadian Pacific Railway (CPR) Mactier Subdivision beyond, to the east;
- The Gore Road and existing agricultural land, to the west; and
- Existing agricultural land (proposed for residential uses) to the southeast and southwest. A portion of the site also extends to King Street, where there are existing industrial developments to the south of King Street.

A Key Plan is included as Figure 1. The Block Plan Concept for the full development area, prepared by Gerrard Design, dated May 1, 2023, is included as Figure 2.

This report was prepared using the Draft Plan of Subdivision, prepared by Glen Schnarr & Associates Inc., dated May 5, 2023. The Draft Plan is included as Figure 3A.

1.2 THE PROPOSED DEVELOPMENT

The proposed development will consist of 580 lots for detached dwellings, 16 blocks for standard townhouses, 72 blocks for back-to-back townhouses, 156 blocks for rear lane townhouses, 5 blocks for dual-frontage townhouses, 16 blocks for medium density residential, 5 blocks for mixed use development, 15 blocks for parks and 3 blocks for elementary schools. There will also be residential reserve part blocks that will be combined with the adjacent development proposals to create full lots or blocks.

It is understood that the dwellings on all townhouse blocks may be up to 5 storeys and the detached dwellings will be 2 storeys. To be conservative, this assessment assumes that all townhouse dwellings are 5 storeys.

The detached dwellings and standard townhouses will have grade-level rear yard amenity space. The back-to-back, dual-frontage and rear lane townhouse units will not have grade-level outdoor amenity space and elevated terraces will be provided for these units.

Since site plans for the medium density and mixed-use blocks have not yet been prepared, specific noise control requirements cannot be determined. General noise control requirements are outlined in Section 6.0. Specific noise control requirements can be determined as part of the Site Plan Approval process for these blocks.

2.0 TRANSPORTATION NOISE ASSESSMENT

There are road and rail noise sources in the area that could impact the proposed residential development. The site lies outside airport noise influence areas (i.e., areas at NEF/NEP 25 or higher). Thus, aircraft noise was not considered further in this study.

2.1 NOISE SOURCES

2.1.1 Road Traffic

The roadways with the potential to impact the site are King Street, The Gore Road, Humber Station Road and the internal collector streets with a Right-Of-Way (ROW) width of 22 m (Streets 'A', 'I', 'JJ', 'VV' and 'Y'). Other roadways are either far enough removed from the site or are anticipated to have low traffic volumes and are not expected to create a significant noise impact on the site.

The road traffic data is discussed below and summarized in Table 1A. Road traffic correspondence is included as Appendix A.

Year 2041 traffic volumes for King Street, The Gore Road, Humber Station Road and the internal collector streets were provided by BA Group, the traffic consultant for this project, in the form of future peak hour turning movement count (TMC) data. The 24-hour traffic volumes were calculated by multiplying the higher of the AM or PM peak hour volume by a factor of 10. The traffic volume for Street 'VV' was calculated to be 580 vehicles per day (vpd). Due to the low volume (below the minimum 40 vehicles per hour required by the MECP road traffic noise prediction model), road traffic on Street 'VV' is not expected to create a significant noise impact on the site. Traffic on Street 'VV' has therefore not been considered further in this analysis. The traffic volumes were escalated to the year 2043 (20-year projection in accordance with Caledon requirements) using a growth rate of 2%, compounded annually.

Ultimate traffic data (including truck percentages, day/night splits and posted speed limits) for King Street and The Gore Road were also obtained from the Region of Peel. The ultimate traffic volumes provided by the Region for King Street and The Gore Road were lower than the volume calculated from the traffic study data. Thus, to be conservative, the volumes calculated from the traffic study data were used in the assessment. The truck percentages, day/night splits and posted speed limits provided by the Region were used in the analysis since this information was not provided by the traffic consultant.

Truck percentages, day/night splits and posted speed limits were not available for Humber Station Road and the internal collector streets. The medium and heavy truck percentages for Humber Station Road were assumed to be 3% and 2%, respectively, of the total volume. Medium and heavy truck percentages for the internal collector streets were assumed to be 1.2% and 0.8%, respectively, of the total volume. The day/night splits were assumed to be 90%/10%, as is typical for well travelled roadways. The traffic consultant indicated that the Town of Caledon identifies a desired operating speed for a residential collector road of 40 to 60 kph resulting in a posted speed limit of 30 to 50 kph. To be conservative, a speed limit of 50 kph was used in the assessment for the internal collector roads.

TABLE 1A ROAD TRAFFIC DATA

Roadway	24-Hour Traffic Volume(1)	% Trucks		Speed Limit (kph)(4)	Day/Night Split (%)
		Medium	Heavy		
King Street(2)	21 710 (22 587)	4.37 (Day) 4.01 (Night)	4.51 (Day) 5.44 (Night)	80	90/10
The Gore Road(2)	18 090 (18 821)	3.74 (Day) 3.98 (Night)	1.19 (Day) 0.53 (Night)	70	86/14
Humber Station Road(3)	20 160 (20 974)	3.0	2.0	50	90/10
Street 'A'(3)	4 860 (5 056)	1.2	0.8	50	90/10
Street 'I'(3)	4 920 (5 119)	1.2	0.8	50	90/10
Street 'JJ'(3)	4 920 (5 119)	1.2	0.8	50	90/10
Street 'Y'(3)	8 320 (8 656)	1.2	0.8	50	90/10

Notes:

(1) The year 2041 24-hour traffic volumes were calculated from the future (2041) peak hour traffic volumes provided by BA Group. The peak hour volumes were converted to 24-hour volumes using a factor of 10. The traffic volumes were projected to the year 2043 at a growth rate of 2%, compounded annually. The projected volumes are shown in brackets.

(2) Truck percentages, speed limits and day/night splits provided by the Region of Peel.

(3) Speed limits provided by BA Group. Truck percentages and day/night split are assumed.

(4) Maximum expected speed limit shown. Vehicle speeds 10 kph higher than the indicated speed limit were used in the analysis, per Town of Caledon guidelines.

2.1.2 Rail Traffic

The rail traffic data is discussed below and is summarized in Table 1B. Rail traffic correspondence is included as Appendix A.

2.1.2.1 CPR

CPR is no longer providing rail traffic data. Thus, 2016 rail traffic data for the CPR Mactier Subdivision from a location at Highway 50 and Queen Street in Bolton, which is near the subject site, was used (see Appendix A). Rail traffic on the Mactier Subdivision consists of freight trains. The rail traffic data was escalated to the year 2043 design condition (20-year projection required by the Town of Caledon) using a growth rate of 2.5% compounded annually.

This escalation rate is suggested by the railway authorities when preparing environmental noise studies.

2.1.2.2 Metrolinx

Metrolinx currently does not use the CPR Mactier corridor. However, there is a possibility Metrolinx may use this corridor in the future. Therefore, it was assumed that future GO train traffic volumes will be similar to those expected on the GO Barrie line. Thus, the rail volume expected with the GO Expansion program for the GO Barrie Line was used in the assessment to approximate the potential future rail traffic on the Mactier Subdivision.

TABLE 1B RAIL TRAFFIC DATA

Track	Period	Train Type	Maximum # of Trains	Maximum # of Cars/Train	Maximum # of Locomotives/Train	Speed (kph)
CPR Mactier Subdivision(1)	Daytime	Freight	9 (17.5)	188	4	88
	Nighttime	Freight	5 (9.7)	188	4	88
Proposed GO Bolton Line(2)	Daytime	GO Passenger (1 locomotive)	60	12	1	88
		GO Passenger (2 locomotive)	8	12	2	88
	Nighttime	GO Passenger (1 locomotive)	12	12	1	88
		GO Passenger (2 locomotive)	2	12	2	88

Notes:

(1) Data obtained from CPR for the year 2016 for a nearby site in Bolton. Values shown in brackets have been extrapolated to the Year 2043 design condition using a 2.5 % growth rate, compounded annually.

(2) Data obtained from the recent GO Barrie line extension. Speed was assumed to be the same as the CPR Mactier Subdivision.

2.2 ENVIRONMENTAL NOISE GUIDELINES

2.2.1 MECP Publication NPC-300 – Transportation Sources

The applicable noise guidelines for new residential development are those in MECP Publication NPC-300, *"Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning"*.

The environmental noise guidelines of the MECP (Publication NPC-300) are discussed briefly below and summarized in Appendix B.

2.2.1.1 Architectural Elements

In the daytime (0700 to 2300), the indoor criterion for road noise is $L_{eq\ Day}$(1) of 45 dBA for sensitive spaces such as living/dining rooms, dens and bedrooms. At night, the indoor criterion for road noise is $L_{eq\ Night}$(2) of 45 dBA for sensitive spaces such as living/dining rooms and dens and 40 dBA for bedrooms. The indoor criteria for rail noise are 5 dBA lower than those for road noise; that is, 40 dBA for living/dining rooms, dens and bedrooms during the daytime and nighttime periods except for bedrooms where the nighttime indoor criterion is 35 dBA.

The architectural design of the building envelope (walls, windows, etc.) must provide adequate sound isolation to achieve the above indoor sound level limits applying the outdoor sound level predicted at the facades.

In addition, the MECP requires brick veneer or masonry equivalent exterior wall construction from the foundation to the rafters for the first row of dwellings within 100 m of the rail line when the $L_{eq\ 24}$(3) is greater than 60 dBA.

2.2.1.2 Ventilation

When 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 so 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 air conditioning. A warning clause advising the occupant of the potential interference with some activities is also required. At nighttime, air conditioning is required when the sound level exceeds 60 dBA ($L_{eq\ Night}$) at a noise sensitive window (provision for adding air conditioning is required when the sound level is greater than 50 dBA).

2.2.1.3 Outdoors

For outdoor amenity areas ("Outdoor Living Areas" – OLA's), the guideline objective is 55 dBA $L_{eq\ Day}$, with an excess not exceeding 5 dBA considered acceptable if it is not feasible to achieve the 55 dBA objective for technical, economic or administrative reasons, provided warning clauses are registered on title. Note, a balcony or elevated terrace is not considered an OLA, unless it is:

- the only OLA for the occupant;
- at least 4 m in depth; and
- unenclosed

2.2.2 Region of Peel

The Region of Peel's noise guidelines are described in the "General Guidelines for the Preparation of Acoustical Reports in the Region of Peel" document (Reference 5). The Region of Peel noise guidelines are essentially the same as the MECP noise guidelines for

(1) $L_{eq,\ Day}$ 16-hour energy equivalent sound level (0700-2300 hours).
(2) $L_{eq,\ Night}$ 8-hour energy equivalent sound level (0700-2300 hours).
(3) $L_{eq,24}$ 24-hour energy equivalent sound level.

transportation noise sources except that the nighttime sound level for triggering the air conditioning requirement is 1 dBA more stringent (i.e., less than) the sound level specified by the MECP; i.e., mandatory air conditioning for nighttime sound levels of 60 dBA or greater, and the provision for adding air conditioning for sound levels between 51 to 59 dBA inclusive.

The Peel guidelines also indicate a maximum desirable sound barrier height of 4.0 m (relative to roadway centreline) with a maximum acoustic fence height of 2.4 m, although a height no more than 2.0 m is preferred. To make up any additional height beyond that of the fence, a berm is to be used.

2.2.3 Town of Caledon

The Town of Caledon noise guidelines are described in the "Development Standards Manual" document (Reference 6). The Town of Caledon's general policy is not to accept the 5 dBA excess above the 55 dBA objective in OLA's. However, an excess may be acceptable if unreasonably high sound barriers are needed to meet the 55 dBA objective.

The Town's maximum acoustic fence height is 2.4 m. Higher barriers can be provided by using a combination of an acoustic fence and a berm. The maximum permitted sound barrier height according to the Town's Development Standards is 4.8 m (2.4 m fence atop a 2.4 m berm).

Road traffic noise levels are to be calculated using a minimum 20-year traffic forecast and a speed of 10 kph over the posted speed limit.

2.2.4 Federation of Canadian Municipalities and Railway Association of Canada

The standard noise mitigation measures required by the Federation of Canadian Municipalities and the Railway Association of Canada (FCM/RAC) are:

- a minimum setback of 30 m from the edge of the railway right-of-way to the closest dwelling facade;
- a safety berm at least 2.5 m above grade at the property line;
- an approximately 3.0 m high acoustic fence atop the safety berm (to achieve a total height of 5.5 m above the top of the rail);
- brick veneer exterior wall construction; and
- warning clauses specific to the railway for all dwellings within 300 m of the right-of-way.

Aside from the "standard" requirements regarding the setback of dwellings and safety berm/sound barrier configuration, the sound level design objectives of FCM/RAC are similar to those of the MECP. See Appendix B. Note that the FCM/RAC also permit modifications to their standard requirements where substantiated by a detailed noise impact assessment.

2.3 NOISE IMPACT ASSESSMENT

2.3.1 Method

The daytime and nighttime sound levels at the detached and townhouse dwelling facades were calculated at second and fifth storey heights of 4.5 m and 13.5 m above grade, respectively, representing the top storey plane of windows (the worst-case locations). The sound levels in the

rear yard OLA's were calculated at a height of 1.5 m above grade, 3 m from the dwelling, at a point aligned with the midpoint of the rear facade. The analysis points are consistent with the NPC-300 requirements.

Inherent screening of each building face due to its orientation to the noise source as well as screening provided by the subject development itself was taken into account. To be conservative, screening from the medium density blocks within the development, future development on adjacent parcels (currently vacant land), and existing dwellings along King Street and Humber Station Road was not included in the assessment.

2.3.2 Results

For the detached dwellings and townhouse blocks, the highest unmitigated daytime / nighttime sound level due to road traffic noise is predicted to be 67 dBA / 62 dBA at the west facades of the dwellings immediately adjacent to The Gore Road. The highest unmitigated daytime and nighttime sound level due to rail traffic noise are predicted to be 61 dBA / 60 dBA at the east facades of Blocks 643 to 645 and 650 to 652. The highest unmitigated OLA daytime sound level of 63 dBA is predicted to occur at the rear yards of the dwellings closest to and siding toward The Gore Road (Lots 553 and 554).

Table 2 summarizes the unmitigated daytime and nighttime sound level predictions.

Appendix C contains a sample sound level calculation.

TABLE 2 PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS(1)

Location(1)	Source	Distance (m)(2)	$L_{eq\ Day}$ (dBA)	$L_{eq\ Night}$ (dBA)
Lot 175 (North Facade)	CPR Mactier Subdivision	351	58	58
	Humber Station Road	248	46	40
	TOTAL	**–**	**58**	**58**
Lot 303 (North Facade)	Street 'A'	14	60	53
	Street 'JJ'	18	55	49
	TOTAL	–	**61**	**54**
Lot 329 (OLA)	Street 'A'	17	57	–
Lot 553 (West Facade)	The Gore Road	22	66	61
	Street 'A'	17	56	49
	TOTAL	–	**67**	**61**
Lot 554 (West Facade)	The Gore Road	19	67	62
Lot 554 (OLA)	The Gore Road	27	63	–
Lot 572 (West Facade)	The Gore Road	38	62	57

…/cont'd

TABLE 2 PREDICTED UNMITIGATED SOUND LEVELS OUTDOORS(1) (continued)

Location(1)	Source	Distance (m)(2)	$L_{eq\ Day}$ (dBA)	$L_{eq\ Night}$ (dBA)
Lot 572 (OLA)	The Gore Road	44	59	–
Block 652 (East Facade)	CPR Mactier Subdivision	449	61	60
Block 669 (West Facade)	Street 'I'	14	60	54
Block 717 (South Facade)	Street 'JJ'	16	57	50
	Street 'Y'	16	62	55
	TOTAL	–	**63**	**56**
Block 750 (South Facade)	King Street	99	63	57
	Street 'JJ'	15	57	50
	TOTAL	–	**64**	**58**

Notes:

(1) See Figures 3A to 3D.

(2) Distance indicated is from the centreline of the roadway/rail line to the facade or OLA.

2.4 NOISE ABATEMENT REQUIREMENTS

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

a) The sound isolation performance of architectural elements to achieve the indoor noise guideline sound levels for transportation sources; and

b) design features to attenuate the sound levels in the OLA's.

Noise abatement requirements/recommendations are summarized in Table 6 and in the notes to Table 6.

2.4.1 Indoors

2.4.1.1 Architectural Requirements

The indoor noise guideline sound levels can be achieved by using appropriate construction for exterior walls, windows and doors. In determining the worst-case architectural sound isolation requirements for the detached dwellings and townhouse units, exterior wall and window areas were assumed to be 80% and 30%, respectively, of the associated floor area, on each facade of a corner room with both facades exposed directly or at an angle to the transportation noise source(s).

The assessment shows that:

- Upgraded exterior wall construction meeting STC 54 (e.g., brick veneer) and upgraded windows with ratings up to STC 29 are required for the dwellings on Lots 175 to 202,

Blocks 643 to 645 and 650 to 652 (i.e., the lots/blocks with the greatest exposure to the rail line).

- At all other dwellings units, exterior wall construction meeting STC 37 and exterior windows with ratings up to STC 28 will be sufficient to meet the indoor noise guideline limits.

It is expected that typical exterior wall construction meeting the minimum non-acoustical requirements of the OBC will meet the STC 37 requirement.

For windows, double-glazing configurations meeting the minimum non-acoustical requirements of the OBC would be expected to achieve an STC rating of 28. Note, the window frames themselves must also be designed to ensure that the overall sound isolation performance for the entire window unit meets the sound isolation requirement. This should be confirmed by the window manufacturer through the submission of acoustical test data.

The final sound isolation requirements should be reviewed when detailed architectural plans are developed. Wall and window constructions should also be reviewed at this point to ensure that they will meet the required sound isolation performance. This is typically required by the Town at the time of building permit application.

2.4.1.2 Ventilation Requirements

The ventilation requirements are:

- Mandatory air conditioning is required for the dwellings on Lots 175 to 202, 553 and 554 and the dwellings on Blocks 643 to 645, 650 to 652, 804, 814, 824 to 829 and 886. The specific locations of the dwellings requiring air conditioning are shown on Figures 3A to 3D and summarized in Table 6.
- The provision for adding air conditioning is required at dwellings throughout the development. The provision for adding air conditioning typically takes the form of a ducted, forced air heating system, suitably sized to accommodate air conditioning. The specific locations of the dwellings requiring the provision for adding air conditioning are shown in Figures 3A to 3D. The lot/block numbers are summarized in Table 6.

2.4.2 Outdoors

The unmitigated daytime OLA sound levels at rear yards adjacent to The Gore Road and the internal collector streets are predicted to exceed the 55 dBA objective. Thus, sound barriers are required. To meet the 55 dBA objective, the following sound barriers would be required:

- 2.3 m high for the dwellings on Lots 553 and 554.
- 1.8 m high for the dwellings on Lots 571 and 572.
- 1.8 m high for the dwellings that side towards Streets “A”, “I” and “JJ”.

Figures 3A to 3D show the locations of the sound barriers.

Notes on the sound barriers:

- At any lot that does not have a sound barrier, the unmitigated daytime OLA sound level is predicted to be at or below the 55 dBA objective. Thus, additional sound barriers are not required for noise control purposes.

- It is anticipated that the elevated terraces provided for the back-to-back, dual-frontage and rear lane townhouse units as well as the medium density and mixed-use blocks will be less than 4 m in depth and would not qualify as an OLA under the MECP guidelines. Thus, sound barriers would not be required. If larger balconies or terraces are included in the site design, the sound barrier requirements should be reviewed.
- The sound barriers must be of solid construction with no gaps, cracks or holes and must have a minimum surface weight of 20 kg/m². The sound barrier shall be built according to the Town of Caledon "Development Standards Manual" (Reference 6).
- Since sound barrier heights are less than 2.4 m in height, berms are not required and sound barrier fences are acceptable according to the Town of Caledon Development Standards Manual.

2.5 WARNING CLAUSES

Warning clauses are a tool to inform prospective owners/occupants of potential annoyance due to existing noise sources. Where the guideline sound level limits are exceeded, appropriate 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 agreements of Offers of Purchase and Sale and lease/rental agreements to make future occupants aware of the potential noise situation.

Table 6 and the notes to Table 6 summarize the warning clauses for the site.

3.0 STATIONARY NOISE ASSSMENT

3.1 STATIONARY NOISE SOURCES

There are existing stationary noise sources to the south and east of the site. VCL staff visited the area on April 8, 2021, to review the general area and to make subjective observations of the stationary noise sources.

The closest industries to the proposed development are located within approximately 500 m from Block 835, the medium density block at the southeast corner of the site.

3.1.1 Industries to the East

The industries to the east of the site, on the east side of Humber Station Road, are:

- Cavalier Transportation Services is a transportation and logistics company located at 14091 Humber Station Road, approximately 220 m east of Block 835. The main noise sources associated with this facility are expected to be the truck movements, engine idling and trailer coupling and uncoupling on site. Due to the distance separation and the presence of existing dwellings at closer setback distances, noise from this facility is not expected to have a significant impact on the subject site and has therefore not been considered further in this assessment.
- A concrete truck storage facility is located at 14025 Humber Station Road, approximately 200 m east of Block 835. The main noise sources associated with this facility are expected to be the concrete truck movements and engine idling on site. Due to the distance separation

and the presence of existing dwellings at closer setback distances, noise from this facility is not expected to have a significant impact on the subject site and has therefore not been considered further in this assessment.

- All Mix Concrete is a ready-mix concrete manufacturing facility located at 13975 Humber Station Road. The Facility has an Environmental Compliance Approval (ECA) Number 9655-ANBNN9 dated June 21, 2017. The ECA requires: the Facility to implement noise control measures (as determined by the supporting studies which formed part of the submission) by June 2020, including limiting the amount of truck visits, replacing conveyor pulley equipment with quieter models, installing acoustic barriers and installing stationary plant-based blowers so as to remain in compliance with the sound level limits in the MECP noise guideline (NPC-300) at all times.

