PATERSON GROUP

Environmental Noise Control Study
Proposed Mixed-Use Development

910 March Road
Ottawa, Ontario

Prepared for Canadian Rental Development Service Inc.

Report PG6416-1 Revision 1 dated February 9 2023

Table of Contents

PAGE

Appendices

1.0 Introduction

Paterson Group (Paterson) was commissioned by Canadian Rental Development Service Inc. to conduct an environmental noise control study for the proposed mixed-use development to be located at 910 March Road, in the City of Ottawa.

The objective of the current study is to:

- Determine the primary noise sources impacting the site and compare the projected sound levels to guidelines set out by the Ministry of Environment and Climate Change (MOECC) and the City of Ottawa.

- Review the projected noise levels and offer recommendations regarding warning classes, construction materials or alternative sound barriers.

The following report has been prepared specifically and solely for the aforementioned project which is described herein. It contains our findings and includes acoustical recommendations pertaining to the design and construction of the subject development as they are understood at the time of writing this report.

This study has been conducted according to City of Ottawa document - Engineering Noise Control Guidelines (ENCG), dated January 2016, and the Ontario Ministry of the Environment Guideline NPC-300.

2.0 Proposed Development

It is understood that the proposed development will consist of two buildings (Building A and Building B) interconnected by a three-stories building section. Building A is a seven (7) storey building and will rise 25 metres above grade. Building B is a nine (9) storey building and will rise 31 metres above grade. The three-storey building section will rise 11.5 metres above grade. The development will consist of two (2) levels of basement. The building will consist of 391 residential units and 3 commercial units. The commercial units will be located at the west side of the development. Associated walkways, driveways, parking areas, and landscaped areas are further anticipated. Outdoor living areas – at-grade amenity area, common terraces, and balcony terraces are anticipated at the proposed buildings.

3.0 Methodology and Noise Assessment Criteria

The City of Ottawa outlines three (3) sources of environmental noise that must be analyzed separately:

- Surface Transportation Noise
- Stationary Noise
  - new noise-sensitive development applications (noise receptors) in proximity to existing or approved stationary sources of noise, and
  - new stationary sources of noise (noise generating) in proximity to existing or approved noise-sensitive developments
- Aircraft Noise

Surface Transportation Noise

Surface roadway traffic noise, equivalent to sound level energy L_{eq}, provides a measure of the time varying noise level over a period of time. For roadways, the L_{eq} is commonly calculated on the basis of 16-hour (L_{eq16}) daytime (07:00-23:00) and 8-hour (L_{eq8}) nighttime (23:00-7:00) split to assess its impact on residential, commercial and institutional buildings.

The City of Ottawa's Official Plan dictates that the influence area must contain any of following conditions to classify as a surface transportation noise source for a subject site:

- Within 100 m of the right-of-way of an existing or proposed arterial, collector or major collector road; a light rail transit corridor; bus rapid transit, or transit priority corridor
- Within 250 m of the right-of-way for an existing or proposed highway or secondary rail line
- Within 300 m from the right of way of a proposed or existing rail corridor or a secondary main railway line
- Within 500 m of an existing 400 series provincial highway, freeway or principle main railway line.

The Environmental Noise Guidelines for Stationary and Transportation Sources – NPC-300 outlines the limitations of noise levels in relation to the location of the receptors. These can be found in the following tables:

Table 1 – Noise Level Limit for Outdoor Living Areas

Time Period	L_{eq} Level (dBA)
Daytime, 7:00-23:00	55

- Standard taken from Table 2.2a; Sound Level Limit for Outdoor Living Areas – Road and Rail

Table 2 – Noise Level Limits for Indoor Living Areas

Type of Space	Time Period	L_{eq} Level (dBA)	
		Road	Rail
General offices, reception areas, retail stores, etc.	Daytime 7:00-23:00	50	45
Theatres, places of worship, libraries, individual or semi-private offices, conference rooms, reading rooms, etc.	Daytime 7:00-23:00	45	40
Living/dining/den areas of **residences**, hospitals, nursing/retirement homes, schools, day-care centres	Daytime 7:00-23:00	45	40
Living/dining/den areas of **residences**, hospitals, nursing/retirement homes etc. (except schools or day-care centres)	Nighttime 23:00-7:00	45	40
Sleeping quarters of hotels/motels	Nighttime 23:00-7:00	45	40
Sleeping quarters of **residences**, hospitals, nursing/retirement homes, etc.	Nighttime 23:00-7:00	40	35

- Standards taken from Table 2.2b, Sound Level Limit for Indoor Living Areas – Road and Rail and Table 2.2c, Supplementary Sound Level Limits for Indoor Spaces – Road and Rail

Predicted noise levels at the pane of window dictate the action required to achieve recommended noise levels. It is noted in ENCG that the limits outlined in Table 2 are for the noise levels on the interior of the window glass pane. An open window is considered to provide a 10 dBA noise reduction, while a standard closed window is capable to provide a minimum 20 dBA noise reduction. The noise level limits of residential building are 45 dBA daytime and 40 dBA nighttime. Therefore, where noise levels exceed 55 dBA daytime and 50 dBA nighttime, the ventilation for the building should consider the provision for central air conditioning. Where noise levels exceed 65 dBA daytime and 60 dBA nighttime, central air conditioning will be required, and the building components will require higher levels of sound attenuation.

When the noise levels are equal to or less than the specified criteria, no noise attenuation (control) measures are required.

When the exceedance of the recommended noise level limits is between 1 dBA and 5 dBA for outdoor living areas (55 dBA < Leq ≤ 60 dBA), the proposed development can be completed with no noise control measures incorporated into the site, but the prospective purchasers / tenants should be made aware by suitable Warning Clauses. When the exceedance of recommended noise level limits is more than 5 dBA for outdoor living areas (Leq > 60 dBA), noise control measures are required to reduce Leq to below 60 dBA and as close as 55 dBA as it is technically and economically feasible.

Noise attenuation (control) measures include any or all of the following:

- Noise attenuation barrier
- Provisions for the installation of central air conditioning
- Central air conditioning
- Architectural components designed to provide additional acoustic insulation

In addition to the implementation of noise attenuation features, if required, the following Warning Clauses may be recommended to advise the prospective purchasers / tenants of affected units of potential environmental noise problem:

Table 3 – Warning Clauses for Outdoor Living Areas

Leq (dBA)	Warning Clause	Description
55 dBA < $L_{eq(16)}$ ≤ 60 dBA	Warning Clause Type A	"Purchasers/tenants are advised that sound levels due to increasing road traffic (rail traffic) (air traffic) may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."
60 dBA < $L_{eq(16)}$	Warning Clause Type B	"Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic (rail traffic) (air traffic) may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

- Clauses taken from section C8 Warning Clauses; Environmental Noise Guidelines for Stationary and Transportation Sources - NPC-300

Table 4 – Warning Clauses for Indoor Living Areas		
Leq (dBA)	**Warning Clause**	**Description**
55 dBA < $L_{eq(16)}$ ≤ 65 dBA 50 dBA < $L_{eq(8)}$ ≤ 60 dBA	Warning Clause Type C	"This dwelling unit has been designed with the provision for adding central air conditioning at the occupant's discretion. Installation of central air conditioning by the occupant in low and medium density developments will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."
65 dBA < $L_{eq(16)}$ 60 dBA < $L_{eq(8)}$	Warning Clause Type D	"This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment."
➢ Clauses taken from section C8 Warning Clauses; Environmental Noise Guidelines for Stationary and Transportation Sources - NPC-300		

Stationary Noise

Stationary noise sources include sources or facilities that are fixed or mobile and can cause a combination of sound and vibration levels emitted beyond the property line. These sources may include commercial air conditioner units, generators and fans. Facilities that may contribute to stationary noise may include car washes, snow disposal sites, transit stations and manufacturing facilities.

The subject site is not in proximity to existing or approved stationary sources of noise. Therefore, a stationary noise analysis will not be required.

Aircraft / Airport Noise

The subject site is not located within the Airport Vicinity Development Zone. Therefore this project will not require an aircraft/airport noise analysis. No warning clauses regarding aircraft or airport noise will be required.

4.0 Analysis

Surface Transportation Noise

The subject development is bordered to the north by a stream, grassed area and treed area, to the east by a stream, grassed area, followed by residential dwellings, to the south by a stream, grassed area, and treed area, followed by a parking lot, commercial building, and Maxwell Bridge Road, and to the west by March Road followed by residential dwellings and commercial building. March Road and Maxwell Bridge Road are identified within the 100 m radius of proposed development.

Based on the City of Ottawa's Official Plan, Schedule E, March Road is considered a 4-lane urban arterial road – divided (4-UAD). Maxwell Bridge Road is considered a 2-lane urban collector road (2-UCU). Other roads within the 100 m radius of the proposed development are not classified as either arterial, collector or major collector roads and therefore are not included in this study. The major sources of traffic noise are due to the March Road to the west and Maxwell Bridge Road to the south of the proposed development.

All noise sources are presented in Drawing PG6416-3 - Site Geometry located in Appendix 1.

The noise levels from road traffic are provided by the City of Ottawa, taking into consideration the right-of-way width and the implied roadway classification. It is understood that these values represent the maximum allowable capacity of the proposed roadways. The parameters to be used for sound level predictions can be found below.

Table 5 – Traffic and Road Parameters

Segment	Roadway Classification	AADT Veh/Day	Speed Limit (km/h)	Day/Night Split %	Medium Truck %	Heavy Truck %
March Road	4-UAD	35000	80	92/8	7	5
Maxwell Bridge Road	2-UCU	8000	40	92/8	7	5

- Data obtained from the City of Ottawa document ENCG

Four (4) levels of reception points at Building A and eight (8) levels of reception points at Building B were selected for this analysis. The following elevations were selected from the heights provided on the survey plan for the subject buildings.

Table 6 – Elevations of Reception Points			
Floor Number	**Elevation at Centre of Window (m)**	**Floor Use**	**Daytime / Nighttime Analysis**
Building A			
First Floor	1.5	Living Area/Bedroom	Daytime / Nighttime
Seventh Floor	23.0	Living Area/Bedroom	Daytime / Nighttime
Balcony – 4th Floor Terrace	13.0	--	Outdoor Living Area
Balcony – 6th Floor Terrace	19.5	--	Outdoor Living Area
Building B			
First Floor	1.5	Living Area/Bedroom	Daytime / Nighttime
Nineth Floor	29.0	Living Area/Bedroom	Daytime / Nighttime
Balcony – 4th Floor Terrace	13.0	--	Outdoor Living Area
Balcony – 5th Floor Terrace	16.5	--	Outdoor Living Area
Balcony – 6th Floor Terrace	19.5	--	Outdoor Living Area
Balcony – 7th Floor Terrace	23.0	--	Outdoor Living Area
Balcony – 8th Floor Terrace	26.0	--	Outdoor Living Area
Balcony – 9th Floor Terrace	29.0	--	Outdoor Living Area

For this analysis, a reception point was taken at the centre of each floor, at the first floor and top floor. The top floor is anticipated to be the 7th floor at Building A and the 9th floor at Building B. Outdoor living areas – at-grade amenity area, common terraces, and balcony terraces are anticipated at the proposed buildings.

Balcony terraces are noted at two ends of Building A and Building B. A total of two (2) receptor points were selected in the centre of the 4th floor and 6th floor terraces of Building A, at heights ranging from 13.0 m to 19.5 m. A total of nine (9) receptor points were selected in the centre of the 4th floor, 5th floor, 6th floor, 7th floor, 8th floor, and 9th floor terraces of Building B, at heights ranging from 13.0 m to 29.0 m. It should be noted that only terraces with widths greater than 4.0 m were analyzed as per City of Ottawa standards.

At-grade amenity area and at-grade common terrace are anticipated at the centre of the building area. A common terrace is anticipated on the 1st floor at the northern elevation of Building A. Due to the surrounding exterior walls of the proposed building, there is no direct line of sight to surface transportation noise sources. Therefore any noise levels due to the surface transportation surrounding the subject site will be minimal for at-grade amenity and terrace areas. Reception points are detailed on Drawing PG6416-2 - Receptor Locations presented in Appendix 1.

All horizontal distances have been measured from the reception point to the edge of the right-of-way. The roadway was analyzed where it intersected the 100 m buffer zone, which is reflected in the local angles described in Paterson Drawings PG6416-3A to 3Q - Site Geometry in Appendix 1.

Table 8 - Summary of Reception Points and Geometry, located in Appendix 1, provides a summary of the points of reception and their geometry with respect to the noise sources. The analysis is completed so that no effects of sound reflection off of the building facade are considered, as stipulated by the ENGC.

The subject site is generally levelled and at grade with the neighbouring roads within the 100 m radius.

The analysis was completed using STAMSON version 5.04, a computer program which uses the road and rail traffic noise prediction methods using ORNAMENT (Ontario Road Noise Analysis Method for Environment and Transportation) and STEAM (Sound from Trains Environment Analysis Method), publications from the Ontario Ministry of Environment and Energy.

5.0 Results

Surface Transportation Noise

The primary descriptors are the 16-hour daytime (7:00-23:00) and the 8-hour nighttime (23:00-7:00) equivalent sound levels, $L_{eq(16)}$ and $L_{eq(8)}$ for City roads.

The exterior noise levels due to roadway traffic sources were analyzed with the STAMSON version 5.04 software at all reception points. The input and output data of the STAMSON modeling can be found in Appendix 2, and the summary of the results can be found in Table 7.

Table 7: Exterior Noise Levels due to Roadway Traffic Sources

Reception Point	Height Above Grade (m)	Receptor Location	Daytime $L_{eq(16)}$ (dBA)	Nighttime $L_{eq(8)}$ (dBA)
Building A:				
REC 1-1	1.5	Building A, Northern Elevation, 1st Floor (Exterior)	51	43
REC 1-7	23.0	Building A, Northern Elevation, 7th Floor (Exterior)	57	50
REC 2-1	1.5	Building A, Eastern Elevation, 1st Floor (Exterior)	41	33
REC 2-7	23.0	Building A, Eastern Elevation, 7th Floor (Exterior)	47	39
REC 5-1	1.5	Building A, Western Elevation, 1st Floor (Interior)	46	38
REC 5-7	23.0	Building A, Western Elevation, 7th Floor (Interior)	53	46
REC 6-1	1.5	Building A, Western Elevation, 1st Floor (Exterior)	57	49
REC 6-7	23.0	Building A, Western Elevation, 7th Floor (Exterior)	62	54
REC 7	13.0	Building A, Balcony - 4th Floor Terrace (Southern Elevation)	43	--
REC 8	19.5	Building A, Balcony - 6th Floor Terrace (Southern Elevation)	53	--
Building B:				
REC 3-1	1.5	Building B, Southern Elevation, 1st Floor (Exterior)	61	53
REC 3-9	29.5	Building B, Southern Elevation, 9th Floor (Exterior)	66	58
REC 4-1	1.5	Building B, Western Elevation, 1st Floor (Exterior)	73	65
REC 4-9	29.5	Building B, Western Elevation, 9th Floor (Exterior)	75	67

Table 7: Exterior Noise Levels due to Roadway Traffic Sources

Reception Point	Height Above Grade (m)	Receptor Location	Daytime $L_{eq(16)}$ (dBA)	Nighttime $L_{eq(8)}$ (dBA)
REC 9	13.0	Building B, Balcony - 4th Floor Terrace (Eastern Elevation)	49	--
REC 10	16.5	Building B, Balcony - 5th Floor Terrace (Eastern Elevation)	47	--
REC 11	19.5	Building B, Balcony - 6th Floor Terrace (Eastern Elevation)	47	--
REC 12	22.5	Building B, Balcony - 7th Floor Terrace (Eastern Elevation)	46	--
REC 13	26.0	Building B, Balcony - 8th Floor Terrace (Eastern Elevation)	45	--
REC 14	29.0	Building B, Balcony - 9th Floor Terrace (Eastern Elevation)	57	--
REC 15	29.0	Building B, Balcony - 9th Floor Terrace (Northern Elevation)	57	--
REC 16	26.0	Building B, Balcony - 8th Floor Terrace (Northern Elevation)	52	--
REC 17	22.5	Building B, Balcony - 7th Floor Terrace (Northern Elevation)	53	--

6.0 Discussion and Recommendations

6.1 Outdoor Living Areas

Terraces are anticipated at the balconies of the proposed buildings. For the noise analysis at Building A, one (1) receptor point was selected at 4th floor terrace (REC 7), and one (1) receptor point was selected at 6th floor terrace (REC 8). It should be noted that outdoor living areas located on the 5th floor terrace and 7th floor terrace on the southern side of Building A and the 6th floor terrace and 7th floor terrace on the western side of Building A were initially identified for analysis. However, upon review these terraces are too narrow to be considered outdoor living areas and therefore are not included in this analysis. For the noise analysis at Building B, one (1) receptor point was selected at 4th floor terrace (REC 9), one (1) receptor point was selected at 5th floor terrace (REC 10), one (1) receptor point was selected at 6th floor terrace (REC 11), two (2) receptor points were selected at 7th floor terrace (REC 12 and REC 17), two (2) receptor points were selected at 8th floor terrace (REC 13 and REC 16), and two (2) receptor points were selected at 9th floor terrace (REC 14 and REC 15).

