

NOISE IMPACT STUDY

“559 GARNER ROAD EAST”
“RESIDENTIAL DEVELOPMENT”
LOCATED AT 559 GARNER ROAD EAST
ANCASTER ON

Prepared for:

Garner South MD Developments Inc.
102-3410 South Service Road
Burlington ON
L7N 3T2

Prepared By:



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1.0 INTRODUCTION

dBA Acoustical Consultants Inc. has been retained to provide a noise impact study for the proposed 7 storey residential apartment building located at 559 Garner Road East, Ancaster, ON. See Figure 1 Site Location.

The purpose of the study is to determine the noise impact from Garner Road East and Southcote Road, Ancaster, ON relative to the proposed 7 storey apartment building located at 559 Garner Road East, Ancaster, ON. Total residential units for the site development are 99 residential units. There is also a ground floor outdoor amenity area located at the northeast corner of the proposed site property.

This noise study will detail noise impact relative to the proposed site plan and recommend noise control measures necessary (if applicable) to meet MECP (Ministry of Environment Conservation & Parks) guidelines while satisfying the planning requirements of the City of Hamilton.

Vibration is not considered as there are no heavy industrial operations near the proposed development. Aircraft is not a concern as the development is located outside the NEF 25 contour of the area. There are no area stationary noise sources in the general area that will impact the proposed site development. See Figure 1 Site Location.

2.0 SITE DESCRIPTION

The proposed 7 storey residential apartment development includes 5th & 7th storey terraces that are greater than 4m in depth. There are rooftop terraces proposed for this development. The proposed site is in an area largely comprised of existing open fields to the south, west, and existing 2-storey residential properties to the north and northeast & northwest of Southcote Road. Garner Road East is located approximately 22m to the southeast and Southcote Road is located approximately 24m to the northwest of the proposed development. See Figure 2 Site Plan.

3.0 NOISE IMPACT ASSESSMENT

3.1 NOISE CRITERIA

MECP specifies limits for road noise relative to new residential developments. The MECP Publication 300, Stationary & Transportation Sources-Approval & Planning, specifies the criteria, summarized as follows:

TABLE 1 - Road Traffic Sound Levels Limits	
Time Period	L _{eq} (dBA)
07:00 – 23:00 (16 hr.)	55 Outdoor Living Area (OLA)
23:00 – 07:00 (8 hr.)	50 Plane of Bedroom Window (POW)

The OLA refers to an outdoor patio, a backyard, a terrace or other area where outdoor passive recreation is expected to occur on the residential property. Noise levels are calculated at the upper storey bedroom window to represent nighttime (23:00 - 07:00) periods.

Where noise levels estimated in the Outdoor Living Area (OLA) and at an upper storey window (POW) are equal to or less than the values listed in Table 1, no noise control measures are required. Where noise levels exceed Table 1 values, the following action is required:

TABLE 2 –Noise Control Requirements		
Time Period	Noise Level Leq (dBA)	Action Required
07:00 - 23:00 Daytime (OLA)	55 to 60	Barrier or Warning Clause Type “A”
07:00 - 23:00 Daytime (OLA)	> 60	Barrier & Warning Clause Type “B”
07:00 – 23:00 Daytime (POW)	>55	Provision for A/C, Warning Clause “C”
07:00 – 23:00 Daytime (POW)	>65	Central A/C, Warning Clause “D”
07:00 – 23:00 Daytime (POW)	>65	Building Component Specification
23:00 to 07:00 Nighttime (POW)	> 50-60	Provision for A/C and Warning Clause Type “C”
23:00 to 07:00 Nighttime (POW)	> 60	Building Component Specification
	> 60	Central Air Conditioning and Warning Clause Type “D”

Where nighttime noise levels exceed 60 dBA, building components must be designed to meet the following Table 3 indoor sound level limits.

TABLE 3 - Indoor Road Sound Levels Limits	
Indoor Location	Leq (dBA)
	Road
Living/Dining 7:00 – 23:00	45
Bedroom 23:00 - 07:00	40

3.2 ROAD NOISE

Predicted road traffic noise levels were calculated for Garner Road East and Southcote Road, the major road noise sources in the site area. Road traffic volumes were sourced from the *City of Hamilton Traffic Engineering Website*, relative to the roadways. MECP computer program STAMSON version 5.04 was used to carry out prediction calculations. (See Appendix “A”). Traffic data is summarized in Table 4.

The daytime/nighttime volume ratio relative for both Garner Road East and Southcote Road roadways are calculated using a 90/10 split and a 16/8-hour assessment as required by the MECP.

The maximum posted speeds for Garner Road East vehicles is 60 km/hr. Southcote Road all vehicles is 50 km/hr. The percentage of annual growth for both roadways was figured at 2.0% over 13 years. The 2018 AADT (Annual Average Daily Traffic) volumes were used for both Garner Road East and Southcote Road, reflective of the worst-case scenario. Truck volumes were factored at 2% medium and 2% heavy of the total vehicle volumes for Garner Road East and 1.5% medium and 1.5% heavy for Southcote Road. Table 4 following is the forecasted traffic volumes used in the report.

Garner Road East is a 2-lane roadway with north and south turning lanes and Southcote Road is a 2-lane roadway with an eastbound turning lane.

TABLE 4 – Future Road Traffic Volumes (Year 2031)			
Garner Road East	AADT 22747 Vehicles		
	Cars	Medium Trucks	Heavy Trucks
Day	19653	409	409
Night	2184	45	45
Southcote Road	AADT 8103 Vehicles		
	Cars	Medium Trucks	Heavy Trucks
Day	7074	109	109
Night	786	12	12

Table 5 summarizes the combined “free field” traffic noise prediction results, modeled at 9receptor locations and representative of building facades throughout the proposed development as well as a 0.91 safety railing or noise barrier for R7 & R8. (See Figure 3 Receptor Locations)