  There are existing residential dwellings located to the east and northwest of the facility. Some of these dwellings are located closer to the facility than the proposed dwellings on the subject site. With the increased distance separation of the site, the predicted sound levels would be expected to be lower than those at the existing dwellings. As the facility is required to remain in compliance with the noise guideline limits at the existing (closer) noise sensitive uses, compliance with the sound level limits would also be expected at the subject site. Thus, this facility has not been considered further in this assessment.

- Ontario Hardwood Products is a hardwood processing and shipping facility located at 8068 King Street, approximately 350 m east of Block 835. The facility includes indoor and outdoor storage areas. The main noise sources associated with facility are expected to be delivery truck movements and forklift movements in the outdoor storage areas. Due to the distance separation and the presence of existing dwellings at closer setback distances, noise from this facility is not expected to have a significant impact on the subject site and has therefore not been considered further in this assessment.

- Alliance Agri-Turf Inc. is a fertilizer and seed supplier located at 8112 King Street West, approximately 480 m east of Block 835. The main noise sources associated with this facility are expected to be manufacturing activities, delivery truck movements and locomotive idling at the rail spur.

  During the site visit by VCL staff on April 8, 2021, blower noise from the storage silos at Alliance Agri-Turf was occasionally audible at a location approximately 250 m away from the facility, in the direction of the subject site. When the blower noise was audible, an overall sound level of 46 dBA was measured which includes the blower noise and any other background noise as well. Since the development site is more than 400 m from Alliance Agri-Turf Inc., the blower noise sound level at the development site will be well below the MECP stationary source guideline limit of 45 dBA. Thus, this facility has not been considered further in this assessment.

3.1.2 Industries to the South

The industries to the south of the site, on the south side of King Street are:

- JC Mini Storage is a self-storage facility located at 7865 King St, approximately 40 m south of Block 835. The facility includes both indoor and outdoor storage. The main noise sources associated with this facility are expected to be the passenger vehicles and small truck movements on site. Based on the distance separation and the ambient road traffic noise from the intervening roadway (King Street), noise from this facility is not expected to have a significant impact on the subject site.

- S.W. Stoneworks is a stone storage and shipping facility located at 13970 Humber Station Road, approximately 40 m south of Block 835. The main noise sources associated with this facility are expected to be the truck, forklift and front-end loader movements on site.

- Sun Transportation Systems is a transportation and logistics located at 13930 Humber Station Road, approximately 100 m south of Block 835. The main noise sources associated with this facility are expected to be the truck movements, engine idling and trailer coupling and uncoupling on site.

Building plans for the medium density and mixed-use blocks are currently not available. Thus, the specific impacts on Blocks 832 to 835 from the above industries cannot be determined. A stationary noise impact assessment from these industries onto the medium density and mixed-use blocks should be completed as part of the Site Plan Approval (SPA) application for these blocks.

An assessment of the noise impact from S.W. Stoneworks and Sun Transportation systems onto the closest dwellings within the proposed development is shown below.

3.2 ENVIRONMENTAL NOISE GUIDELINES

3.2.1 MECP Publication NPC-300 – Stationary Sources

Stationary sources are treated differently by the MECP guideline than transportation sources of noise (i.e. road and rail traffic). Stationary source noise criteria used for noise impact assessments are dependent on the type of area and the ambient sound environment. The site and area are Class 1, i.e., an area where the ambient sound environment is dominated by “urban hum”, primarily traffic noise. This is due to the proximity of the area road network. See Appendix B.

3.2.1.1 Sound Level Criteria – Class 1 Areas

3.2.1.1.1 *Non-Impulse Sources*

MECP Publication NPC-300 requires the hourly sound level (i.e. $L_{eq\ 1hr}$) from the stationary sources not exceed the higher of the ambient sound level, due to road traffic noise, or the minimum exclusion limits at a Point of Reception (POR). For a Class 1 area, the exclusion limits are 50 dBA during the daytime and evening periods (0700 to 2300 hours) and 45 dBA during the nighttime period (2300 to 0700 hours). The above limits apply at the exterior of a noise sensitive plane of window (at all times) and at an outdoor area only during the daytime and evening period. There are no sound level limits at an outdoor point of reception at night.

The MECP requires a “predictable worst case” one-hour operating scenario be analysed. This would occur when the sound emissions from the stationary noise source exceeds the guideline limit by the greatest margin.

No indoor sound level objectives are provided for stationary sources.

3.2.1.1.2 *Impulse Sources*

Impulsive sounds are a category of sounds which last for a brief time (typically fractions of one second). Examples are the sounds of banging metal, punch presses or gunshots. During the loading/unloading of trucks, the impact of dock levellers on a trailer when a forklift drives over it are also classified as impulsive sounds.

Impulse sounds are measured and treated separately from non-impulse sounds because of their special time characteristics. The logarithmic mean impulse sound level (L_{LM}, in dBA) is used to assess impulse noise. The L_{LM} descriptor is the energy average of the range of impulse sound levels impinging on a receptor. Because of the logarithmic relationship involved, L_{LM} is weighted to the higher values and is unlike an arithmetic average, which would yield a much lower numerical result for a wide range of values.

The sound level limits for impulse sources are dependant on Class of area as well as the number of impulses that occur in the worst case hour. For frequent impulses (9 or more in an hour), the sound level limits are the same as for non-impulse sources.

3.2.1.2 Sound Level Criteria – Class 4 Areas

Class 4 areas are defined in NPC-300 as an area:

- intended for development with new noise-sensitive land use(s) that are not yet built;
- in proximity to existing, lawfully-established stationary source(s); and
- that has formal confirmation from the land use planning authority with the Class 4 area classification.

Although not specifically identified in NPC-300, the Class 4 area status is intended to be used when noise mitigation measures required to meet the typically applied Class 1 or 2 guideline limits are not feasible to implement. Class 4 is also a way to allow development in areas that are in transition.

The sound level limits for Class 4 areas are generally higher than those for a Class 1 area. The sound level limits in a Class 4 area are the higher of the ambient due to road traffic or the minimum exclusion limits defined as:

- 60 dBA during the daytime and evening at a plane of window;
- 55 dBA during the nighttime at a plane of window; and
- 55 dBA during the daytime and evening at an outdoor point of reception.

There are no sound level limits at an outdoor point of reception at night.

3.3 NOISE SOURCES AND OPERATING SCENARIOS

As discussed in Section 3.1, the two nearby industries with the potential for significant noise impact on the subject site are S.W. Stoneworks and Sun Transportation Systems. The noise sources are shown in Figures 4 to 5B and in Table 3.

3.3.1 S.W. Stoneworks

S.W. Stoneworks is a stone storage and shipping facility located at 13970 Humber Station Road. Based on aerial imagery, the facility includes two buildings at the eastern end of the property as well as a product and material storage yard to the west of the buildings. Outdoor storage bins are located along the west property line. This facility operates during the daytime hours only (between 0700 and 1700 hours) as indicated on their website.

The main noise sources associated with this facility are expected to be truck, forklift and front-end loader activities on site. It is assumed that the forklifts operate in the entire yard while the front-end loader only operates in the vicinity of the outdoor storage bins.

An assessment of the noise impact from the facility was completed using source sound data and operating scenarios from other similar projects done by VCL.

The operations during the worst-case daytime hour were modelled as:

- One tractor trailer arriving at and departing from the facility;
- One tractor trailer idling for 5 minutes;
- Three forklifts operating in the yard for the full hour; and
- A front-end loader operating at the outdoor storage bins at the west side of the yard for the full hour.

3.3.2 Sun Transportation Systems

Sun Transportation Systems is a transportation and logistics facility located at 13930 Humber Station Road. Based on aerial imagery, the facility includes two buildings at the eastern end of the property. The larger building has two large overhead doors and two loading docks along the west facade of the building. The facility also includes a tractor trailer storage yard to the west of the buildings. A narrow parcel of land extends west of the main area of the yard, along the south property line of J.C. Mini Storage, and also appears to be used for trailer parking. The main noise sources associated with this facility are expected to be the truck activities on site. It is assumed that the facility is primarily used for tractor and trailer storage and that the main noise sources would be truck movements on site as well as the coupling and uncoupling of trailers.

An assessment of the noise impact from the facility was completed using source sound data and operating scenarios from other similar projects done by VCL. It was assumed that this facility could operate for 24 hours a day.

The facility's operations during the worst-case hour, which it was assumed could occur at any hour during the 24-hour period, were modelled as:

- Nine (9) heavy trucks arrive and depart the facility, with one travelling to the west extension of the yard and 8 travelling to the main yard area;
- Each of the 9 heavy trucks idles for 5 minutes in the yard to account for manoeuvring while picking up or dropping off a trailer;
- Impulse sounds are generated when the trucks are coupled/uncoupled from their trailers. Eight (8) coupling/uncoupling impulses occur in the main area of the yard and one coupling/uncoupling impulse occurs at the west extension of the yard.

  To be conservative, it was assumed that there would be no activities at the loading dock that generate impulse noise during this hour (due to the way impulses are assessed, it is more conservative to assume all impacts from impulse noise are due to coupling/uncoupling rather than including both coupling/uncoupling and loading impulses).

TABLE 3 STATIONARY SOURCE MODELLING DETAILS

Source ID[1]	Source Description	Sound Power Level (dBA or dBAI) [5]	Source Height (m)[4]	Operating Time (mins/hour or movements/hour)		
				Daytime	Evening	Nighttime
S.W. Stoneworks						
SWStone_FEL[3]	Front-end Loader	106	2.5	60 min	0 min	0 min
SWStone_FL[3]	3 Forklifts	95[6]	1.0	60 min	0 min	0 min
SWStone_HTIdle	Heavy Truck Idling	101	2.4	5 min	0 min	0 min
SWStone_HTMov[2]	Heavy Truck Movement	106	2.4	1 Movement	0 Movements	0 Movements
Sun Transportation Systems – Steady (Non-impulse) Sources						
SUNSS_HTMov1[2]	Heavy Truck Movement to Main Yard	106[7]	2.4	8 Movements	8 Movements	8 Movements
SUNSS_HTMov2[2]	Heavy Truck Movement to Western Extension	106	2.4	1 Movement	1 Movement	1 Movement
SUNSS_HTIdle[3]	8 Heavy Trucks Idling in Main Yard	101[7]	2.4	5 min	5 min	5 min
SUNSS_HTIdleW	Heavy Truck Idling in Western Extension	101	2.4	5 min	5 min	5 min
Sun Transportation Systems – Impulse Sources						
SUNIMP_CPL1 to 9	Coupling/Uncoupling Impulses	115	1.0	60 min	60 min	60 min

Notes:

(1) See Figures 4 to 5B for the source locations. Point source unless otherwise noted.
(2) Line source.
(3) Area source.
(4) Relative to grade.
(5) Sound measurement by VCL staff of a similar source.
(6) Sound power level of a single forklift.
(7) Sound power level of a single truck.

3.4 ANALYSIS METHOD

A 3-D acoustic model of the facility, as shown in Figures 4 to 5B, was developed using CadnaA V2023 MR1 environmental noise modelling software, which follows the protocol of the ISO Standard 9613.2, “Acoustics – Attenuation of Sound During Propagation in Outdoors”, to predict the sound levels at the building facades. Accounting for distance attenuation and ground attenuation, the sound level was determined for each receptor position.

The following parameters were used in the model:

1. Hard ground (G = 0.0) was used for the roadways and the paved areas. Soft ground (G = 1) was used elsewhere.
2. Two orders of sound reflection were included in the assessment.

Screening from the medium density blocks within the development, future development on adjacent parcels (currently vacant land), and existing dwellings along King Street and Humber Station Road was not included in the assessment.

The building evaluation feature was used to calculate the sound levels from the stationary sources. This method calculates sound levels on a grid of receivers over each facade at each storey of the building.

Note, the dwellings closest to the noise sources are rear lane and back-to-back townhouse blocks. These dwelling types are expected to not have any grade-level outdoor amenity space or terraces greater than 4 m in depth and thus, outdoor points of reception were not included.

3.4.1 Sound Level Limits

For dwelling units with significant exposure to King Street, the ambient sound environment is expected to be dominated by noise from road traffic. The ambient sound levels due to road traffic (i.e. the applicable guideline limits, if higher than the minimum exclusion limits) were calculated using the RLS-90 road traffic noise model included in the CadnaA software package. The ambient sound levels at receptor R6 were also calculated using STAMSON to confirm that the levels predicted by RLS-90 are not higher than the predictions from ORNAMENT (see Appendix D for sample calculation).

Hourly traffic volumes for King Street were calculated based on the existing (2019) 24-hour volumes provided by the Region of Peel, using a typical traffic distribution for well travelled roadways. According to this distribution, the daytime, evening and nighttime hours with the lowest traffic volumes will have 3.5%, 2.5% and 0.2%, respectively, of the 24-hour traffic volume. To be conservative, the minimum hourly traffic volume for each assessment period was used to calculate the ambient sound levels. The truck percentages were taken from the data provided by the Region of Peel. The traffic data used in the ambient sound levels calculations is summarized in Table 4.

The calculations show that the ambient sound levels exceed the Class 1 minimum exclusion limits, and therefore define the sound level limits, in the daytime and evening scenarios only for some of the receptors. The minimum exclusion limits define the sound level limits during the nighttime. Table 5 shows the applicable guideline limits at each receptor, for each scenario.

TABLE 4 ROAD TRAFFIC DATA FOR AMBIENT ANALYSIS(1)

Roadway(1)	Year	Minimum Hourly Traffic Volume(2)			% Trucks			Speed Limit (km/hr)
		Daytime	Evening	Nighttime	Daytime	Evening	Nighttime	
King Street	2019	402	287	23	8.9	8.9	9.4	80

Notes:

(1) Existing 24-hour traffic volume and truck percentages provided by the Region of Peel.

(2) Minimum hourly traffic volume as calculated using a typical traffic distribution.

3.5 RESULTS

The predicted sound levels due to S.W. Stoneworks and Sun Transportation Systems are summarized in Table 5 and shown in Figures 4 to 5B.

On the figures, the sound levels in the centre of the octagons represent the highest sound level at the location, at any storey. Red octagons represent locations with excesses over the Class 1 guideline limits. White octagons represent compliance with the Class 1 guideline limits. Point receptors showing the predicted sound levels, together with the applicable guideline limits, are also included at several representative locations.

TABLE 5 UNMITIGATED SOUND LEVELS

Receptor[1]	Predicted Hourly Sound Level (dBA) (D/E/N)	Class 1 Guideline Limit[2] (D/E/N)	Class 4 Guideline Limit[3] (D/E/N)	Meets Class 1? (Y/N)	Meets Class 4? (Y/N)
S.W. Stoneworks[5] (dBA)					
R1	38 / - / -	50 / - / -	60 / - /-	Y	Y
R2	48 / - / -	54[4] / - / -	60 / - / -	Y	Y
R3	41 / - / -	54[4] / - / -	60 / - / -	Y	Y
R4	46 / - / -	54[4] / - / -	60 / - / -	Y	Y
R5	37 / - / -	50 / - / -	60 / - / -	Y	Y
R6	42 / - / -	56[4] / - / -	60 / - / -	Y	Y
R7	39 / - / -	56[4] / - / -	60 / - / -	Y	Y
Sun Transportation Systems (Non-Impulse Sources) (dBA)					
R1	34 / 34 / 34	50 / 50 / 45	60 / 60 / 55	Y	Y
R2	43 / 43 / 43	54[4] / 52[4] / 45	60 / 60 / 55	Y	Y
R3	37 / 37 / 37	54[4] / 53[4] / 45	60 / 60 / 55	Y	Y
R4	42 / 42 / 42	54[4] / 53[4] / 45	60 / 60 / 55	Y	Y
R5	35 / 35 / 35	50 / 50 / 45	60 / 60 / 55	Y	Y
R6	40 / 40 / 40	56[4] / 55[4] / 45	60 / 60 / 55	Y	Y
R7	38 / 38 / 38	56[4] / 55[4] / 45	60 / 60 / 55	Y	Y
Sun Transportation Systems (Impulse Sources) (dBAI)					
R1	46 / 46 / 46	50 / 50 / 45	60 / 60 / 55	N	Y
R2	55 / 55 / 55	54[4] / 52[4] / 45	60 / 60 / 55	N	Y
R3	49 / 49 / 49	54[4] / 53[4] / 45	60 / 60 / 55	N	Y
R4	53 / 53 / 53	54[4] / 53[4] / 45	60 / 60 / 55	N	Y
R5	47 / 47 / 47	50 / 50 / 45	60 / 60 / 55	N	Y
R6	50 / 50 / 50	56[4] / 55[4] / 45	60 / 60 / 55	N	Y
R7	48 / 48 / 48	56[4] / 55[4] / 45	60 / 60 / 55	N	Y

Notes:

(1) See Figures 4 to 5B.

(2) MECP Class 1 minimum exclusion limits unless otherwise noted.

(3) MECP Class 4 minimum exclusion limit.

(4) Predicted ambient sound level due to road traffic on King Street.

(5) Daytime scenario only.

As shown in Table 5 and shown in Figure 4 to 5B, excesses are predicted over the Class 1 daytime, evening and nighttime guideline limits due to the impulses noise sources at Sun Transportation Systems. The sound levels due to the operations at S.W. Stoneworks and the non-impulse sources at Sun Transportation Systems are predicted to meet the Class 1 guideline limits.

To meet the Class 1 guideline limits, sound barriers at the subject site would need to be high enough to break the line of sight between the noise sources (i.e. the trailers at Sun Transportation Systems) and the top-storey windows at the dwellings. For 5 storey townhouse blocks, sound barriers approximately 16 m in height would be required. This height is not considered feasible. In addition, due to the site layout, the sound barriers would obstruct driveways and building accesses. Another option would be to place 5.5 m high sound barriers along the north and west property lines of Sun Transportation Systems; however, this would rely on cooperation from the facility.

3.6 CLASS 4 RECOMMENDATION

It is noted that the overall area is in transition. It is expected that the industrial uses south of King Street will ultimately be converted to commercial and office uses. Any new commercial/offices will need to be designed to meet the noise guideline limits at the surrounding noise sensitive receptors, including the subject site. A Class 4 status for a portion of the subject site will allow temporary noise issues to be addressed during the transition time. It would also allow for the approval of the proposed development while allowing the nearby stationary sources to operate in compliance with the noise guideline limits.

It is recommended that Lots 8, 9 and Blocks 581 to 584, 723 to 734, 749, 750, 766, 767, 853 to 863, be classified as Class 4. As shown in Table 6, the applicable Class 4 sound level limits are predicted to be met without any physical mitigation measures.

If the site is made Class 4, warning clauses should be registered on title to inform future occupants/residents of the noise situation. This is in accordance with both NPC-300. In addition, the dwellings must be provided with air conditioning. This will allow windows to remain closed for noise control purposes.

Sample wording for the warning clause is given in NPC-300. A recommended wording is given below:

> *"Purchasers/tenants are advised that sound levels due to adjacent industry or commercial facilities are required to comply with sound level limits that are protective of indoor areas and are based on the assumption that windows and exterior doors are closed. This dwelling unit has been supplied with a ventilation/air conditioning system which will allow windows and exterior doors to remain closed. Notwithstanding any noise mitigation at source or in the design of this development and individual dwellings, noise from the commercial facilities may at times interfere with some activities of the dwelling occupants. In the event of such an occurrence, residents are advised to close the windows."*

4.0 OVERALL MITIGATION REQUIREMENTS

The overall mitigation requirements for both stationary and transportation sources are shown in Table 6.

TABLE 6 MINIMUM NOISE ABATEMENT MEASURES

Location[1]	Air Conditioning[2]	Exterior Wall[3]	Exterior Window[4]	Sound Barrier[5]	Warning Clauses[6]
Lot 553 and Lot 554	Mandatory	STC 37	STC 28	Minimum 2.3 m high	A + B + D
Blocks 804, 814, 824 to 828, 829, and 886	Mandatory	STC 37	STC 28	None	A + B
Lots 185 and 186	Mandatory	STC 54	STC 29	Minimum 1.8 m high	A + B + D
Lots 175 to 184, and 187 to 202 Blocks 643 to 645, and 650 to 652	Mandatory	STC 54	STC 29	None	A + B
Lots 40, 41, 72, 73, 141, 142, 163, 164, 230, 231, 246, 266, 267, 287, 288, 303, 304, 319, 329, 330, 412, 413, 432, 433, 459, 460, 571, and 572 Blocks 653, 660, 661, 668, 873 and 874	Provision for adding	STC 37	STC 28	Minimum 1.8 m high	A + C + D
Lots 122 to 140, 152, 153, 174, 209 to 215, 268 to 286, 296 to 302, 305 to 311, 441 to 458, 506 to 512, 544 to 552, 555 to 559, 568 to 570, 573, and 574 Blocks 585, 590, 591, 596, 603 to 606, 610, 612, 613, 618, 619, 622 to 626, 640, 642, 646, 669 to 671, 672, 675, 678 to 683, 687, 698, 692, 693, 699, 704, 705, 710, 711, 716 to 722, 739, 740, 751 to 765, 788, 789, 803, 805, 813, 815, 818, 821 to 823, 852, 869 to 874, 884, and 885	Provision for adding	STC 37	STC 28	None	A + C
Lots 8 and 9 Blocks 581 to 584, 723 to 734, 749, 750, 766, 767, 853 to 863	Mandatory[9]	STC 37	STC 28	None	A + B + E
All Other Dwelling Units	None	STC 37	STC 28	None	None
All dwelling units within 300 m of the rail right of way (Blocks 836, 842 to 848)	In addition to the requirements above				F

Notes to Table 6 on the following page.

Notes to Table 6

(1) See Figures 3A to 3D.

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

(3) STC – Sound Transmission Class Rating (Reference ASTM E-413).

The requirements are based on the assumed percentages of wall and window area to associated floor area stated in Section 2.4.1 and should be reviewed once detailed floor plans are available

(4) STC – Sound Transmission Class Rating (Reference ASTM E-413). A sliding glass walkout door should be considered as a window and be included in the percentage of glazing.

The requirements were based on the assumed percentages of wall and window area to associated floor area stated in Section 2.4.1 and should be reviewed once detailed floor plans are available.

