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Noise Feasibility Study
Proposed Mixed-Use/Residential Development
Elia Land
Mississauga, Ontario

Prepared for:

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Table of Contents

1 Introduction & Summary

HGC Engineering was retained by The Elia Corporation to conduct a noise feasibility study for a proposed mixed-use/residential development, Elia Lands, to be located to the east of Hurontario Street, and south of Eglinton Avenue in the City of Mississauga, Ontario. The proposed development will include 5 blocks, primarily 9 residential towers on podiums, 28 to 45 storeys, some small retail components in strategic locations, an office component and a row of 3-storey back-to-back townhouses at the east property line. The address of each block are: Part of Block 1 = 25, 35, 55 Elia Avenue, Block 2 = 136 Eglinton East, Block 3 = 105 Elia Avenue, Block 4 = 4615 Hurontario Street and Block 5 = 110 Elia Avenue. The surrounding lands are primarily existing residential and commercial. The study is required by the municipality as part of their planning and approvals process.

This report has been updated to reflect the latest site phasing plan of the development prepared by Quadrangle dated January 26, 2021.

The primary noise sources impacting the site were determined to be road traffic on Hurontario Street, Eglinton Avenue West and Highway 403 to the further south. Secondary sources of noise include Elia Avenue, Sorrento Drive, and Trudeau Drive. Road traffic data for the roadways were obtained from the City of Mississauga and the Ministry of Transportation (MTO) and were used to predict future traffic sound levels at the locations of the proposed residential buildings. The predicted sound levels were compared to the guidelines of the Ministry of the Environment, Conservation and Parks (MECP) and the municipality.

Noise from transportation sources requires that appropriate sound insulation measures be considered for integration into the design of the buildings and building envelopes to maintain acceptable indoor sound levels. These requirements will be met through the use of appropriate wall and glazing assemblies, which will be implemented during the detailed building design process. Central air conditioning is required for the majority of the proposed mixed-use/residential buildings on the development site. Warning clauses are also required to inform the future occupants of the residential buildings of the traffic noise impacts and the presence of nearby commercial/office/retail facilities.

As this project is at an early stage of development, a review should be conducted to verify and/or

refine the acoustic recommendations when more detailed floor plans and building elevations are available for individual buildings or on a phase by phase basis, as details become available or as part of individual site plan applications. In addition, an acoustical consultant should review the mechanical drawings and details of demising constructions, when available, to help ensure that the noise impact of the development on the environment, and of the development on itself, are maintained within acceptable levels.

An analysis was also conducted to determine the potential impact of noise associated with the existing nearby commercial facilities on the proposed residences at the development site. The analysis is based on a review of the latest site plan, site visits, aerial photos and experience with similar past projects.

A computer model of the area was created, using acoustic modelling software, in order to predict the sound levels at the locations of the proposed development. Several commercial buildings adjacent to the site were identified with respect to their potential noise impacts and have been included in this analysis. Modelling was undertaken based on data from other similar facilities, from observations made during site visits and review of aerial photography.

The results indicate that the sound emissions from the activities associated with the existing commercial facilities, has the potential to exceed the background sound levels in the area during a worst-case operational scenario during the nighttime hours. Mitigation is recommended at the commercial plaza, in the form of either providing silencers, mitigation in the form of acoustic screens or enclosures or replacements of the units to quieter models or relocation of the units, to meet NPC-300 noise criteria. For the loading area of the Oceans, a higher wing wall or enclosed loading area may also be investigated further along with administrative controls such as turning reefer units off during the deliveries and/or reducing the duty cycle of the rooftop units further to minimize noise excesses at the proposed adjacent residential receptors. Noise warning clauses are also recommended to be included in the property and tenancy agreements. A detailed noise study is also required for each building or phase, when detailed floor plans and building elevations are available to refine the acoustic recommendations.

2 Site Description & Noise Sources

The site is located to the east of Hurontario Street, and south of Eglinton Avenue in the City of Mississauga, Ontario. Figure 1 is a key plan illustrating the location of the proposed site. The latest site phasing plan of the development prepared by Quadrangle dated January 26, 2021 is shown in Figure 2. The proposed development will include 5 blocks, primarily 9 residential towers on podiums, 28 to 45 storeys, underground parking, some small retail components in strategic locations, an office component and a row of 3-storey back-to-back townhouses at the east property line.