TABLE 5 – Predicted COMBINED Future Traffic Noise (dBA)		
Location	07:00 – 23:00	23:00 – 07:00
R1- 1 st Floor Residential South Facade	64	64
R2- 5 th Floor Residential South Facade	66	66
R3- 1 st Floor Residential South Facade	61	61
R4- 5 th Floor Residential South Facade	62	62
R5- 1 st Floor Residential Northwest Facade	58	58
R6- 5 th Floor Residential Northwest Facade	60	60
R7- 5 th & 6 th Floor Terraces 0.91m (3ft)	50	N/A
R8- 7 th Floor Terraces 0.91m (3ft)	44	N/A
R9- Ground Floor Outdoor Amenity Area	41	N/A

(1) 6.5m Receiver Height – 1st floor

(2) 22m Receiver Height – 7th floor

4.0 RECOMMENDATIONS - NOISE CONTROL

4.1 OUTDOOR LIVING AREAS

Calculated road noise levels exceed the 55 dBA daytime criteria outlined in Table 1 for entire apartment building. The proposed apartment building has standard balconies that are less than 4m in depth and therefore are not considered OLA’s as defined by the MECP. The 5th and 7th floor terraces exceed the 55 dBA daytime criteria outlined in Table 1 and therefore requires a 0.91m (3ft) safety glass railing or equivalent to achieve the noise criteria. The ground floor outdoor amenity area located at the northeast corner of the proposed site does not require any mitigation measures as (R9) noise levels are well below MECP guidelines.

In compliance with MECP guidelines, a noise barrier or equivalent (Safety Glass Railing) must have a minimum surface density of 20kg/m² and be designed and constructed without cracks or gaps. Any gaps under the noise barrier that are necessary for drainage purposes must be minimized (2”) and localized and must not deteriorate acoustical performance. (See Figure 4, Noise Barrier Location)

4.2 INDOOR NOISE LEVELS

Calculated road noise levels at the Plane of Window (POW) exceed the 50 dBA criteria outlined in Table 1 for indoor space for specific units. Specific building components (walls, windows, doors etc.) are required and confirmed using the STC (Sound Transmission Class) methods.

Building design specifications were not made available at report time and calculations for the STC (Sound Transmission Class) method, are summarized in Table 6 following with minimum window door and wall construction specified for specific units throughout the development.

The STC values are calculated for each room type, based on typical window to floor ratios of 20% for bedrooms and 30% for living room areas. Wall to floor ratio was factored at 80%. A maximum of two components were factored per room.

TABLE 6 – Recommended Door, Wall, and Window Construction			
LOCATION	STC To Be Used	Wall	Door Construction
ALL UNITS			
Bedroom	28	EW-2	OBC
Living room	28	EW-2	OBC

* First number denotes glass thickness, followed by spacing, and thickness of second pane. OBC denotes minimum requirements of the Ontario Building Code will suffice. Recommendations assume windows are well-fitted, weather-stripped units that can be opened. No slider windows only casement.

5.0 VENTILATION / WARNING CLAUSES

Ventilation and warning clause requirements for the entire apartment building are required for this development. The development has proposed central air conditioning for this development. The rooftop mechanical room for the central air equipment is enclosed and will not have an acoustical impact on the area residents.

TABLE 7 - Ventilation and Warning Clause Requirements		
LOCATION	VENTILATION	WARNING CLAUSE
All Residential Units	Central Air Conditioning	Type “A” & “D”

TYPE A:

“Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the Municipality’s and the MECP’s noise criteria.”

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 Municipality’s and the MECP’s noise criteria.”

6.0 SUMMARY OF RECOMMENDATIONS

The following noise control measures are required to satisfy the indoor and outdoor noise level criterion:

- Central Air for all residential units recommended in Table 7.
- Window, Door, and Wall construction recommended in Table 6.
- Floors 5 & 7 as well as the rooftop terraces require a 0.91m safety railing or an acoustical noise barrier of equivalent.
- Qualified Acoustical Consultant certifies that the required noise control measures have been incorporated into the builder's plans prior to issuance of a building permit.
- Prior to issuance of an occupancy permit or equivalent, it is recommended the Qualified Acoustical Consultant certify that the approved noise control measures have been professionally installed.

7.0 CONCLUSIONS

dBA Acoustical Consultants Inc. has conducted a noise impact study for the proposed 7 storey residential apartment building located at 559 Garner Road East, Ancaster ON. The purpose of the study determined the noise impact from Garner Road East and Southcote Road Ancaster ON relative to the proposed 7 storey apartment building.

This noise study detailed noise impact relative to the proposed site plan and recommend noise control measures necessary to meet MECP guidelines while satisfying the planning requirements of the City of Hamilton.