(5) Sound barriers must be of solid construction with no gaps cracks or holes, and must have a minimum surface density of 20 kg/m².

(6) Standard example warning clauses to be registered on title and be included in Offers of Purchase and Sale for designated lots:

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

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

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

D. "Purchasers/tenants are advised that a noise barrier wall is located at the rear/side of this property. The owner of this property also owns his/her section of the noise barrier wall. The noise barrier wall is not in public ownership. Monitoring, maintenance, inspection, repair and replacement of this noise barrier wall, including any associated costs, are the sole responsibility of the property owner. The Town of Caledon is in no way responsible for this noise barrier wall. Should this noise barrier wall fall, it is the property owner's responsibility to repair or replace his/her section of the wall, at his/her cost. If the property owner fails to maintain the noise barrier wall, the Town of Caledon will notify the requirement to repair in writing. If the property owner does not comply with the Town's request, the Town will correct the deficiency and bill the property owner accordingly."

E. "Purchasers/tenants are advised that sound levels due to adjacent industry or commercial facilities are required to comply with sound level limits that are protective of indoor areas and are based on the assumption that windows and exterior doors are closed. This dwelling unit has been supplied with a ventilation/air conditioning system which will allow windows and exterior doors to remain closed. Notwithstanding any noise mitigation at source or in the design of this development and individual dwellings, noise from the commercial facilities may at times interfere with some activities of the dwelling occupants. In the event of such an occurrence, residents are advised to close the windows."

F. "Canadian Pacific Railways, Metrolinx or its affiliated railway companies has or have a railway right-of-way within 300 m from this dwelling unit. There may be alterations to or expansions of the railway facilities of such right-of-way in the future, including the possibility that Canadian Pacific Railways, Metrolinx or its affiliated railway companies as aforesaid, or their assigns or successors may expand their business operations. Such expansion may affect the living and business environment of the residents, tenants and their visitors, employees, customers and patients in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating features in the design of the development. Canadian Pacific Railways, Metrolinx, its affiliated railway companies and their successors and assigns will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way."

(7) Conventional ventilated attic roof construction meeting OBC requirements is satisfactory.

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

(9) As part of the Class 4 classification, air conditioning must be provided to allow windows to remain closed for noise control purposes.

5.0 MEDIUM DENSITY, MIXED USE AND ELEMENTARY SCHOOL BLOCKS

Building plans for the medium density, mixed-use, elementary school and commercial blocks are currently not available. Specific mitigation measures have therefore not been established.

It is expected that the residential dwellings on Blocks 836, 837 and 843 to 848 will require mandatory air conditioning due to their proximity to the CPR Mactier Subdivision. Upgraded facade construction and/or upgraded exterior windows may also be needed.

It is expected that residential dwellings on Blocks 839, 840 and 842 would require the provision for adding air conditioning due to their proximity to the internal collector Streets 'A' and 'I'. Depending on the design of these blocks, the provision for adding air conditioning may not be practical to implement. Thus, the requirement may need to be increased to mandatory air conditioning. Upgraded facade construction and/or upgraded exterior windows may also be needed.

It is anticipated that all elevated terraces in the medium-high density blocks will be less than 4 m in depth and would therefore would not qualify as an OLA under the MECP guidelines. Thus, sound barriers would not be required. If larger balconies or terraces are included in the site design, the sound barrier requirements should be reviewed.

It is anticipated that the dwellings on Blocks 832 to 835 will also require a Class 4 designation for noise from the nearby industries to meet the sound level limits. Additional physical mitigation measures may also be needed.

The elementary school blocks and commercial uses within the mixed-use blocks would need to be designed so any sound emissions from these facilities comply with the stationary source sound level limits in Publication NPC-300, with consideration to the surrounding residential uses including those that are part of this proposed development. Detailed noise studies for these blocks should be done as a condition of their Site Plan Approval.

6.0 CONCLUSIONS

With the incorporation of the recommended noise mitigation measures, the applicable Town of Caledon, Peel Region and MECP noise guidelines can be met and a suitable acoustical environment provided for the occupants.

The approvals and administrative procedures are available to ensure that the noise requirements are implemented.

7.0 REFERENCES

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

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

3. "Environmental Noise Assessment in Land-Use Planning 1987", Ontario Ministry of the Environment, February 1987, ISBN 0-7729-2804-5.

4. MECP Publication NPC-300, "Stationary and Transportation Sources – Approval and Planning" Ontario Ministry of the Environment, August 2013.

5. "General Guidelines for the Preparation of Acoustical Reports in the Region of Peel", Region of Peel. November 2012.

6. "Development Standards Manual, Version 5.0", Town of Caledon, 2019.

7. "Guidelines for New Development in Proximity to Railway Operations", Prepared for The Federation of Canadian Municipalities and the Railway Association of Canada (FCM/RAC), May 2013.

8. "Environmental Noise Feasibility Study, Argo Macville I and II, Proposed Residential Subdivision, Town of Caledon", Valcoustics Canada Ltd., February 9, 2022, Project: 121-0094.

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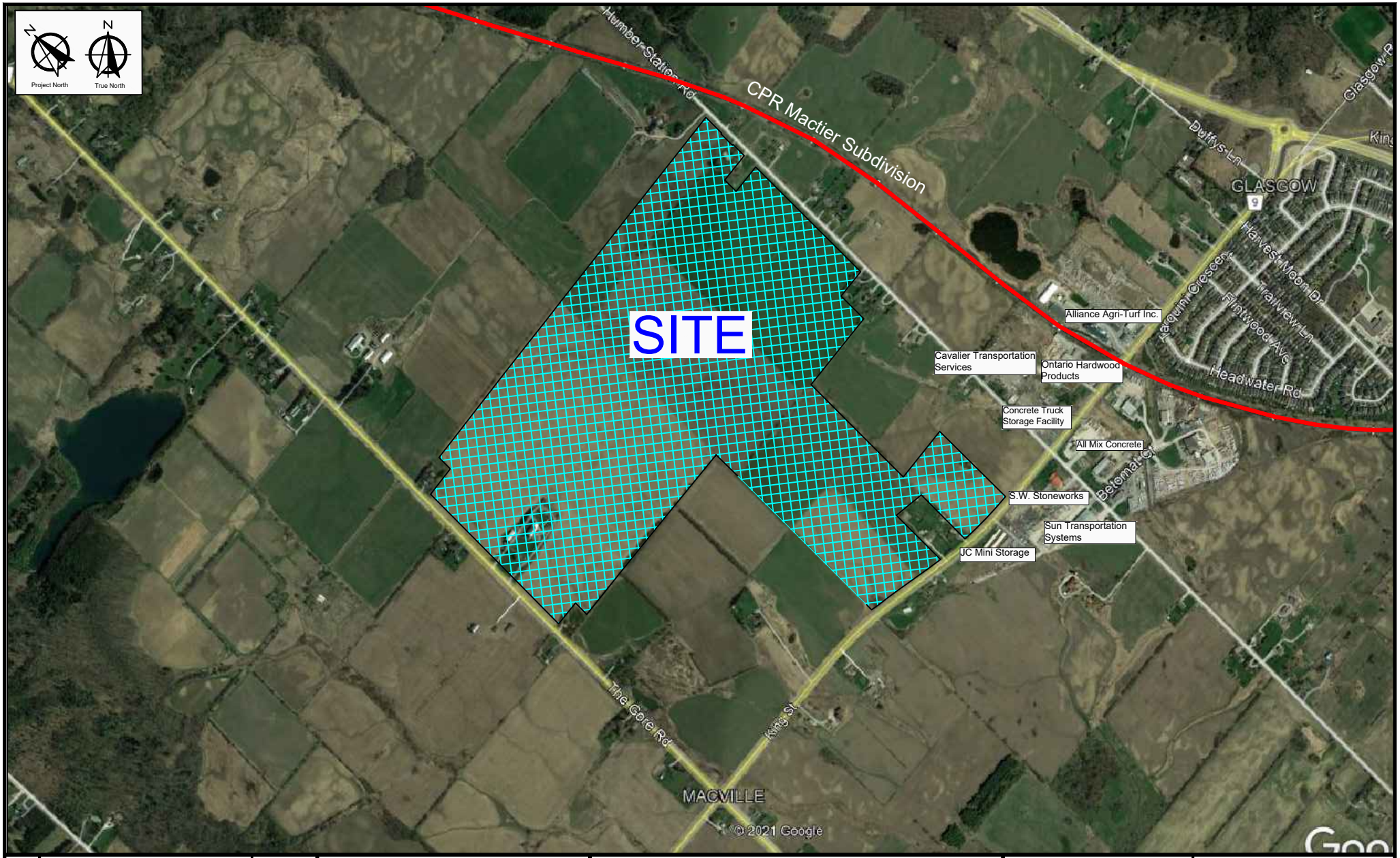


No.	Revision/Issue	Date

VALCOUSTICS Canada Ltd.
30 Wertheim Court, Unit 25
Richmond Hill, Ontario
Canada L4B 1B9
solutions@valcoustics.com
Phone: (905) 764-5223
Fax: (905) 764-6813

Title
Key Plan

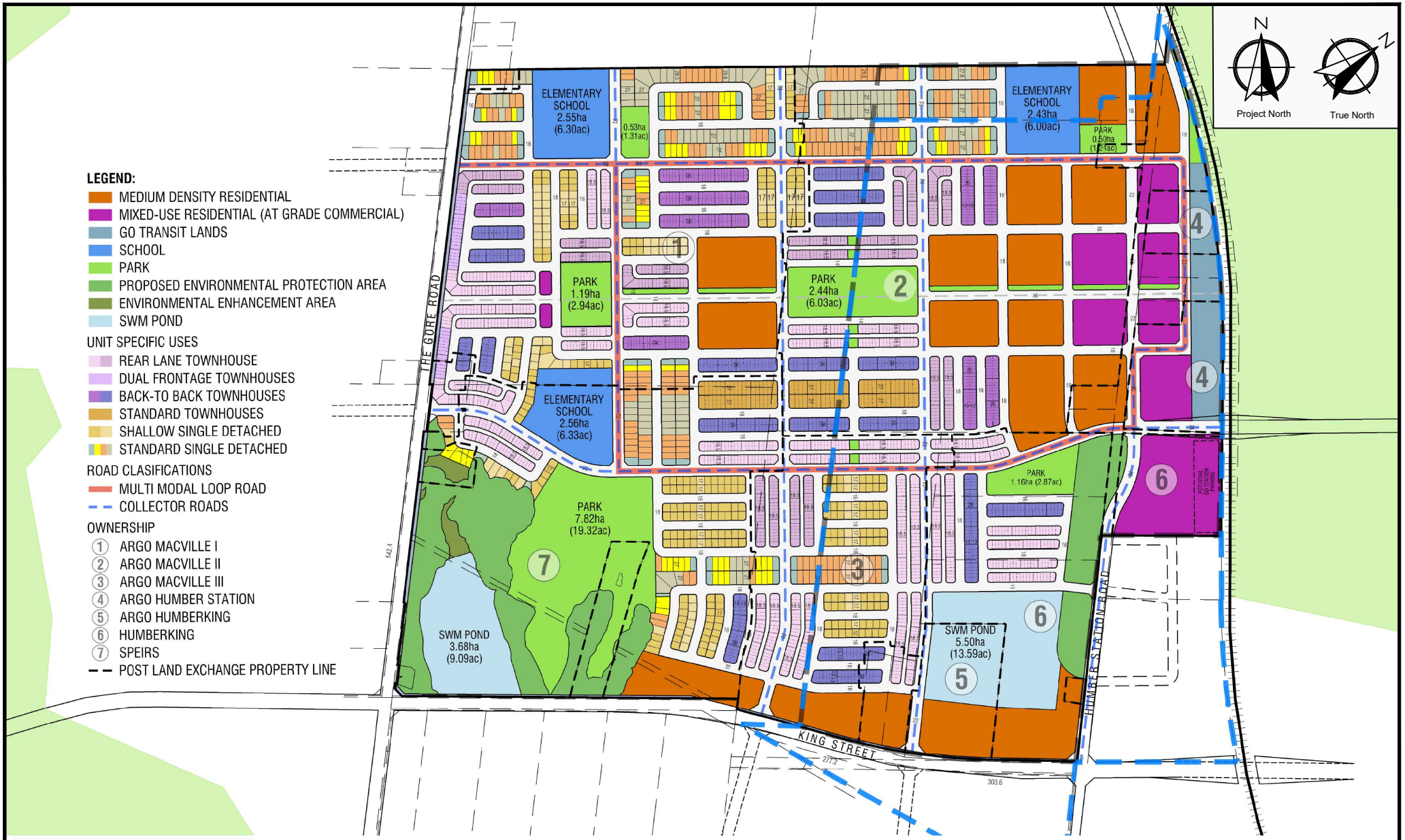
Project No.
121-0094

Date
May 9, 2023

Project Name
Argo Macville and Humberking, Caledon

Scale
N.T.S.

Figure
1



BASE DRAWING BY GERRARD DESIGN

No.	Revision/Issue	Date

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Title	Project No.	Date
Block Plan Concept	121-0094	May 30, 2023
Project Name	**Scale**	**Figure**
Argo Macville and Humberking, Caledon	N.T.S.	2

Figure 3B

Figure 3C

Figure 3D

N
Project North
True North

HUMBER STATION ROAD
(TO BE RE-ALIGNED)

THE GORE ROAD (Ultimate R.O.W.-35.5m)

KING STREET (Ultimate R.O.W. 35.5m)

CANADIAN PACIFIC RAILWAY

EXISTING HUMBER STATION ROAD (TO BE RE-ALIGNED)

EXISTING AGRICULTURAL

PROPOSED ELEMENTARY SCHOOL

PROPOSED RESIDENTIAL

PROPOSED PARK

PROPOSED MIXED USE

PROPOSED GO TRANSIT LANDS

ADDITIONAL LANDS OWNED BY APPLICANT

FUTURE SWM POND

FUTURE MEDIUM DENSITY

BLOCK 888 ELEMENTARY SCHOOL 2.57ha (6.35ac)

BLOCK 889 ELEMENTARY SCHOOL 2.43ha (6.00ac)

BLOCK 887 ELEMENTARY SCHOOL 0.47ha (1.17ac)

BLOCK 904 PARK 0.53ha (1.31ac)

BLOCK 903 PARK 1.19ha (2.94ac)

BLOCK 896 PARK 2.44ha (6.03ac)

BLOCK 890 PARK 0.40ha (0.99ac)

BLOCK 908 SWM POND 2.08ha (5.16ac)

BLOCK 830 MEDIUM DENSITY 1.49ha (3.68ac)

BLOCK 831 MEDIUM DENSITY 1.35ha (3.36ac)

BLOCK 832 MEDIUM DENSITY 0.26ha (0.64ac)

BLOCK 833 MEDIUM DENSITY 1.26ha (3.11ac)

BLOCK 834 MEDIUM DENSITY 0.03ha (0.07ac)

BLOCK 835 MEDIUM DENSITY 1.51ha (3.73ac)

BLOCK 836 MEDIUM DENSITY 0.53ha (1.31ac)

BLOCK 837 MEDIUM DENSITY 1.59ha (3.93ac)

BLOCK 838 MEDIUM DENSITY 0.90ha (2.35ac)

BLOCK 839 MEDIUM DENSITY 1.18ha (2.92ac)

BLOCK 840 MEDIUM DENSITY 1.31ha (3.24ac)

BLOCK 841 MEDIUM DENSITY 1.05ha (2.59ac)

BLOCK 842 MEDIUM DENSITY 1.22ha (3.02ac)

BLOCK 843 MEDIUM DENSITY 1.16ha (2.87ac)

BLOCK 844 MEDIUM DENSITY 1.04ha (2.57ac)

BLOCK 845 MEDIUM DENSITY 0.39ha (0.96ac)

BLOCK 846 MIXED USE 0.04ha (0.10ac)

BLOCK 847 MIXED USE 1.03ha (2.55ac)

BLOCK 848 MIXED USE 0.89ha (2.20ac)

BLOCK 891 PARK, 0.10ha (0.25ac)

BLOCK 892 PARK, 0.11ha (0.27ac)

BLOCK 893 PARK, 0.13ha (0.32ac)

BLOCK 901 PARK, 0.15ha (0.37ac)

BLOCK 902 PARK, 0.13ha (0.32ac)

BLOCK 905 WALKWAY 0.015ha (0.04ac)

BLOCK 906 WALKWAY 0.015ha (0.04ac)

BLOCK 907 WALKWAY 0.02ha (0.05ac)

BLOCK 911 ROAD WIDENING 0.40ha (0.99ac)

BLOCK 910 ROAD WIDENING

BLOCK 912 0.3m RESERVE

BLOCK 913 0.3m RESERVE

BLOCK 914 0.3m RESERVE

BLOCK 915 0.3m RESERVE

BLOCK 916 0.3m RESERVE

BLOCK 917 0.3m RESERVE

BLOCK 918 0.3m RESERVE

BLOCK 919 0.3m RESERVE

BLOCK 920 0.3m RESERVE

BLOCK 921 0.3m RESERVE

BLOCK 922 0.3m RESERVE

BLOCK 923 0.3m RESERVE

BLOCK 924 0.3m RESERVE

BLOCK 925 0.3m RESERVE

BLOCK 926 0.3m RESERVE

BLOCK 927 0.3m RESERVE

BLOCK 928 0.3m RESERVE

BLOCK 929 0.3m RESERVE

BLOCK 930 0.3m RESERVE

BLOCK 931 0.3m RESERVE

BLOCK 932 0.3m RESERVE

BLOCK 933 0.3m RESERVE

BLOCK 934 0.3m RESERVE

BLOCK 935 0.3m RESERVE

BLOCK 936 0.3m RESERVE

BLOCK 937 0.3m RESERVE

BLOCK 938 0.3m RESERVE

BLOCK 939 0.3m RESERVE

BLOCK 946 0.3m RESERVE

BLOCK 949 0.3m RESERVE

BLOCK 950 0.3m RESERVE

BLOCK 951 0.3m RESERVE

BLOCK 952 0.3m RESERVE

BLOCK 852 RESIDENTIAL RESERVE 0.02ha (0.05ac)

BLOCK 853 RESIDENTIAL RESERVE 0.02ha (0.05ac)

BLOCK 854 RESIDENTIAL RESERVE 0.03ha (0.07ac)

BLOCK 855 RESIDENTIAL RESERVE 0.01ha (0.02ac)

BLOCK 856 RESIDENTIAL RESERVE

BLOCK 857 RESIDENTIAL RESERVE 0.08ha (0.20ac)

BLOCK 858 RESIDENTIAL RESERVE 0.04ha (0.10ac)

BLOCK 859 RESIDENTIAL RESERVE 0.02ha (0.05ac)

BLOCK 860 RESIDENTIAL RESERVE 0.07ha (0.03ac)

BLOCK 861 RESIDENTIAL RESERVE 0.03ha (0.07ac)

BLOCK 862 RESIDENTIAL RESERVE 0.06ha (0.15ac)

BLOCK 863 RESIDENTIAL RESERVE 0.04ha (0.10ac)

BLOCK 864 RESIDENTIAL RESERVE 0.02ha (0.05ac)

BLOCK 865 RESIDENTIAL RESERVE 0.01ha (0.02ac)

BLOCK 866 RESIDENTIAL RESERVE 0.02ha (0.05ac)

BLOCK 867 RESIDENTIAL RESERVE 0.04ha (0.10ac)

BLOCK 868 RESIDENTIAL RESERVE 0.06ha (0.15ac)

BLOCK 869 RESIDENTIAL RESERVE 0.02ha (0.05ac)

BLOCK 870 RESIDENTIAL RESERVE 0.04ha (0.10ac)

BLOCK 871 RESIDENTIAL RESERVE 0.04ha (0.10ac)

BLOCK 872 RESIDENTIAL RESERVE 0.04ha (0.10ac)

BLOCK 873 RESIDENTIAL RESERVE 0.03ha (0.07ac)

BLOCK 874 RESIDENTIAL RESERVE 0.04ha (0.10ac)

BLOCK 875 RESIDENTIAL RESERVE 0.04ha (0.10ac)

BLOCK 876 RESIDENTIAL RESERVE 0.04ha (0.10ac)

BLOCK 877 RESIDENTIAL RESERVE 0.04ha (0.10ac)

BLOCK 878 RESIDENTIAL RESERVE 0.05ha (0.12ac)

BLOCK 879 RESIDENTIAL RESERVE 0.02ha (0.05ac)

BLOCK 880 RESIDENTIAL RESERVE 0.01ha (0.02ac)

BLOCK 881 RESIDENTIAL RESERVE 0.01ha (0.02ac)

BLOCK 882 RESIDENTIAL RESERVE

BLOCK 883 RESIDENTIAL RESERVE 0.01ha (0.03ac)

BLOCK 884 RESIDENTIAL RESERVE 0.01ha (0.03ac)

BLOCK 885 RESIDENTIAL RESERVE 0.01ha (0.03ac)

BLOCK 886 RESIDENTIAL RESERVE 0.03ha (0.07ac)

STREET 'A'
STREET 'B'
STREET 'C'
STREET 'D'
STREET 'E'
STREET 'F'
STREET 'G'
STREET 'H'
STREET 'I'
STREET 'J'
STREET 'K'
STREET 'L'
STREET 'M'
STREET 'N'
STREET 'O'
STREET 'P'
STREET 'Q'
STREET 'R'
STREET 'S'
STREET 'T'
STREET 'U'
STREET 'V'
STREET 'W'
STREET 'X'
STREET 'Y'
STREET 'Z'
STREET 'AA'
STREET 'BB'
STREET 'CC'
STREET 'DD'
STREET 'EE'
STREET 'FF'
STREET 'GG'
STREET 'HH'
STREET 'II'
STREET 'JJ'
STREET 'KK'
STREET 'LL'
STREET 'MM'
STREET 'NN'
STREET 'OO'
STREET 'PP'
STREET 'QQ'
STREET 'RR'
STREET 'SS'
STREET 'TT'
STREET 'UU'
STREET 'VV'
STREET 'WW'
STREET 'XX'
STREET 'YY'
STREET 'ZZ'
STREET 'AAA'
STREET 'BBB'
STREET 'CCC'
STREET 'DDD'
STREET 'EEE'
STREET 'FFF'
STREET 'GGG'
STREET 'HHH'
STR 'JJJ'
STR 'KKK'
STR 'LLL'
STR 'MMM'
STR 'NNN'
LANE 'A'
LANE 'B'
LANE 'C'
LANE 'D'
LANE 'E'
LANE 'F'
LANE 'G'
LANE 'H'
LANE 'I'
LANE 'J'
LANE 'K'
LANE 'L'
LANE 'M'
LANE 'N'
LANE 'O'
LANE 'P'
LANE 'Q'
LANE 'R'
LANE 'S'
LANE 'T'
LANE 'U'
LANE 'V'
LANE 'W'
LANE 'X'
LANE 'Y'

LEGEND

- Mandatory Air Conditioning
- Mandatory Air Conditioning and Class 4
- Provision for Adding Air Conditioning
- 2.3 m High Sound Barrier
- 1.8 m High Sound Barrier

General Notes

BASE DRAWING BY GLEN SCHNARR & ASSOCIATES INC.