A site visit was made by HGC Engineering personnel in December 2020 to make observations of the acoustic environment, and to identify the significant noise sources in the vicinity. The acoustical environment surrounding the site is urban in nature and is considered to be a Class I area, with the majority of the surrounding lands consisting of existing residential. There is an existing commercial plaza located at the southeast corner of Hurontario Street and Eglinton Avenue West which is to remain for now. A site visit was conducted to investigate the noise sources associated with the commercial plaza and is further discussed in Section 6.0. Figure 3 is an aerial photo indicating the surrounding land uses of the commercial plaza.

3 Noise Level Criteria

3.1 Road Traffic Noise

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

Table 1: MECP Road Traffic Noise Criteria (dBA)

Area	Daytime L_{EQ} (16 hour) Road	Nighttime L_{EQ}(8 hour) Road
Outdoor Living Area	55 dBA	--
Inside Living/Dining Rooms	45 dBA	45 dBA
Inside Bedrooms	45 dBA	40 dBA

Daytime refers to the period between 07:00 and 23:00, while nighttime refers to the period between 23:00 and 07:00. The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, a backyard, a terrace or other area where passive recreation is expected to occur. Balconies that are less than 4 m in depth are not considered to be outdoor living areas under MECP guidelines.

The MECP guidelines allow the daytime sound levels in an Outdoor Living Area to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the purchase and rental agreements to the property. Where OLA sound levels exceed 60 dBA, physical mitigation is recommended to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible.

A central air conditioning system as an alternative means of ventilation to open windows is required for dwellings where nighttime sound levels outside bedroom or living/dining room windows exceed 60 dBA or daytime sound levels outside bedroom or living/dining room windows exceed 65 dBA. Forced-air ventilation with ducts sized to accommodate the future installation of air conditioning is required when nighttime sound levels at bedroom or living/dining room windows are in the range of 51 to 60 dBA or when daytime sound levels at bedroom or living/dining room windows are in the range of 56 to 65 dBA.

Building components such as walls, windows and doors must be designed to achieve indoor sound level criteria when the plane of window nighttime sound level is greater than 60 dBA or the daytime sound level is greater than 65 dBA due to road traffic noise.

Warning clauses to notify future residents of possible excesses are also required when nighttime sound levels exceed 50 dBA at the plane of the bedroom or living/dining room window and daytime

sound levels exceed 55 dBA in the outdoor living area and at the plane of the bedroom or living/dining room window due to road traffic.

4 Traffic Noise Predictions

4.1 Road Traffic

Road traffic data for Hwy 403 was obtained from the MTO at the Hurontario exit, in the form of summer average annual daily traffic for the year 2016 and is included in Appendix A. The data was projected to the year 2031 at a conservative growth rate of 2.5%/yr. A 67%/33% day/night split was used in the analysis. A commercial vehicle percentage of 10% was provided, further split into 3.8% medium trucks and 6.2% heavy trucks. These vehicles were assumed to be travelling at the posted maximum speed for the highway (100 km/hr).

Ultimate traffic data for Hurontario Street, Eglinton Avenue East, Trudeau Avenue, Elia Avenue, and Sorento Drive in the site area was obtained from the City of Mississauga in the form of Ultimate traffic volumes and are provided in Appendix A. The ultimate traffic volumes are listed in Table 2, in addition to the provided commercial vehicle (truck) percentages. A 90%/10% day/night split was used for the roadways.