It is assumed that the balcony terraces will only be utilized as outdoor living areas provided that the proposed buildings are constructed. Utilizing the exteriors of proposed buildings as noise barriers, the proposed Leq(16) at the balcony terraces at the south end of Building A will be below the 55 dBA threshold value specified by the ENCG. Therefore, additional noise attenuation feature is not required.

Utilizing the exteriors of proposed buildings as noise barriers, the proposed Leq(16) at the 4th floor, 5th floor, 6th floor, 7th floor, and 8th floor balcony terraces at the east end of Building B, and the 7th floor and 8th floor balcony terraces at the north end of Building B will be below the 55 dBA threshold value specified by the ENCG. However, the proposed Leq(16) at the 9th floor balcony terraces at the east end and the north end of Building B will be 57 dBA, which exceed the 55 dBA threshold value specified by the ENCG. The results of STAMSON modeling (REC 14TR and REC 15TR) indicates that the installation of 1 m high glass railing as noise barrier surrounding the 9th floor balcony terraces at the east end and north end of Building B can reduce the anticipated noise levels at the balcony terraces to 53 dBA and 54 dBA, respectively, which are below the 55 dBA threshold value. Therefore, additional noise attenuation feature is not required.

6.2 Indoor Living Areas and Ventilation

The results of the STAMSON modeling indicate that the noise levels on the exterior elevations of proposed Building A will range between 41 dBA and 62 dBA during the daytime period (07:00-23:00) and between 33 dBA and 54 dBA during the nighttime period (23:00-07:00). It is expected that the noise levels on the northern and western elevations of proposed Building A will exceed the limit for the exterior of the pane of glass (55 dBA) specified by the ENCG. Therefore, the units of on the northern and western elevations of Building A should be designed with the provision of a central air conditioning unit, along with the warning clause Type C, as outlined in Table 3. It is also noted that the results of STAMSON modeling indicate that the noise levels at proposed Building A will be below 65 dBA, and therefore standard building materials are acceptable to provide adequate soundproofing.

The results of the STAMSON modeling indicate that the noise levels on the exterior elevations of proposed Building B will range between 57 dBA and 75 dBA during the daytime period (07:00-23:00) and between 49 dBA and 67 dBA during the nighttime period (23:00-07:00), assuming the anticipated noise level on the northern elevation of Building B is the same as the noise level at 9th floor balcony terrace (REC 15). It is expected that the noise levels on the northern, western, and southern elevations of proposed Building B, as well as the southern elevation of building section between Building A and Building B, will exceed the limit for the exterior of the pane of glass (55 dBA) specified by the ENCG. It is also expected that the noise level on the western and southern elevations of Building B will exceed the 65 dBA threshold value (for residential purpose) and/or 70 dBA threshold value (for commercial purpose) specified by the ENCG. Therefore, the units of on the northern, western, and southern elevations of Building B, as well as the southern elevation of building section between Building A and Building B, should be supplied with a central air conditioning unit, along with the warning clause Type D, as outlined in Table 3. This building does exceed the 65 dBA threshold for noise on the western and southern elevations. Therefore, an analysis of the building materials will be required. However, at this time the building materials and exterior wall construction details have not been finalized. Therefore, a review of the proposed building materials on the western and southern elevations will need to be completed.

Proposed Construction Specifications

It is understood that typical window and wall details are proposed for the residential buildings. The effectiveness of the noise insulation can be expressed as the Acoustical Insulation Factor (AIF), calculated as follows:

$$AIF = L_{eq(16)(Exterior)} - L_{eq(16)(Interior)} + 10\log_{10}(N) + 2 \text{ dBA}$$

Where:

$L_{eq(16)(Exterior)}$ = Calculated value at the window pane
$L_{eq(16)(Interior)}$ = 45 dBA
N = number of components in the room

No floor plans or detailed design drawings were provided for this portion of the review. A conservative approach is to assume that there are 2 components per room. Therefore, the AIF would need to be at least 35 dBA.

A conversion from AIF to a Standard Transmission Class (STC) rating will require the knowledge of room dimensions in addition to the wall and window dimensions. However, a conservative approach would be to increase the AIF factor by 3. **Therefore, provided the building materials of either the windows and/or exterior walls have an STC rating of 38 or higher, this would be a sufficient noise attenuation device.**

A review of industry standards for construction material indicates that, as long as the exterior cladding of the western and southern elevations consist of brick or concrete panels and that all windows consist of double pane glass, these materials have an STC rating of greater than 38 and are considered acceptable. If alternative materials are to be utilized on the western and southern elevations, then a review will need to be completed once design details are finalized.

7.0 Summary of Findings

The subject site is located at 910 March Road, in the City of Ottawa. It is understood that the proposed development will consist of two buildings (Building A and Building B) interconnected by three-stories building. Building A is a seven (7) storey building and will rise 25 metres above grade. Building B is a nine (9) storey building and will rise 31 metres above grade. The three-storey building section will rise 11.5 metres above grade. The development will consist of two (2) levels below ground. There are two major sources of surface transportation noise to the proposed development: March Road and Maxwell Bridge Road.

Several tiered balcony terraces are anticipated at the building. Only terraces with widths greater than 4.0 m were selected for analysis. The proposed Leq(16) at the balcony terraces at the south end of Building A will be below the 55 dBA threshold value specified by the ENCG. The 5th floor terrace and 7th floor terrace on the southern side of Building A and the 6th floor terrace and 7th floor terrace on the western side of Building A have widths less than 4.0 m, therefore they are not considered as outdoor living areas. Therefore, further noise attenuation measure is not required. The proposed Leq(16) at the 4th floor, 5th floor, 6th floor, 7th floor, and 8th floor balcony terraces at the east end of Building B, and the 7th floor and 8th floor balcony terraces at the north end of Building B will be below the 55 dBA threshold value specified by the ENCG. However, the proposed Leq(16) at the 9th floor balcony terraces at the east end and the north end of Building B will exceed the 55 dBA threshold value specified by the ENCG. According to ENCG, noise control measures (i.e. barriers) are required to reduce the Leq to 55 dBA where technically and economically feasible. An investigation including noise barriers, which included both the exterior cladding of the proposed building in addition to the addition of a solid 1 m noise barrier around the perimeters of the 9th floor balcony terraces found that the noise levels at the balcony terraces can be reduced to below the 55 dBA threshold value specified by the ENCG. Therefore, further noise attenuation measure is not required.

Several reception points were selected for the surface transportation noise analysis, consisting of the centre of first level and top level. The top floor is anticipated to be 7th floor at Building A. The results of STAMSON modeling indicate that the noise levels on the northern and western elevations of proposed Building A will exceed the limit for the exterior of the pane of glass (55 dBA) specified by the ENCG. Therefore, the design with provision of a central air conditioning unit, along with a warning clause Type C, will be required for the units on the northern and western elevations of Building A.

The following warning clause is to be included on all Offers of Purchase and Sale and/or lease agreements of Building A:

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

Several reception points were selected for the surface transportation noise analysis, consisting of the centre of first level and top level. The top floors are anticipated to be 9th floor at Building B and 3rd floor at the building section between Building A and Building B. The results of STAMSON modeling indicate that the noise levels on the northern, western, and southern elevations of proposed Building B, as well as the southern elevation of building section between Building A and Building B, will exceed the limit for the exterior of the pane of glass (55 dBA) specified by the ENCG. It is also expected that the noise level on the western and southern elevations of Building B will exceed the 65 dBA threshold value (for residential purpose) and/or 70 dBA threshold value (for commercial purpose) specified by the ENCG. Therefore, the installation of a central air conditioning unit, along with a warning clause Type D, will be required for the units on the northern, western, and southern elevations of proposed dwelling. Building B does exceed the 65 dBA threshold for noise on the western and southern elevations. Therefore, an analysis of the building materials will be required. However, at this time the building materials and exterior wall construction details have not been finalized. Therefore, a review of the proposed building materials on the western and southern elevations will need to be completed.

The following warning clause is to be included on all Offers of Purchase and Sale and/or lease agreements of Building B and the building section between Building A and Building 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."

8.0 Statement of Limitations

The recommendations made in this report are in accordance with our present understanding of the project. Our recommendations should be reviewed when the project drawings and specifications are complete.

The present report applies only to the project described in this document. Use of this report for purposes other than those described herein or by person(s) other than Canadian Rental Development Service Inc. or their agent(s) is not authorized without review by this firm for the applicability of our recommendations to the altered use of the report.

Paterson Group Inc.

February 9, 2023

Yolanda Tang, M.A.Sc

Stephanie A. Boisvenue, P.Eng.

Report Distribution:

- ❑ Canadian Rental Development Service Inc. (email copy)
- ❑ Paterson Group (1 copy)

APPENDIX 1

Table 8 - Summary of Reception Points and Geometry

Drawing PG6416-1 - Site Plan

Drawing PG6416-2 - Receptor Location Plan

Drawing PG6416-3 - Site Geometry

Drawing PG6416-3A - Site Geometry - REC 1-1 and REC 1-7

Drawing PG6416-3B - Site Geometry - REC 2-1 and REC 2-7

Drawing PG6416-3C - Site Geometry - REC 3-1 and REC 3-9

Drawing PG6416-3D - Site Geometry - REC 4-1 and REC 4-9

Drawing PG6416-3E - Site Geometry - REC 5-1 and REC 5-7

Drawing PG6416-3F - Site Geometry - REC 6-1 and REC 6-7

Drawing PG6416-3G - Site Geometry - REC 7

Drawing PG6416-3H - Site Geometry - REC 8

Drawing PG6416-3I - Site Geometry - REC 9

Drawing PG6416-3J - Site Geometry - REC 10

Drawing PG6416-3K - Site Geometry - REC 11

Drawing PG6416-3L - Site Geometry - REC 12

Drawing PG6416-3M - Site Geometry - REC 13

Drawing PG6416-3N - Site Geometry - REC 14

Drawing PG6416-3O - Site Geometry - REC 15

Drawing PG6416-3P - Site Geometry - REC 16

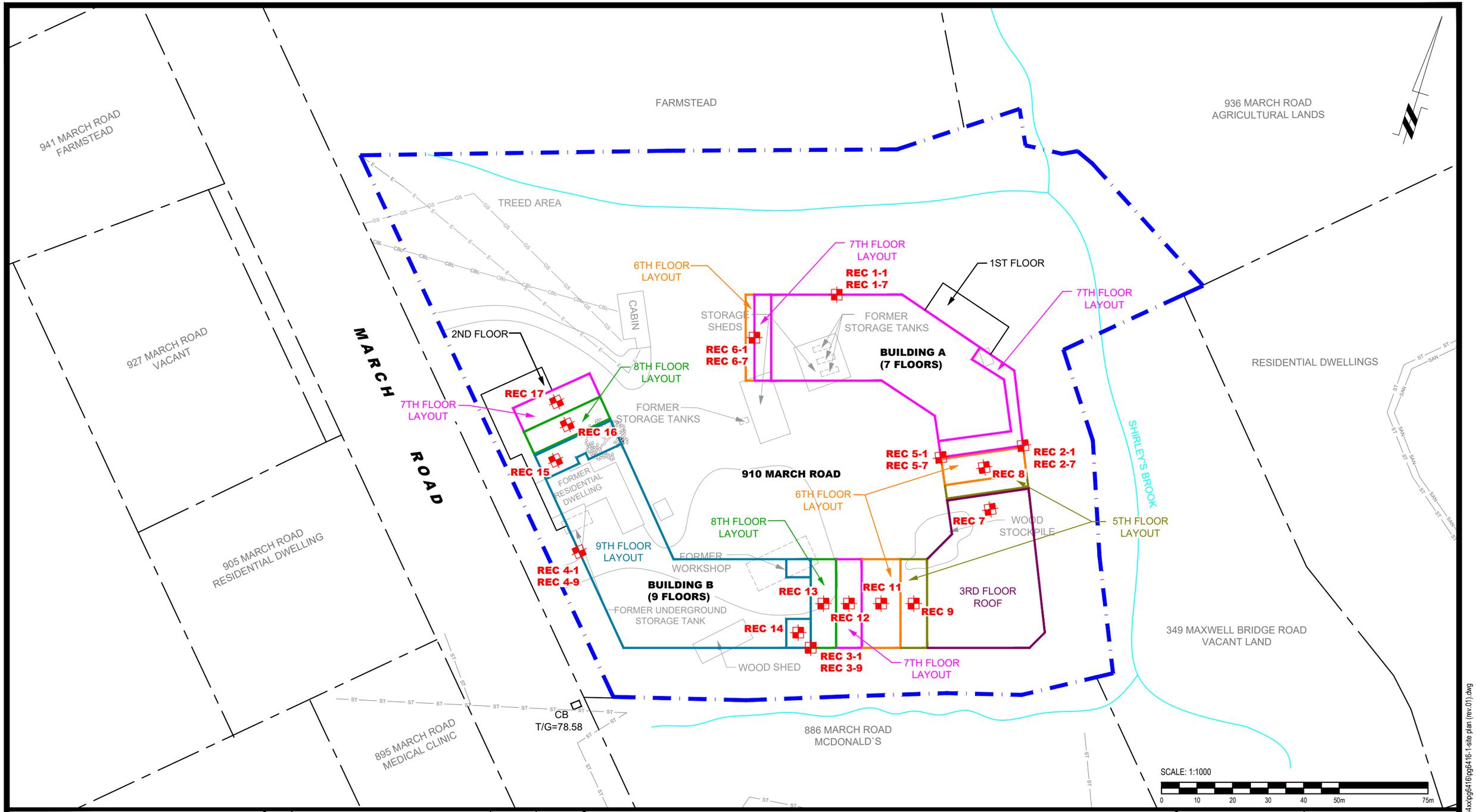
Drawing PG6416-3Q - Site Geometry - REC 17

Table 8 - Summary of Reception Points and Geometry
910 March Road

Point of Reception	Location	Leq Day (dBA)	March Road								Maxwell Bridge Road							
			Horizontal (m)	Vertical (m)	Total (m)	Local Angle (degree)	Number of Rows of Houses	Density (%)	Barrier Height (m)	Barrier Distance (m)	Horizontal (m)	Vertical (m)	Total (m)	Local Angle (degree)	Number of Rows of Houses	Density (%)	Barrier Height (m)	Barrier Distance (m)
REC 1-1	Building A, Northern Elevation, 1st Floor	51	130	1.5	130.0	0, 20	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
REC 1-7	Building A, Northern Elevation, 7th Floor	57	130	23.0	132.0	0, 20	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
REC 2-1	Building A, Eastern Elevation, 1st Floor	41	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	130	1.5	130.0	-31, 0	n/a	n/a	n/a	n/a
REC 2-7	Building A, Eastern Elevation, 7th Floor	47	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	130	23.0	132.0	-31, 0	n/a	n/a	n/a	n/a
REC 3-1	Building B, Southern Elevation, 1st Floor	61	70	1.5	70.0	-76, 0	n/a	n/a	n/a	n/a	90	1.5	90.0	-69, 18	n/a	n/a	n/a	n/a
REC 3-9	Building B, Southern Elevation, 9th Floor	66	70	29.0	75.8	-76, 0	n/a	n/a	n/a	n/a	90	29.0	94.6	-69, 18	n/a	n/a	n/a	n/a
REC 4-1	Building B, Western Elevation, 1st Floor	73	20	1.5	20.1	-82, 82	n/a	n/a	n/a	n/a	135	1.5	135.0	0, 10	n/a	n/a	n/a	n/a
REC 4-9	Building B, Western Elevation, 9th Floor	75	20	29.0	35.2	-82, 82	n/a	n/a	n/a	n/a	135	29.0	138.1	0, 10	n/a	n/a	n/a	n/a
REC 5-1	Building A, Western Elevation, 1st Floor	46	150	1.5	150.0	21, 29	n/a	n/a	n/a	n/a	145	1.5	145.0	0, 11	n/a	n/a	11.5	55
											150		150.0	11, 19	n/a	n/a	15	55
											170		170.0	19, 30	1	20	18	65
REC 5-7	Building A, Western Elevation, 7th Floor	53	150	23.0	151.8	21, 29	n/a	n/a	n/a	n/a	145	23.0	146.8	0, 11	n/a	n/a	11.5	55
											150		151.8	11, 19	n/a	n/a	15	55
											170		171.6	19, 30	1	20	18	65
REC 6-1	Building A, Western Elevation, 1st Floor	57	90	1.5	90.0	-12, 28	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
REC 6-7	Building A, Western Elevation, 7th Floor	62	90	23.0	92.9	-12, 28	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Table 8 - Summary of Reception Points and Geometry
910 March Road