No.	Revision/Issue	Date

VALCOUSTICS Canada Ltd.
30 Wertheim Court, Unit 25
Richmond Hill, Ontario
Canada L4B 1B9
solutions@valcoustics.com
Phone: (905) 764-5223
Fax: (905) 764-6813

Project Name
Argo Macville and Humberking, Caledon

Title
Draft Plan of Subdivision

Project 121-0094
Date Jun. 13, 2023
Scale N.T.S.
Figure 3A

Project North
True North

RESIDENTIAL RESERVE 0.03ha (0.07ac)

BLOCK 913 0.3m RESERVE

BLOCK 914 0.3m RESERVE

BLOCK 912 0.3m RESERVE

BLOCK 952 0.3m RESERVE

BLOCK 911 ROAD WIDENING 0.40ha (0.99ac)

BLOCK 888 ELEMENTARY SCHOOL 2.57ha (6.35ac)

BLOCK 904 PARK 0.53ha (1.31ac)

STREET 'VV'

STREET 'WW'

STREET 'KK'

STREET 'LL'

STREET 'JJ'

STREET 'A'

STREET 'AAA'

STREET 'BBB'

STREET 'CCC'

STREET 'DDD'

STREET 'ZZ'

STREET 'YY'

STREET 'XX'

STREET 'C'

STREET 'PP'

STREET 'MM'

STREET 'NN'

STREET 'OO'

STREET 'P'

STREET 'N'

STREET 'O'

STREET 'Q'

STREET 'R'

STREET 'S'

STREET 'T'

STREET 'U'

STREET 'V'

STREET 'RR'

STREET 'SS'

STREET 'TT'

STREET 'UU'

STREET 'QQ'

LANE 'R'

LANE 'S'

LANE 'T'

LANE 'U'

LANE 'V'

LANE 'M'

LANE 'N'

LANE 'O'

LANE 'P'

LANE 'Q'

STR. 'AAA'

STR. 'EEE'

STR. 'FFF'

STR. 'GGG'

STR. 'HHH'

THE GORE ROAD (Ultimate R.O.W. 35.5m)

BLOCK 905 WALKWAY 0.015ha (0.04ac)

BLOCK 903 PARK 1.19ha (2.94ac)

BLOCK 906 WALKWAY 0.015ha (0.04ac)

BLOCK 907 WALKWAY 0.02ha (0.05ac)

BLOCK 902 PARK, 0.13ha (0.32ac)

BLOCK 901 PARK, 0.15ha (0.37ac)

BLOCK 830 MEDIUM DENSITY 1.49ha (3.68ac)

BLOCK 831 MEDIUM DENSITY 1.35ha (3.36ac)

BLOCK 896 PARK 2.44ha (6.03ac)

BLOCK 886 RESIDENTIAL RESERVE 0.03ha (0.07ac)

BLOCK 949 0.3m RESERVE

BLOCK 950 0.3m RESERVE

BLOCK 951 0.3m RESERVE

BLOCK 882 RESIDENTIAL RESERVE

BLOCK 883 RESIDENTIAL RESERVE 0.01ha (0.03ac)

BLOCK 881 RESIDENTIAL RESERVE 0.01ha (0.02ac)

BLOCK 887 ELEMENTARY SCHOOL 0.47ha (1.17ac) Total Area - 2.56ha (6.33ac)

BLOCK 880 RESIDENTIAL RESERVE 0.01ha (0.02ac)

BLOCK 879 RESIDENTIAL RESERVE 0.02ha (0.05ac)

BLOCK 878 RESIDENTIAL RESERVE 0.02ha (0.05ac)

BLOCK 877 RESIDENTIAL RESERVE 0.02ha (0.05ac)

BLOCK 876 RESIDENTIAL RESERVE 0.05ha (0.12ac)

BLOCK 875 RESIDENTIAL RESERVE 0.06ha (0.15ac)

BLOCK 873 RESIDENTIAL RESERVE 0.03ha (0.07ac)

BLOCK 872 RESIDENTIAL RESERVE

EXISTING AGRICULTURAL

PROPOSED RESIDENTIAL

PROPOSED ELEMENTARY SCHOOL

LEGEND

- Mandatory Air Conditioning
- Mandatory Air Conditioning and Class 4
- Provision for Adding Air Conditioning
- 2.3 m High Sound Barrier
- 1.8 m High Sound Barrier

General Notes

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solutions@valcoustics.com
Phone: (905) 764-5223
Fax: (905) 764-6813

Project Name

Argo Macville and Humberking, Caledon

Title

Draft Plan of Subdivision

Project	Figure
121-0094	3B
Date: Jun. 13, 2023	
Scale: N.T.S.	

N

Project North

True North

EXISTING AGRICULTURAL

HUMBER STATION ROAD

(TO BE RE-ALIGNED)

BLOCK 914 0.3m RESERVE

BLOCK 915 0.3m RESERVE

BLOCK 916 0.3m RESERVE

BLOCK 917 0.3m RESERVE

BLOCK 845 MEDIUM DENSITY 0.39ha (0.96ac)

BLOCK 844 MEDIUM DENSITY 1.04ha (2.57ac)

BLOCK 889 ELEMENTARY SCHOOL 2.43ha (6.00ac)

BLOCK 890 PARK 0.40ha (0.99ac)

BLOCK 919 0.3m RESERVE

BLOCK 918 0.3m RESERVE

BLOCK 846 MIXED USE 0.04ha (0.10ac)

BLOCK 920 0.3m RESERVE

PROPOSED MIXED USE

BLOCK 842 MEDIUM DENSITY 1.22ha (3.02ac)

BLOCK 843 MEDIUM DENSITY 1.16ha (2.87ac)

ADDITIONAL LANDS OWNED BY APPLICANT

BLOCK 921 0.3m RESERVE

PROPOSED MIXED USE

PROPOSED GO TRANSIT LANDS

BLOCK 922 0.3m RESERVE

ADDITIONAL LANDS OWNED BY APPLICANT

BLOCK 923 0.3m RESERVE

BLOCK 924 0.3m RESERVE

BLOCK 925 0.3m RESERVE

CANADIAN PACIFIC RAILWAY

HUMBER STATION ROAD

BLOCK 907 WALKWAY 0.02ha (0.05ac)

BLOCK 830 MEDIUM DENSITY 1.49ha (3.68ac)

BLOCK 901 PARK, 0.15ha (0.37ac)

BLOCK 831 MEDIUM DENSITY 1.35ha (3.36ac)

BLOCK 896 PARK 2.44ha (6.03ac)

BLOCK 840 MEDIUM DENSITY 1.31ha (3.24ac)

BLOCK 893 PARK, 0.13ha (0.32ac)

BLOCK 841 MEDIUM DENSITY 1.05ha (2.59ac)

BL. 892 PARK, 0.11ha (0.27ac)

BLOCK 847 MIXED USE 1.03ha (2.55ac)

BL. 891 PARK, 0.10ha (0.25ac)

BLOCK 839 MEDIUM DENSITY 1.18ha (2.92ac)

BLOCK 838 MEDIUM DENSITY 0.95ha (2.35ac)

BLOCK 848 MIXED USE 0.89ha (2.20ac)

BLOCK 836 MEDIUM DENSITY 0.53ha (1.31ac)

BLOCK 837 MEDIUM DENSITY 1.59ha (3.93ac)

BLOCK 878 RESIDENTIAL RESERVE 0.02ha (0.05ac)

BLOCK 876 RESIDENTIAL RESERVE 0.05ha (0.12ac)

BLOCK 875 RESIDENTIAL RESERVE 0.06ha (0.15ac)

BLOCK 873 RESIDENTIAL RESERVE 0.03ha (0.07ac)

BLOCK 877 RESIDENTIAL RESERVE 0.02ha (0.05ac)

BLOCK 872 RESIDENTIAL RESERVE 0.04ha (0.10ac)

BLOCK 871 RESIDENTIAL RESERVE 0.04ha (0.10ac)

BLOCK 870 RESIDENTIAL RESERVE 0.04ha (0.10ac)

BLOCK 852 RESIDENTIAL RESERVE 0.03ha (0.07ac)

BLOCK 853 RESIDENTIAL RESERVE

STREET 'KK' STREET 'LL' STREET 'PP' STREET 'MM' STREET 'NN' STREET 'OO' STREET 'JJ' STREET 'H' STREET 'J' STREET 'I' STREET 'G' STREET 'A' STREET 'P' STREET 'N' STREET 'O' STREET 'M' STREET 'L' STREET 'K' STREET 'F' STREET 'B' STREET 'C' STREET 'RR' STREET 'SS' STREET 'TT' STREET 'QQ' STREET 'Q' STREET 'R' STREET 'D' STREET 'S' STREET 'UU' STREET 'T' STREET 'V' STREET 'W' STREET 'E' STREET 'U' STREET 'X' STREET 'Y'

LANE 'A' LANE 'C' LANE 'D' LANE 'E' LANE 'F' LANE 'M' LANE 'N'

LEGEND

- Mandatory Air Conditioning
- Mandatory Air Conditioning and Class 4
- Provision for Adding Air Conditioning
- 2.3 m High Sound Barrier
- 1.8 m High Sound Barrier

General Notes

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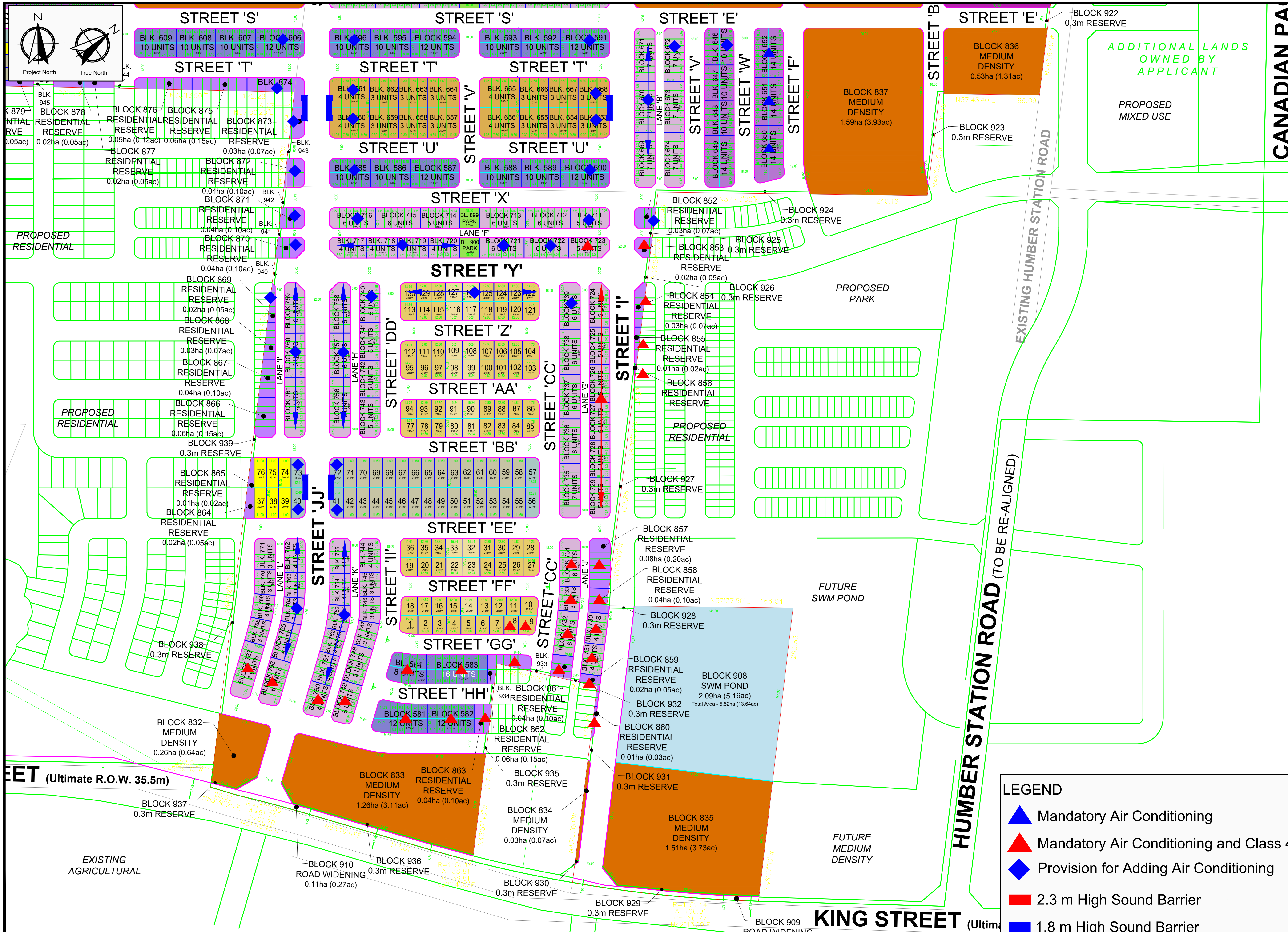
Project Name

Argo Macville and Humberking, Caledon

Title

Draft Plan of Subdivision

Project	Figure
121-0094	3C
Date: Jun. 13, 2023	
Scale: N.T.S.	



General Notes

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solutions@valcoustics.com
Phone: (905) 764-5223
Fax: (905) 764-6813

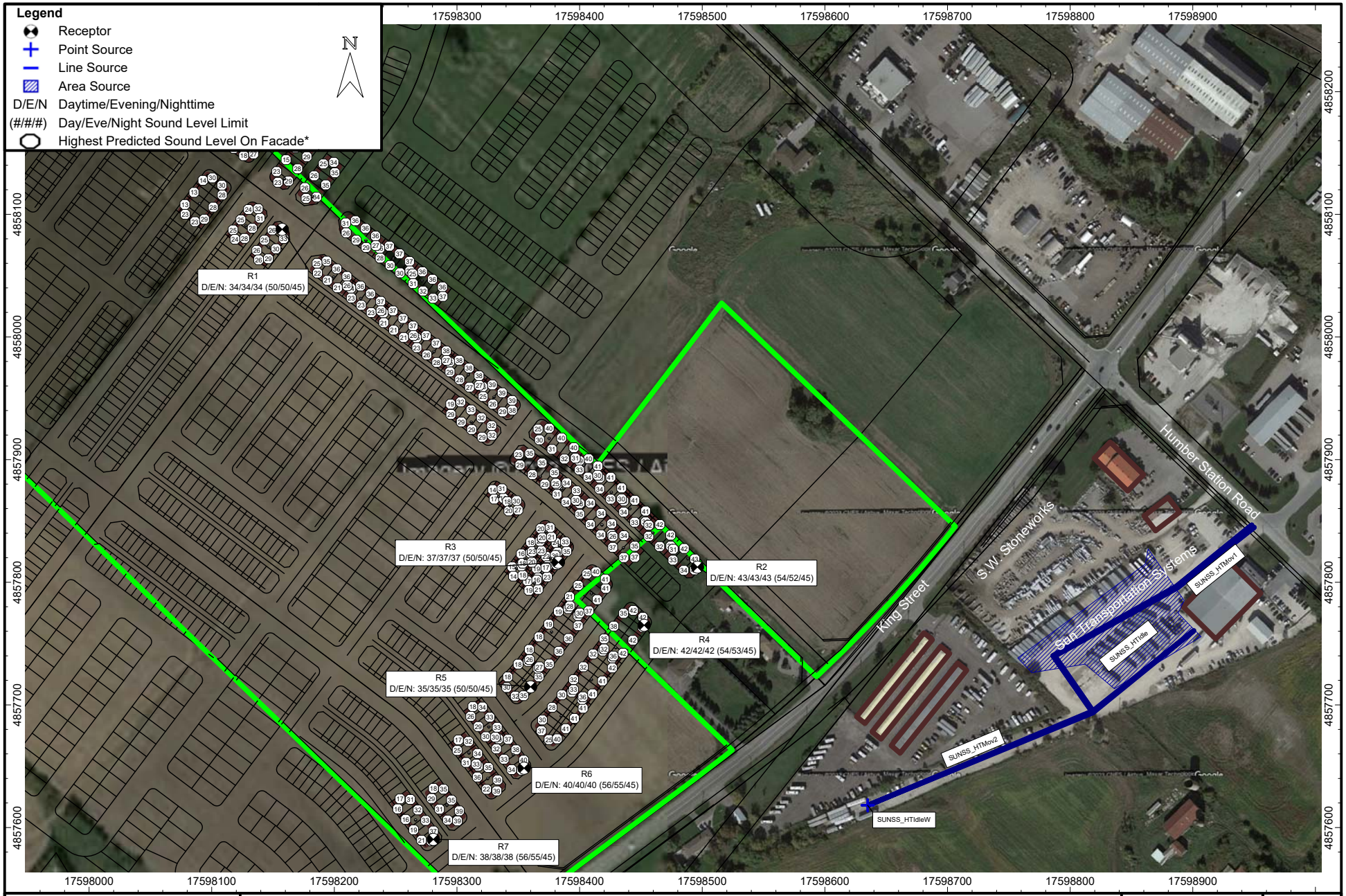
Project Name
Argo Macville and Humberking, Caledon

Title
Draft Plan of Subdivision

Project 121-0094
Date Jun. 13, 2023
Scale N.T.S.
Figure 3D

VALCOUSTICS Canada Ltd. consulting acoustical engineers	Title: **Predicted Daytime Sound Levels due to SW Stoneworks (dBA)**	Date: **Jun. 13, 2023**	Figure: **4**
	Project Name: **Argo Macville and Humberking, Caledon**	Project No.: **121-0094**	

Date Plotted: 14.06.23



VALCOUSTICS Canada Ltd.
consulting acoustical engineers

Title
Predicted Sound Levels due to Sun Transportation Systems (dBA) - Non-Impulse Sources

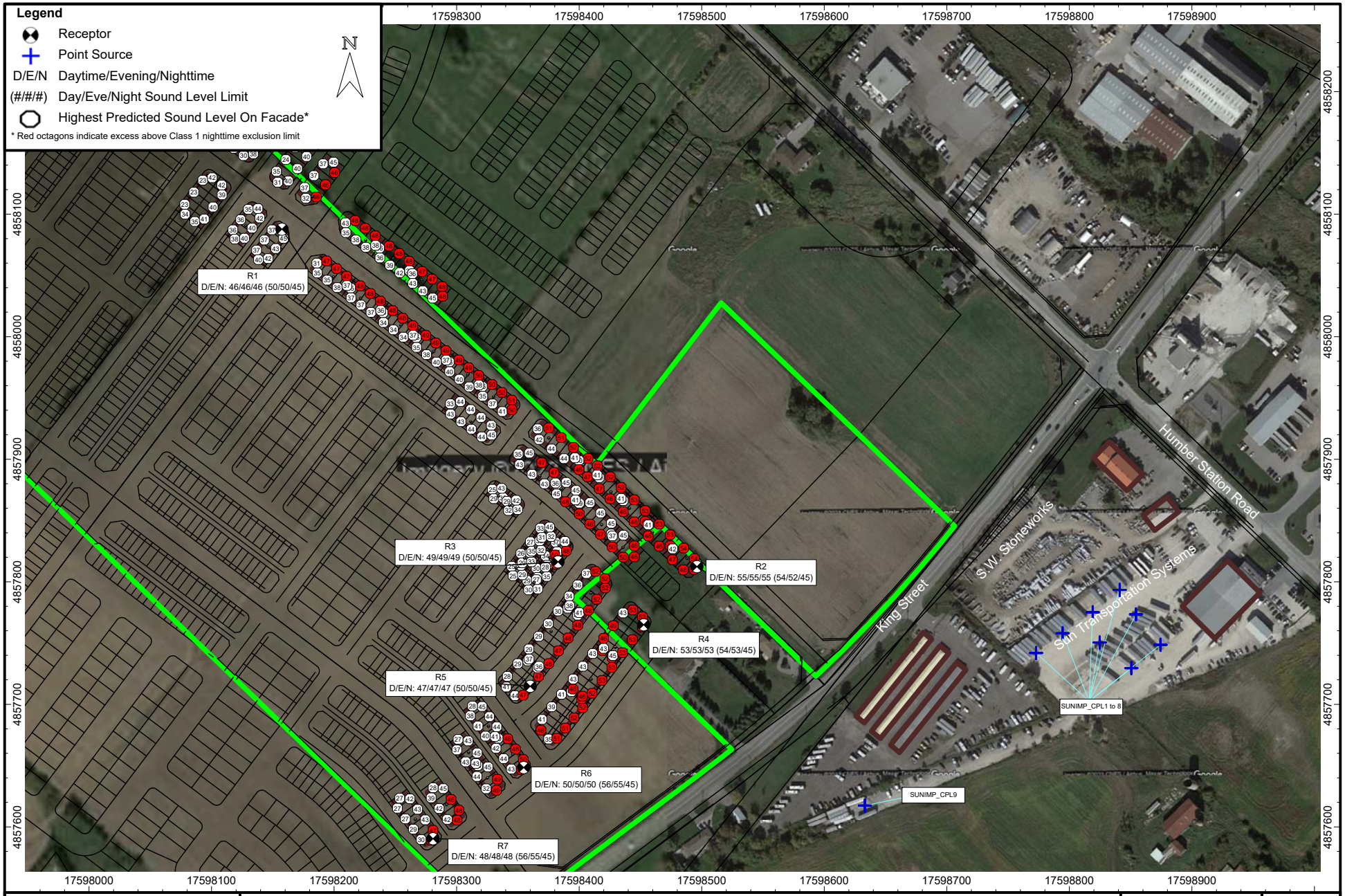
Date
Jun. 13, 2023

Figure
5A

Project Name
Argo Macville and Humberking, Caledon

Project No.
121-0094

Date Plotted: 14.06.23



VALCOUSTICS Canada Ltd.
consulting acoustical engineers

Title
Predicted Sound Levels due to Sun Transportation Systems (dBA) - Impulse Sources