FIGURE 1
SITE LOCATION

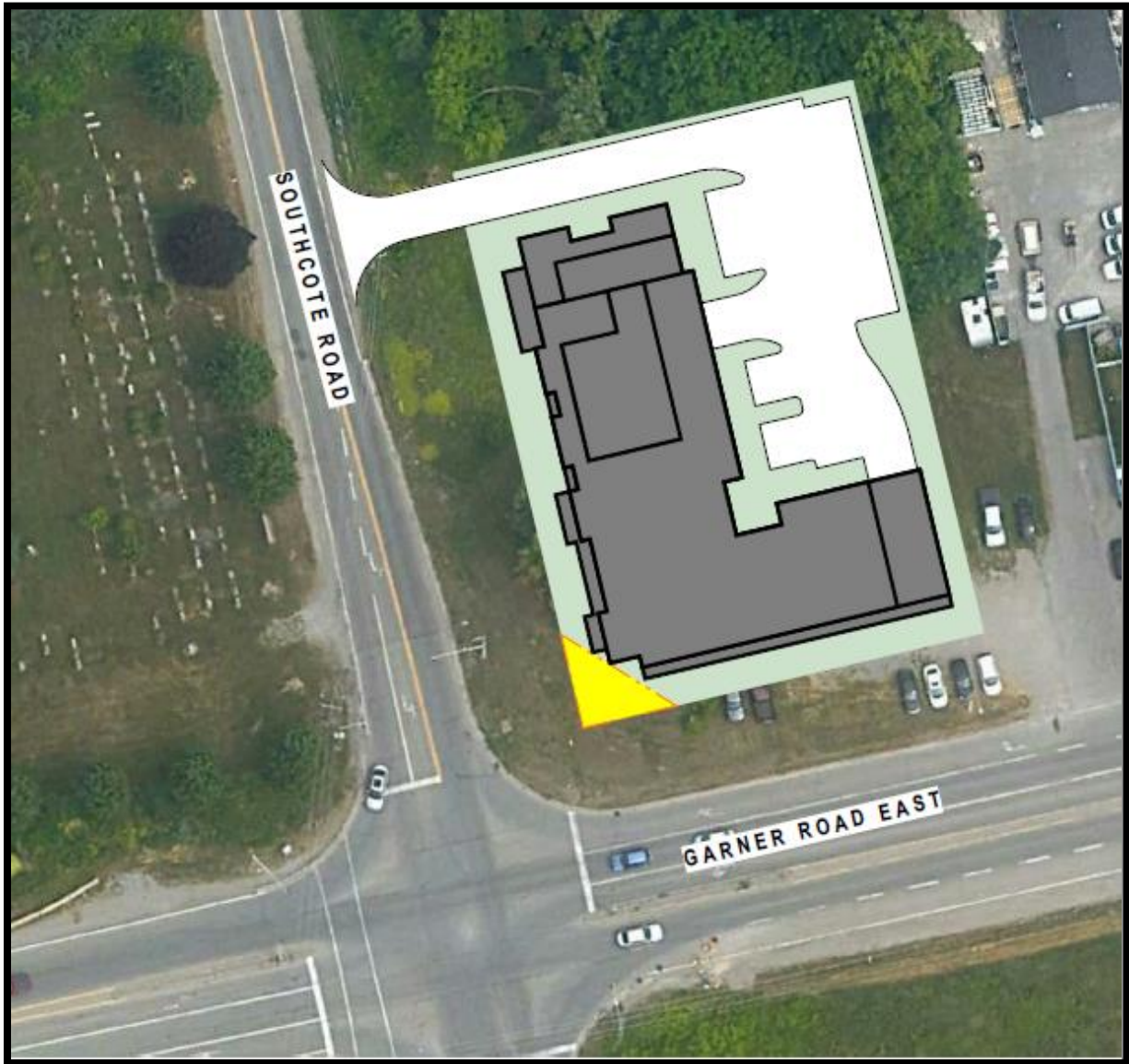


FIGURE 2
SITE PLAN