Point of Reception	Location	Leq Day (dBA)	March Road								Maxwell Bridge Road							
			Horizontal (m)	Vertical (m)	Total (m)	Local Angle (degree)	Number of Rows of Houses	Density (%)	Barrier Height (m)	Barrier Distance (m)	Horizontal (m)	Vertical (m)	Total (m)	Local Angle (degree)	Number of Rows of Houses	Density (%)	Barrier Height (m)	Barrier Distance (m)
REC 7	Building A, Balcony - 4th Floor Terrace (Southern Elevation)	43	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	115	13.0	115.7	-37, 33	n/a	n/a	11.5	35
REC 8	Building A, Balcony - 6th Floor Terrace (Southern Elevation)	53	155	19.5	156.2	-55, -47	n/a	n/a	18.0	5	125	19.5	126.5	-34, 36	n/a	n/a	18.0	5
REC 9	Building B, Balcony - 4th Floor Terrace (Eastern Elevation)	49	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	13.0	100.8	-58, 23	n/a	n/a	11.5	10
REC 10	Building B, Balcony - 5th Floor Terrace (Eastern Elevation)	47	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	16.5	101.4	-60, 16	n/a	n/a	15.0	10
REC 11	Building B, Balcony - 6th Floor Terrace (Eastern Elevation)	47	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	19.5	101.9	-62, 24	n/a	n/a	18.0	10
REC 12	Building B, Balcony - 7th Floor Terrace (Eastern Elevation)	46	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	23.0	102.6	-63, 16	n/a	n/a	21.5	10
REC 13	Building B, Balcony - 8th Floor Terrace (Eastern Elevation)	45	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	100	26.0	103.3	-64, 13	n/a	n/a	24.5	10
REC 14	Building B, Balcony - 9th Floor Terrace (Eastern Elevation)	57	90	29.0	94.6	-78, -55	n/a	n/a	27.5	5	100	29.0	104.1	-68, 15	n/a	n/a	27.5	5
REC 15	Building B, Balcony - 9th Floor Terrace (Northern Elevation)	57	25	29.0	38.3	-31, 79	n/a	n/a	27.5	5	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
REC 16	Building B, Balcony - 8th Floor Terrace (Northern Elevation)	52	30	26.0	39.7	-15, 75	n/a	n/a	24.5	10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
REC 17	Building A, Balcony - 7th Floor Terrace (Northern Elevation)	52	30	23.0	37.8	-18, 74	n/a	n/a	21.5	10	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7Z9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED TO NEW CONCEPTUAL PLAN	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

Title:

SITE PLAN

Scale: 1:1000	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-1
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-1-site plan (rev.01).dwg

941 MARCH ROAD
FARMSTEAD

927 MARCH ROAD
VACANT

905 MARCH ROAD
RESIDENTIAL DWELLING

895 MARCH ROAD
MEDICAL CLINIC

886 MARCH ROAD
MCDONALD`S

936 MARCH ROAD
AGRICULTURAL LANDS

349 MAXWELL BRIDGE ROAD
VACANT LAND

RESIDENTIAL DWELLINGS

FARMSTEAD

TREED AREA

MARCH ROAD

910 MARCH ROAD

SHIRLEY'S BROOK

CABIN

STORAGE SHEDS

FORMER STORAGE TANKS

FORMER RESIDENTIAL DWELLING

FORMER WORKSHOP

FORMER UNDERGROUND STORAGE TANK

WOOD SHED

WOOD STOCKPILE

BUILDING A
(7 FLOORS)

BUILDING B
(9 FLOORS)

1ST FLOOR

2ND FLOOR

3RD FLOOR ROOF

5TH FLOOR LAYOUT

6TH FLOOR LAYOUT

7TH FLOOR LAYOUT

8TH FLOOR LAYOUT

9TH FLOOR LAYOUT

REC 1-1
REC 1-7

REC 2-1
REC 2-7

REC 3-1
REC 3-9

REC 4-1
REC 4-9

REC 5-1
REC 5-7

REC 6-1
REC 6-7

REC 7

REC 8

REC 9

REC 10

REC 11

REC 12

REC 13

REC 14

REC 15

REC 16

REC 17

CB
T/G=78.58

LEGEND:

RECEPTOR LOCATION

SCALE: 1:1000

0 10 20 30 40 50m 75m

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

Title:

RECEPTOR LOCATION PLAN

Scale: 1:1000	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-2
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-2-receptor location plan (rev.01).dwg

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

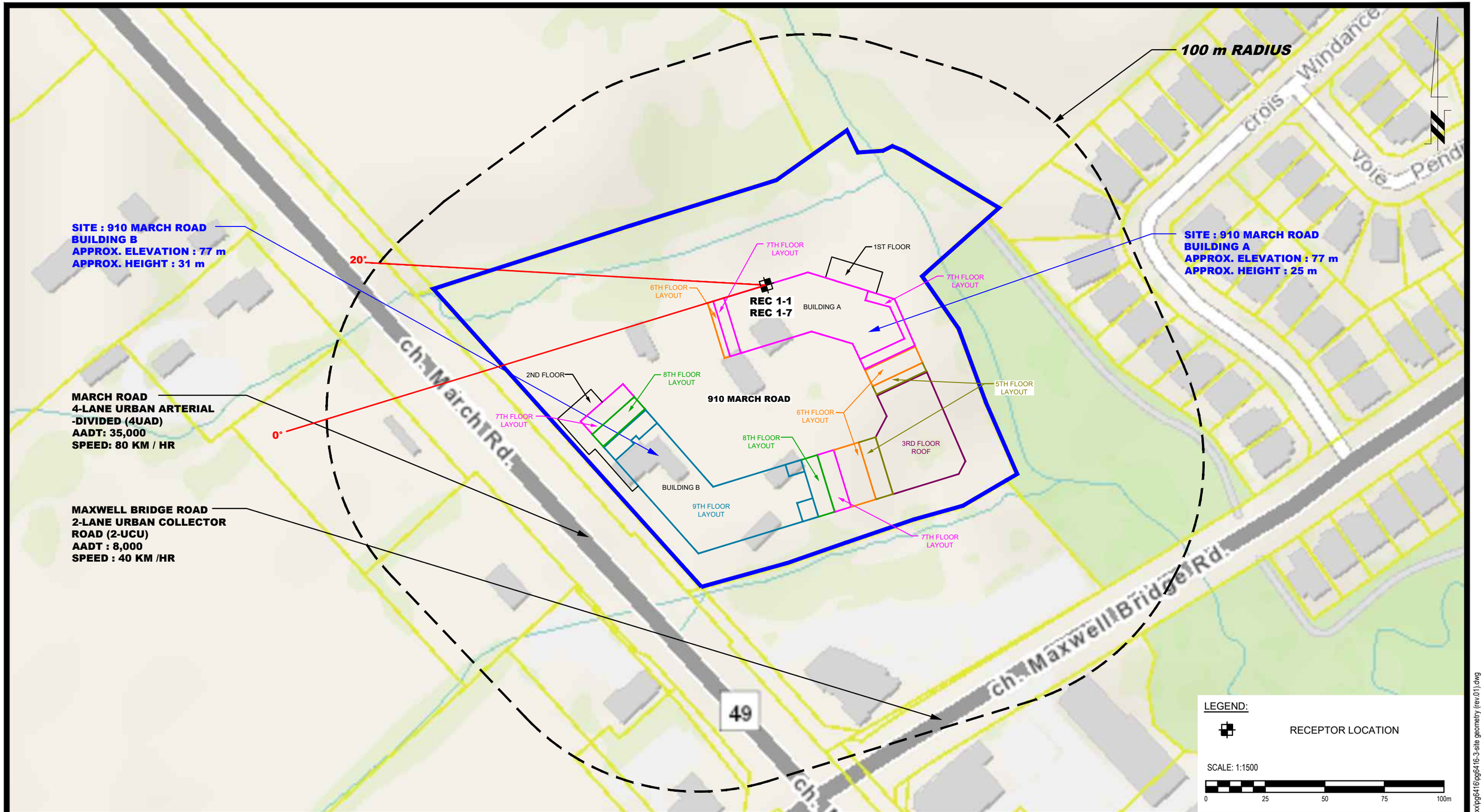
Title:

SITE GEOMETRY

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7Z9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD
OTTAWA, ONTARIO

Title:

SITE GEOMETRY - REC 1-1 AND REC 1-7

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3A
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

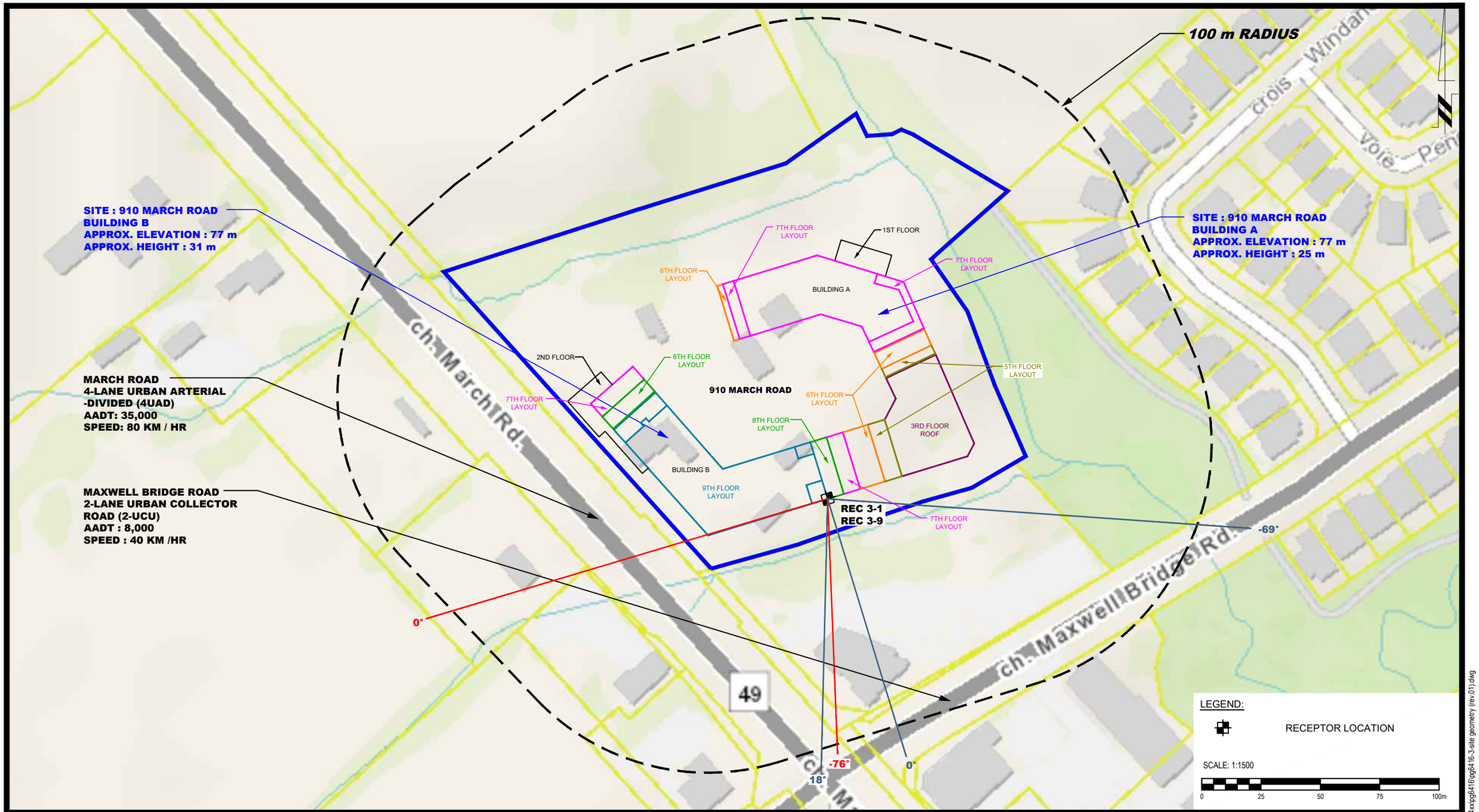
Title:

SITE GEOMETRY - REC 2-1 AND REC 2-7

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3B
Approved by: SB	Revision No.: 1

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg

11x17



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7Z9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD
OTTAWA, ONTARIO

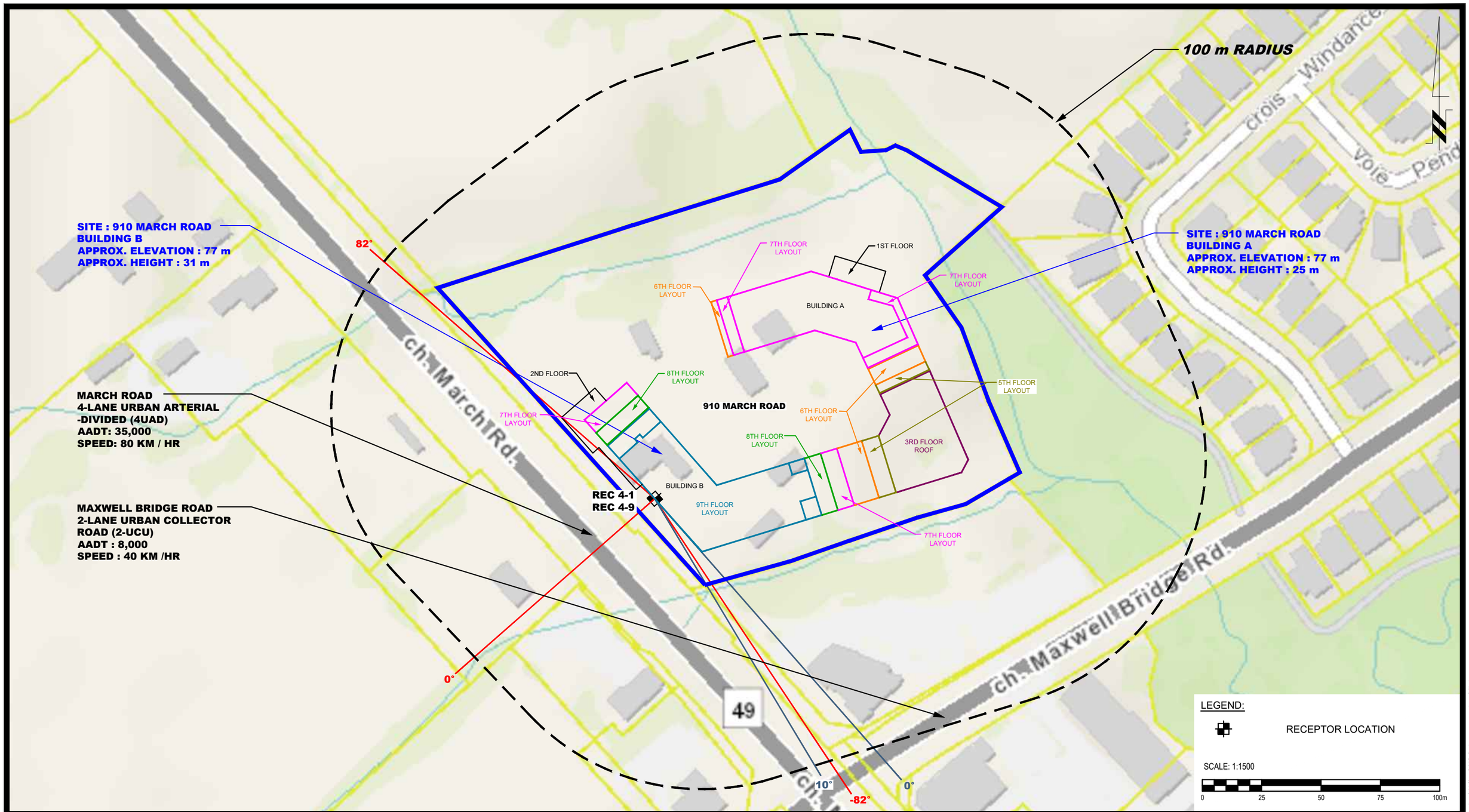
Title:

SITE GEOMETRY - REC 3-1 AND REC 3-9

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3C
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

Title:

SITE GEOMETRY - REC 4-1 AND REC 4-9

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3D
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg

100 m RADIUS

SITE : 910 MARCH ROAD
BUILDING B
APPROX. ELEVATION : 77 m
APPROX. HEIGHT : 31 m

SITE : 910 MARCH ROAD
BUILDING A
APPROX. ELEVATION : 77 m
APPROX. HEIGHT : 25 m

MARCH ROAD
4-LANE URBAN ARTERIAL
-DIVIDED (4UAD)
AADT: 35,000
SPEED: 80 KM / HR

MAXWELL BRIDGE ROAD
2-LANE URBAN COLLECTOR
ROAD (2-UCU)
AADT : 8,000
SPEED : 40 KM /HR

910 MARCH ROAD

BUILDING A
1ST FLOOR
2ND FLOOR
3RD FLOOR ROOF
5TH FLOOR LAYOUT
6TH FLOOR LAYOUT
7TH FLOOR LAYOUT
8TH FLOOR LAYOUT

BUILDING B
6TH FLOOR LAYOUT
7TH FLOOR LAYOUT
8TH FLOOR LAYOUT
9TH FLOOR LAYOUT

REC 5-1
REC 5-7

29°
21°
0°
30°
19°
11°
0°

ch. March Rd.
ch. Maxwell Bridge Rd.
Windance Crois
Voie Pendr
49

LEGEND:
RECEPTOR LOCATION

SCALE: 1:1500
0 25 50 75 100m

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

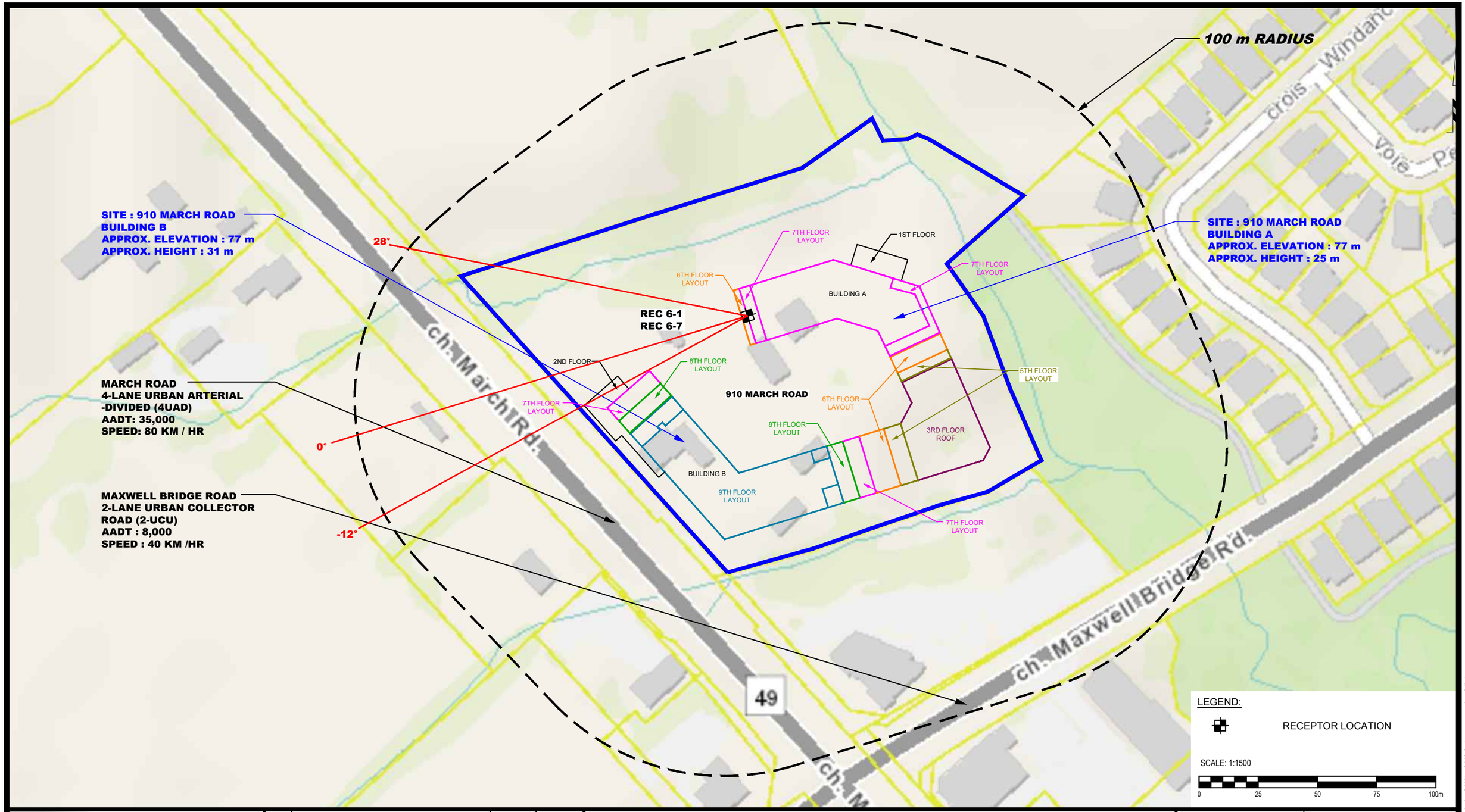
Title:

SITE GEOMETRY - REC 5-1 AND REC 5-7

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3E
Approved by: SB	Revision No.: 1

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg

11x17



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

Title:

SITE GEOMETRY - REC 6-1 AND REC 6-7

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3F
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg

100 m RADIUS

SITE : 910 MARCH ROAD
BUILDING B
APPROX. ELEVATION : 77 m
APPROX. HEIGHT : 31 m

MARCH ROAD
4-LANE URBAN ARTERIAL
-DIVIDED (4UAD)
AADT: 35,000
SPEED: 80 KM / HR

MAXWELL BRIDGE ROAD
2-LANE URBAN COLLECTOR
ROAD (2-UCU)
AADT : 8,000
SPEED : 40 KM /HR

SITE : 910 MARCH ROAD
BUILDING A
APPROX. ELEVATION : 77 m
APPROX. HEIGHT : 25 m

7TH FLOOR LAYOUT
1ST FLOOR
6TH FLOOR LAYOUT
BUILDING A
2ND FLOOR
8TH FLOOR LAYOUT
REC 7
5TH FLOOR LAYOUT
910 MARCH ROAD
7TH FLOOR LAYOUT
6TH FLOOR LAYOUT
8TH FLOOR LAYOUT
3RD FLOOR ROOF
BUILDING B
9TH FLOOR LAYOUT
7TH FLOOR LAYOUT

-37°
0°
33°

LEGEND:
RECEPTOR LOCATION

SCALE: 1:1500
0 25 50 75 100m

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

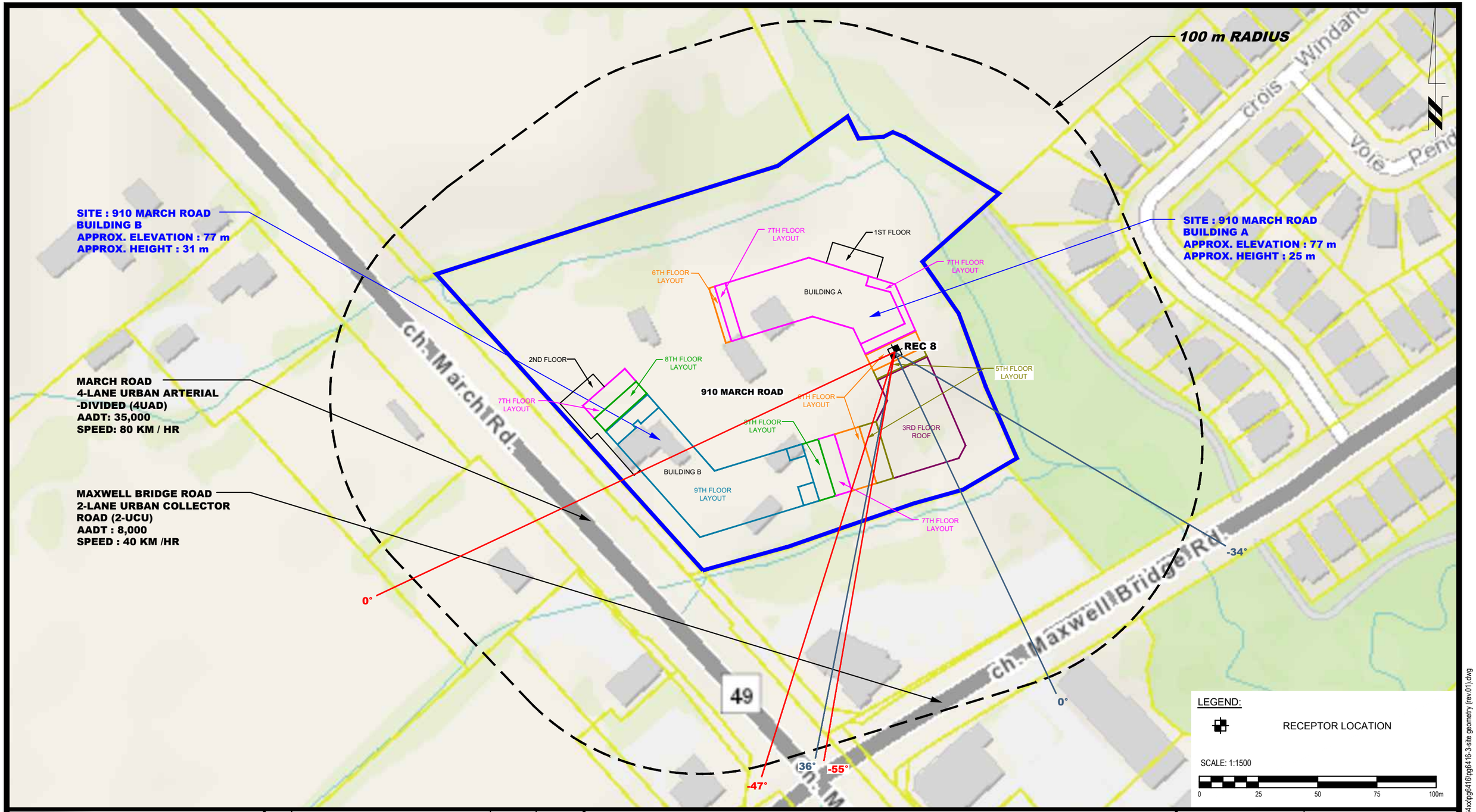
Title:

SITE GEOMETRY - REC 7

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3G
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

Title:

SITE GEOMETRY - REC 8

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3H
Approved by: SB	Revision No.: 1

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg

11x17

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

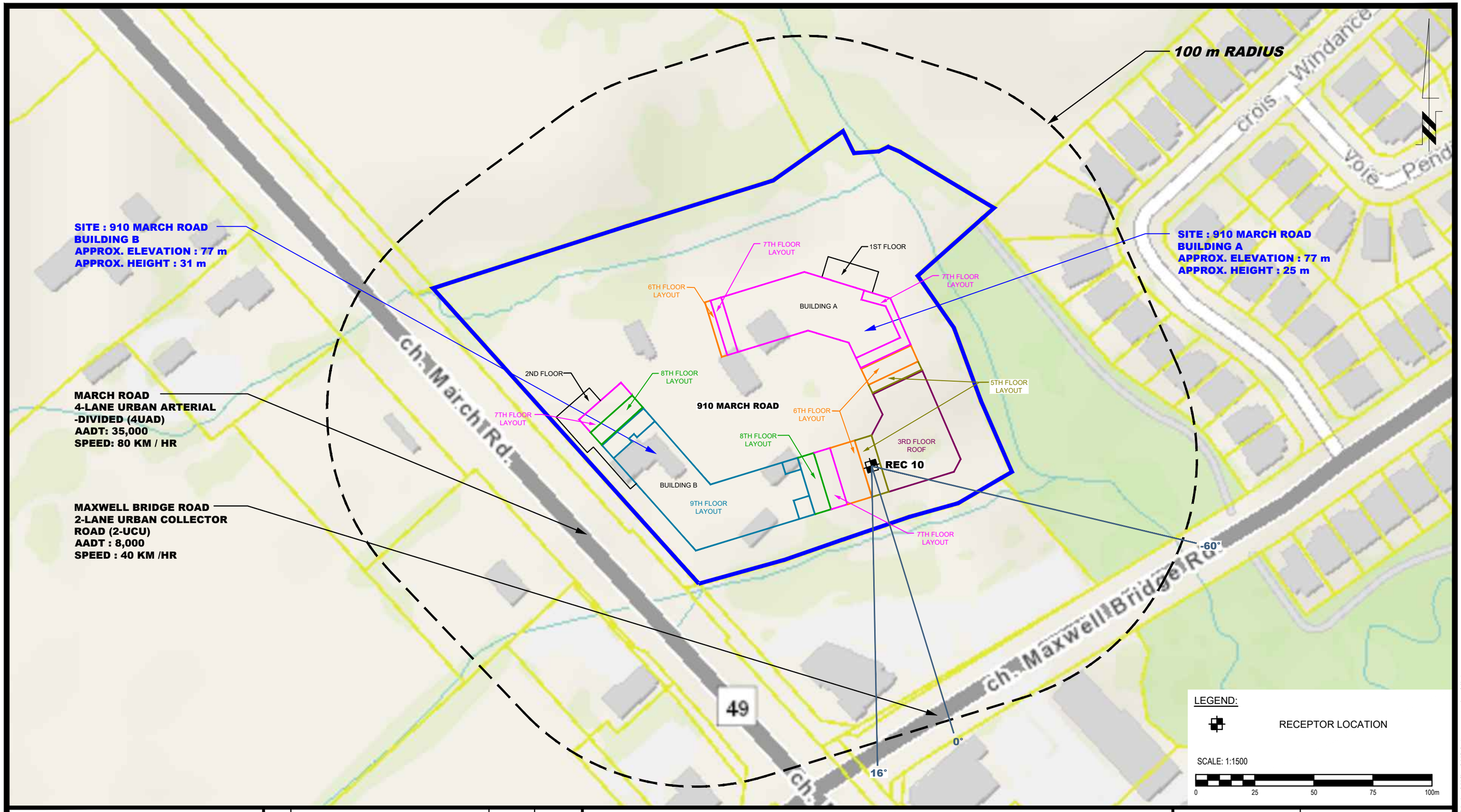
Title:

SITE GEOMETRY - REC 9

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3I
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

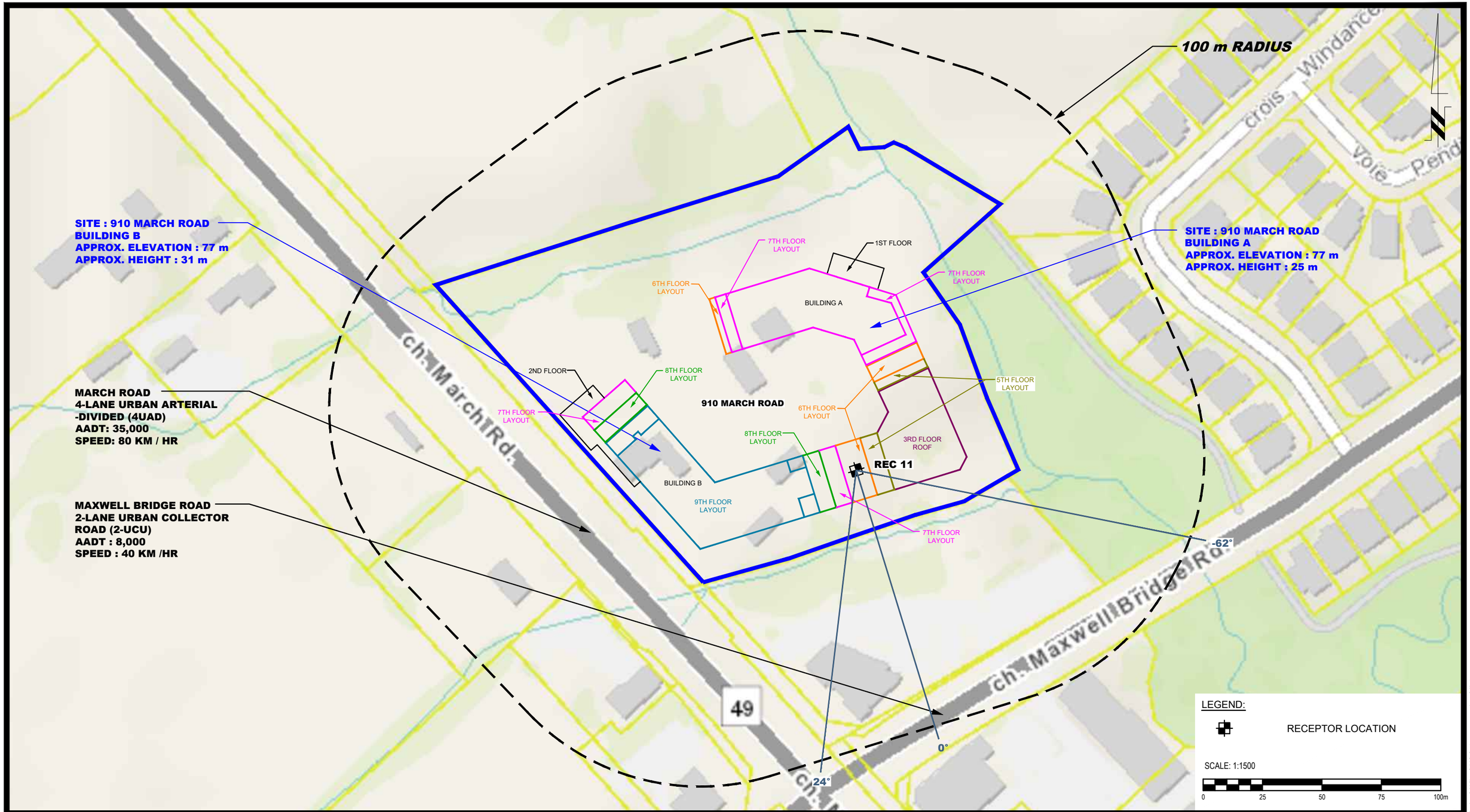
Title:

SITE GEOMETRY - REC 10

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3J
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

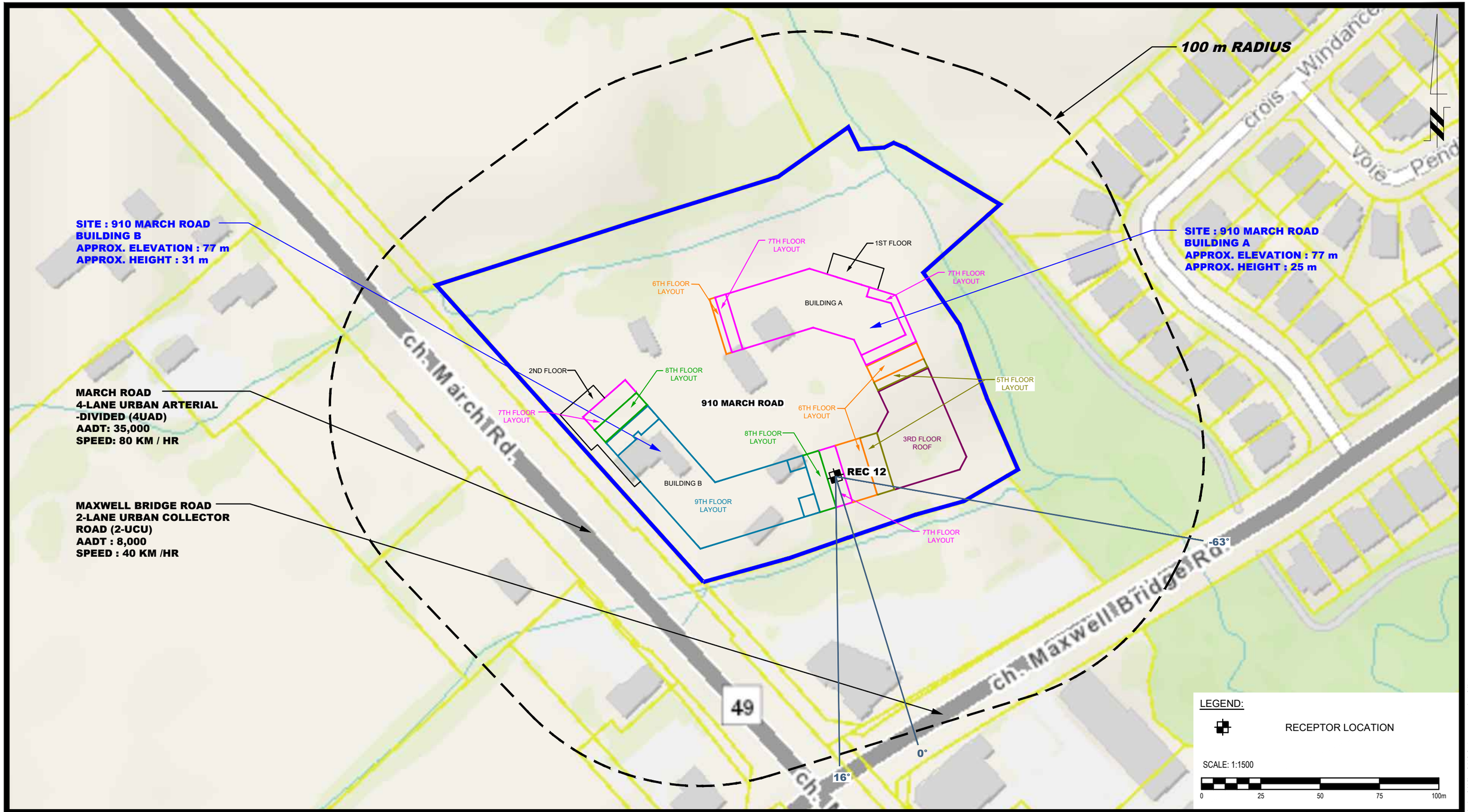
Title:

SITE GEOMETRY - REC 11

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3K
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

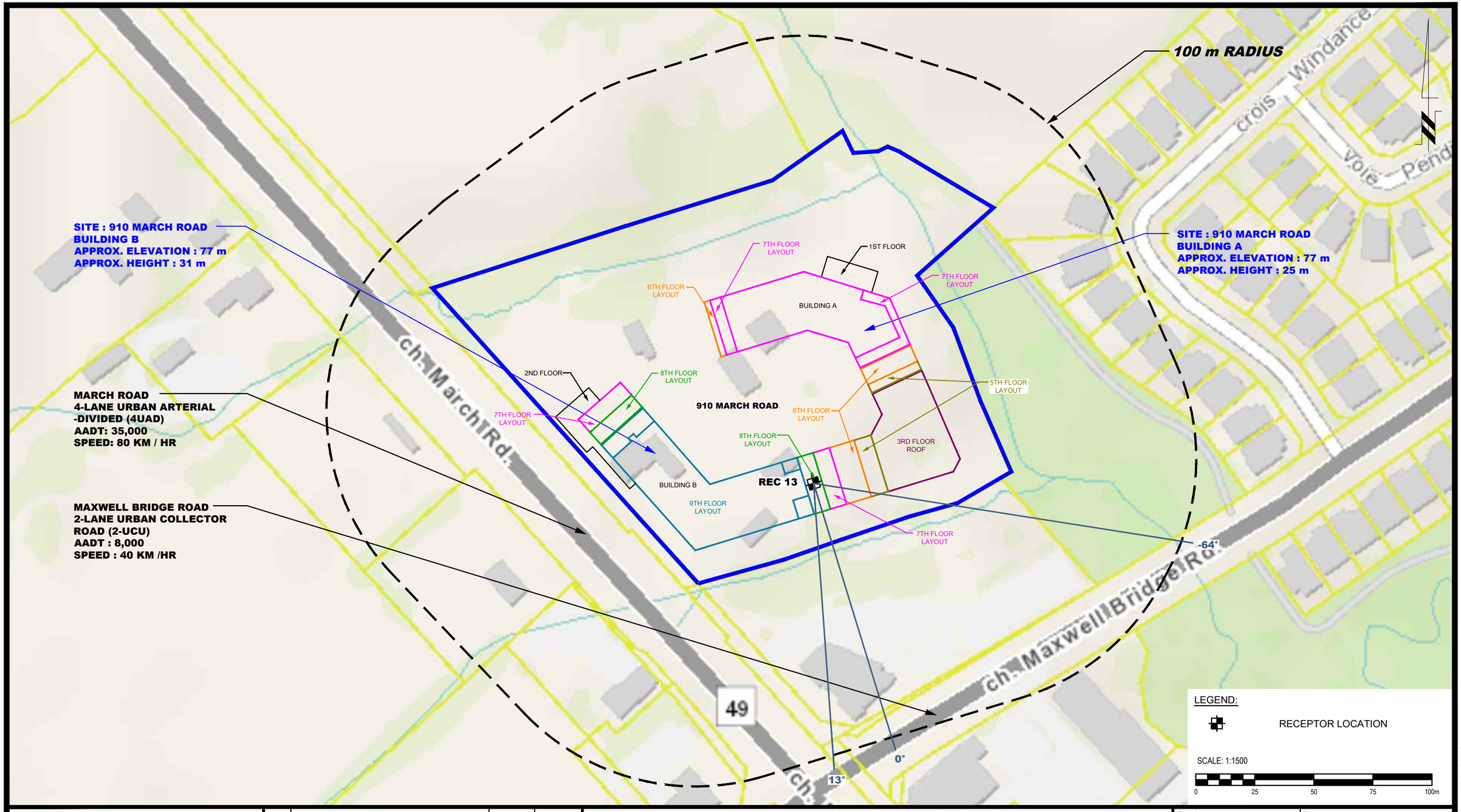
Title:

SITE GEOMETRY - REC 12

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3L
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

Title:

SITE GEOMETRY - REC 13

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3M
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

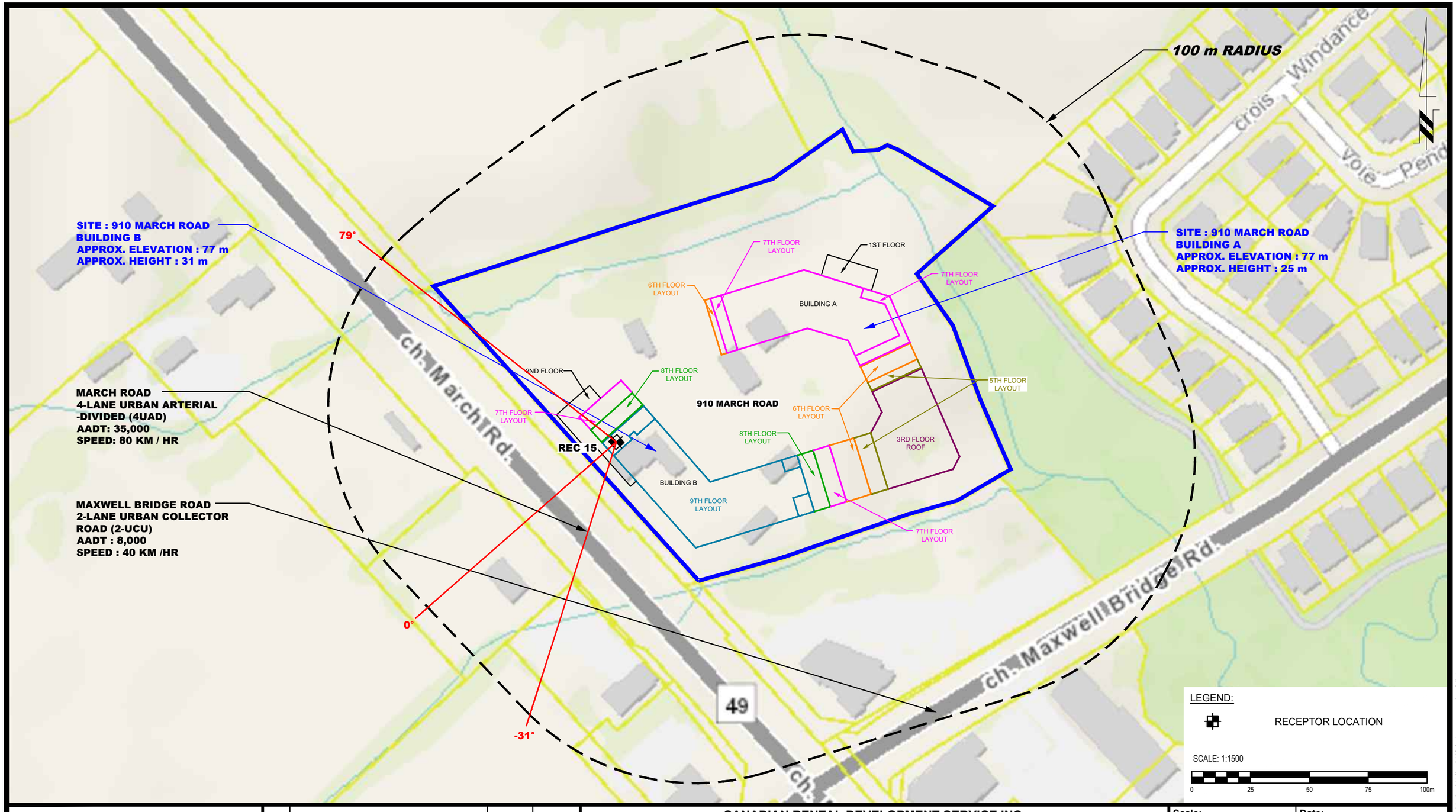
Title:

SITE GEOMETRY - REC 14

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3N
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

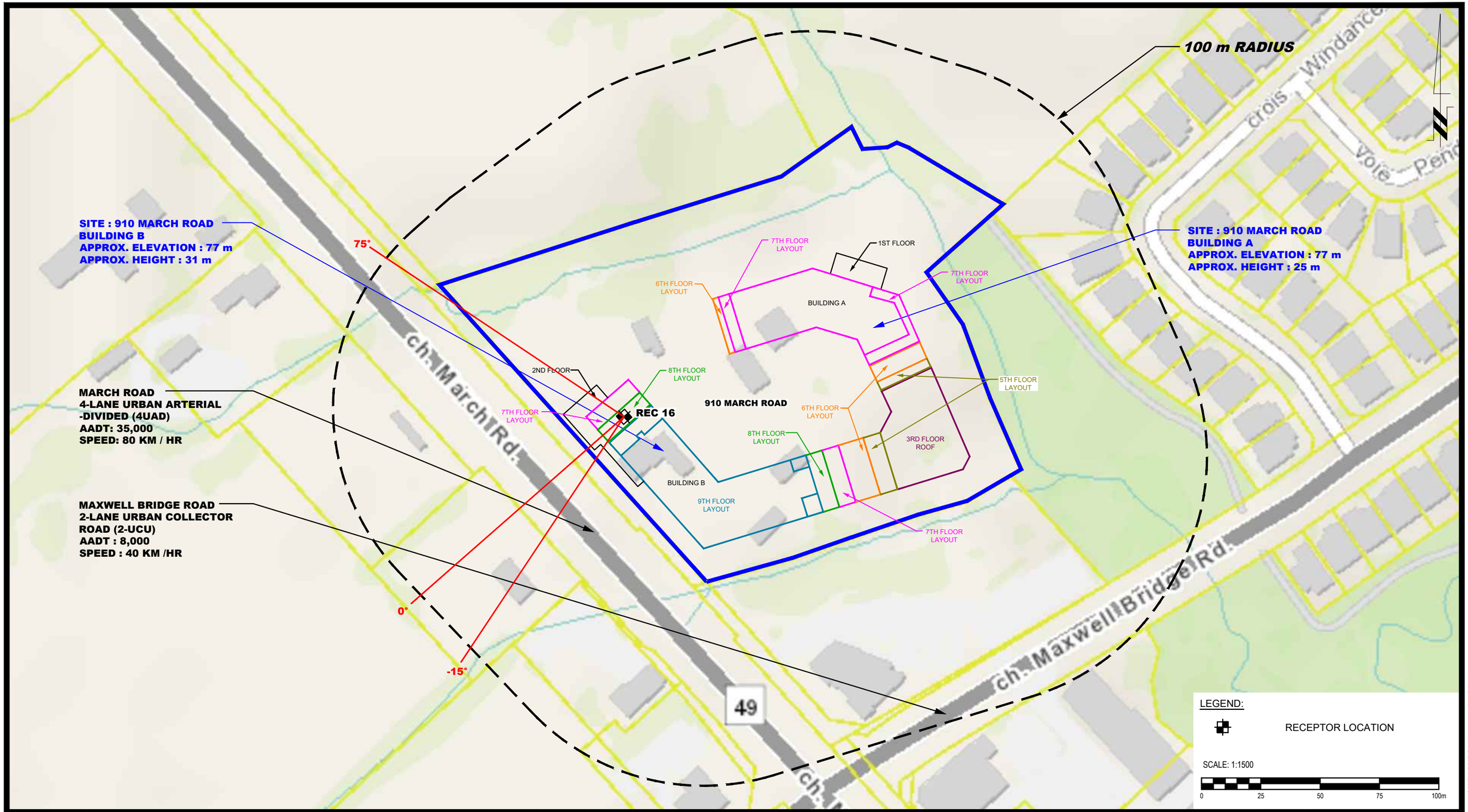
Title:

SITE GEOMETRY - REC 15

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3O
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

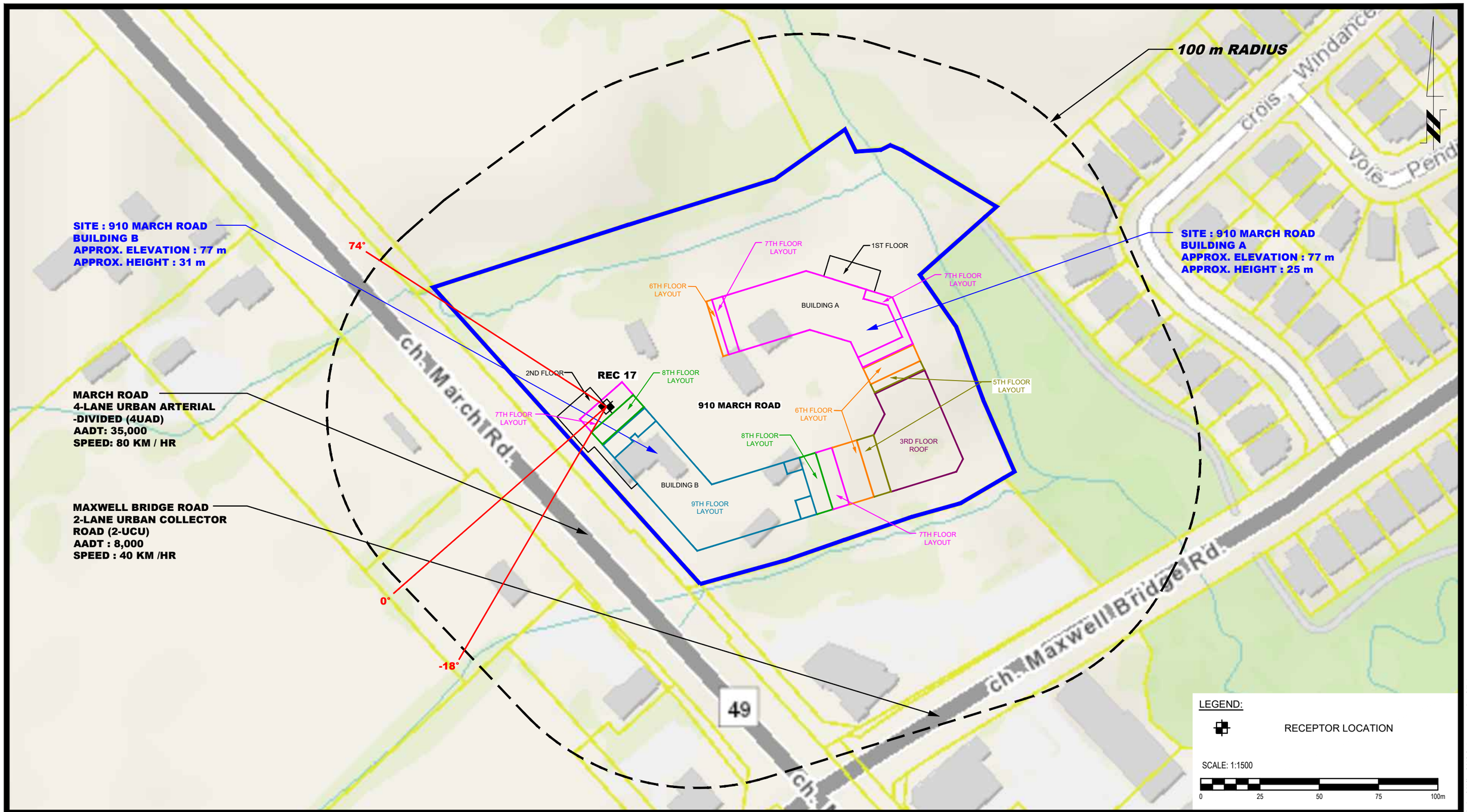
Title:

SITE GEOMETRY - REC 16

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3P
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg



PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

NO.	REVISIONS	DATE	INITIAL
1	UPDATED BUILDING LAYOUT	23/01/2023	YT

CANADIAN RENTAL DEVELOPMENT SERVICE INC.

NOISE ATTENUATION STUDY
PROPOSED RESIDENTIAL DEVELOPMENT
910 MARCH ROAD

OTTAWA, ONTARIO

Title:

SITE GEOMETRY - REC 17

Scale: 1:1500	Date: 09/2022
Drawn by: YA	Report No.: PG6416-1
Checked by: YT	Dwg. No.: PG6416-3Q
Approved by: SB	Revision No.: 1

11x17

p:\autocad drawings\geotechnical\pg64xx\pg6416\pg6416-3-site geometry (rev.01).dwg

APPENDIX 2

STAMSON RESULTS

STAMSON 5.0 NORMAL REPORT Date: 04-10-2022 16:18:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec11.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 1-1

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : 0.00 deg 20.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 130.00 / 130.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: March Rd (day)

Source height = 1.50 m

ROAD (0.00 + 51.00 + 0.00) = 51.00 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	20	0.66	76.17	0.00	-15.57	-9.60	0.00	0.00	0.00	51.00

Segment Leq : 51.00 dBA

Total Leq All Segments: 51.00 dBA

↟
Results segment # 1: March Rd (night)

Source height = 1.50 m

ROAD (0.00 + 43.40 + 0.00) = 43.40 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	20	0.66	68.57	0.00	-15.57	-9.60	0.00	0.00	0.00	43.40

Segment Leq : 43.40 dBA

Total Leq All Segments: 43.40 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 51.00
(NIGHT): 43.40
↟
↟

STAMSON 5.0 NORMAL REPORT Date: 25-01-2023 16:50:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec17.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 1-7

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : 0.00 deg 20.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 130.00 / 130.00 m
Receiver height : 23.00 / 23.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Results segment # 1: March Rd (day)

Source height = 1.50 m

ROAD (0.00 + 57.10 + 0.00) = 57.10 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	20	0.02	76.17	0.00	-9.52	-9.54	0.00	0.00	0.00	57.10

Segment Leq : 57.10 dBA

Total Leq All Segments: 57.10 dBA

↟
Results segment # 1: March Rd (night)

Source height = 1.50 m

ROAD (0.00 + 49.51 + 0.00) = 49.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	20	0.02	68.57	0.00	-9.52	-9.54	0.00	0.00	0.00	49.51

Segment Leq : 49.51 dBA

Total Leq All Segments: 49.51 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 57.10
(NIGHT): 49.51
↟
↟

STAMSON 5.0 NORMAL REPORT Date: 05-10-2022 09:31:36
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec21.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 2-1

Road data, segment # 1: Maxwell B Rd (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Maxwell B Rd (day/night)

Angle1 Angle2 : -31.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 130.00 / 130.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Results segment # 1: Maxwell B Rd (day)

Source height = 1.50 m

ROAD (0.00 + 40.61 + 0.00) = 40.61 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-31	0	0.66	63.96	0.00	-15.57	-7.78	0.00	0.00	0.00	40.61

Segment Leq : 40.61 dBA

Total Leq All Segments: 40.61 dBA

↟
Results segment # 1: Maxwell B Rd (night)

Source height = 1.50 m

ROAD (0.00 + 33.01 + 0.00) = 33.01 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-31	0	0.66	56.36	0.00	-15.57	-7.78	0.00	0.00	0.00	33.01

Segment Leq : 33.01 dBA

Total Leq All Segments: 33.01 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 40.61
(NIGHT): 33.01
↟
↟

STAMSON 5.0 NORMAL REPORT Date: 25-01-2023 16:58:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec27.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 2-7

Road data, segment # 1: Maxwell B Rd (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Maxwell B Rd (day/night)

Angle1 Angle2 : -31.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 130.00 / 130.00 m
Receiver height : 23.00 / 23.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Results segment # 1: Maxwell B Rd (day)

Source height = 1.50 m

ROAD (0.00 + 46.79 + 0.00) = 46.79 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-31	0	0.02	63.96	0.00	-9.52	-7.64	0.00	0.00	0.00	46.79

Segment Leq : 46.79 dBA

Total Leq All Segments: 46.79 dBA

↟
Results segment # 1: Maxwell B Rd (night)

Source height = 1.50 m

ROAD (0.00 + 39.20 + 0.00) = 39.20 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-31	0	0.02	56.36	0.00	-9.52	-7.64	0.00	0.00	0.00	39.20

Segment Leq : 39.20 dBA

Total Leq All Segments: 39.20 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 46.79
(NIGHT): 39.20

↟
↟

STAMSON 5.0 NORMAL REPORT Date: 04-10-2022 16:29:32
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec31.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 3-1

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : -76.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 70.00 / 70.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00

```
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: MaxwellBRoad (day/night)
------------------------------------------------
Angle1   Angle2           : -69.00 deg   18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  90.00 / 90.00  m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

↟

```
Results segment # 1: March Rd (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 60.36 + 0.00) = 60.36 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -76      0   0.66  76.17   0.00 -11.11  -4.70   0.00   0.00   0.00  60.36
-------------------------------------------------------------------------------

Segment Leq : 60.36 dBA
```

↟

```
Results segment # 2: MaxwellBRoad (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 47.27 + 0.00) = 47.27 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -69     18   0.66  63.96   0.00 -12.92  -3.76   0.00   0.00   0.00  47.27
-------------------------------------------------------------------------------

Segment Leq : 47.27 dBA

Total Leq All Segments: 60.57 dBA
```

↟

```
Results segment # 1: March Rd (night)
-------------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 52.77 + 0.00) = 52.77 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-76	0	0.66	68.57	0.00	-11.11	-4.70	0.00	0.00	0.00	52.77

Segment Leq : 52.77 dBA

Results segment # 2: MaxwellBRoad (night)

Source height = 1.50 m

ROAD (0.00 + 39.68 + 0.00) = 39.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-69	18	0.66	56.36	0.00	-12.92	-3.76	0.00	0.00	0.00	39.68

Segment Leq : 39.68 dBA

Total Leq All Segments: 52.98 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 60.57
(NIGHT): 52.98

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 16:30:57
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec39.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 3-9

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : -76.00 deg 0.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 70.00 / 70.00 m
Receiver height : 29.00 / 29.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00

```
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: MaxwellBRoad (day/night)
------------------------------------------------
Angle1   Angle2           : -69.00 deg   18.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  :  90.00 / 90.00  m
Receiver height           :  29.00 / 29.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

↟

```
Results segment # 1: March Rd (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 65.73 + 0.00) = 65.73 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -76      0   0.00  76.17   0.00  -6.69  -3.74   0.00   0.00   0.00  65.73
-------------------------------------------------------------------------------

Segment Leq : 65.73 dBA
```

↟

```
Results segment # 2: MaxwellBRoad (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 53.02 + 0.00) = 53.02 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -69     18   0.00  63.96   0.00  -7.78  -3.16   0.00   0.00   0.00  53.02
-------------------------------------------------------------------------------

Segment Leq : 53.02 dBA

Total Leq All Segments: 65.96 dBA
```

↟

```
Results segment # 1: March Rd (night)
-------------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 58.14 + 0.00) = 58.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-76	0	0.00	68.57	0.00	-6.69	-3.74	0.00	0.00	0.00	58.14

Segment Leq : 58.14 dBA

Results segment # 2: MaxwellBRoad (night)

Source height = 1.50 m

ROAD (0.00 + 45.42 + 0.00) = 45.42 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-69	18	0.00	56.36	0.00	-7.78	-3.16	0.00	0.00	0.00	45.42

Segment Leq : 45.42 dBA

Total Leq All Segments: 58.37 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 65.96
(NIGHT): 58.37

STAMSON 5.0 NORMAL REPORT Date: 04-10-2022 16:42:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec41.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 4-1

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : -82.00 deg 82.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 20.00 / 20.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00

```
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: MaxwellBRoad (day/night)
------------------------------------------------
Angle1   Angle2           :   0.00 deg   10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 135.00 / 135.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

🡅
Results segment # 1: March Rd (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 72.55 + 0.00) = 72.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -82     82   0.66  76.17   0.00  -2.07  -1.55   0.00   0.00   0.00  72.55
-------------------------------------------------------------------------------

Segment Leq : 72.55 dBA

🡅
Results segment # 2: MaxwellBRoad (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 35.55 + 0.00) = 35.55 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     10   0.66  63.96   0.00 -15.84 -12.57   0.00   0.00   0.00  35.55
-------------------------------------------------------------------------------

Segment Leq : 35.55 dBA

Total Leq All Segments: 72.55 dBA

🡅
Results segment # 1: March Rd (night)
-------------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 64.95 + 0.00) = 64.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-82	82	0.66	68.57	0.00	-2.07	-1.55	0.00	0.00	0.00	64.95

Segment Leq : 64.95 dBA

↟

Results segment # 2: MaxwellBRoad (night)

Source height = 1.50 m

ROAD (0.00 + 27.95 + 0.00) = 27.95 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	10	0.66	56.36	0.00	-15.84	-12.57	0.00	0.00	0.00	27.95

Segment Leq : 27.95 dBA

Total Leq All Segments: 64.95 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 72.55
(NIGHT): 64.95

↟

↟

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 16:32:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec49.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 4-9

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : -82.00 deg 82.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 20.00 / 20.00 m
Receiver height : 29.00 / 29.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Road data, segment # 2: MaxwellBRoad (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00

```
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: MaxwellBRoad (day/night)
------------------------------------------------
Angle1   Angle2           :   0.00 deg   10.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 135.00 / 135.00 m
Receiver height           :  29.00 / 29.00  m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00

🡅
Results segment # 1: March Rd (day)
-----------------------------------

Source height = 1.50 m

ROAD (0.00 + 74.51 + 0.00) = 74.51 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -82     82   0.00  76.17   0.00  -1.25  -0.40   0.00   0.00   0.00  74.51
-------------------------------------------------------------------------------

Segment Leq : 74.51 dBA

🡅
Results segment # 2: MaxwellBRoad (day)
---------------------------------------

Source height = 1.50 m

ROAD (0.00 + 41.86 + 0.00) = 41.86 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     10   0.00  63.96   0.00  -9.54 -12.55   0.00   0.00   0.00  41.86
-------------------------------------------------------------------------------

Segment Leq : 41.86 dBA

Total Leq All Segments: 74.51 dBA

🡅
Results segment # 1: March Rd (night)
-------------------------------------
```

Source height = 1.50 m

ROAD (0.00 + 66.92 + 0.00) = 66.92 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-82	82	0.00	68.57	0.00	-1.25	-0.40	0.00	0.00	0.00	66.92

Segment Leq : 66.92 dBA

↟

Results segment # 2: MaxwellBRoad (night)

Source height = 1.50 m

ROAD (0.00 + 34.27 + 0.00) = 34.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	10	0.00	56.36	0.00	-9.54	-12.55	0.00	0.00	0.00	34.27

Segment Leq : 34.27 dBA

Total Leq All Segments: 66.92 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 74.51
(NIGHT): 66.92

↟

↟

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 14:40:56
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: REC51.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 5-1

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : 21.00 deg 29.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 150.00 / 150.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Road data, segment # 2: Maxwell Rd A (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00

```
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Maxwell Rd A (day/night)
-----------------------------------------------
Angle1   Angle2           :   0.00 deg   11.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 145.00 / 145.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 11.00 deg
Barrier height            :  11.50 m
Barrier receiver distance :  55.00 / 55.00  m
Source elevation          :  77.00 m
Receiver elevation        :  77.00 m
Barrier elevation         :  77.00 m
Reference angle           :   0.00

♠
Road data, segment # 3: Maxwell Rd B (day/night)
-------------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Maxwell Rd B (day/night)
-----------------------------------------------
Angle1   Angle2           :  11.00 deg   19.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 150.00 / 150.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
```

```
Barrier angle1            :  11.00 deg   Angle2 : 19.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  55.00 / 55.00  m
Source elevation          :  77.00 m
Receiver elevation        :  77.00 m
Barrier elevation         :  77.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 4: Maxwell Rd C (day/night)
------------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Maxwell Rd C (day/night)
------------------------------------------------
Angle1   Angle2           :  19.00 deg   30.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     20 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 170.00 / 170.00 m
Receiver height           :   1.50 / 1.50   m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  19.00 deg   Angle2 : 30.00 deg
Barrier height            :  18.00 m
Barrier receiver distance :  65.00 / 65.00  m
Source elevation          :  77.00 m
Receiver elevation        :  77.00 m
Barrier elevation         :  77.00 m
Reference angle           :   0.00
```

↟