Date
Jun. 13, 2023

Figure
5B

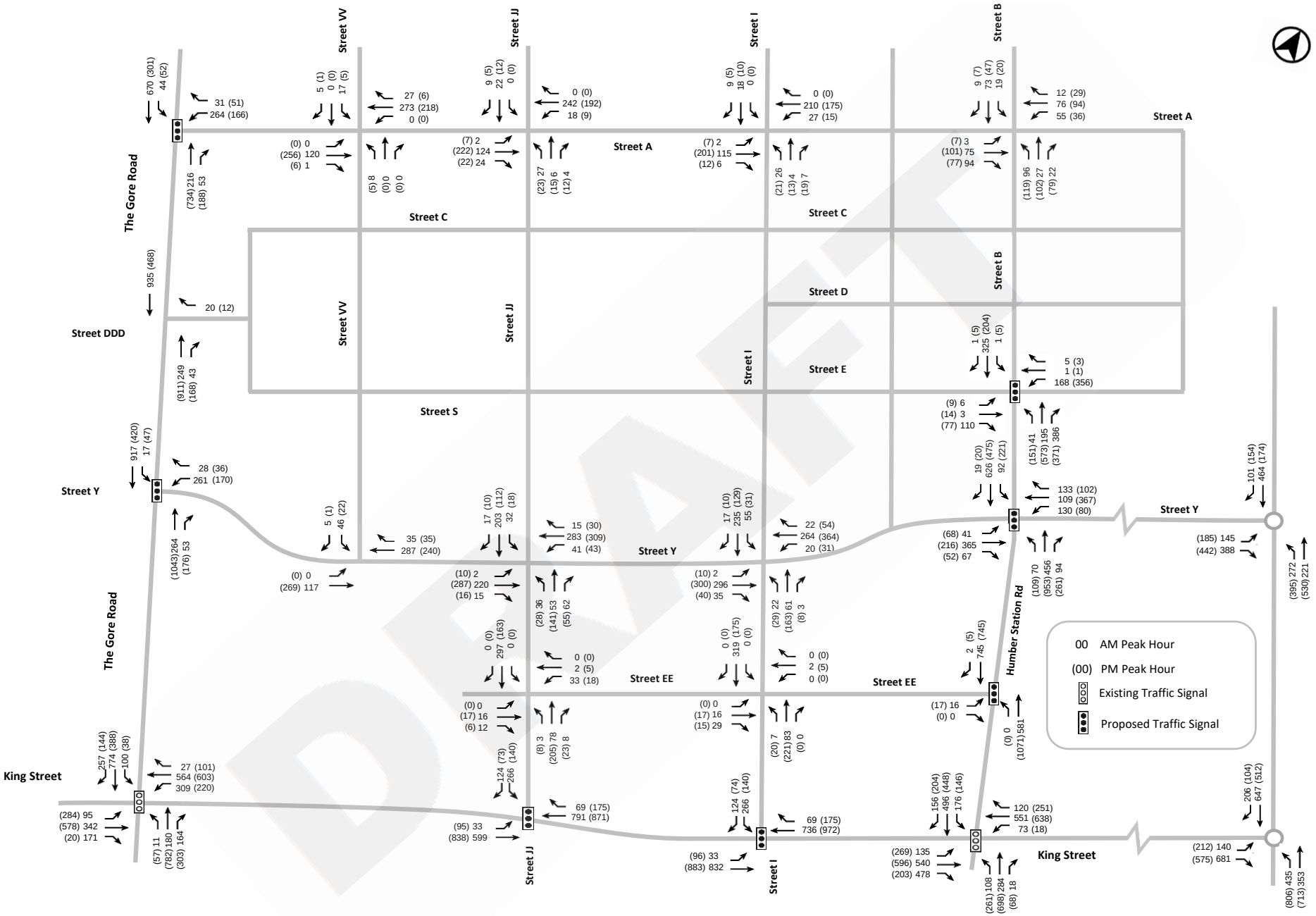
Project Name
Argo Macville and Humberking, Caledon

Project No.
121-0094

Date Plotted: 14.06.23

APPENDIX A

TRAFFIC DATA CORRESPONDENCE



BAGROUP 7694-01

FIGURE - FUTURE TOTAL Reduced Units by 42% TRAFFIC VOLUMES

MACVILLE SECONDARY PLAN

Date: March 12, 2021
From: Brett Lipson, Valcoustics Canada Ltd.
Re: Traffic Data Request – King Street (0.75 KM West of Humber Station Road)

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

	Existing	Ultimate
24 Hour Traffic Volume	11,478	16,200
# of Lanes	2	2
Day/Night Split	90/10	90/10
Day Trucks (% of Total Volume)	4.37% Medium 4.51% Heavy	4.37% Medium 4.51% Heavy
Night Trucks (% of Total Volume)	4.01% Medium 5.44% Heavy	4.01% Medium 5.44% Heavy
Right-of-Way Width	30 meters	
Posted Speed Limit	80 km/h	

Please note:

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

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

Regards,

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

Date: March 12, 2021
From: Brett Lipson, Valcoustics Canada Ltd.
Re: Traffic Data Request – The Gore Road (1.4 KM North of King Street)

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

	Existing	Ultimate
24 Hour Traffic Volume	7785	16,200
# of Lanes	2	2
Day/Night Split	86/14	86/14
Day Trucks (% of Total Volume)	3.74% Medium 1.19% Heavy	3.74% Medium 1.19% Heavy
Night Trucks (% of Total Volume)	3.98% Medium 0.53% Heavy	3.98% Medium 0.53% Heavy
Right-of-Way Width	30 meters	
Posted Speed Limit	70 km/h	

Please note:

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

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

Regards,

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

Real Estate and Facility Management
800 – 1290 Central Parkway West
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April 22, 2016

Via e-mail: Anthony@valcoustics.com

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

Dear Sir/Madam:

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

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

The information requested is as follows:

1. Number of freight trains 0700 to 2300: 9
   Number of freight trains 2300 to 0700: 5

2. Average number of cars per train freight: 80
   Maximum cars per train freight: 188

3. Number of Locomotives per train: 2 (4 max)

4. Maximum permissible speed: 55 mph (88 kph)

5. The whistle signal is not routinely through the study area. Please note that the whistle may be sounded if deemed necessary by the train crew for safety reasons at any location.

6. There is one main line track with welded joints in the vicinity of the study area and one passing track with bolted joints along with an additional siding track north of the study area. Due to the additional tracks, trains will meet numerous times a day at in this area which may cause longer than usual train idling time while awaiting other trains to pass by.

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

Yours truly,

J Tomei

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

Brett Lipson

From: Rail Data Requests <RailDataRequests@metrolinx.com>
Sent: January 23, 2021 1:18 PM
To: Seema Nagaraj
Cc: Terri Cowan
Subject: RE: Rail data confirmation - Yonge/Mapleview, Barrie

Hi Seema:

Sorry for the delay. Further to your request dated October 20, 2020, the subject lands (near Yonge St./Mapleview Dr.) are adjacent to the Metrolinx Newmarket Subdivision which carries Barrie GO rail service.

It's anticipated that GO rail service on these two Subdivisions will be comprised of electric trains. The GO rail fleet combination on this Subdivision will consist of up to 2 locomotives and 12 passenger cars. The typical GO rail weekday train volume forecast near the subject lands, including both revenue and equipment trips is in the order of 82 trains. The planned detailed trip breakdown is listed below:

	1 Electric Locomotive	2 Electric Locomotives		1 Electric Locomotive	2 Electric Locomotives
Day (0700-2300)	60	8	Night (2300-0700)	12	2

The current design track design speed near the subject lands is 60 mph (97 km/h).

There are *anti-whistling by-laws* in effect at the Mapleview Dr. at-grade crossing.

With respect to future electrified rail service, Metrolinx is committed to finding the most sustainable solution for electrifying the GO rail network and we are currently working towards the next phase. That's why, in addition to studying the environmental impacts of traditional electrification, Metrolinx has studied the feasibility of another form of electrification - hydrogen powered vehicles.

Both options have been studied as part of the Transit Project Assessment Process (TPAP) for the GO Expansion program, currently in the procurement phase. The successful proponent team will be responsible for selecting and delivering the right trains and infrastructure to unlock the benefits of GO Expansion. The contract is in a multi-year procurement process and teams are currently completing the bids that will close in 2021. GO Expansion construction will get underway in 2022.

Metrolinx has not made a final decision regarding the electric train technology or technologies to be deployed. However, we can advise that train noise is dominated by the powertrain at lower speeds and by the wheel- track interaction at higher speeds. Hence, the noise level and spectrum of electric trains is expected to be very similar at higher speeds, if not identical, to those of equivalent diesel trains.

APPENDIX B

ENVIRONMENTAL NOISE GUIDELINES

APPENDIX B

ENVIRONMENTAL NOISE GUIDELINES

MINISTRY OF THE ENVIRONMENT, CONSERVATION AND PARKS (MECP)

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

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

\# may not apply to in-fill or re-development.
* or the minimum hourly background sound exposure $L_{eq(1)}$, 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.

Reference: MECP Publication ISBN 0-7729-2804-5, 1987: *"Environmental Noise Assessment in Land-Use Planning"*.

EXCESS ABOVE RECOMMENDED SOUND LEVEL LIMITS (dBA)	CHANGE IN SUBJECTIVE LOUDNESS ABOVE	MAGNITUDE OF THE NOISE PROBLEM	NOISE CONTROL MEASURES (OR ACTION TO BE TAKEN)
No excess (<55 dBA)	—	No expected noise problem	None
1 to 5 inclusive (56 to 60 dBA)	Noticeably louder	Slight noise impact	If no physical measures are taken, then prospective purchasers or tenants should be made aware by suitable warning clauses.
6 to 10 inclusive (61 - 65 dBA)	Almost twice as loud	Definite noise impact	Recommended.
11 to 15 inclusive (66 - 70 dBA)	Almost three times as loud	Serious noise impact	Strongly Recommended.
16 and over (>70 dBA)	Almost four times as loud	Very serious noise impact	Strongly Recommended (may be mandatory).

APPENDIX C

SAMPLE SOUND LEVEL CALCULATIONS - TRANSPORTATION SOURCES

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STAMSON 5.04        NORMAL REPORT        Date: 17-05-2023 11:20:53
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: 553_wf.te            Time Period: Day/Night 16/8 hours
Description: Lot 553 West Facade

Road data, segment # 1: The Gore (day/night)
----------------------------------------------
Car traffic volume  : 15388/2505  veh/TimePeriod  *
Medium truck volume :   605/99    veh/TimePeriod  *
Heavy truck volume  :   193/31    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  18090
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :   2.00
    Medium Truck % of Total Volume     :   3.74
    Heavy Truck  % of Total Volume     :   1.19
    Day (16 hrs) % of Total Volume     :  86.00

Data for Segment # 1: The Gore (day/night)
----------------------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  22.00 / 22.00  m
Receiver height           :   4.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: Street A (day/night)
----------------------------------------------
Car traffic volume  :  4460/496   veh/TimePeriod  *
Medium truck volume :    55/6     veh/TimePeriod  *
Heavy truck volume  :    36/4     veh/TimePeriod  *
Posted speed limit  :    60 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):   4860
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :   2.00
    Medium Truck % of Total Volume     :   1.20
    Heavy Truck  % of Total Volume     :   0.80
    Day (16 hrs) % of Total Volume     :  90.00
```

```
Data for Segment # 2: Street A (day/night)
------------------------------------------
Angle1   Angle2           :   0.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  17.00 / 17.00  m
Receiver height           :   4.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: The Gore (day)
-----------------------------------

Source height = 1.04 m

ROAD (0.00 + 66.47 + 0.00) = 66.47 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.58  70.43   0.00  -2.63  -1.33   0.00   0.00   0.00  66.47
-------------------------------------------------------------------------------

Segment Leq : 66.47 dBA

Results segment # 2: Street A (day)
-----------------------------------

Source height = 0.94 m

ROAD (0.00 + 55.51 + 0.00) = 55.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     90   0.59  60.72   0.00  -0.86  -4.34   0.00   0.00   0.00  55.51
-------------------------------------------------------------------------------

Segment Leq : 55.51 dBA

Total Leq All Segments: 66.80 dBA

Results segment # 1: The Gore (night)
-------------------------------------

Source height = 1.04 m

ROAD (0.00 + 61.59 + 0.00) = 61.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.58  65.55   0.00  -2.63  -1.33   0.00   0.00   0.00  61.59
-------------------------------------------------------------------------------

Segment Leq : 61.59 dBA
```

Results segment # 2: Street A (night)

Source height = 0.94 m

ROAD (0.00 + 48.97 + 0.00) = 48.97 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	90	0.59	54.18	0.00	-0.86	-4.34	0.00	0.00	0.00	48.97

Segment Leq : 48.97 dBA

Total Leq All Segments: 61.82 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 66.80
(NIGHT): 61.82

```
STAMSON 5.04        NORMAL REPORT        Date: 17-05-2023 11:22:09
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: 554_ola.te           Time Period: Day/Night 16/8 hours
Description:  Lot 554 OLA Unmitigated


Road data, segment # 1: The Gore (day/night)
-------------------------------------------
Car traffic volume  : 15388/2505  veh/TimePeriod  *
Medium truck volume :   605/99    veh/TimePeriod  *
Heavy truck volume  :   193/31    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  18090
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :   2.00
    Medium Truck % of Total Volume     :   3.74
    Heavy Truck  % of Total Volume     :   1.19
    Day (16 hrs) % of Total Volume     :  86.00

Data for Segment # 1: The Gore (day/night)
-------------------------------------------
Angle1   Angle2           : -55.00 deg   30.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  27.00 / 27.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: The Gore (day)
-----------------------------------

Source height = 1.04 m

ROAD (0.00 + 62.59 + 0.00) = 62.59 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -55     30   0.66  70.43   0.00  -4.24  -3.60   0.00   0.00   0.00  62.59
-------------------------------------------------------------------------------

Segment Leq : 62.59 dBA

Total Leq All Segments: 62.59 dBA
```

```
Results segment # 1: The Gore (night)
-------------------------------------

Source height = 1.04 m

ROAD (0.00 + 57.94 + 0.00) = 57.94 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -55     30   0.58  65.55   0.00  -4.04  -3.57   0.00   0.00   0.00  57.94
-------------------------------------------------------------------------------

Segment Leq : 57.94 dBA

Total Leq All Segments: 57.94 dBA



TOTAL Leq FROM ALL SOURCES (DAY): 62.59
                           (NIGHT): 57.94
```

```
STAMSON 5.04        NORMAL REPORT        Date: 17-05-2023 11:22:27
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS / NOISE ASSESSMENT

Filename: 554_ola.te           Time Period: Day/Night 16/8 hours
Description:  Lot 554 OLA Mitigated


Road data, segment # 1: The Gore (day/night)
-------------------------------------------
Car traffic volume  : 15388/2505  veh/TimePeriod  *
Medium truck volume :   605/99    veh/TimePeriod  *
Heavy truck volume  :   193/31    veh/TimePeriod  *
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

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

    24 hr Traffic Volume (AADT or SADT):  18090
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :   2.00
    Medium Truck % of Total Volume     :   3.74
    Heavy Truck  % of Total Volume     :   1.19
    Day (16 hrs) % of Total Volume     :  86.00

Data for Segment # 1: The Gore (day/night)
-------------------------------------------
Angle1   Angle2           : -55.00 deg   30.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  27.00 / 27.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -55.00 deg   Angle2 : 30.00 deg
Barrier height            :   2.30 m
Barrier receiver distance :   8.00 / 8.00   m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00
```

Results segment # 1: The Gore (day)

Source height = 1.04 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.04	1.50	1.37	1.37

ROAD (0.00 + 55.14 + 0.00) = 55.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-55	30	0.54	70.43	0.00	-3.92	-3.54	0.00	0.00	-7.83	55.14

Segment Leq : 55.14 dBA

Total Leq All Segments: 55.14 dBA

Results segment # 1: The Gore (night)

Source height = 1.04 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.04	4.50	3.48	3.48

ROAD (0.00 + 57.94 + 0.00) = 57.94 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-55	30	0.45	65.55	0.00	-3.69	-3.50	0.00	0.00	0.00	58.36*
-55	30	0.58	65.55	0.00	-4.04	-3.57	0.00	0.00	0.00	57.94

 * Bright Zone !

Segment Leq : 57.94 dBA

Total Leq All Segments: 57.94 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.14
(NIGHT): 57.94

APPENDIX D

RLS-90 CALIBRATION WITH ORNAMENT

```
STAMSON 5.04        NORMAL REPORT        Date: 12-06-2023 16:22:59
MINISTRY OF ENVIRONMENT, CONSERVATION AND PARKS/ NOISE ASSESSMENT

Filename: r6_amb.te            Time Period: 1 hours
Description: R6 calibration

Road data, segment # 1: King Day
--------------------------------
Car traffic volume  :   366 veh/TimePeriod
Medium truck volume :    18 veh/TimePeriod
Heavy truck volume  :    18 veh/TimePeriod
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: King Day
------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 101.00 m
Receiver height           :  13.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 2: King Eve
--------------------------------
Car traffic volume  :   262 veh/TimePeriod
Medium truck volume :    13 veh/TimePeriod
Heavy truck volume  :    13 veh/TimePeriod
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 2: King Eve
------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 101.00 m
Receiver height           :  13.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Road data, segment # 3: King Night
----------------------------------
Car traffic volume  :    21 veh/TimePeriod
Medium truck volume :     1 veh/TimePeriod
Heavy truck volume  :     1 veh/TimePeriod
Posted speed limit  :    80 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)
```

```
Data for Segment # 3: King Night
--------------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 101.00 m
Receiver height           :  13.50 m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

Results segment # 1: King Day
-----------------------------

Source height = 1.45 m

ROAD (0.00 + 57.01 + 0.00) = 57.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.30  68.56   0.00 -10.78  -0.77   0.00   0.00   0.00  57.01
-------------------------------------------------------------------------------

Segment Leq : 57.01 dBA

Results segment # 2: King Eve
-----------------------------

Source height = 1.46 m

ROAD (0.00 + 55.58 + 0.00) = 55.58 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.30  67.13   0.00 -10.78  -0.77   0.00   0.00   0.00  55.58
-------------------------------------------------------------------------------

Segment Leq : 55.58 dBA


Results segment # 3: King Night
-------------------------------

Source height = 1.44 m

ROAD (0.00 + 44.49 + 0.00) = 44.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.30  56.05   0.00 -10.78  -0.77   0.00   0.00   0.00  44.49
-------------------------------------------------------------------------------