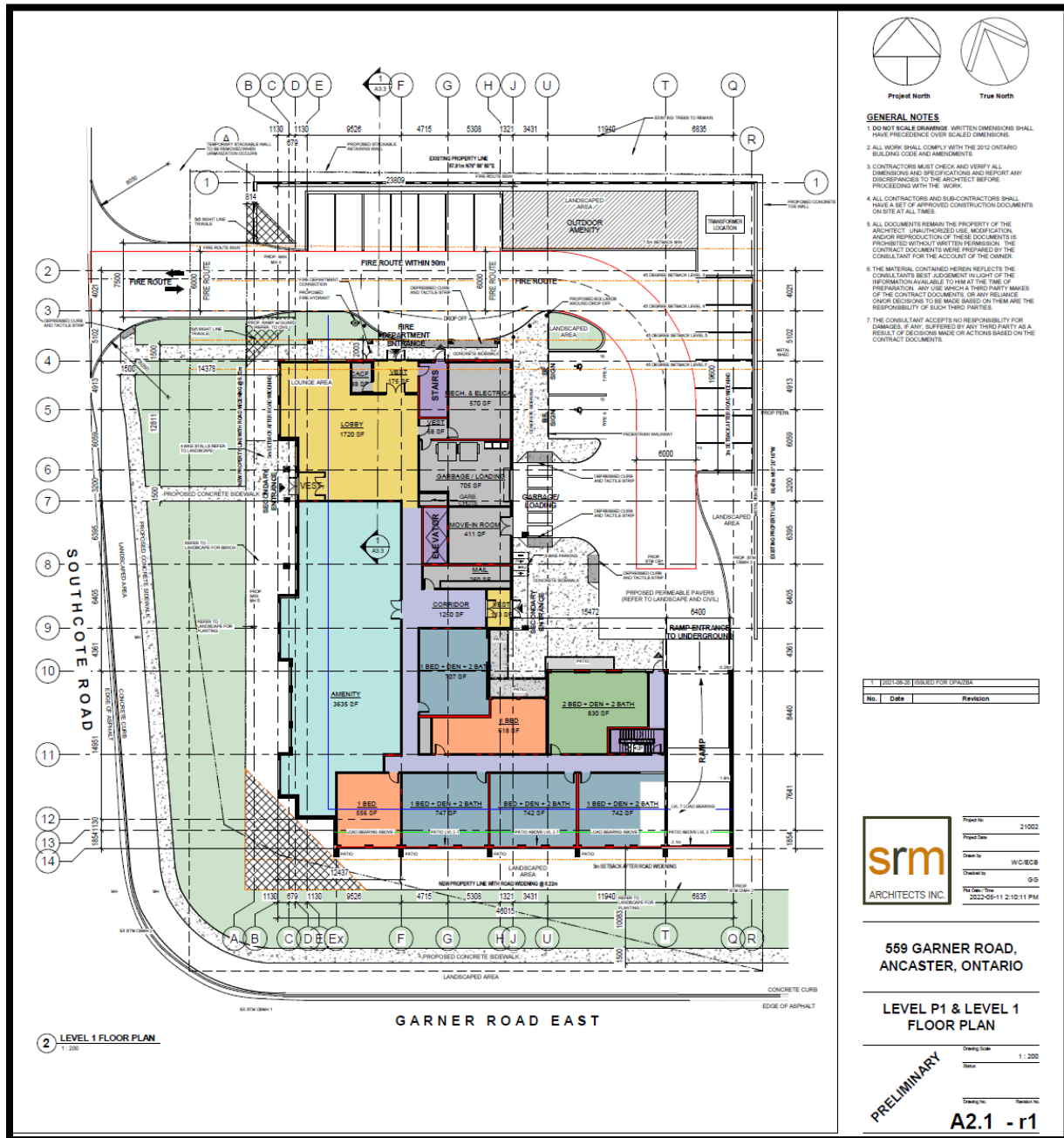
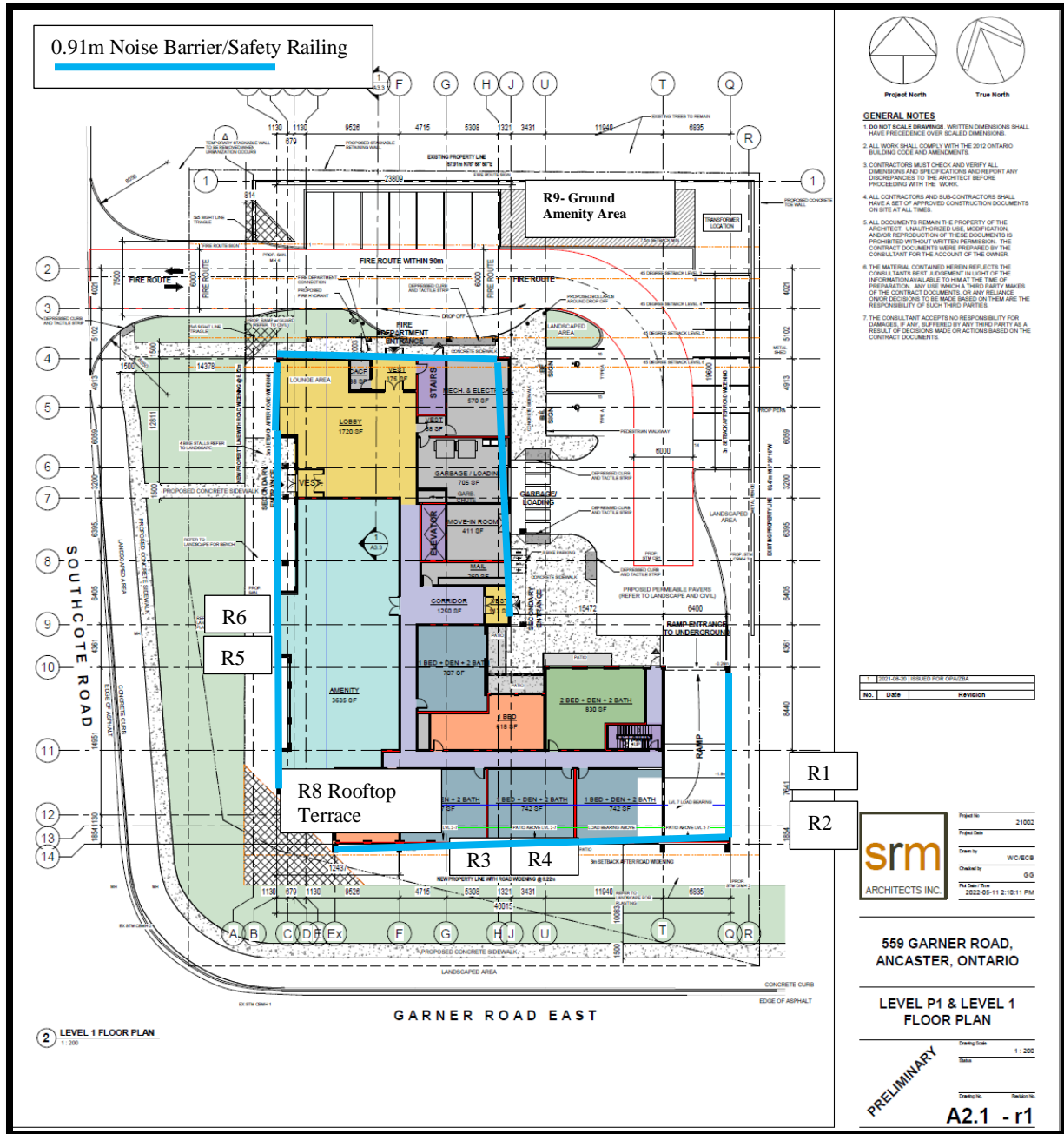
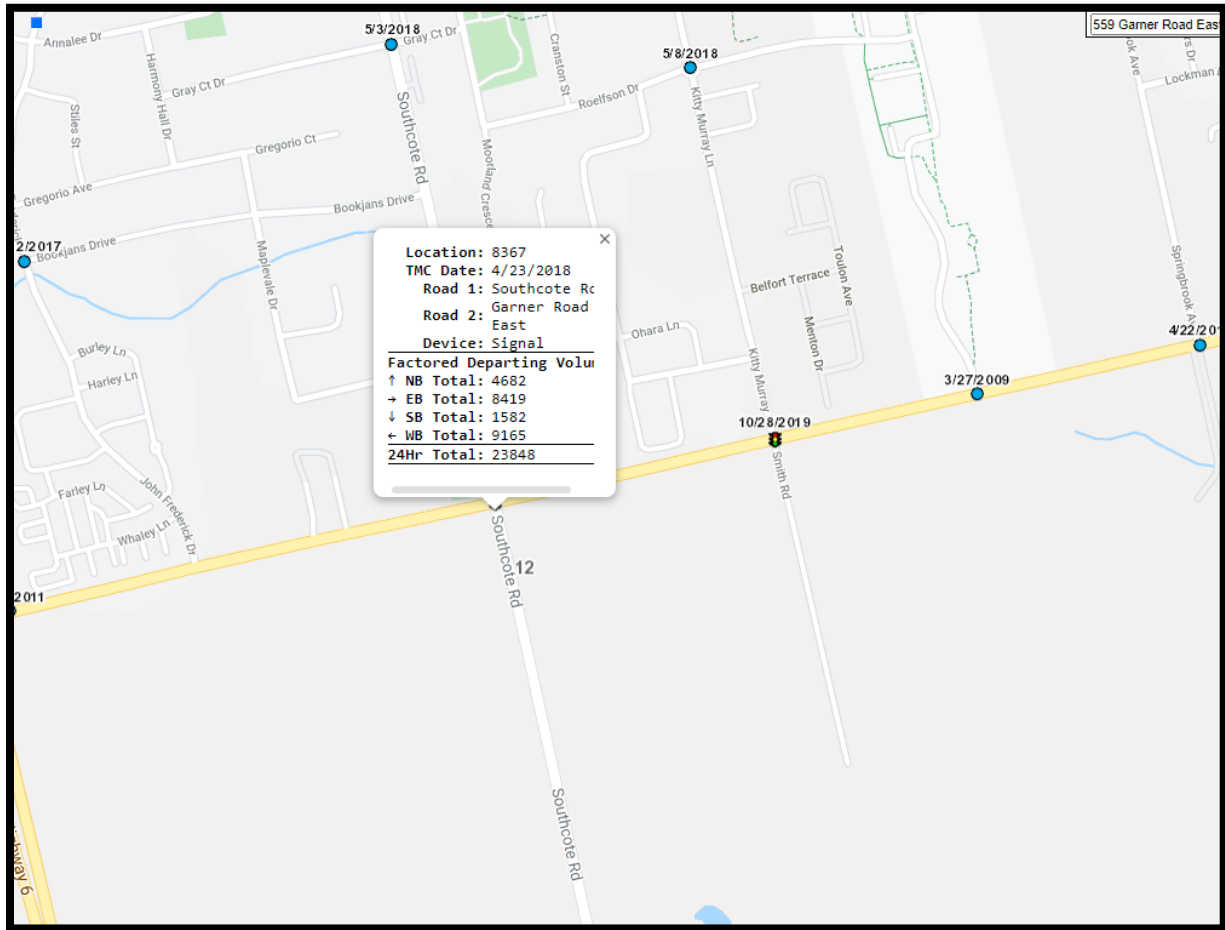