Table 2: Ultimate and Projected Road Traffic Data

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
Hwy 403 *(Projected to 2031)*	Daytime	148 466	6 268	10 228	164 960
	Nighttime	73 124	3 088	5 038	81 250
	Total	**221 590**	**9 356**	**15 266**	**246 210**
Hurontario Street *(Ultimate)*	Daytime	37 478	1 316	1 076	39 870
	Nighttime	4 164	146	120	4 430
	Total	**41 642**	**1 462**	**1 196**	**44 300**
Eglinton Avenue West *(Ultimate)*	Daytime	36 936	1 069	875	38 880
	Nighttime	4 104	119	97	4 320
	Total	**41 040**	**1 188**	**972**	**43 200**
Trudeau Avenue *(Ultimate)*	Daytime	4 410	50	40	4 500
	Nighttime	490	5	5	500
	Total	**4 900**	**56**	**46**	**5 000**
Elia Avenue *(Ultimate)*	Daytime	4 365	74	61	4 500
	Nighttime	485	8	7	500
	Total	**4 850**	**82**	**68**	**5 000**
Sorrento Drive *(Ultimate)*	Daytime	4 365	74	61	4 500
	Nighttime	485	8	7	500
	Total	**4 850**	**82**	**68**	**5 000**

4.2 Road Traffic Noise Prediction

To assess the levels of traffic noise which will impact the site in the future, predictions were made using a numerical computer modeling package (*Cadna-A version 2021 build 183.5110*) due to the complexity of the site. The model is based on the methods from ISO Standard 9613-2.2, "*Acoustics - Attenuation of Sound During Propagation Outdoors*", which accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures.

The road noise sources have been included in the model as line sources included in *Cadna/A* which have been calibrated to Stamson. Our experience suggests that road sound levels predicted by Cadna are reasonably accurate. The model road traffic values have been qualified to be within 0.5 dBA of those predicted in STAMSON 5.04, a computer algorithm developed by the MECP.

Predictions of overall sound levels from all road sources were made at various representative façade locations throughout the site. The predicted sound levels from road traffic impacting the proposed development are summarized in the following tables on a block-by-block basis. The 5-storey podium for Building A of Block 1 is proposed to include office use and has not been considered in the analysis below.

Table 3: Block 1 Predicted Road Traffic Sound Levels [dBA], Without Mitigation

Block	Building	Location Description	Daytime at Façade $L_{EQ-16\ hr}$	Nighttime at Façade $L_{EQ-8\ hr}$
	5-Storey Podium	OLA	57*	--
	Building A 45-Storey Tower	NW Façade	60	57
		NE Façade	60	59
		SE Façade	63	62
		SW Façade	66	62
	Building B 1-Storey Podium	North Façade	55	50
		East Façade	60	55
		South Façade	58	54
		West Façade	<55	51
		OLA	<55*	--
	Building B 6-Storey Podium	North Façade	58	52
		East Façade	59	56
		South Façade	59	57
		West Façade	59	55
		OLA	<55*	--
	Building B 36-Storey Tower	North Façade	58	52
		East Façade	61	61
		South Façade	63	63
		West Façade	62	59

Note: *With a minimum 1.07 m high solid parapet wall

Table 5: Block 2 Predicted Road Traffic Sound Levels [dBA], Without Mitigation

Block	Building	Location Description	Daytime at Façade $L_{EQ-16\ hr}$	Nighttime at Façade $L_{EQ-8\ hr}$
Block 2	Building A 4-Storey Podium	North Façade	69	62
		East Façade	65	60
		South Façade	56	55
		West Façade	64	58
	Building A 6-Storey Podium	North Façade	68	62
		East Façade	64	59
		South Façade	56	55
		West Façade	64	58
		OLA	57*	--
	Building A 8-Storey Podium	North Façade	67	61
		East Façade	64	59
		South Façade	57	56
		West Façade	64	57
		OLA	57*	--
	Building A 42-Storey Tower	North Façade	66	60
		East Façade	63	59
		South Façade	58	57
		West Façade	63	57
	Building B 6-Storey Podium	North Façade	59	53
		East Façade	58	56
		South Façade	59	57
		West Façade	60	54
		OLA North	55*	--
		OLA South	58*	--
	Building B 36-Storey Tower	North Façade	60	54
		East Façade	59	58
		South Façade	59	59
		West Façade	60	55
	Townhouses	--	59	57