Segment Leq : 44.49 dBA

Total Leq All Segments: 59.50 dBA

TOTAL Leq FROM ALL SOURCES:       59.50
```

APPENDIX E

SAMPLE SOUND LEVEL CALCULATIONS - STATIONARY SOURCES

Receiver Table

Name	Sel.	M.	ID	Level Lr			Limit. Value			Land Use			Height		Coordinates		
				Day	Eve	Night	Day	Eve	Night	Type	Auto	Noise Type			X	Y	Z
				(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)				(m)		(m)	(m)	(m)
			R1	45.9	45.9	45.9	0.0	0.0	0.0		x	Total	1.50	r	17598157.43	4858087.65	1.50
			R2	54.9	54.9	54.9	0.0	0.0	0.0		x	Total	7.50	r	17598496.12	4857812.39	7.50
			R3	49.3	49.3	49.3	0.0	0.0	0.0		x	Total	4.50	r	17598382.72	4857816.21	4.50
			R4	52.6	52.6	52.6	0.0	0.0	0.0		x	Total	7.50	r	17598452.64	4857764.92	7.50
			R5	46.6	46.6	46.6	0.0	0.0	0.0		x	Total	13.50	r	17598360.08	4857714.65	13.50
			R6	50.2	50.2	50.2	0.0	0.0	0.0		x	Total	13.50	r	17598354.67	4857648.36	13.50
			R7	47.6	47.6	47.6	0.0	0.0	0.0		x	Total	13.50	r	17598280.69	4857590.31	13.50

Point Sources

Name	Sel.	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)
			SUNIMP_CPL9	105.2	105.2	105.2	Lw	IMP_CP		0.0	0.0	0.0			-10*log10(1/9)				0.0		(none)	1.00	r	17598633.12	4857617.40	1.00
			SUNIMP_CPL1	105.2	105.2	105.2	Lw	IMP_CP		0.0	0.0	0.0			-10*log10(1/9)				0.0		(none)	1.00	r	17598772.79	4857741.88	1.00
			SUNIMP_CPL2	105.2	105.2	105.2	Lw	IMP_CP		0.0	0.0	0.0			-10*log10(1/9)				0.0		(none)	1.00	r	17598794.44	4857758.06	1.00
			SUNIMP_CPL3	105.2	105.2	105.2	Lw	IMP_CP		0.0	0.0	0.0			-10*log10(1/9)				0.0		(none)	1.00	r	17598819.03	4857775.09	1.00
			SUNIMP_CPL4	105.2	105.2	105.2	Lw	IMP_CP		0.0	0.0	0.0			-10*log10(1/9)				0.0		(none)	1.00	r	17598841.10	4857793.38	1.00
			SUNIMP_CPL5	105.2	105.2	105.2	Lw	IMP_CP		0.0	0.0	0.0			-10*log10(1/9)				0.0		(none)	1.00	r	17598854.34	4857773.41	1.00
			SUNIMP_CPL6	105.2	105.2	105.2	Lw	IMP_CP		0.0	0.0	0.0			-10*log10(1/9)				0.0		(none)	1.00	r	17598824.70	4857750.50	1.00
			SUNIMP_CPL7	105.2	105.2	105.2	Lw	IMP_CP		0.0	0.0	0.0			-10*log10(1/9)				0.0		(none)	1.00	r	17598874.31	4857748.61	1.00
			SUNIMP_CPL8	105.2	105.2	105.2	Lw	IMP_CP		0.0	0.0	0.0			-10*log10(1/9)				0.0		(none)	1.00	r	17598850.56	4857729.48	1.00
		~	SWStone_HTIdle	100.9	100.9	100.9	Lw	HvyTrk_Idle		0.0	0.0	0.0				5.00	0.00	0.00	0.0		(none)	2.40	r	17598852.48	4857861.31	2.40
		~	SUNSS_HTIdleW	100.9	100.9	100.9	Lw	HvyTrk_Idle		0.0	0.0	0.0				5.00	5.00	5.00	0.0		(none)	2.40	r	17598634.84	4857618.12	2.40

Line Sources

Name	Sel.	M.	ID	Result. PWL			Result. PWL'			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Moving Pt. Src			
				Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				Number			Speed
				(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night	(km/h)
		~	SWStone_HTMov	84.6	-15.4	-15.4	64.2	-35.8	-35.8	PWL-Pt	Heavy_15kph		0.0	0.0	0.0							0.0		(none)	1.0	0.0	0.0	15.0
		~	SUNSS_HTMov2	93.7	93.7	93.7	64.2	64.2	64.2	PWL-Pt	Heavy_15kph		0.0	0.0	0.0							0.0		(none)	1.0	1.0	1.0	15.0
		~	SUNSS_HTMov1	101.7	101.7	101.7	73.2	73.2	73.2	PWL-Pt	Heavy_15kph		0.0	0.0	0.0							0.0		(none)	8.0	8.0	8.0	15.0

Area Sources

Name	Sel.	M.	ID	Result. PWL			Result. PWL"			Lw / Li			Correction			Sound Reduction		Attenuation	Operating Time			K0	Freq.	Direct.	Moving Pt. Src		
				Day	Evening	Night	Day	Evening	Night	Type	Value	norm.	Day	Evening	Night	R	Area		Day	Special	Night				Number		
				(dBA)	(dBA)	(dBA)	(dBA)	(dBA)	(dBA)			dB(A)	dB(A)	dB(A)	dB(A)		(m²)		(min)	(min)	(min)	(dB)	(Hz)		Day	Evening	Night
Forklift		~	SWStone_FL	99.9	95.1	95.1	59.6	54.8	54.8	Lw	FL_Move		4.8	0.0	0.0				60.00	0.00	0.00	0.0		(none)			
Front End Loader		~	SWStone_FEL	105.5	105.5	105.5	72.4	72.4	72.4	Lw	FEL		0.0	0.0	0.0				60.00	0.00	0.00	0.0		(none)			
Heavy Truck Idling		~	SUNSS_HTIdle	109.9	109.9	109.9	71.1	71.1	71.1	Lw	HvyTrk_Idle		9.0	9.0	9.0				5.00	5.00	5.00	0.0		(none)			

Sound Level Library

Name	ID	Type	Octave Spectrum (dB)												Source
			Weight.	31.5	63	125	250	500	1000	2000	4000	8000	A	lin	
Forklift Movement	FL_Move	Lw			103.1	93.7	88.7	90.3	90.7	89.1	82.0	77.4	95.1	104.3	Sound measurement for 108-299
Kubota Front End Loader	FEL	Lw		91.7	102.0	102.9	102.8	100.4	101.7	98.2	93.5	87.8	105.5	109.6	Sound Measurement on 2021/05/06 for 1200288
Heavy truck movement - 15 kph	Heavy_15kph	Lw		0.0	112.0	110.5	106.5	102.3	99.2	97.5	95.7	92.3	105.9	115.5	VCL Database
Heavy Truck Idling	HvyTrk_Idle	Lw		101.1	100.6	98.3	94.2	96.9	97.0	94.2	87.4	81.6	100.9	106.7	VCL Database
Coupling/Uncoupling Impulse	IMP_CP	Lw		110.9	108.8	112.9	113.5	113.5	109.9	105.2	100.2	94.7	114.8	119.9	VCL Database
Loading/Unloading Impulse	IMP_LD	Lw		119.1	114.3	114.5	111.5	107.3	103.8	100.3	97.1	92.8	110.0	122.0	VCL Database

Calculation Configuration

Configuration	
Parameter	Value
General	
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	
Daytime Penalty (dB)	0.00
Recr. Time Penalty (dB)	6.00
Night-time Penalty (dB)	10.00
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 (FTA/FRA)	
Aircraft (???)	
Strictly acc. to AzB	

Receiver
Name: (untitled)
ID: R2
X: 17598496.12 m
Y: 4857812.39 m
Z: 7.50 m

Area Source, ISO 9613, Name: "Front End Loader", ID: "SWStone_FEL"

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)
1	17598728.82	4857792.46	2.50	0	D	A	72.4	30.2	0.0	0.0	0.0	58.4	1.4	-1.6	0.0	0.0	0.0	0.0	0.0	44.4
1	17598728.82	4857792.46	2.50	0	N	A	72.4	30.2	-188.0	0.0	0.0	58.4	1.4	-1.6	0.0	0.0	0.0	0.0	0.0	-143.6
1	17598728.82	4857792.46	2.50	0	E	A	72.4	30.2	-188.0	0.0	0.0	58.4	1.4	-1.6	0.0	0.0	0.0	0.0	0.0	-143.6
6	17598715.95	4857808.92	2.50	2	D	A	72.4	21.6	0.0	0.0	0.0	62.3	2.0	-1.4	0.0	0.0	26.0	0.0	5.1	-0.0
6	17598715.95	4857808.92	2.50	2	N	A	72.4	21.6	-188.0	0.0	0.0	62.3	2.0	-1.4	0.0	0.0	26.0	0.0	5.1	-188.0
6	17598715.95	4857808.92	2.50	2	E	A	72.4	21.6	-188.0	0.0	0.0	62.3	2.0	-1.4	0.0	0.0	26.0	0.0	5.1	-188.0
12	17598740.08	4857768.96	2.50	0	D	A	72.4	29.9	0.0	0.0	0.0	58.9	1.5	-1.0	0.0	0.0	0.0	0.0	0.0	42.9
12	17598740.08	4857768.96	2.50	0	N	A	72.4	29.9	-188.0	0.0	0.0	58.9	1.5	-1.0	0.0	0.0	0.0	0.0	0.0	-145.1
12	17598740.08	4857768.96	2.50	0	E	A	72.4	29.9	-188.0	0.0	0.0	58.9	1.5	-1.0	0.0	0.0	0.0	0.0	0.0	-145.1

Area Source, ISO 9613, Name: "Forklift", ID: "SWStone_FL"

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)
19	17598807.35	4857806.26	1.00	0	D	A	59.6	34.0	0.0	0.0	0.0	60.9	1.8	-2.5	0.0	0.0	0.0	0.0	0.0	33.4
19	17598807.35	4857806.26	1.00	0	N	A	54.8	34.0	-188.0	0.0	0.0	60.9	1.8	-2.5	0.0	0.0	0.0	0.0	0.0	-159.4
19	17598807.35	4857806.26	1.00	0	E	A	54.8	34.0	-188.0	0.0	0.0	60.9	1.8	-2.5	0.0	0.0	0.0	0.0	0.0	-159.4
22	17598753.54	4857796.11	1.00	0	D	A	59.6	34.0	0.0	0.0	0.0	59.2	1.6	-2.1	0.0	0.0	0.0	0.0	0.0	34.8
22	17598753.54	4857796.11	1.00	0	N	A	54.8	34.0	-188.0	0.0	0.0	59.2	1.6	-2.1	0.0	0.0	0.0	0.0	0.0	-158.0
22	17598753.54	4857796.11	1.00	0	E	A	54.8	34.0	-188.0	0.0	0.0	59.2	1.6	-2.1	0.0	0.0	0.0	0.0	0.0	-158.0
30	17598807.24	4857821.20	1.00	2	D	A	59.6	26.8	0.0	0.0	0.0	64.3	2.5	-2.9	0.0	0.0	26.7	0.0	5.8	-9.9
30	17598807.24	4857821.20	1.00	2	N	A	54.8	26.8	-188.0	0.0	0.0	64.3	2.5	-2.9	0.0	0.0	26.7	0.0	5.8	-202.7
30	17598807.24	4857821.20	1.00	2	E	A	54.8	26.8	-188.0	0.0	0.0	64.3	2.5	-2.9	0.0	0.0	26.7	0.0	5.8	-202.7
33	17598734.54	4857809.71	1.00	2	D	A	59.6	21.9	0.0	0.0	0.0	62.8	2.2	-2.5	0.0	0.0	26.4	0.0	5.6	-12.9
33	17598734.54	4857809.71	1.00	2	N	A	54.8	21.9	-188.0	0.0	0.0	62.8	2.2	-2.5	0.0	0.0	26.4	0.0	5.6	-205.7
33	17598734.54	4857809.71	1.00	2	E	A	54.8	21.9	-188.0	0.0	0.0	62.8	2.2	-2.5	0.0	0.0	26.4	0.0	5.6	-205.7
36	17598781.52	4857814.75	1.00	2	D	A	59.6	21.9	0.0	0.0	0.0	63.8	2.4	-2.8	0.0	0.0	26.6	0.0	5.7	-14.2
36	17598781.52	4857814.75	1.00	2	N	A	54.8	21.9	-188.0	0.0	0.0	63.8	2.4	-2.8	0.0	0.0	26.6	0.0	5.7	-207.0
36	17598781.52	4857814.75	1.00	2	E	A	54.8	21.9	-188.0	0.0	0.0	63.8	2.4	-2.8	0.0	0.0	26.6	0.0	5.7	-207.0
52	17598812.41	4857825.06	1.00	2	D	A	59.6	20.5	0.0	0.0	0.0	64.4	2.5	-2.9	0.0	0.0	26.7	0.0	5.8	-16.3
52	17598812.41	4857825.06	1.00	2	N	A	54.8	20.5	-188.0	0.0	0.0	64.4	2.5	-2.9	0.0	0.0	26.7	0.0	5.8	-209.1
52	17598812.41	4857825.06	1.00	2	E	A	54.8	20.5	-188.0	0.0	0.0	64.4	2.5	-2.9	0.0	0.0	26.7	0.0	5.8	-209.1
55	17598761.93	4857817.41	1.00	2	D	A	59.6	20.5	0.0	0.0	0.0	63.4	2.3	-2.7	0.0	0.0	26.5	0.0	5.7	-15.0
55	17598761.93	4857817.41	1.00	2	N	A	54.8	20.5	-188.0	0.0	0.0	63.4	2.3	-2.7	0.0	0.0	26.5	0.0	5.7	-207.8
55	17598761.93	4857817.41	1.00	2	E	A	54.8	20.5	-188.0	0.0	0.0	63.4	2.3	-2.7	0.0	0.0	26.5	0.0	5.7	-207.8
57	17598840.98	4857831.38	1.00	2	D	A	59.6	23.5	0.0	0.0	0.0	64.9	2.7	-3.0	0.0	0.0	26.7	0.0	5.9	-14.0
57	17598840.98	4857831.38	1.00	2	N	A	54.8	23.5	-188.0	0.0	0.0	64.9	2.7	-3.0	0.0	0.0	26.7	0.0	5.9	-206.8
57	17598840.98	4857831.38	1.00	2	E	A	54.8	23.5	-188.0	0.0	0.0	64.9	2.7	-3.0	0.0	0.0	26.7	0.0	5.9	-206.8
60	17598856.98	4857831.75	1.00	1	D	A	59.6	20.7	0.0	0.0	0.0	62.8	2.2	-2.8	0.0	0.0	0.0	0.0	2.3	15.9
60	17598856.98	4857831.75	1.00	1	N	A	54.8	20.7	-188.0	0.0	0.0	62.8	2.2	-2.8	0.0	0.0	0.0	0.0	2.3	-176.9
60	17598856.98	4857831.75	1.00	1	E	A	54.8	20.7	-188.0	0.0	0.0	62.8	2.2	-2.8	0.0	0.0	0.0	0.0	2.3	-176.9
63	17598814.22	4857811.00	1.00	1	D	A	59.6	31.2	0.0	0.0	0.0	63.6	2.4	-2.4	0.0	0.0	0.0	0.0	3.8	23.5
63	17598814.22	4857811.00	1.00	1	N	A	54.8	31.2	-188.0	0.0	0.0	63.6	2.4	-2.4	0.0	0.0	0.0	0.0	3.8	-169.3
63	17598814.22	4857811.00	1.00	1	E	A	54.8	31.2	-188.0	0.0	0.0	63.6	2.4	-2.4	0.0	0.0	0.0	0.0	3.8	-169.3
67	17598766.42	4857829.90	1.00	0	D	A	59.6	31.1	0.0	0.0	0.0	59.7	1.6	-2.0	0.0	0.0	0.0	0.0	0.0	31.5
67	17598766.42	4857829.90	1.00	0	N	A	54.8	31.1	-188.0	0.0	0.0	59.7	1.6	-2.0	0.0	0.0	0.0	0.0	0.0	-161.3
67	17598766.42	4857829.90	1.00	0	E	A	54.8	31.1	-188.0	0.0	0.0	59.7	1.6	-2.0	0.0	0.0	0.0	0.0	0.0	-161.3
70	17598820.23	4857840.04	1.00	0	D	A	59.6	31.1	0.0	0.0	0.0	61.2	1.9	-2.5	0.0	0.0	0.0	0.0	0.0	30.1
70	17598820.23	4857840.04	1.00	0	N	A	54.8	31.1	-188.0	0.0	0.0	61.2	1.9	-2.5	0.0	0.0	0.0	0.0	0.0	-162.7
70	17598820.23	4857840.04	1.00	0	E	A	54.8	31.1	-188.0	0.0	0.0	61.2	1.9	-2.5	0.0	0.0	0.0	0.0	0.0	-162.7
77	17598766.42	4857829.90	1.00	2	D	A	59.6	31.1	0.0	0.0	0.0	63.5	2.3	-2.6	0.0	0.0	26.4	0.0	5.7	-4.6
77	17598766.42	4857829.90	1.00	2	N	A	54.8	31.1	-188.0	0.0	0.0	63.5	2.3	-2.6	0.0	0.0	26.4	0.0	5.7	-197.4
77	17598766.42	4857829.90	1.00	2	E	A	54.8	31.1	-188.0	0.0	0.0	63.5	2.3	-2.6	0.0	0.0	26.4	0.0	5.7	-197.4
79	17598820.23	4857840.04	1.00	2	D	A	59.6	31.1	0.0	0.0	0.0	64.6	2.6	-2.9	0.0	0.0	26.6	0.0	5.8	-5.9

Area Source, ISO 9613, Name: "Forklift", ID: "SWStone_FL"																				
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)
79	17598820.23	4857840.04	1.00	2	N	A	54.8	31.1	-188.0	0.0	0.0	64.6	2.6	-2.9	0.0	0.0	26.6	0.0	5.8	-198.7
79	17598820.23	4857840.04	1.00	2	E	A	54.8	31.1	-188.0	0.0	0.0	64.6	2.6	-2.9	0.0	0.0	26.6	0.0	5.8	-198.7
82	17598859.83	4857839.11	1.00	1	D	A	59.6	17.8	0.0	0.0	0.0	62.6	2.2	-2.8	0.0	0.0	0.0	0.0	2.2	13.3
82	17598859.83	4857839.11	1.00	1	N	A	54.8	17.8	-188.0	0.0	0.0	62.6	2.2	-2.8	0.0	0.0	0.0	0.0	2.2	-179.5
82	17598859.83	4857839.11	1.00	1	E	A	54.8	17.8	-188.0	0.0	0.0	62.6	2.2	-2.8	0.0	0.0	0.0	0.0	2.2	-179.5
85	17598820.83	4857840.02	1.00	1	D	A	59.6	29.0	0.0	0.0	0.0	62.9	2.2	-2.2	0.0	0.0	0.0	0.0	2.5	23.2
85	17598820.83	4857840.02	1.00	1	N	A	54.8	29.0	-188.0	0.0	0.0	62.9	2.2	-2.2	0.0	0.0	0.0	0.0	2.5	-169.6
85	17598820.83	4857840.02	1.00	1	E	A	54.8	29.0	-188.0	0.0	0.0	62.9	2.2	-2.2	0.0	0.0	0.0	0.0	2.5	-169.6
89	17598759.45	4857848.03	1.00	0	D	A	59.6	32.1	0.0	0.0	0.0	59.5	1.6	-0.6	0.0	0.0	0.0	0.0	0.0	31.3
89	17598759.45	4857848.03	1.00	0	N	A	54.8	32.1	-188.0	0.0	0.0	59.5	1.6	-0.6	0.0	0.0	0.0	0.0	0.0	-161.5
89	17598759.45	4857848.03	1.00	0	E	A	54.8	32.1	-188.0	0.0	0.0	59.5	1.6	-0.6	0.0	0.0	0.0	0.0	0.0	-161.5
91	17598769.87	4857854.55	1.00	2	D	A	59.6	26.1	0.0	0.0	0.0	63.7	2.4	-2.5	0.0	0.0	26.3	0.0	5.8	-9.9
91	17598769.87	4857854.55	1.00	2	N	A	54.8	26.1	-188.0	0.0	0.0	63.7	2.4	-2.5	0.0	0.0	26.3	0.0	5.8	-202.7
91	17598769.87	4857854.55	1.00	2	E	A	54.8	26.1	-188.0	0.0	0.0	63.7	2.4	-2.5	0.0	0.0	26.3	0.0	5.8	-202.7
93	17598749.65	4857836.62	1.00	2	D	A	59.6	29.2	0.0	0.0	0.0	63.2	2.3	-1.5	0.0	0.0	25.3	0.0	5.7	-6.1
93	17598749.65	4857836.62	1.00	2	N	A	54.8	29.2	-188.0	0.0	0.0	63.2	2.3	-1.5	0.0	0.0	25.3	0.0	5.7	-198.9
93	17598749.65	4857836.62	1.00	2	E	A	54.8	29.2	-188.0	0.0	0.0	63.2	2.3	-1.5	0.0	0.0	25.3	0.0	5.7	-198.9
101	17598832.40	4857861.70	1.00	0	D	A	59.6	31.4	0.0	0.0	0.0	61.6	2.0	-2.5	0.0	0.0	0.0	0.0	0.0	29.9
101	17598832.40	4857861.70	1.00	0	N	A	54.8	31.4	-188.0	0.0	0.0	61.6	2.0	-2.5	0.0	0.0	0.0	0.0	0.0	-162.9
101	17598832.40	4857861.70	1.00	0	E	A	54.8	31.4	-188.0	0.0	0.0	61.6	2.0	-2.5	0.0	0.0	0.0	0.0	0.0	-162.9