FIGURE 3
RECEPTOR/NOISE BARRIER/SAFETY RAILING LOCATIONS



City of Hamilton Traffic Data 2018



The screenshot shows the City of Hamilton logo and the MS2 Transportation Data Management System interface. It includes navigation buttons for Home, TMC, TCLS, TTDS, PMS, RSMS, NMDS, WOTS, and RTTV. There are also buttons for Login, Locate, and Locate All. The status 'Auto-Locate OFF' is visible in the bottom right corner.

STAMSON CALCULATIONS

STAMSON 5.04 SUMMARY REPORT Date: 15-06-2021 21:31:59
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R1South.te Time Period: Day/Night 16/8 hours

Description: R1- 1st floor residential south facade
TOTAL Leq FROM ALL SOURCES

(DAY): 64.48
(NIGHT): 64.49

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

Car traffic volume : 14558/7279 veh/TimePeriod
Medium truck volume : 303/152 veh/TimePeriod
Heavy truck volume : 303/152 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 22.00 / 22.00 m
Receiver height : 6.50 / 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 5240/2620 veh/TimePeriod
Medium truck volume : 81/41 veh/TimePeriod
Heavy truck volume : 81/41 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Southcote Rd (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 25.00 / 25.00 m
Receiver height : 6.50 / 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Garner Rd E	! 1.19 !	63.80 !	63.80
2.Southcote Rd	! 1.11 !	56.08 !	56.08
Total			64.48 dBA

Result summary (night)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Garner Rd E	! 1.19 !	63.81 !	63.81
2.Southcote Rd	! 1.11 !	56.10 !	56.10
Total			64.49 dBA

STAMSON 5.04 SUMMARY REPORT Date: 15-06-2021 21:35:54
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2south.te Time Period: Day/Night 16/8 hours
Description: R2- 5th floor residential southwest facade & Terraces
TOTAL Leq FROM ALL SOURCES

(DAY): 65.94
(NIGHT): 65.95

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

Car traffic volume : 14558/7279 veh/TimePeriod
Medium truck volume : 303/152 veh/TimePeriod
Heavy truck volume : 303/152 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 22.00 / 22.00 m
Receiver height : 19.00 / 19.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 5240/2620 veh/TimePeriod
Medium truck volume : 81/41 veh/TimePeriod
Heavy truck volume : 81/41 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Southcote Rd (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 25.00 / 25.00 m
Receiver height : 19.00 / 19.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)

+-----+-----+-----+
1.Garner Rd E ! 1.19 ! 65.23 ! 65.23
2.Southcote Rd ! 1.11 ! 57.72 ! 57.72

Total 65.94 dBA

Result summary (night)

! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)

+-----+-----+-----+
1.Garner Rd E ! 1.19 ! 65.24 ! 65.24
2.Southcote Rd ! 1.11 ! 57.75 ! 57.75

Total 65.95 dBA

STAMSON 5.04 SUMMARY REPORT Date: 15-06-2021 21:40:25
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3south.te Time Period: Day/Night 16/8 hours
Description: R3- 1st floor residential west facade

TOTAL Leq FROM ALL SOURCES

(DAY): 60.62
(NIGHT): 60.63

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

Car traffic volume : 14558/7279 veh/TimePeriod
Medium truck volume : 303/152 veh/TimePeriod
Heavy truck volume : 303/152 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 30.00 / 30.00 m
Receiver height : 6.50 / 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 5240/2620 veh/TimePeriod
Medium truck volume : 81/41 veh/TimePeriod
Heavy truck volume : 81/41 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Southcote Rd (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 25.00 / 25.00 m
Receiver height : 6.50 / 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)

+-----+-----+-----+
1.Garner Rd E ! 1.19 ! 58.74 ! 58.74
2.Southcote Rd ! 1.11 ! 56.08 ! 56.08

Total 60.62 dBA

Result summary (night)

! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)

+-----+-----+-----+
1.Garner Rd E ! 1.19 ! 58.75 ! 58.75
2.Southcote Rd ! 1.11 ! 56.10 ! 56.10

Total 60.63 dBA

STAMSON 5.04 SUMMARY REPORT Date: 15-06-2021 21:42:15
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4south.te Time Period: Day/Night 16/8 hours

Description: R4- 5th floor residential west facade & Terraces
TOTAL Leq FROM ALL SOURCES

(DAY): 62.46
(NIGHT): 62.47

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

Car traffic volume : 14558/7279 veh/TimePeriod
Medium truck volume : 303/152 veh/TimePeriod
Heavy truck volume : 303/152 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 30.00 / 30.00 m
Receiver height : 19.00 / 19.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 5240/2620 veh/TimePeriod
Medium truck volume : 81/41 veh/TimePeriod
Heavy truck volume : 81/41 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Southcote Rd (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 25.00 / 25.00 m
Receiver height : 19.00 / 19.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)