```
Results segment # 1: March Rd (day)
-----------------------------------

Source height = 1.50 m
```

ROAD (0.00 + 45.76 + 0.00) = 45.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
21	29	0.66	76.17	0.00	-16.60	-13.81	0.00	0.00	0.00	45.76

Segment Leq : 45.76 dBA

Results segment # 2: Maxwell Rd A (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.50	78.50

ROAD (0.00 + 22.73 + 0.00) = 22.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	11	0.00	63.96	0.00	-9.85	-12.14	0.00	0.00	-19.23	22.73

Segment Leq : 22.73 dBA

Results segment # 3: Maxwell Rd B (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	1.50	1.50	78.50

ROAD (0.00 + 20.43 + 0.00) = 20.43 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
11	19	0.00	63.96	0.00	-10.00	-13.52	0.00	0.00	-20.00	20.43

Segment Leq : 20.43 dBA

↟
Results segment # 4: Maxwell Rd C (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m) ! Receiver Height (m) ! Barrier Height (m) ! Elevation of Barrier Top (m)

1.50 ! 1.50 ! 1.50 ! 78.50

ROAD (0.00 + 21.27 + 0.00) = 21.27 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
19	30	0.66	63.96	0.00	-17.50	-12.41	0.00	-0.86	0.00	33.18
19	30	0.00	63.96	0.00	-10.54	-12.14	0.00	0.00	-20.00	21.27

Segment Leq : 21.27 dBA

Total Leq All Segments: 45.81 dBA

↟
Results segment # 1: March Rd (night)

Source height = 1.50 m

ROAD (0.00 + 38.16 + 0.00) = 38.16 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
21	29	0.66	68.57	0.00	-16.60	-13.81	0.00	0.00	0.00	38.16

Segment Leq : 38.16 dBA

↟
Results segment # 2: Maxwell Rd A (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m) ! Receiver Height (m) ! Barrier Height (m) ! Elevation of Barrier Top (m)

```
       1.50 !        1.50 !        1.50 !        78.50

ROAD (0.00 + 15.14 + 0.00) = 15.14 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
     0     11   0.00  56.36   0.00  -9.85 -12.14   0.00   0.00 -19.23  15.14
-------------------------------------------------------------------------------

Segment Leq : 15.14 dBA

🡅
Results segment # 3: Maxwell Rd B (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        78.50

ROAD (0.00 + 12.84 + 0.00) = 12.84 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    11     19   0.00  56.36   0.00 -10.00 -13.52   0.00   0.00 -20.00  12.84
-------------------------------------------------------------------------------

Segment Leq : 12.84 dBA

🡅
Results segment # 4: Maxwell Rd C (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !        1.50 !        1.50 !        78.50

ROAD (0.00 + 13.68 + 0.00) = 13.68 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    19     30   0.66  56.36   0.00 -17.50 -12.41   0.00  -0.86   0.00  25.59
    19     30   0.00  56.36   0.00 -10.54 -12.14   0.00   0.00 -20.00  13.68
-------------------------------------------------------------------------------
```

Segment Leq : 13.68 dBA

Total Leq All Segments: 38.21 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 45.81
(NIGHT): 38.21

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 14:44:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: REC57.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 5-7

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : 21.00 deg 29.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 150.00 / 150.00 m
Receiver height : 23.00 / 23.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

↑
Road data, segment # 2: Maxwell Rd A (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00

```
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: Maxwell Rd A (day/night)
-----------------------------------------------
Angle1   Angle2           :   0.00 deg   11.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 145.00 / 145.00 m
Receiver height           :  23.00 / 23.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :   0.00 deg   Angle2 : 11.00 deg
Barrier height            :  11.50 m
Barrier receiver distance :  55.00 / 55.00  m
Source elevation          :  77.00 m
Receiver elevation        :  77.00 m
Barrier elevation         :  77.00 m
Reference angle           :   0.00

↟
Road data, segment # 3: Maxwell Rd B (day/night)
-----------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 3: Maxwell Rd B (day/night)
-----------------------------------------------
Angle1   Angle2           :  11.00 deg   19.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 150.00 / 150.00 m
Receiver height           :  23.00 / 23.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
```

```
Barrier angle1            :  11.00 deg   Angle2 : 19.00 deg
Barrier height            :  15.00 m
Barrier receiver distance :  55.00 / 55.00  m
Source elevation          :  77.00 m
Receiver elevation        :  77.00 m
Barrier elevation         :  77.00 m
Reference angle           :   0.00
```

↟

```
Road data, segment # 4: Maxwell Rd C (day/night)
------------------------------------------------
Car traffic volume  :  6477/563   veh/TimePeriod  *
Medium truck volume :   515/45    veh/TimePeriod  *
Heavy truck volume  :   368/32    veh/TimePeriod  *
Posted speed limit  :    40 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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 4: Maxwell Rd C (day/night)
------------------------------------------------
Angle1   Angle2           :  19.00 deg   30.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      1 / 1
House density             :     20 %
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 170.00 / 170.00 m
Receiver height           :  23.00 / 23.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            :  19.00 deg   Angle2 : 30.00 deg
Barrier height            :  18.00 m
Barrier receiver distance :  65.00 / 65.00  m
Source elevation          :  77.00 m
Receiver elevation        :  77.00 m
Barrier elevation         :  77.00 m
Reference angle           :   0.00
```

↟

```
Results segment # 1: March Rd (day)
-----------------------------------

Source height = 1.50 m
```

ROAD (0.00 + 52.49 + 0.00) = 52.49 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
21	29	0.02	76.17	0.00	-10.15	-13.53	0.00	0.00	0.00	52.49

Segment Leq : 52.49 dBA

Results segment # 2: Maxwell Rd A (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	23.00	14.84	91.84

ROAD (0.00 + 41.81 + 0.00) = 41.81 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	11	0.00	63.96	0.00	-9.85	-12.14	0.00	0.00	0.00	41.96*
0	11	0.02	63.96	0.00	-10.00	-12.14	0.00	0.00	0.00	41.81

* Bright Zone !

Segment Leq : 41.81 dBA

Results segment # 3: Maxwell Rd B (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	23.00	15.11	92.11

ROAD (0.00 + 40.28 + 0.00) = 40.28 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
11	19	0.00	63.96	0.00	-10.00	-13.52	0.00	0.00	-4.99	35.44*

```
    11     19   0.02  63.96   0.00 -10.15 -13.52   0.00   0.00   0.00  40.28
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 40.28 dBA

↟
Results segment # 4: Maxwell Rd C (day)
---------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       23.00 !       14.78 !        91.78

ROAD (0.00 + 32.09 + 0.00) = 32.09 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    19     30   0.02  63.96   0.00 -10.70 -12.15   0.00  -0.86   0.00  40.25
    19     30   0.00  63.96   0.00 -10.54 -12.14   0.00   0.00  -9.19  32.09
-------------------------------------------------------------------------------

Segment Leq : 32.09 dBA

Total Leq All Segments: 53.11 dBA

↟
Results segment # 1: March Rd (night)
-------------------------------------

Source height = 1.50 m

ROAD (0.00 + 44.89 + 0.00) = 44.89 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    21     29   0.02  68.57   0.00 -10.15 -13.53   0.00   0.00   0.00  44.89
-------------------------------------------------------------------------------

Segment Leq : 44.89 dBA

↟
Results segment # 2: Maxwell Rd A (night)
-----------------------------------------

Source height = 1.50 m
```

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	23.00	14.84	91.84

ROAD (0.00 + 34.22 + 0.00) = 34.22 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
0	11	0.00	56.36	0.00	-9.85	-12.14	0.00	0.00	0.00	34.37*
0	11	0.02	56.36	0.00	-10.00	-12.14	0.00	0.00	0.00	34.22

* Bright Zone !

Segment Leq : 34.22 dBA

Results segment # 3: Maxwell Rd B (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	23.00	15.11	92.11

ROAD (0.00 + 32.69 + 0.00) = 32.69 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
11	19	0.00	56.36	0.00	-10.00	-13.52	0.00	0.00	-4.99	27.85*
11	19	0.02	56.36	0.00	-10.15	-13.52	0.00	0.00	0.00	32.69

* Bright Zone !

Segment Leq : 32.69 dBA

Results segment # 4: Maxwell Rd C (night)

Source height = 1.50 m

Barrier height for grazing incidence

```
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       23.00 !       14.78 !        91.78

ROAD (0.00 + 24.49 + 0.00) = 24.49 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
    19     30   0.02  56.36   0.00 -10.70 -12.15   0.00  -0.86   0.00  32.66
    19     30   0.00  56.36   0.00 -10.54 -12.14   0.00   0.00  -9.19  24.49
-------------------------------------------------------------------------------

Segment Leq : 24.49 dBA

Total Leq All Segments: 45.52 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 53.11
                           (NIGHT): 45.52
↟
↟
```

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 09:27:39
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec61.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 6-1

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : -12.00 deg 28.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 90.00 / 90.00 m
Receiver height : 1.50 / 1.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: March Rd (day)

Source height = 1.50 m

ROAD (0.00 + 56.63 + 0.00) = 56.63 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-12	28	0.66	76.17	0.00	-12.92	-6.62	0.00	0.00	0.00	56.63

Segment Leq : 56.63 dBA

Total Leq All Segments: 56.63 dBA

↟
Results segment # 1: March Rd (night)

Source height = 1.50 m

ROAD (0.00 + 49.03 + 0.00) = 49.03 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-12	28	0.66	68.57	0.00	-12.92	-6.62	0.00	0.00	0.00	49.03

Segment Leq : 49.03 dBA

Total Leq All Segments: 49.03 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 56.63
(NIGHT): 49.03
↟
↟

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 09:30:06
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec67.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 6-7

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : -12.00 deg 28.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 90.00 / 90.00 m
Receiver height : 23.00 / 23.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Results segment # 1: March Rd (day)

Source height = 1.50 m

ROAD (0.00 + 61.73 + 0.00) = 61.73 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-12	28	0.02	76.17	0.00	-7.90	-6.53	0.00	0.00	0.00	61.73

Segment Leq : 61.73 dBA

Total Leq All Segments: 61.73 dBA

↟
Results segment # 1: March Rd (night)

Source height = 1.50 m

ROAD (0.00 + 54.14 + 0.00) = 54.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-12	28	0.02	68.57	0.00	-7.90	-6.53	0.00	0.00	0.00	54.14

Segment Leq : 54.14 dBA

Total Leq All Segments: 54.14 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 61.73
(NIGHT): 54.14
↟
↟

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 10:22:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec7.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 7

Road data, segment # 1: Maxwell B Rd (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Maxwell B Rd (day/night)

Angle1 Angle2 : -37.00 deg 33.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 115.00 / 115.00 m
Receiver height : 13.00 / 13.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -37.00 deg Angle2 : 33.00 deg
Barrier height : 11.50 m
Barrier receiver distance : 35.00 / 35.00 m
Source elevation : 77.00 m
Receiver elevation : 77.00 m
Barrier elevation : 77.00 m
Reference angle : 0.00

Results segment # 1: Maxwell B Rd (day)

Source height = 1.50 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.00 !        9.50 !        86.50

ROAD (0.00 + 42.92 + 0.00) = 42.92 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -37     33   0.00  63.96   0.00  -8.85  -4.10   0.00   0.00  -8.09  42.92
-------------------------------------------------------------------------------

Segment Leq : 42.92 dBA

Total Leq All Segments: 42.92 dBA

↟
Results segment # 1: Maxwell B Rd (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.00 !        9.50 !        86.50

ROAD (0.00 + 35.33 + 0.00) = 35.33 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -37     33   0.00  56.36   0.00  -8.85  -4.10   0.00   0.00  -8.09  35.33
-------------------------------------------------------------------------------

Segment Leq : 35.33 dBA

Total Leq All Segments: 35.33 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 42.92
                           (NIGHT): 35.33
↟
↟
```

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 10:18:17
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec8.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 8

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : -55.00 deg -47.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 155.00 / 155.00 m
Receiver height : 19.50 / 19.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -55.00 deg Angle2 : -47.00 deg
Barrier height : 18.00 m
Barrier receiver distance : 5.00 / 5.00 m
Source elevation : 77.00 m
Receiver elevation : 77.00 m
Barrier elevation : 77.00 m
Reference angle : 0.00

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

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: MaxwellBRoad (day/night)
-----------------------------------------------
Angle1   Angle2           : -34.00 deg   36.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 125.00 / 125.00 m
Receiver height           :  19.50 / 19.50  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -34.00 deg   Angle2 : 36.00 deg
Barrier height            :  18.00 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :  77.00 m
Receiver elevation        :  77.00 m
Barrier elevation         :  77.00 m
Reference angle           :   0.00

♠
Results segment # 1: March Rd (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       19.50 !       18.92 !        95.92

ROAD (0.00 + 51.04 + 0.00) = 51.04 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -55    -47   0.00  76.17   0.00 -10.14 -13.52   0.00   0.00  -1.35  51.15*
   -55    -47   0.12  76.17   0.00 -11.36 -13.76   0.00   0.00   0.00  51.04
-------------------------------------------------------------------------------

 * Bright Zone !
```

Segment Leq : 51.04 dBA

↟
Results segment # 2: MaxwellBRoad (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	19.50	18.78	95.78

ROAD (0.00 + 49.51 + 0.00) = 49.51 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-34	36	0.00	63.96	0.00	-9.21	-4.10	0.00	0.00	-0.98	49.66*
-34	36	0.12	63.96	0.00	-10.31	-4.14	0.00	0.00	0.00	49.51

* Bright Zone !

Segment Leq : 49.51 dBA

Total Leq All Segments: 53.35 dBA

↟
Results segment # 1: March Rd (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	19.50	18.92	95.92

ROAD (0.00 + 43.44 + 0.00) = 43.44 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-55	-47	0.00	68.57	0.00	-10.14	-13.52	0.00	0.00	-1.35	43.55*
-55	-47	0.12	68.57	0.00	-11.36	-13.76	0.00	0.00	0.00	43.44

* Bright Zone !

Segment Leq : 43.44 dBA

↟
Results segment # 2: MaxwellBRoad (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	19.50	18.78	95.78

ROAD (0.00 + 41.91 + 0.00) = 41.91 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-34	36	0.00	56.36	0.00	-9.21	-4.10	0.00	0.00	-0.98	42.07*
-34	36	0.12	56.36	0.00	-10.31	-4.14	0.00	0.00	0.00	41.91

---

 * Bright Zone !

Segment Leq : 41.91 dBA

Total Leq All Segments: 45.75 dBA

↟

TOTAL Leq FROM ALL SOURCES (DAY): 53.35
(NIGHT): 45.75
↟
↟

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 10:30:21
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: REC9.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 9

Road data, segment # 1: Maxwell B Rd (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Maxwell B Rd (day/night)

Angle1 Angle2 : -58.00 deg 23.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 100.00 / 100.00 m
Receiver height : 13.00 / 13.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -58.00 deg Angle2 : 23.00 deg
Barrier height : 11.50 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 77.00 m
Receiver elevation : 77.00 m
Barrier elevation : 77.00 m
Reference angle : 0.00

Results segment # 1: Maxwell B Rd (day)

Source height = 1.50 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.00 !       11.85 !        88.85

ROAD (0.00 + 49.46 + 0.00) = 49.46 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -58     23   0.00  63.96   0.00  -8.24  -3.47   0.00   0.00  -4.68  47.57*
   -58     23   0.32  63.96   0.00 -10.84  -3.66   0.00   0.00   0.00  49.46
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 49.46 dBA

Total Leq All Segments: 49.46 dBA

↟
Results segment # 1: Maxwell B Rd (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       13.00 !       11.85 !        88.85

ROAD (0.00 + 41.87 + 0.00) = 41.87 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -58     23   0.00  56.36   0.00  -8.24  -3.47   0.00   0.00  -4.68  39.97*
   -58     23   0.32  56.36   0.00 -10.84  -3.66   0.00   0.00   0.00  41.87
-------------------------------------------------------------------------------

 * Bright Zone !

Segment Leq : 41.87 dBA

Total Leq All Segments: 41.87 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 49.46
                           (NIGHT): 41.87
```

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 10:40:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: REC10.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 10

Road data, segment # 1: Maxwell B Rd (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Maxwell B Rd (day/night)

Angle1 Angle2 : -60.00 deg 16.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 100.00 / 100.00 m
Receiver height : 16.50 / 16.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -60.00 deg Angle2 : 16.00 deg
Barrier height : 15.00 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 77.00 m
Receiver elevation : 77.00 m
Barrier elevation : 77.00 m
Reference angle : 0.00