107	17598838.48	4857854.85	1.00	2	D	A	59.6	29.1	0.0	0.0	0.0	64.9	2.7	-3.0	0.0	0.0	26.6	0.0	5.9	-8.4
107	17598838.48	4857854.85	1.00	2	N	A	54.8	29.1	-188.0	0.0	0.0	64.9	2.7	-3.0	0.0	0.0	26.6	0.0	5.9	-201.2
107	17598838.48	4857854.85	1.00	2	E	A	54.8	29.1	-188.0	0.0	0.0	64.9	2.7	-3.0	0.0	0.0	26.6	0.0	5.9	-201.2
109	17598823.07	4857867.25	1.00	2	D	A	59.6	25.4	0.0	0.0	0.0	64.7	2.6	-1.9	0.0	0.0	25.6	0.0	5.9	-11.9
109	17598823.07	4857867.25	1.00	2	N	A	54.8	25.4	-188.0	0.0	0.0	64.7	2.6	-1.9	0.0	0.0	25.6	0.0	5.9	-204.7
109	17598823.07	4857867.25	1.00	2	E	A	54.8	25.4	-188.0	0.0	0.0	64.7	2.6	-1.9	0.0	0.0	25.6	0.0	5.9	-204.7
111	17598862.02	4857844.76	1.00	1	D	A	59.6	18.8	0.0	0.0	0.0	62.5	2.1	-2.8	0.0	0.0	0.0	0.0	2.0	14.5
111	17598862.02	4857844.76	1.00	1	N	A	54.8	18.8	-188.0	0.0	0.0	62.5	2.1	-2.8	0.0	0.0	0.0	0.0	2.0	-178.3
111	17598862.02	4857844.76	1.00	1	E	A	54.8	18.8	-188.0	0.0	0.0	62.5	2.1	-2.8	0.0	0.0	0.0	0.0	2.0	-178.3
129	17598817.51	4857867.43	1.00	1	D	A	59.6	24.8	0.0	0.0	0.0	62.3	2.1	-0.3	0.0	0.0	0.0	0.0	2.5	17.7
129	17598817.51	4857867.43	1.00	1	N	A	54.8	24.8	-188.0	0.0	0.0	62.3	2.1	-0.3	0.0	0.0	0.0	0.0	2.5	-175.1
129	17598817.51	4857867.43	1.00	1	E	A	54.8	24.8	-188.0	0.0	0.0	62.3	2.1	-0.3	0.0	0.0	0.0	0.0	2.5	-175.1
131	17598832.68	4857864.13	1.00	1	D	A	59.6	28.4	0.0	0.0	0.0	62.3	2.1	-2.2	0.0	0.0	0.0	0.0	2.3	23.5
131	17598832.68	4857864.13	1.00	1	N	A	54.8	28.4	-188.0	0.0	0.0	62.3	2.1	-2.2	0.0	0.0	0.0	0.0	2.3	-169.3
131	17598832.68	4857864.13	1.00	1	E	A	54.8	28.4	-188.0	0.0	0.0	62.3	2.1	-2.2	0.0	0.0	0.0	0.0	2.3	-169.3

Point Source, ISO 9613, Name: "", ID: "SWStone_HTIdle"																				
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)
137	17598852.48	4857861.31	2.40	0	D	A	100.9	0.0	-10.8	0.0	0.0	62.1	1.9	-2.2	0.0	0.0	0.0	0.0	0.0	28.2
137	17598852.48	4857861.31	2.40	0	N	A	100.9	0.0	-188.0	0.0	0.0	62.1	1.9	-2.2	0.0	0.0	0.0	0.0	0.0	-149.0
137	17598852.48	4857861.31	2.40	0	E	A	100.9	0.0	-188.0	0.0	0.0	62.1	1.9	-2.2	0.0	0.0	0.0	0.0	0.0	-149.0
142	17598852.48	4857861.31	2.40	2	D	A	100.9	0.0	-10.8	0.0	0.0	65.2	2.6	-2.8	0.0	0.0	27.2	0.0	4.9	-7.0
142	17598852.48	4857861.31	2.40	2	N	A	100.9	0.0	-188.0	0.0	0.0	65.2	2.6	-2.8	0.0	0.0	27.2	0.0	4.9	-184.2
142	17598852.48	4857861.31	2.40	2	E	A	100.9	0.0	-188.0	0.0	0.0	65.2	2.6	-2.8	0.0	0.0	27.2	0.0	4.9	-184.2

Line Source, ISO 9613, Name: "", ID: "SWStone_HTMov"																				
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)
148	17598880.00	4857890.33	2.40	0	D	A	64.2	15.2	0.0	0.0	0.0	62.9	2.0	-1.7	0.0	0.0	11.6	0.0	0.0	4.6
148	17598880.00	4857890.33	2.40	0	N	A	-35.8	15.2	0.0	0.0	0.0	62.9	2.0	-1.7	0.0	0.0	11.6	0.0	0.0	-95.4
148	17598880.00	4857890.33	2.40	0	E	A	-35.8	15.2	0.0	0.0	0.0	62.9	2.0	-1.7	0.0	0.0	11.6	0.0	0.0	-95.4
151	17598860.56	4857869.86	2.40	0	D	A	64.2	13.6	0.0	0.0	0.0	62.3	1.9	-2.2	0.0	0.0	0.0	0.0	0.0	15.7
151	17598860.56	4857869.86	2.40	0	N	A	-35.8	13.6	0.0	0.0	0.0	62.3	1.9	-2.2	0.0	0.0	0.0	0.0	0.0	-84.3
151	17598860.56	4857869.86	2.40	0	E	A	-35.8	13.6	0.0	0.0	0.0	62.3	1.9	-2.2	0.0	0.0	0.0	0.0	0.0	-84.3
155	17598872.66	4857882.60	2.40	2	D	A	64.2	8.5	0.0	0.0	0.0	65.6	2.4	-2.6	0.0	0.0	27.1	0.0	6.6	-26.4
155	17598872.66	4857882.60	2.40	2	N	A	-35.8	8.5	0.0	0.0	0.0	65.6	2.4	-2.6	0.0	0.0	27.1	0.0	6.6	-126.4
155	17598872.66	4857882.60	2.40	2	E	A	-35.8	8.5	0.0	0.0	0.0	65.6	2.4	-2.6	0.0	0.0	27.1	0.0	6.6	-126.4
162	17598861.43	4857870.78	2.40	2	D	A	64.2	14.1	0.0	0.0	0.0	65.4	2.4	-2.8	0.0	0.0	25.6	0.0	8.2	-20.6
162	17598861.43	4857870.78	2.40	2	N	A	-35.8	14.1	0.0	0.0	0.0	65.4	2.4	-2.8	0.0	0.0	25.6	0.0	8.2	-120.6
162	17598861.43	4857870.78	2.40	2	E	A	-35.8	14.1	0.0	0.0	0.0	65.4	2.4	-2.8	0.0	0.0	25.6	0.0	8.2	-120.6
165	17598888.62	4857899.41	2.40	1	D	A	64.2	9.3	0.0	0.0	0.0	65.3	2.4	-3.2	0.0	0.0	0.0	0.0	6.6	2.5
165	17598888.62	4857899.41	2.40	1	N	A	-35.8	9.3	0.0	0.0	0.0	65.3	2.4	-3.2	0.0	0.0	0.0	0.0	6.6	-97.5

Line Source, ISO 9613, Name: "", ID: "SWStone_HTMov"																				
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)
165	17598888.62	4857899.41	2.40	1	E	A	-35.8	9.3	0.0	0.0	0.0	65.3	2.4	-3.2	0.0	0.0	0.0	0.0	6.6	-97.5
167	17598883.66	4857894.18	2.40	1	D	A	64.2	7.8	0.0	0.0	0.0	65.2	2.3	-3.2	0.0	0.0	11.7	0.0	11.0	-15.0
167	17598883.66	4857894.18	2.40	1	N	A	-35.8	7.8	0.0	0.0	0.0	65.2	2.3	-3.2	0.0	0.0	11.7	0.0	11.0	-115.0
167	17598883.66	4857894.18	2.40	1	E	A	-35.8	7.8	0.0	0.0	0.0	65.2	2.3	-3.2	0.0	0.0	11.7	0.0	11.0	-115.0
170	17598881.01	4857891.39	2.40	1	D	A	64.2	14.8	0.0	0.0	0.0	63.2	2.0	-2.5	0.0	0.0	0.0	0.0	3.8	12.4
170	17598881.01	4857891.39	2.40	1	N	A	-35.8	14.8	0.0	0.0	0.0	63.2	2.0	-2.5	0.0	0.0	0.0	0.0	3.8	-87.6
170	17598881.01	4857891.39	2.40	1	E	A	-35.8	14.8	0.0	0.0	0.0	63.2	2.0	-2.5	0.0	0.0	0.0	0.0	3.8	-87.6
174	17598861.42	4857870.01	2.40	0	D	A	64.2	13.9	0.0	0.0	0.0	62.4	1.9	-2.2	0.0	0.0	0.0	0.0	0.0	15.9
174	17598861.42	4857870.01	2.40	0	N	A	-35.8	13.9	0.0	0.0	0.0	62.4	1.9	-2.2	0.0	0.0	0.0	0.0	0.0	-84.1
174	17598861.42	4857870.01	2.40	0	E	A	-35.8	13.9	0.0	0.0	0.0	62.4	1.9	-2.2	0.0	0.0	0.0	0.0	0.0	-84.1
176	17598881.30	4857889.23	2.40	0	D	A	64.2	14.9	0.0	0.0	0.0	62.9	2.0	-1.8	0.0	0.0	10.8	0.0	0.0	5.3
176	17598881.30	4857889.23	2.40	0	N	A	-35.8	14.9	0.0	0.0	0.0	62.9	2.0	-1.8	0.0	0.0	10.8	0.0	0.0	-94.7
176	17598881.30	4857889.23	2.40	0	E	A	-35.8	14.9	0.0	0.0	0.0	62.9	2.0	-1.8	0.0	0.0	10.8	0.0	0.0	-94.7
178	17598862.48	4857871.03	2.40	2	D	A	64.2	14.4	0.0	0.0	0.0	65.4	2.4	-2.8	0.0	0.0	25.6	0.0	8.2	-20.3
178	17598862.48	4857871.03	2.40	2	N	A	-35.8	14.4	0.0	0.0	0.0	65.4	2.4	-2.8	0.0	0.0	25.6	0.0	8.2	-120.3
178	17598862.48	4857871.03	2.40	2	E	A	-35.8	14.4	0.0	0.0	0.0	65.4	2.4	-2.8	0.0	0.0	25.6	0.0	8.2	-120.3
180	17598875.06	4857883.20	2.40	2	D	A	64.2	8.8	0.0	0.0	0.0	65.6	2.4	-2.8	0.0	0.0	27.2	0.0	6.6	-26.2
180	17598875.06	4857883.20	2.40	2	N	A	-35.8	8.8	0.0	0.0	0.0	65.6	2.4	-2.8	0.0	0.0	27.2	0.0	6.6	-126.2
180	17598875.06	4857883.20	2.40	2	E	A	-35.8	8.8	0.0	0.0	0.0	65.6	2.4	-2.8	0.0	0.0	27.2	0.0	6.6	-126.2
183	17598883.88	4857891.72	2.40	1	D	A	64.2	7.6	0.0	0.0	0.0	65.1	2.3	-3.2	0.0	0.0	12.0	0.0	11.3	-15.8
183	17598883.88	4857891.72	2.40	1	N	A	-35.8	7.6	0.0	0.0	0.0	65.1	2.3	-3.2	0.0	0.0	12.0	0.0	11.3	-115.8
183	17598883.88	4857891.72	2.40	1	E	A	-35.8	7.6	0.0	0.0	0.0	65.1	2.3	-3.2	0.0	0.0	12.0	0.0	11.3	-115.8
186	17598889.17	4857896.84	2.40	1	D	A	64.2	9.5	0.0	0.0	0.0	65.2	2.3	-3.2	0.0	0.0	0.0	0.0	6.6	2.8
186	17598889.17	4857896.84	2.40	1	N	A	-35.8	9.5	0.0	0.0	0.0	65.2	2.3	-3.2	0.0	0.0	0.0	0.0	6.6	-97.2
186	17598889.17	4857896.84	2.40	1	E	A	-35.8	9.5	0.0	0.0	0.0	65.2	2.3	-3.2	0.0	0.0	0.0	0.0	6.6	-97.2
189	17598880.97	4857888.91	2.40	1	D	A	64.2	15.0	0.0	0.0	0.0	63.2	2.0	-2.4	0.0	0.0	0.0	0.0	3.8	12.6
189	17598880.97	4857888.91	2.40	1	N	A	-35.8	15.0	0.0	0.0	0.0	63.2	2.0	-2.4	0.0	0.0	0.0	0.0	3.8	-87.4
189	17598880.97	4857888.91	2.40	1	E	A	-35.8	15.0	0.0	0.0	0.0	63.2	2.0	-2.4	0.0	0.0	0.0	0.0	3.8	-87.4

Receiver
Name: (untitled)
ID: R2
X: 17598496.12 m
Y: 4857812.39 m
Z: 7.50 m

Area Source, ISO 9613, Name: "Heavy Truck Idling", ID: "SUNSS_HTIdle"																				
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)
96	17598810.18	4857762.07	2.40	0	D	A	71.1	33.7	-10.8	0.0	0.0	61.1	1.7	-2.1	0.0	0.0	0.0	0.0	0.0	33.3
96	17598810.18	4857762.07	2.40	0	N	A	71.1	33.7	-10.8	0.0	0.0	61.1	1.7	-2.1	0.0	0.0	0.0	0.0	0.0	33.3
96	17598810.18	4857762.07	2.40	0	E	A	71.1	33.7	-10.8	0.0	0.0	61.1	1.7	-2.1	0.0	0.0	0.0	0.0	0.0	33.3
100	17598838.32	4857783.74	2.40	1	D	A	71.1	26.8	-10.8	0.0	0.0	63.9	2.3	-2.8	0.0	0.0	0.0	0.0	3.8	19.9
100	17598838.32	4857783.74	2.40	1	N	A	71.1	26.8	-10.8	0.0	0.0	63.9	2.3	-2.8	0.0	0.0	0.0	0.0	3.8	19.9
100	17598838.32	4857783.74	2.40	1	E	A	71.1	26.8	-10.8	0.0	0.0	63.9	2.3	-2.8	0.0	0.0	0.0	0.0	3.8	19.9
108	17598824.11	4857768.37	2.40	1	D	A	71.1	27.2	-10.8	0.0	0.0	64.3	2.4	-2.5	0.0	0.0	0.0	0.0	3.8	19.6
108	17598824.11	4857768.37	2.40	1	N	A	71.1	27.2	-10.8	0.0	0.0	64.3	2.4	-2.5	0.0	0.0	0.0	0.0	3.8	19.6
108	17598824.11	4857768.37	2.40	1	E	A	71.1	27.2	-10.8	0.0	0.0	64.3	2.4	-2.5	0.0	0.0	0.0	0.0	3.8	19.6
111	17598801.67	4857753.95	2.40	1	D	A	71.1	30.8	-10.8	0.0	0.0	64.7	2.4	-2.3	0.0	0.0	0.0	0.0	9.6	16.7
111	17598801.67	4857753.95	2.40	1	N	A	71.1	30.8	-10.8	0.0	0.0	64.7	2.4	-2.3	0.0	0.0	0.0	0.0	9.6	16.7
111	17598801.67	4857753.95	2.40	1	E	A	71.1	30.8	-10.8	0.0	0.0	64.7	2.4	-2.3	0.0	0.0	0.0	0.0	9.6	16.7
247	17598853.76	4857774.24	2.40	0	D	A	71.1	33.2	-10.8	0.0	0.0	62.1	1.9	-2.5	0.0	0.0	0.0	0.0	0.0	31.9
247	17598853.76	4857774.24	2.40	0	N	A	71.1	33.2	-10.8	0.0	0.0	62.1	1.9	-2.5	0.0	0.0	0.0	0.0	0.0	31.9
247	17598853.76	4857774.24	2.40	0	E	A	71.1	33.2	-10.8	0.0	0.0	62.1	1.9	-2.5	0.0	0.0	0.0	0.0	0.0	31.9
253	17598835.69	4857763.39	2.40	1	D	A	71.1	27.9	-10.8	0.0	0.0	64.3	2.4	-2.9	0.0	0.0	0.0	0.0	3.8	20.7
253	17598835.69	4857763.39	2.40	1	N	A	71.1	27.9	-10.8	0.0	0.0	64.3	2.4	-2.9	0.0	0.0	0.0	0.0	3.8	20.7
253	17598835.69	4857763.39	2.40	1	E	A	71.1	27.9	-10.8	0.0	0.0	64.3	2.4	-2.9	0.0	0.0	0.0	0.0	3.8	20.7
256	17598823.13	4857745.98	2.40	1	D	A	71.1	21.8	-10.8	0.0	0.0	64.7	2.5	-2.7	0.0	0.0	0.0	0.0	9.6	7.9
256	17598823.13	4857745.98	2.40	1	N	A	71.1	21.8	-10.8	0.0	0.0	64.7	2.5	-2.7	0.0	0.0	0.0	0.0	9.6	7.9
256	17598823.13	4857745.98	2.40	1	E	A	71.1	21.8	-10.8	0.0	0.0	64.7	2.5	-2.7	0.0	0.0	0.0	0.0	9.6	7.9
424	17598831.29	4857723.72	2.40	0	D	A	71.1	23.7	-10.8	0.0	0.0	61.8	1.9	-2.5	0.0	0.0	0.0	0.0	0.0	22.8
424	17598831.29	4857723.72	2.40	0	N	A	71.1	23.7	-10.8	0.0	0.0	61.8	1.9	-2.5	0.0	0.0	0.0	0.0	0.0	22.8
424	17598831.29	4857723.72	2.40	0	E	A	71.1	23.7	-10.8	0.0	0.0	61.8	1.9	-2.5	0.0	0.0	0.0	0.0	0.0	22.8
426	17598845.75	4857742.02	2.40	0	D	A	71.1	29.6	-10.8	0.0	0.0	62.0	1.9	-2.5	0.0	0.0	0.0	0.0	0.0	28.5
426	17598845.75	4857742.02	2.40	0	N	A	71.1	29.6	-10.8	0.0	0.0	62.0	1.9	-2.5	0.0	0.0	0.0	0.0	0.0	28.5
426	17598845.75	4857742.02	2.40	0	E	A	71.1	29.6	-10.8	0.0	0.0	62.0	1.9	-2.5	0.0	0.0	0.0	0.0	0.0	28.5
428	17598875.65	4857765.36	2.40	0	D	A	71.1	19.9	-10.8	0.0	0.0	62.7	2.0	-2.6	0.0	0.0	0.0	0.0	0.0	18.1
428	17598875.65	4857765.36	2.40	0	N	A	71.1	19.9	-10.8	0.0	0.0	62.7	2.0	-2.6	0.0	0.0	0.0	0.0	0.0	18.1
428	17598875.65	4857765.36	2.40	0	E	A	71.1	19.9	-10.8	0.0	0.0	62.7	2.0	-2.6	0.0	0.0	0.0	0.0	0.0	18.1
435	17598825.21	4857733.40	2.40	1	D	A	71.1	24.0	-10.8	0.0	0.0	64.8	2.5	-3.0	0.0	0.0	0.0	0.0	3.8	16.1
435	17598825.21	4857733.40	2.40	1	N	A	71.1	24.0	-10.8	0.0	0.0	64.8	2.5	-3.0	0.0	0.0	0.0	0.0	3.8	16.1
435	17598825.21	4857733.40	2.40	1	E	A	71.1	24.0	-10.8	0.0	0.0	64.8	2.5	-3.0	0.0	0.0	0.0	0.0	3.8	16.1
481	17598890.06	4857763.45	2.40	0	D	A	71.1	24.1	-10.8	0.0	0.0	63.0	2.1	-2.7	0.0	0.0	0.0	0.0	0.0	22.1
481	17598890.06	4857763.45	2.40	0	N	A	71.1	24.1	-10.8	0.0	0.0	63.0	2.1	-2.7	0.0	0.0	0.0	0.0	0.0	22.1
481	17598890.06	4857763.45	2.40	0	E	A	71.1	24.1	-10.8	0.0	0.0	63.0	2.1	-2.7	0.0	0.0	0.0	0.0	0.0	22.1
483	17598891.24	4857757.71	2.40	0	D	A	71.1	6.5	-10.8	0.0	0.0	63.0	2.1	-2.7	0.0	0.0	0.0	0.0	0.0	4.4
483	17598891.24	4857757.71	2.40	0	N	A	71.1	6.5	-10.8	0.0	0.0	63.0	2.1	-2.7	0.0	0.0	0.0	0.0	0.0	4.4
483	17598891.24	4857757.71	2.40	0	E	A	71.1	6.5	-10.8	0.0	0.0	63.0	2.1	-2.7	0.0	0.0	0.0	0.0	0.0	4.4
484	17598872.63	4857742.84	2.40	0	D	A	71.1	29.1	-10.8	0.0	0.0	62.7	2.0	-2.6	0.0	0.0	0.0	0.0	0.0	27.3
484	17598872.63	4857742.84	2.40	0	N	A	71.1	29.1	-10.8	0.0	0.0	62.7	2.0	-2.6	0.0	0.0	0.0	0.0	0.0	27.3
484	17598872.63	4857742.84	2.40	0	E	A	71.1	29.1	-10.8	0.0	0.0	62.7	2.0	-2.6	0.0	0.0	0.0	0.0	0.0	27.3
492	17598896.75	4857758.33	2.40	1	D	A	71.1	19.5	-10.8	0.0	0.0	63.5	2.2	-2.9	0.0	0.0	0.0	0.0	2.1	14.9
492	17598896.75	4857758.33	2.40	1	N	A	71.1	19.5	-10.8	0.0	0.0	63.5	2.2	-2.9	0.0	0.0	0.0	0.0	2.1	14.9
492	17598896.75	4857758.33	2.40	1	E	A	71.1	19.5	-10.8	0.0	0.0	63.5	2.2	-2.9	0.0	0.0	0.0	0.0	2.1	14.9
496	17598902.15	4857756.93	2.40	1	D	A	71.1	15.9	-10.8	0.0	0.0	63.5	2.2	-2.9	0.0	0.0	0.0	0.0	2.1	11.2
496	17598902.15	4857756.93	2.40	1	N	A	71.1	15.9	-10.8	0.0	0.0	63.5	2.2	-2.9	0.0	0.0	0.0	0.0	2.1	11.2
496	17598902.15	4857756.93	2.40	1	E	A	71.1	15.9	-10.8	0.0	0.0	63.5	2.2	-2.9	0.0	0.0	0.0	0.0	2.1	11.2
603	17598769.37	4857727.64	2.40	0	D	A	71.1	10.1	-10.8	0.0	0.0	60.1	1.6	-1.6	0.0	0.0	6.3	0.0	0.0	3.9
603	17598769.37	4857727.64	2.40	0	N	A	71.1	10.1	-10.8	0.0	0.0	60.1	1.6	-1.6	0.0	0.0	6.3	0.0	0.0	3.9
603	17598769.37	4857727.64	2.40	0	E	A	71.1	10.1	-10.8	0.0	0.0	60.1	1.6	-1.6	0.0	0.0	6.3	0.0	0.0	3.9
604	17598770.96	4857730.57	2.40	0	D	A	71.1	18.7	-10.8	0.0	0.0	60.2	1.6	-1.6	0.0	0.0	0.0	0.0	0.0	18.8
604	17598770.96	4857730.57	2.40	0	N	A	71.1	18.7	-10.8	0.0	0.0	60.2	1.6	-1.6	0.0	0.0	0.0	0.0	0.0	18.8

Area Source, ISO 9613, Name: "Heavy Truck Idling", ID: "SUNSS_HTIdle"																				