+-----+-----+-----+
1.Garner Rd E ! 1.19 ! 60.68 ! 60.68
2.Southcote Rd ! 1.11 ! 57.72 ! 57.72

Total 62.46 dBA

Result summary (night)

! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)

+-----+-----+-----+
1.Garner Rd E ! 1.19 ! 60.69 ! 60.69
2.Southcote Rd ! 1.11 ! 57.75 ! 57.75

Total 62.47 dBA

STAMSON 5.04 SUMMARY REPORT Date: 15-06-2021 21:55:58
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5south.te Time Period: Day/Night 16/8 hours

Description: R5 1st Floor Northwest free field
TOTAL Leq FROM ALL SOURCES

(DAY) : 57.59
(NIGHT) : 57.61

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

Car traffic volume : 14558/7279 veh/TimePeriod
Medium truck volume : 303/152 veh/TimePeriod
Heavy truck volume : 303/152 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 80.00 / 80.00 m
Receiver height : 6.50 / 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 5240/2620 veh/TimePeriod
Medium truck volume : 81/41 veh/TimePeriod
Heavy truck volume : 81/41 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Southcote Rd (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 25.00 / 25.00 m
Receiver height : 6.50 / 6.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Garner Rd E	! 1.19 !	52.27 !	52.27
2.Southcote Rd	! 1.11 !	56.08 !	56.08
Total			57.59 dBA

Result summary (night)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Garner Rd E	! 1.19 !	52.28 !	52.28
2.Southcote Rd	! 1.11 !	56.10 !	56.10
Total			57.61 dBA

STAMSON 5.04 SUMMARY REPORT Date: 15-06-2021 21:57:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6south.te Time Period: Day/Night 16/8 hours

Description: R6 5th Floor Northwest free field
TOTAL Leq FROM ALL SOURCES

(DAY) : 59.88
(NIGHT) : 59.90

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

Car traffic volume : 14558/7279 veh/TimePeriod
Medium truck volume : 303/152 veh/TimePeriod
Heavy truck volume : 303/152 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 80.00 / 80.00 m
Receiver height : 19.00 / 19.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

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

Car traffic volume : 5240/2620 veh/TimePeriod
Medium truck volume : 81/41 veh/TimePeriod
Heavy truck volume : 81/41 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Southcote Rd (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 25.00 / 25.00 m
Receiver height : 19.00 / 19.00 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00

Result summary (day)

	! source !	Road !	Total
	! height !	Leq !	Leq
	! (m) !	(dBA) !	(dBA)
1.Garner Rd E	! 1.19 !	55.81 !	55.81
2.Southcote Rd	! 1.11 !	57.72 !	57.72
Total			59.88 dBA

Result summary (night)

	! source !	Road !	Total
	! height !	Leq !	Leq
	! (m) !	(dBA) !	(dBA)
1.Garner Rd E	! 1.19 !	55.82 !	55.82
2.Southcote Rd	! 1.11 !	57.75 !	57.75
Total			59.90 dBA

STAMSON 5.04 SUMMARY REPORT Date: 15-06-2021 22:07:14
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r7south.te Time Period: Day/Night 16/8 hours
Description: R7 5th 7th Terraces with 0.91m safety glass railing
TOTAL Leq FROM ALL SOURCES (DAY): 50.23

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

Car traffic volume : 14558/7279 veh/TimePeriod
Medium truck volume : 303/152 veh/TimePeriod
Heavy truck volume : 303/152 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 20.00 / 80.00 m
Receiver height : 19.00 / 19.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 0.91 m
Barrier receiver distance : 3.00 / 3.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 19.00 m
Reference angle : 0.00

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

Car traffic volume : 5240/2620 veh/TimePeriod
Medium truck volume : 81/41 veh/TimePeriod
Heavy truck volume : 81/41 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Southcote Rd (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 25.00 / 25.00 m
Receiver height : 19.00 / 19.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 0.91 m
Barrier receiver distance : 3.00 / 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 19.00 m
Reference angle : 0.00

Result summary (day)

	! source !	Road !	Total !
	! height !	Leq !	Leq !
	! (m) !	(dBA) !	(dBA) !
1.Garner Rd E	! 1.19 !	49.52 !	49.52
2.Southcote Rd	! 1.11 !	42.03 !	42.03
Total			50.23 dBA

STAMSON 5.04 SUMMARY REPORT Date: 11-05-2022 14:38:15
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r8South.te Time Period: Day/Night 16/8 hours

Description: R8 Roof Top Terraces

TOTAL Leq FROM ALL SOURCES

(DAY) : 44.45

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

Car traffic volume : 14558/7279 veh/TimePeriod
Medium truck volume : 303/152 veh/TimePeriod
Heavy truck volume : 303/152 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 80.00 / 80.00 m
Receiver height : 2.00 / 19.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -0.00 deg Angle2 : 90.00 deg
Barrier height : 0.91 m
Barrier receiver distance : 3.00 / 3.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 22.00 m
Reference angle : 0.00

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

Car traffic volume : 5240/2620 veh/TimePeriod
Medium truck volume : 81/41 veh/TimePeriod
Heavy truck volume : 81/41 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Southcote Rd (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 25.00 m
Receiver height : 22.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -90.00 deg Angle2 : 90.00 deg
Barrier height : 0.91 m
Barrier receiver distance : 3.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 22.00 m
Reference angle : 0.00

Result summary (day)

! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)

+-----+-----+-----+
1.Garner Rd E ! 1.19 ! 37.86 ! 37.86
2.Southcote Rd ! 1.11 ! 43.38 ! 43.38

Total 44.45 dBA

STAMSON 5.04 SUMMARY REPORT Date: 11-05-2022 14:41:41
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r9South.te Time Period: Day/Night 16/8 hours

Description: R9 Northeast OLA Ground Elevation

TOTAL Leq FROM ALL SOURCES

(DAY) : 41.39

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

Car traffic volume : 14558/7279 veh/TimePeriod
Medium truck volume : 303/152 veh/TimePeriod
Heavy truck volume : 303/152 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