Results segment # 1: Maxwell B Rd (day)

Source height = 1.50 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       16.50 !       15.00 !        92.00

ROAD (0.00 + 46.97 + 0.00) = 46.97 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -60     16   0.00  63.96   0.00  -8.24  -3.74   0.00   0.00  -5.00  46.97
-------------------------------------------------------------------------------

Segment Leq : 46.97 dBA

Total Leq All Segments: 46.97 dBA

↟
Results segment # 1: Maxwell B Rd (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       16.50 !       15.00 !        92.00

ROAD (0.00 + 39.38 + 0.00) = 39.38 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -60     16   0.00  56.36   0.00  -8.24  -3.74   0.00   0.00  -5.00  39.38
-------------------------------------------------------------------------------

Segment Leq : 39.38 dBA

Total Leq All Segments: 39.38 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 46.97
                           (NIGHT): 39.38
↟
↟
```

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 10:53:15
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: REC11.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 11

Road data, segment # 1: Maxwell B Rd (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Maxwell B Rd (day/night)

Angle1 Angle2 : -62.00 deg 24.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 100.00 / 100.00 m
Receiver height : 19.50 / 19.50 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -62.00 deg Angle2 : 24.00 deg
Barrier height : 18.00 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 77.00 m
Receiver elevation : 77.00 m
Barrier elevation : 77.00 m
Reference angle : 0.00

↑
Results segment # 1: Maxwell B Rd (day)

Source height = 1.50 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       19.50 !       17.70 !        94.70

ROAD (0.00 + 47.29 + 0.00) = 47.29 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -62     24   0.00  63.96   0.00  -8.24  -3.21   0.00   0.00  -5.21  47.29
-------------------------------------------------------------------------------

Segment Leq : 47.29 dBA

Total Leq All Segments: 47.29 dBA

↟
Results segment # 1: Maxwell B Rd (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       19.50 !       17.70 !        94.70

ROAD (0.00 + 39.70 + 0.00) = 39.70 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -62     24   0.00  56.36   0.00  -8.24  -3.21   0.00   0.00  -5.21  39.70
-------------------------------------------------------------------------------

Segment Leq : 39.70 dBA

Total Leq All Segments: 39.70 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 47.29
                           (NIGHT): 39.70
↟
↟
```

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 16:42:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec12.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 12

Road data, segment # 1: Maxwell B Rd (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Maxwell B Rd (day/night)

Angle1 Angle2 : -63.00 deg 16.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 100.00 / 100.00 m
Receiver height : 23.00 / 23.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -63.00 deg Angle2 : 16.00 deg
Barrier height : 21.50 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 77.00 m
Receiver elevation : 77.00 m
Barrier elevation : 77.00 m
Reference angle : 0.00

Results segment # 1: Maxwell B Rd (day)

Source height = 1.50 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       23.00 !       20.85 !        97.85

ROAD (0.00 + 46.22 + 0.00) = 46.22 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -63     16   0.00  63.96   0.00  -8.24  -3.58   0.00   0.00  -5.92  46.22
-------------------------------------------------------------------------------

Segment Leq : 46.22 dBA

Total Leq All Segments: 46.22 dBA

↟
Results segment # 1: Maxwell B Rd (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       23.00 !       20.85 !        97.85

ROAD (0.00 + 38.63 + 0.00) = 38.63 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -63     16   0.00  56.36   0.00  -8.24  -3.58   0.00   0.00  -5.92  38.63
-------------------------------------------------------------------------------

Segment Leq : 38.63 dBA

Total Leq All Segments: 38.63 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 46.22
                           (NIGHT): 38.63
↟
↟
```

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 11:08:13
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: REC13.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 13

Road data, segment # 1: Maxwell B Rd (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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): 8000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: Maxwell B Rd (day/night)

Angle1 Angle2 : -64.00 deg 13.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 100.00 / 100.00 m
Receiver height : 26.00 / 26.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -64.00 deg Angle2 : 13.00 deg
Barrier height : 24.50 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 77.00 m
Receiver elevation : 77.00 m
Barrier elevation : 77.00 m
Reference angle : 0.00

Results segment # 1: Maxwell B Rd (day)

Source height = 1.50 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       26.00 !       23.55 !       100.55

ROAD (0.00 + 45.26 + 0.00) = 45.26 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -64     13   0.00  63.96   0.00  -8.24  -3.69   0.00   0.00  -6.77  45.26
-------------------------------------------------------------------------------

Segment Leq : 45.26 dBA

Total Leq All Segments: 45.26 dBA

↟
Results segment # 1: Maxwell B Rd (night)
-----------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       26.00 !       23.55 !       100.55

ROAD (0.00 + 37.67 + 0.00) = 37.67 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -64     13   0.00  56.36   0.00  -8.24  -3.69   0.00   0.00  -6.77  37.67
-------------------------------------------------------------------------------

Segment Leq : 37.67 dBA

Total Leq All Segments: 37.67 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 45.26
                           (NIGHT): 37.67
↟
↟
```

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 11:29:47
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: REC14.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 14

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : -78.00 deg -55.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 90.00 / 90.00 m
Receiver height : 29.00 / 29.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -78.00 deg Angle2 : -55.00 deg
Barrier height : 27.50 m
Barrier receiver distance : 5.00 / 5.00 m
Source elevation : 77.00 m
Receiver elevation : 77.00 m
Barrier elevation : 77.00 m
Reference angle : 0.00

↟
Road data, segment # 2: MaxwellBRoad (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: MaxwellBRoad (day/night)
-----------------------------------------------
Angle1   Angle2           : -68.00 deg   15.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 100.00 / 100.00 m
Receiver height           :  29.00 / 29.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -68.00 deg   Angle2 : 15.00 deg
Barrier height            :  27.50 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :  77.00 m
Receiver elevation        :  77.00 m
Barrier elevation         :  77.00 m
Reference angle           :   0.00

↟
Results segment # 1: March Rd (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       29.00 !       27.47 !       104.47

ROAD (0.00 + 54.45 + 0.00) = 54.45 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -78    -55   0.00  76.17   0.00  -7.78  -8.94   0.00   0.00  -5.00  54.45
-------------------------------------------------------------------------------

Segment Leq : 54.45 dBA

↟
```

Results segment # 2: MaxwellBRoad (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	29.00	27.62	104.62

ROAD (0.00 + 52.35 + 0.00) = 52.35 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-68	15	0.00	63.96	0.00	-8.24	-3.36	0.00	0.00	-4.94	47.42*
-68	15	0.00	63.96	0.00	-8.24	-3.36	0.00	0.00	0.00	52.35

* Bright Zone !

Segment Leq : 52.35 dBA

Total Leq All Segments: 56.54 dBA

↟
Results segment # 1: March Rd (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	29.00	27.47	104.47

ROAD (0.00 + 46.85 + 0.00) = 46.85 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-78	-55	0.00	68.57	0.00	-7.78	-8.94	0.00	0.00	-5.00	46.85

Segment Leq : 46.85 dBA

↟
Results segment # 2: MaxwellBRoad (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	29.00	27.62	104.62

ROAD (0.00 + 44.76 + 0.00) = 44.76 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-68	15	0.00	56.36	0.00	-8.24	-3.36	0.00	0.00	-4.94	39.82*
-68	15	0.00	56.36	0.00	-8.24	-3.36	0.00	0.00	0.00	44.76

* Bright Zone !

Segment Leq : 44.76 dBA

Total Leq All Segments: 48.94 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 56.54
(NIGHT): 48.94

STAMSON 5.0 NORMAL REPORT Date: 30-01-2023 13:24:26
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec14tr.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 14TR

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : -78.00 deg -55.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 90.00 / 90.00 m
Receiver height : 29.00 / 29.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -78.00 deg Angle2 : -55.00 deg
Barrier height : 28.50 m
Barrier receiver distance : 5.00 / 5.00 m
Source elevation : 77.00 m
Receiver elevation : 77.00 m
Barrier elevation : 77.00 m
Reference angle : 0.00

↟
Road data, segment # 2: MaxwellBRoad (day/night)

Car traffic volume : 6477/563 veh/TimePeriod *
Medium truck volume : 515/45 veh/TimePeriod *
Heavy truck volume : 368/32 veh/TimePeriod *
Posted speed limit : 40 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):   8000
    Percentage of Annual Growth        :   0.00
    Number of Years of Growth          :   0.00
    Medium Truck % of Total Volume     :   7.00
    Heavy Truck  % of Total Volume     :   5.00
    Day (16 hrs) % of Total Volume     :  92.00

Data for Segment # 2: MaxwellBRoad (day/night)
-----------------------------------------------
Angle1   Angle2           : -68.00 deg   15.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0 / 0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 100.00 / 100.00 m
Receiver height           :  29.00 / 29.00  m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -68.00 deg   Angle2 : 15.00 deg
Barrier height            :  28.50 m
Barrier receiver distance :   5.00 / 5.00   m
Source elevation          :  77.00 m
Receiver elevation        :  77.00 m
Barrier elevation         :  77.00 m
Reference angle           :   0.00

↟
Results segment # 1: March Rd (day)
-----------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       29.00 !       27.47 !       104.47

ROAD (0.00 + 52.64 + 0.00) = 52.64 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -78    -55   0.00  76.17   0.00  -7.78  -8.94   0.00   0.00  -6.81  52.64
-------------------------------------------------------------------------------

Segment Leq : 52.64 dBA

↟
```

Results segment # 2: MaxwellBRoad (day)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	29.00	27.62	104.62

ROAD (0.00 + 44.80 + 0.00) = 44.80 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-68	15	0.00	63.96	0.00	-8.24	-3.36	0.00	0.00	-7.55	44.80

Segment Leq : 44.80 dBA

Total Leq All Segments: 53.30 dBA

Results segment # 1: March Rd (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50	29.00	27.47	104.47

ROAD (0.00 + 45.05 + 0.00) = 45.05 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-78	-55	0.00	68.57	0.00	-7.78	-8.94	0.00	0.00	-6.81	45.05

Segment Leq : 45.05 dBA

Results segment # 2: MaxwellBRoad (night)

Source height = 1.50 m

Barrier height for grazing incidence

```
-------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       29.00 !       27.62 !       104.62

ROAD (0.00 + 37.21 + 0.00) = 37.21 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -68     15   0.00  56.36   0.00  -8.24  -3.36   0.00   0.00  -7.55  37.21
-------------------------------------------------------------------------------

Segment Leq : 37.21 dBA

Total Leq All Segments: 45.71 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 53.30
                           (NIGHT): 45.71
↟
↟
```

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 11:39:03
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: REC15.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 15

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : -31.00 deg 79.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 25.00 / 25.00 m
Receiver height : 29.00 / 29.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -31.00 deg Angle2 : 79.00 deg
Barrier height : 27.50 m
Barrier receiver distance : 5.00 / 5.00 m
Source elevation : 77.00 m
Receiver elevation : 77.00 m
Barrier elevation : 77.00 m
Reference angle : 0.00

Results segment # 1: March Rd (day)

Source height = 1.50 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       29.00 !       23.50 !       100.50

ROAD (0.00 + 56.56 + 0.00) = 56.56 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -31     79   0.00  76.17   0.00  -2.22  -2.14   0.00   0.00 -15.25  56.56
-------------------------------------------------------------------------------

Segment Leq : 56.56 dBA

Total Leq All Segments: 56.56 dBA

↟
Results segment # 1: March Rd (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       29.00 !       23.50 !       100.50

ROAD (0.00 + 48.96 + 0.00) = 48.96 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -31     79   0.00  68.57   0.00  -2.22  -2.14   0.00   0.00 -15.25  48.96
-------------------------------------------------------------------------------

Segment Leq : 48.96 dBA

Total Leq All Segments: 48.96 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 56.56
                           (NIGHT): 48.96
↟
↟
```

STAMSON 5.0 NORMAL REPORT Date: 30-01-2023 13:26:32
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: REC15TR.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 15TR

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : -31.00 deg 79.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 25.00 / 25.00 m
Receiver height : 29.00 / 29.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -31.00 deg Angle2 : 79.00 deg
Barrier height : 28.50 m
Barrier receiver distance : 5.00 / 5.00 m
Source elevation : 77.00 m
Receiver elevation : 77.00 m
Barrier elevation : 77.00 m
Reference angle : 0.00

Results segment # 1: March Rd (day)

Source height = 1.50 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       29.00 !       23.50 !       100.50

ROAD (0.00 + 54.32 + 0.00) = 54.32 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -31     79   0.00  76.17   0.00  -2.22  -2.14   0.00   0.00 -17.49  54.32
-------------------------------------------------------------------------------

Segment Leq : 54.32 dBA

Total Leq All Segments: 54.32 dBA

↟
Results segment # 1: March Rd (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       29.00 !       23.50 !       100.50

ROAD (0.00 + 46.72 + 0.00) = 46.72 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -31     79   0.00  68.57   0.00  -2.22  -2.14   0.00   0.00 -17.49  46.72
-------------------------------------------------------------------------------

Segment Leq : 46.72 dBA

Total Leq All Segments: 46.72 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 54.32
                           (NIGHT): 46.72
↟
↟
```

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 11:46:37
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: REC16.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 16

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : -15.00 deg 75.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 30.00 / 30.00 m
Receiver height : 26.00 / 26.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -15.00 deg Angle2 : 75.00 deg
Barrier height : 24.50 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 77.00 m
Receiver elevation : 77.00 m
Barrier elevation : 77.00 m
Reference angle : 0.00

↑
Results segment # 1: March Rd (day)

Source height = 1.50 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       26.00 !       17.83 !        94.83

ROAD (0.00 + 51.53 + 0.00) = 51.53 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -15     75   0.00  76.17   0.00  -3.01  -3.01   0.00   0.00 -18.62  51.53
-------------------------------------------------------------------------------

Segment Leq : 51.53 dBA

Total Leq All Segments: 51.53 dBA

↟
Results segment # 1: March Rd (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       26.00 !       17.83 !        94.83

ROAD (0.00 + 43.93 + 0.00) = 43.93 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -15     75   0.00  68.57   0.00  -3.01  -3.01   0.00   0.00 -18.62  43.93
-------------------------------------------------------------------------------

Segment Leq : 43.93 dBA

Total Leq All Segments: 43.93 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 51.53
                           (NIGHT): 43.93
↟
↟
```

STAMSON 5.0 NORMAL REPORT Date: 26-01-2023 16:44:01
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: rec17.te Time Period: Day/Night 16/8 hours
Description: Receptor Point 17

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

Car traffic volume : 28336/2464 veh/TimePeriod *
Medium truck volume : 2254/196 veh/TimePeriod *
Heavy truck volume : 1610/140 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): 35000
Percentage of Annual Growth : 0.00
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 7.00
Heavy Truck % of Total Volume : 5.00
Day (16 hrs) % of Total Volume : 92.00

Data for Segment # 1: March Rd (day/night)

Angle1 Angle2 : -18.00 deg 74.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 30.00 / 30.00 m
Receiver height : 23.00 / 23.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -18.00 deg Angle2 : 74.00 deg
Barrier height : 21.50 m
Barrier receiver distance : 10.00 / 10.00 m
Source elevation : 77.00 m
Receiver elevation : 77.00 m
Barrier elevation : 77.00 m
Reference angle : 0.00

Results segment # 1: March Rd (day)

Source height = 1.50 m

Barrier height for grazing incidence

```
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       23.00 !       15.83 !        92.83

ROAD (0.00 + 52.40 + 0.00) = 52.40 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -18     74   0.00  76.17   0.00  -3.01  -2.91   0.00   0.00 -17.84  52.40
-------------------------------------------------------------------------------

Segment Leq : 52.40 dBA

Total Leq All Segments: 52.40 dBA

↟
Results segment # 1: March Rd (night)
-------------------------------------

Source height = 1.50 m

Barrier height for grazing incidence
------------------------------------
Source      ! Receiver    ! Barrier     ! Elevation of
Height  (m) ! Height  (m) ! Height  (m) ! Barrier Top  (m)
------------+-------------+-------------+--------------
       1.50 !       23.00 !       15.83 !        92.83

ROAD (0.00 + 44.81 + 0.00) = 44.81 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -18     74   0.00  68.57   0.00  -3.01  -2.91   0.00   0.00 -17.84  44.81
-------------------------------------------------------------------------------

Segment Leq : 44.81 dBA

Total Leq All Segments: 44.81 dBA

↟



TOTAL Leq FROM ALL SOURCES (DAY): 52.40
                           (NIGHT): 44.81
↟
↟
```