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)
604	17598770.96	4857730.57	2.40	0	E	A	71.1	18.7	-10.8	0.0	0.0	60.2	1.6	-1.6	0.0	0.0	0.0	0.0	0.0	18.8
606	17598772.53	4857732.98	2.40	0	D	A	71.1	17.2	-10.8	0.0	0.0	60.2	1.6	-1.6	0.0	0.0	0.0	0.0	0.0	17.3
606	17598772.53	4857732.98	2.40	0	N	A	71.1	17.2	-10.8	0.0	0.0	60.2	1.6	-1.6	0.0	0.0	0.0	0.0	0.0	17.3
606	17598772.53	4857732.98	2.40	0	E	A	71.1	17.2	-10.8	0.0	0.0	60.2	1.6	-1.6	0.0	0.0	0.0	0.0	0.0	17.3
609	17598785.91	4857733.62	2.40	0	D	A	71.1	22.2	-10.8	0.0	0.0	60.6	1.7	-1.7	0.0	0.0	0.0	0.0	0.0	21.9
609	17598785.91	4857733.62	2.40	0	N	A	71.1	22.2	-10.8	0.0	0.0	60.6	1.7	-1.7	0.0	0.0	0.0	0.0	0.0	21.9
609	17598785.91	4857733.62	2.40	0	E	A	71.1	22.2	-10.8	0.0	0.0	60.6	1.7	-1.7	0.0	0.0	0.0	0.0	0.0	21.9
625	17598881.50	4857795.68	2.40	0	D	A	71.1	24.1	-10.8	0.0	0.0	62.7	2.0	-2.7	0.0	0.0	0.0	0.0	0.0	22.3
625	17598881.50	4857795.68	2.40	0	N	A	71.1	24.1	-10.8	0.0	0.0	62.7	2.0	-2.7	0.0	0.0	0.0	0.0	0.0	22.3
625	17598881.50	4857795.68	2.40	0	E	A	71.1	24.1	-10.8	0.0	0.0	62.7	2.0	-2.7	0.0	0.0	0.0	0.0	0.0	22.3
627	17598864.22	4857826.09	2.40	2	D	A	71.1	-5.1	-10.8	0.0	0.0	65.3	2.6	-2.9	0.0	0.0	27.4	0.0	4.9	-42.0
627	17598864.22	4857826.09	2.40	2	N	A	71.1	-5.1	-10.8	0.0	0.0	65.3	2.6	-2.9	0.0	0.0	27.4	0.0	4.9	-42.0
627	17598864.22	4857826.09	2.40	2	E	A	71.1	-5.1	-10.8	0.0	0.0	65.3	2.6	-2.9	0.0	0.0	27.4	0.0	4.9	-42.0
630	17598892.15	4857785.07	2.40	1	D	A	71.1	4.1	-10.8	0.0	0.0	63.1	2.1	-2.8	0.0	0.0	0.0	0.0	2.0	0.0
630	17598892.15	4857785.07	2.40	1	N	A	71.1	4.1	-10.8	0.0	0.0	63.1	2.1	-2.8	0.0	0.0	0.0	0.0	2.0	0.0
630	17598892.15	4857785.07	2.40	1	E	A	71.1	4.1	-10.8	0.0	0.0	63.1	2.1	-2.8	0.0	0.0	0.0	0.0	2.0	0.0
634	17598863.92	4857826.59	2.40	1	D	A	71.1	-10.5	-10.8	0.0	0.0	62.8	2.1	-2.5	0.0	0.0	0.0	0.0	2.1	-14.7
634	17598863.92	4857826.59	2.40	1	N	A	71.1	-10.5	-10.8	0.0	0.0	62.8	2.1	-2.5	0.0	0.0	0.0	0.0	2.1	-14.7
634	17598863.92	4857826.59	2.40	1	E	A	71.1	-10.5	-10.8	0.0	0.0	62.8	2.1	-2.5	0.0	0.0	0.0	0.0	2.1	-14.7
636	17598870.91	4857805.56	2.40	0	D	A	71.1	23.3	-10.8	0.0	0.0	62.5	2.0	-2.6	0.0	0.0	0.0	0.0	0.0	21.7
636	17598870.91	4857805.56	2.40	0	N	A	71.1	23.3	-10.8	0.0	0.0	62.5	2.0	-2.6	0.0	0.0	0.0	0.0	0.0	21.7
636	17598870.91	4857805.56	2.40	0	E	A	71.1	23.3	-10.8	0.0	0.0	62.5	2.0	-2.6	0.0	0.0	0.0	0.0	0.0	21.7
642	17598863.73	4857826.02	2.40	2	D	A	71.1	-0.1	-10.8	0.0	0.0	65.3	2.6	-2.9	0.0	0.0	27.4	0.0	4.9	-37.0
642	17598863.73	4857826.02	2.40	2	N	A	71.1	-0.1	-10.8	0.0	0.0	65.3	2.6	-2.9	0.0	0.0	27.4	0.0	4.9	-37.0
642	17598863.73	4857826.02	2.40	2	E	A	71.1	-0.1	-10.8	0.0	0.0	65.3	2.6	-2.9	0.0	0.0	27.4	0.0	4.9	-37.0
646	17598863.42	4857825.15	2.40	1	D	A	71.1	2.2	-10.8	0.0	0.0	62.9	2.1	-2.5	0.0	0.0	0.0	0.0	2.1	-2.0
646	17598863.42	4857825.15	2.40	1	N	A	71.1	2.2	-10.8	0.0	0.0	62.9	2.1	-2.5	0.0	0.0	0.0	0.0	2.1	-2.0
646	17598863.42	4857825.15	2.40	1	E	A	71.1	2.2	-10.8	0.0	0.0	62.9	2.1	-2.5	0.0	0.0	0.0	0.0	2.1	-2.0

Line Source, ISO 9613, Name: "", ID: "SUNSS_HTMov1"																				
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)
131	17598836.33	4857768.39	2.40	0	DEN	A	73.2	20.6	0.0	0.0	0.0	61.7	1.8	-2.3	0.0	0.0	0.0	0.0	0.0	32.6
139	17598835.05	4857767.67	2.40	1	DEN	A	73.2	13.9	0.0	0.0	0.0	64.2	2.2	-2.8	0.0	0.0	0.0	0.0	6.4	17.1
142	17598808.24	4857752.62	2.40	1	DEN	A	73.2	17.1	0.0	0.0	0.0	64.7	2.3	-2.3	0.0	0.0	0.0	0.0	11.4	14.3
144	17598837.46	4857767.73	2.40	0	DEN	A	73.2	20.6	0.0	0.0	0.0	61.7	1.8	-2.3	0.0	0.0	0.0	0.0	0.0	32.5
149	17598834.45	4857766.06	2.40	1	DEN	A	73.2	13.9	0.0	0.0	0.0	64.2	2.2	-2.8	0.0	0.0	0.0	0.0	6.4	17.1
157	17598808.89	4857751.85	2.40	1	DEN	A	73.2	16.9	0.0	0.0	0.0	64.7	2.3	-2.3	0.0	0.0	0.0	0.0	11.4	14.1
259	17598898.62	4857758.69	2.40	0	DEN	A	73.2	7.5	0.0	0.0	0.0	63.2	2.0	-2.7	0.0	0.0	0.0	0.0	0.0	18.2
261	17598857.46	4857725.21	2.40	0	DEN	A	73.2	20.0	0.0	0.0	0.0	62.4	1.9	-2.6	0.0	0.0	0.0	0.0	0.0	31.5
272	17598900.22	4857759.99	2.40	1	DEN	A	73.2	1.8	0.0	0.0	0.0	63.4	2.1	-2.8	0.0	0.0	0.0	0.0	2.5	9.8
275	17598897.09	4857757.45	2.40	1	DEN	A	73.2	8.2	0.0	0.0	0.0	63.5	2.1	-2.8	0.0	0.0	0.0	0.0	2.5	16.1
278	17598857.40	4857726.00	2.40	0	DEN	A	73.2	20.0	0.0	0.0	0.0	62.4	1.9	-2.6	0.0	0.0	0.0	0.0	0.0	31.4
280	17598898.57	4857758.70	2.40	0	DEN	A	73.2	7.6	0.0	0.0	0.0	63.2	2.0	-2.7	0.0	0.0	0.0	0.0	0.0	18.2
295	17598897.08	4857757.52	2.40	1	DEN	A	73.2	8.1	0.0	0.0	0.0	63.5	2.1	-2.8	0.0	0.0	0.0	0.0	2.5	16.1
300	17598900.22	4857760.00	2.40	1	DEN	A	73.2	1.8	0.0	0.0	0.0	63.4	2.1	-2.8	0.0	0.0	0.0	0.0	2.5	9.7
401	17598812.31	4857702.35	2.40	0	DEN	A	73.2	13.3	0.0	0.0	0.0	61.5	1.8	-1.5	0.0	0.0	0.0	0.0	0.0	24.8
407	17598801.30	4857718.11	2.40	0	DEN	A	73.2	12.3	0.0	0.0	0.0	61.1	1.7	-1.4	0.0	0.0	0.0	0.0	0.0	24.0
417	17598791.20	4857732.56	2.40	0	DEN	A	73.2	12.6	0.0	0.0	0.0	60.7	1.7	-1.4	0.0	0.0	0.0	0.0	0.0	24.8
438	17598797.54	4857725.32	2.40	0	DEN	A	73.2	15.5	0.0	0.0	0.0	60.9	1.7	-1.4	0.0	0.0	0.0	0.0	0.0	27.4
441	17598813.05	4857702.88	2.40	0	DEN	A	73.2	12.8	0.0	0.0	0.0	61.5	1.8	-1.6	0.0	0.0	0.0	0.0	0.0	24.2
444	17598918.67	4857820.11	2.40	0	DEN	A	73.2	19.0	0.0	0.0	0.0	63.5	2.1	-2.7	0.0	0.0	0.0	0.0	0.0	29.3
447	17598944.27	4857840.28	2.40	2	DEN	A	73.2	11.5	0.0	0.0	0.0	66.5	2.6	-3.1	0.0	0.0	26.0	0.0	8.3	-15.5
450	17598909.74	4857813.08	2.40	1	DEN	A	73.2	16.9	0.0	0.0	0.0	63.7	2.1	-2.8	0.0	0.0	0.0	0.0	2.5	24.7
457	17598939.60	4857836.60	2.40	2	DEN	A	73.2	7.4	0.0	0.0	0.0	65.5	2.4	-3.3	0.0	0.0	0.0	0.0	13.7	2.2
471	17598917.36	4857821.65	2.40	0	DEN	A	73.2	19.0	0.0	0.0	0.0	63.5	2.1	-2.7	0.0	0.0	0.0	0.0	0.0	29.3
474	17598941.02	4857840.91	2.40	2	DEN	A	73.2	12.6	0.0	0.0	0.0	66.5	2.6	-3.1	0.0	0.0	26.0	0.0	8.3	-14.5
476	17598909.66	4857815.37	2.40	1	DEN	A	73.2	17.0	0.0	0.0	0.0	63.7	2.1	-2.8	0.0	0.0	0.0	0.0	2.5	24.7
478	17598936.91	4857837.57	2.40	2	DEN	A	73.2	7.3	0.0	0.0	0.0	65.4	2.4	-3.2	0.0	0.0	0.0	0.0	13.7	2.2

Point Source, ISO 9613, Name: "", ID: "SUNSS_HTIdleW"																				
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)
304	17598634.84	4857618.12	2.40	0	D	A	100.9	0.0	-10.8	0.0	0.0	58.6	1.4	-1.8	0.0	0.0	0.0	0.0	0.0	31.9
304	17598634.84	4857618.12	2.40	0	N	A	100.9	0.0	-10.8	0.0	0.0	58.6	1.4	-1.8	0.0	0.0	0.0	0.0	0.0	31.9
304	17598634.84	4857618.12	2.40	0	E	A	100.9	0.0	-10.8	0.0	0.0	58.6	1.4	-1.8	0.0	0.0	0.0	0.0	0.0	31.9

Line Source, ISO 9613, Name: "", ID: "SUNSS_HTMov2"																				
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)
503	17598817.33	4857694.60	2.40	0	DEN	A	64.2	3.8	0.0	0.0	0.0	61.7	1.8	-1.6	0.0	0.0	0.0	0.0	0.0	6.1
505	17598814.27	4857693.31	2.40	0	DEN	A	64.2	6.3	0.0	0.0	0.0	61.6	1.8	-1.5	0.0	0.0	0.0	0.0	0.0	8.6
507	17598789.45	4857682.90	2.40	0	DEN	A	64.2	17.0	0.0	0.0	0.0	61.1	1.7	-2.4	0.0	0.0	7.2	0.0	0.0	13.5
529	17598741.00	4857662.57	2.40	0	DEN	A	64.2	17.4	0.0	0.0	0.0	60.2	1.6	-2.4	0.0	0.0	7.2	0.0	0.0	15.1
533	17598699.92	4857645.34	2.40	0	DEN	A	64.2	15.3	0.0	0.0	0.0	59.4	1.5	-2.5	0.0	0.0	7.3	0.0	0.0	13.7
536	17598683.13	4857638.29	2.40	0	DEN	A	64.2	4.5	0.0	0.0	0.0	59.1	1.5	-2.1	0.0	0.0	3.3	0.0	0.0	6.8
538	17598658.67	4857628.03	2.40	0	DEN	A	64.2	17.0	0.0	0.0	0.0	58.8	1.5	-1.9	0.0	0.0	0.0	0.0	0.0	22.8
544	17598709.52	4857649.37	2.40	1	DEN	A	64.2	5.9	0.0	0.0	0.0	61.2	1.7	-2.7	0.0	0.0	26.4	0.0	2.4	-19.0
572	17598684.11	4857638.70	2.40	2	DEN	A	64.2	2.1	0.0	0.0	0.0	59.8	1.6	-2.1	0.0	0.0	6.9	0.0	20.7	-20.6
573	17598658.57	4857627.79	2.40	0	DEN	A	64.2	17.0	0.0	0.0	0.0	58.8	1.5	-1.9	0.0	0.0	0.0	0.0	0.0	22.8
574	17598683.19	4857637.91	2.40	0	DEN	A	64.2	5.3	0.0	0.0	0.0	59.2	1.5	-2.2	0.0	0.0	3.2	0.0	0.0	7.7
576	17598699.67	4857644.68	2.40	0	DEN	A	64.2	15.1	0.0	0.0	0.0	59.4	1.5	-2.5	0.0	0.0	7.3	0.0	0.0	13.5
577	17598739.91	4857661.22	2.40	0	DEN	A	64.2	17.4	0.0	0.0	0.0	60.2	1.6	-2.4	0.0	0.0	7.2	0.0	0.0	15.0
578	17598789.40	4857681.55	2.40	0	DEN	A	64.2	17.2	0.0	0.0	0.0	61.1	1.7	-2.4	0.0	0.0	7.2	0.0	0.0	13.7
579	17598815.88	4857692.44	2.40	0	DEN	A	64.2	7.0	0.0	0.0	0.0	61.7	1.8	-1.6	0.0	0.0	0.0	0.0	0.0	9.3
580	17598818.35	4857693.45	2.40	0	DEN	A	64.2	-5.1	0.0	0.0	0.0	61.7	1.8	-1.6	0.0	0.0	0.0	0.0	0.0	-2.9
587	17598708.96	4857648.50	2.40	1	DEN	A	64.2	1.9	0.0	0.0	0.0	61.2	1.7	-2.8	0.0	0.0	26.5	0.0	2.4	-23.0
589	17598710.77	4857649.24	2.40	1	DEN	A	64.2	3.7	0.0	0.0	0.0	61.2	1.7	-2.7	0.0	0.0	26.4	0.0	2.4	-21.2
594	17598684.42	4857638.41	2.40	2	DEN	A	64.2	2.1	0.0	0.0	0.0	59.8	1.6	-2.1	0.0	0.0	6.9	0.0	20.7	-20.7
611	17598836.33	4857768.39	2.40	0	DEN	A	64.2	20.6	0.0	0.0	0.0	61.7	1.8	-2.3	0.0	0.0	0.0	0.0	0.0	23.5
614	17598835.05	4857767.67	2.40	1	DEN	A	64.2	13.9	0.0	0.0	0.0	64.2	2.2	-2.8	0.0	0.0	0.0	0.0	6.4	8.1
616	17598808.24	4857752.62	2.40	1	DEN	A	64.2	17.1	0.0	0.0	0.0	64.7	2.3	-2.3	0.0	0.0	0.0	0.0	11.4	5.3
619	17598837.46	4857767.73	2.40	0	DEN	A	64.2	20.6	0.0	0.0	0.0	61.7	1.8	-2.3	0.0	0.0	0.0	0.0	0.0	23.5
621	17598834.45	4857766.06	2.40	1	DEN	A	64.2	13.9	0.0	0.0	0.0	64.2	2.2	-2.8	0.0	0.0	0.0	0.0	6.4	8.0
623	17598808.89	4857751.85	2.40	1	DEN	A	64.2	16.9	0.0	0.0	0.0	64.7	2.3	-2.3	0.0	0.0	0.0	0.0	11.4	5.1
649	17598812.31	4857702.35	2.40	0	DEN	A	64.2	13.3	0.0	0.0	0.0	61.5	1.8	-1.5	0.0	0.0	0.0	0.0	0.0	15.7
651	17598801.30	4857718.11	2.40	0	DEN	A	64.2	12.3	0.0	0.0	0.0	61.1	1.7	-1.4	0.0	0.0	0.0	0.0	0.0	15.0
653	17598791.20	4857732.56	2.40	0	DEN	A	64.2	12.6	0.0	0.0	0.0	60.7	1.7	-1.4	0.0	0.0	0.0	0.0	0.0	15.8
661	17598797.54	4857725.32	2.40	0	DEN	A	64.2	15.5	0.0	0.0	0.0	60.9	1.7	-1.4	0.0	0.0	0.0	0.0	0.0	18.4
663	17598813.05	4857702.88	2.40	0	DEN	A	64.2	12.8	0.0	0.0	0.0	61.5	1.8	-1.6	0.0	0.0	0.0	0.0	0.0	15.2
669	17598918.67	4857820.11	2.40	0	DEN	A	64.2	19.0	0.0	0.0	0.0	63.5	2.1	-2.7	0.0	0.0	0.0	0.0	0.0	20.3
671	17598944.27	4857840.28	2.40	2	DEN	A	64.2	11.5	0.0	0.0	0.0	66.5	2.6	-3.1	0.0	0.0	26.0	0.0	8.3	-24.6
673	17598909.74	4857813.08	2.40	1	DEN	A	64.2	16.9	0.0	0.0	0.0	63.7	2.1	-2.8	0.0	0.0	0.0	0.0	2.5	15.6
676	17598939.60	4857836.60	2.40	2	DEN	A	64.2	7.4	0.0	0.0	0.0	65.5	2.4	-3.3	0.0	0.0	0.0	0.0	13.7	-6.8
678	17598917.36	4857821.65	2.40	0	DEN	A	64.2	19.0	0.0	0.0	0.0	63.5	2.1	-2.7	0.0	0.0	0.0	0.0	0.0	20.3
680	17598941.02	4857840.91	2.40	2	DEN	A	64.2	12.6	0.0	0.0	0.0	66.5	2.6	-3.1	0.0	0.0	26.0	0.0	8.3	-23.5
682	17598909.66	4857815.37	2.40	1	DEN	A	64.2	17.0	0.0	0.0	0.0	63.7	2.1	-2.8	0.0	0.0	0.0	0.0	2.5	15.7
684	17598936.91	4857837.57	2.40	2	DEN	A	64.2	7.3	0.0	0.0	0.0	65.4	2.4	-3.2	0.0	0.0	0.0	0.0	13.7	-6.8

Receiver
Name: (untitled)
ID: R2
X: 17598496.12 m
Y: 4857812.39 m
Z: 7.50 m

Point Source, ISO 9613, Name: "", ID: "SUNIMP_CPL9"																				
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)
6	17598633.12	4857617.40	1.00	0	DEN	A	105.2	0.0	0.0	0.0	0.0	58.5	1.0	-1.2	0.0	0.0	0.0	0.0	0.0	46.9

Point Source, ISO 9613, Name: "", ID: "SUNIMP_CPL1"																				
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)
11	17598772.79	4857741.88	1.00	0	DEN	A	105.2	0.0	0.0	0.0	0.0	60.1	1.2	-1.6	0.0	0.0	0.0	0.0	0.0	45.5

Point Source, ISO 9613, Name: "", ID: "SUNIMP_CPL2"																				
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)
17	17598794.44	4857758.06	1.00	0	DEN	A	105.2	0.0	0.0	0.0	0.0	60.6	1.2	-2.4	0.0	0.0	0.0	0.0	0.0	45.7

Point Source, ISO 9613, Name: "", ID: "SUNIMP_CPL3"																				
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)
21	17598819.03	4857775.09	1.00	0	DEN	A	105.2	0.0	0.0	0.0	0.0	61.2	1.3	-2.6	0.0	0.0	0.0	0.0	0.0	45.3

Point Source, ISO 9613, Name: "", ID: "SUNIMP_CPL6"																				
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)
25	17598824.70	4857750.50	1.00	0	DEN	A	105.2	0.0	0.0	0.0	0.0	61.5	1.3	-2.6	0.0	0.0	0.0	0.0	0.0	45.1

Point Source, ISO 9613, Name: "", ID: "SUNIMP_CPL4"																				
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)
29	17598841.10	4857793.38	1.00	0	DEN	A	105.2	0.0	0.0	0.0	0.0	61.8	1.4	-2.8	0.0	0.0	0.0	0.0	0.0	44.9
38	17598841.10	4857793.38	1.00	1	DEN	A	105.2	0.0	0.0	0.0	0.0	63.7	1.6	-3.0	0.0	0.0	0.0	0.0	5.8	37.1

Point Source, ISO 9613, Name: "", ID: "SUNIMP_CPL5"																				
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)
41	17598854.34	4857773.41	1.00	0	DEN	A	105.2	0.0	0.0	0.0	0.0	62.1	1.4	-2.8	0.0	0.0	0.0	0.0	0.0	44.5

Point Source, ISO 9613, Name: "", ID: "SUNIMP_CPL8"																				
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)
44	17598850.56	4857729.48	1.00	0	DEN	A	105.2	0.0	0.0	0.0	0.0	62.2	1.4	-2.9	0.0	0.0	0.0	0.0	0.0	44.5

Point Source, ISO 9613, Name: "", ID: "SUNIMP_CPL7"																				
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)
47	17598874.31	4857748.61	1.00	0	DEN	A	105.2	0.0	0.0	0.0	0.0	62.7	1.5	-2.9	0.0	0.0	0.0	0.0	0.0	44.0