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

Angle1 Angle2 : -0.00 deg 45.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 80.00 / 80.00 m
Receiver height : 2.00 / 19.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -0.00 deg Angle2 : 45.00 deg
Barrier height : 0.91 m
Barrier receiver distance : 3.00 / 3.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 22.00 m
Reference angle : 0.00

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

Car traffic volume : 5240/2620 veh/TimePeriod
Medium truck volume : 81/41 veh/TimePeriod
Heavy truck volume : 81/41 veh/TimePeriod
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Southcote Rd (day/night)

Angle1 Angle2 : -0.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 25.00 / 25.00 m
Receiver height : 22.00 / 19.00 m
Topography : 2 (Flat/gentle slope; with barrier)
Barrier angle1 : -0.00 deg Angle2 : 90.00 deg
Barrier height : 0.91 m
Barrier receiver distance : 3.00 / 3.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 22.00 m
Reference angle : 0.00

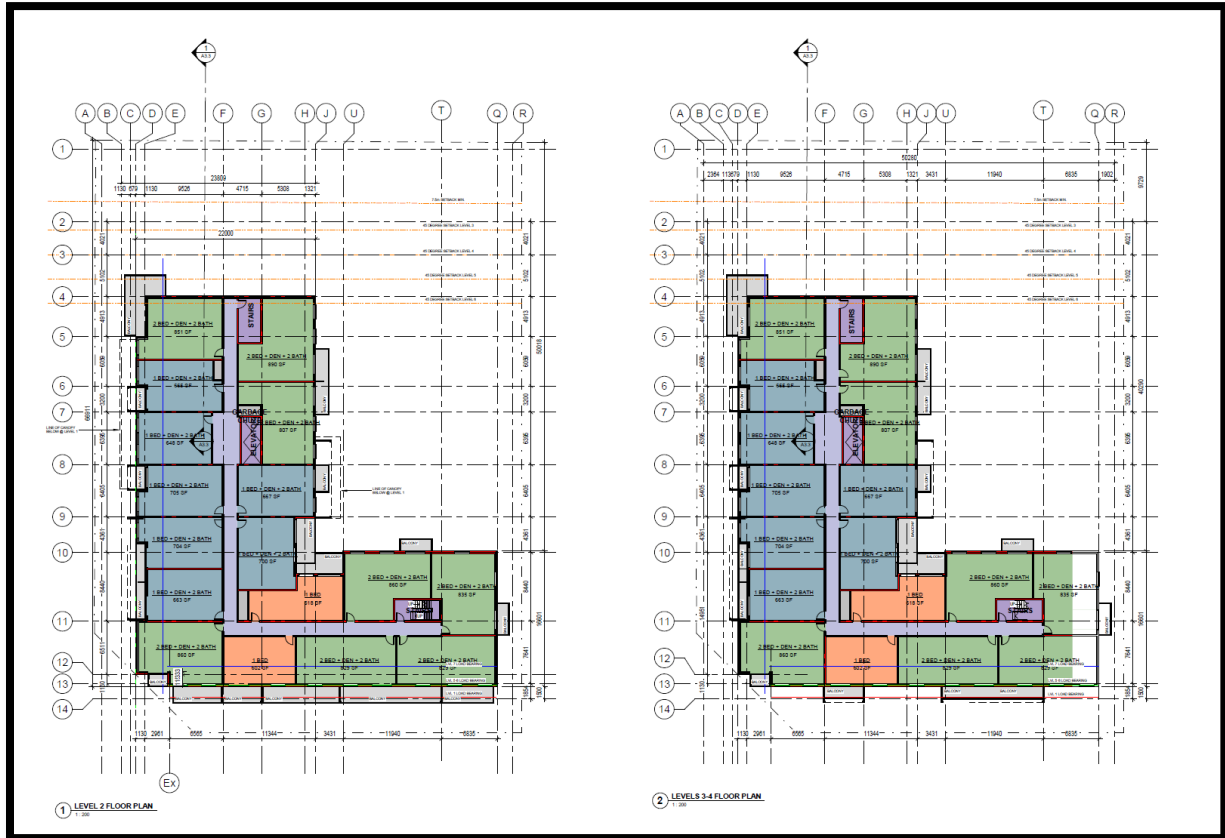
Result summary (day)

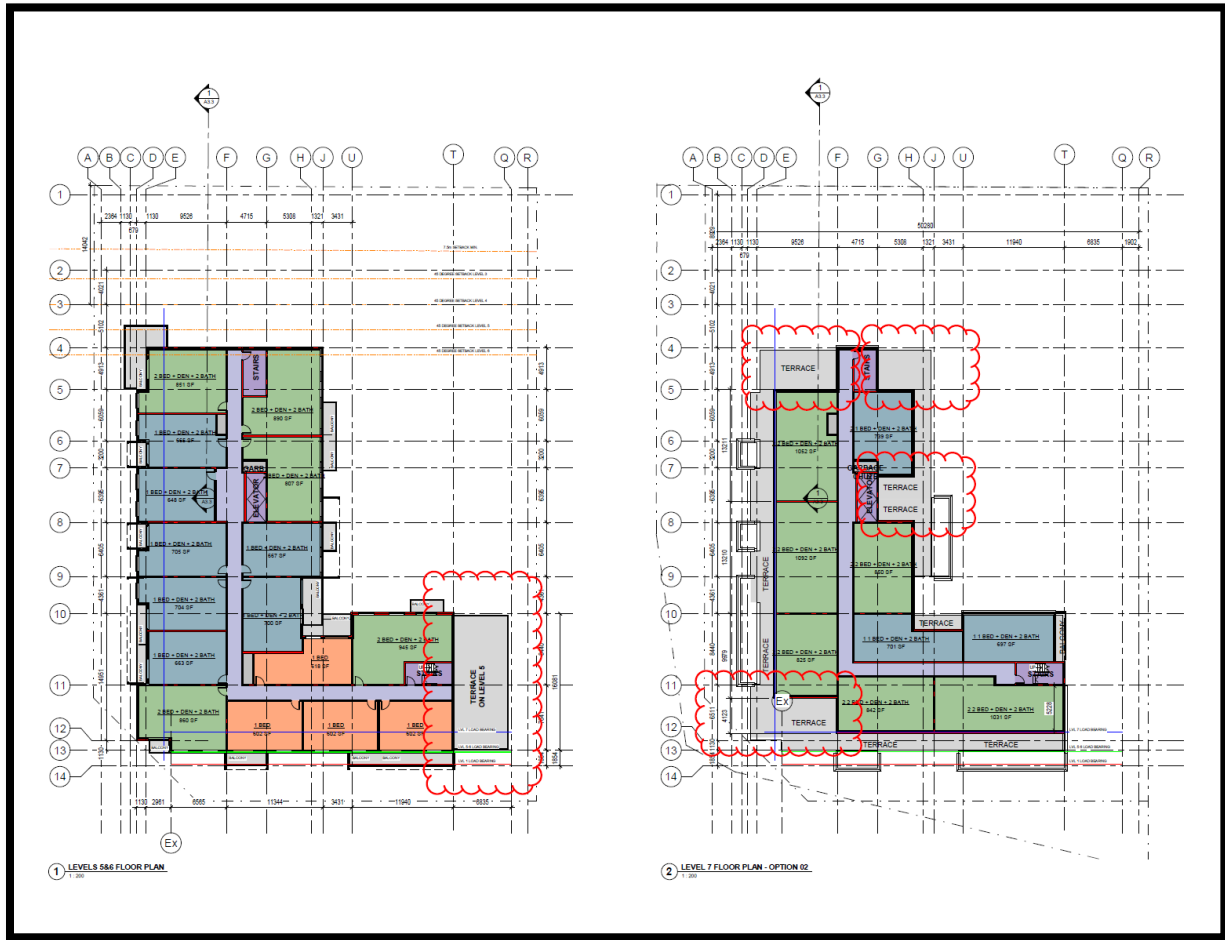
! source ! Road ! Total
! height ! Leq ! Leq
! (m) ! (dBA) ! (dBA)

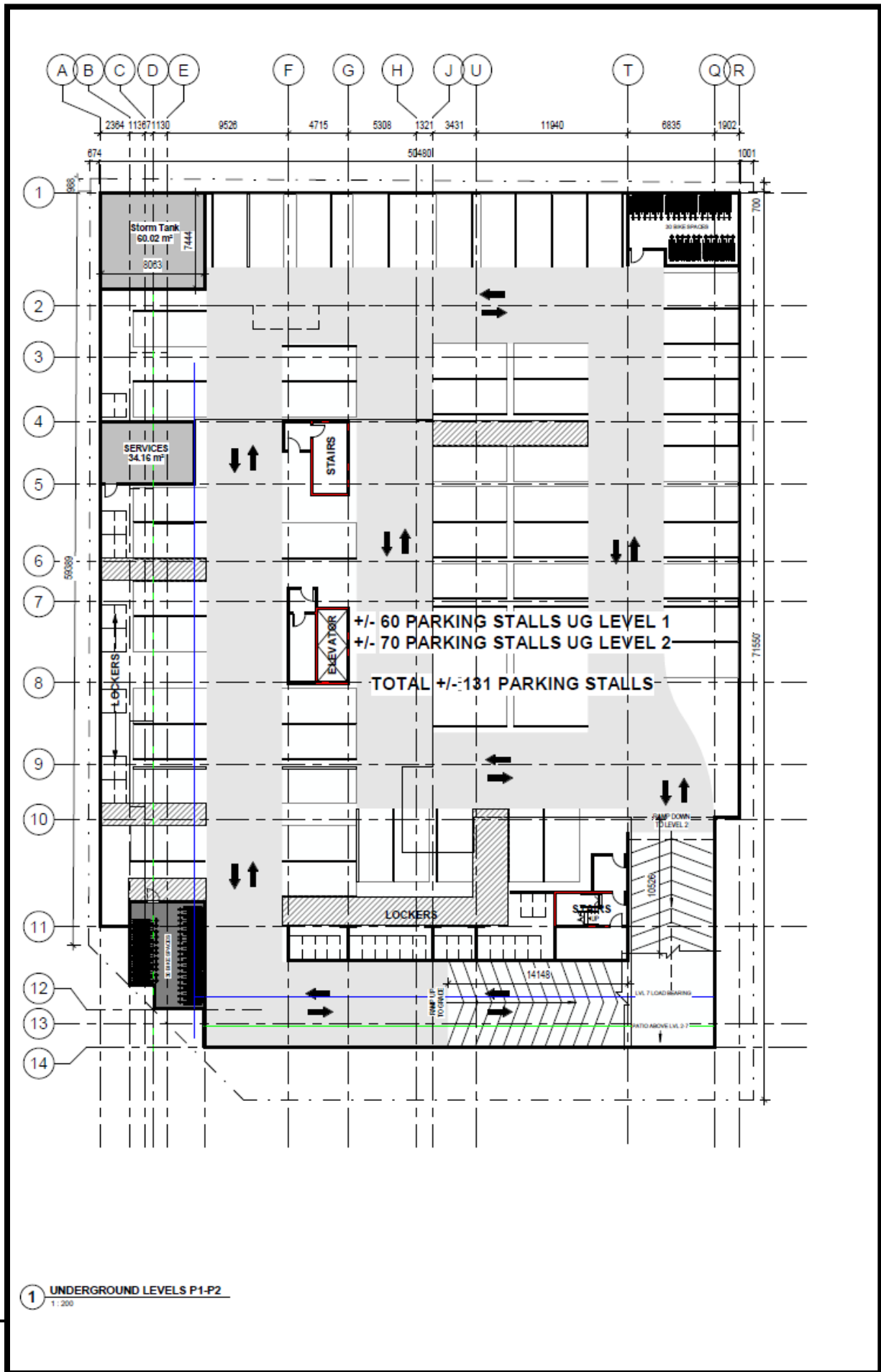
+-----+-----+-----+
1.Garner Rd E ! 1.19 ! 34.25 ! 34.25
2.Southcote Rd ! 1.11 ! 40.46 ! 40.46

Total 41.39 dBA

FLOOR PLANS







1 UNDERGROUND LEVELS P1-P2
1:200