Note: *With a minimum 1.07 m high solid parapet wall

Table 6: Block 3 Predicted Road Traffic Sound Levels [dBA], Without Mitigation

Block	Building	Location Description	Daytime at Façade $L_{EQ-16\ hr}$	Nighttime at Façade $L_{EQ-8\ hr}$
Block 3	Building A 6-Storey Podium	North Façade	59	53
		East Façade	59	57
		South Façade	58	57
		West Façade	59	54
		OLA	56*	--
	Building A 8-Storey Podium	North Façade	58	50
		East Façade	59	58
		South Façade	59	58
		West Façade	59	53
	Building A 36-Storey Tower	North Façade	58	52
		East Façade	60	59
		South Façade	60	59
		West Façade	59	54
	Building B 5-Storey Podium	North Façade	56	50
		East Façade	58	58
		South Façade	59	58
		West Façade	59	54
	Building B 6-Storey Podium	North Façade	56	50
		East Façade	59	59
		South Façade	60	59
		West Façade	58	53
		OLA	56*	--
	Building B 8-Storey Podium	North Façade	56	50
		East Façade	59	58
		South Façade	60	59
		West Façade	58	53
	Building B 36-Storey Tower	North Façade	56	51
		East Façade	61	61
		South Façade	61	61
		West Façade	59	55
	Townhouses	--	59	58

Note: *With a minimum 1.07 m high solid parapet wall

Table 7: Block 4 Predicted Road Traffic Sound Levels [dBA], Without Mitigation

Block	Building	Location Description	Daytime at Façade $L_{EQ-16\ hr}$	Nighttime at Façade $L_{EQ-8\ hr}$
Block 4	Building A 6-Storey Podium	North Façade	63	57
		East Façade	57	57
		South Façade	66	64
		West Façade	69	63
		OLA	59*	--
	Building A 36-Storey Tower	NW Façade	65	59
		NE Façade	60	58
		SE Façade	64	64
		SW Façade	67	64
	Building B 6-Storey Podium	North Façade	58	53
		East Façade	60	59
		South Façade	62	62
		West Façade	60	58
		OLA	58*	--
	Building B 30-Storey Tower	North Façade	58	52
		East Façade	62	62
		South Façade	64	64
		West Façade	62	61

Note: *With a minimum 1.07 m high solid parapet wall

Table 8: Block 5 Predicted Road Traffic Sound Levels [dBA], Without Mitigation

Block	Building	Location Description	Daytime at Façade $L_{EQ-16\ hr}$	Nighttime at Façade $L_{EQ-8\ hr}$
Block 5	Building A 6-Storey Podium	North Façade	59	53
		East Façade	61	60
		South Façade	61	60
		West Façade	61	60
		OLA	56	--
	Building A 28-Storey Tower	North Façade	57	51
		East Façade	62	61
		South Façade	64	64
		West Façade	62	61
	Townhouses	--	60	60

Note: *With a minimum 1.07 m high solid parapet wall

5 Traffic Noise Recommendation

The predictions indicate that the future traffic sound levels are high enough at facades with exposure to the major roadways to warrant certain minimum noise control features. The following discussion outlines recommendations for barriers, ventilation requirements, and upgraded building façade constructions, to achieve the noise criteria stated in Table I.

5.1 Outdoor Living Areas

OLAs are indicated on Block 1: on the 5-storey podium of Building A; and 1st and 6-storey podium of Building B. The predicted sound level in these OLAs with a minimum 1.07 m solid parapet wall is up to 57 dBA for the OLA on the 5-storey podium of Building A. The 2 dBA excess is acceptable to the MECP if it is acceptable to the municipality with the use of a noise warning clause. To achieve 55 dBA, an acoustic barrier 2.8 m in height along the roof edge is required. The predicted sound level in the OLAs of Building B is predicted to be less than 55 dBA.

OLAs are indicated on Block 2: on the 6 and 8-storey podium of Building A; and 6-storey podium of Building B. The predicted sound level in these OLAs with a minimum 1.07 m solid parapet wall is up to 58 dBA. The 3 dBA excess is acceptable to the MECP if it is acceptable to the municipality

with the use of a noise warning clause. To achieve 55 dBA, acoustic barriers 1.7 m in height along the roof edge of the OLA on the 6th-storey podium of Building A; 1.2 m in height along the roof edge of the OLA on the 8th-storey podium of Building A; and 1.4 m in height along the roof edge of the OLA on the southern part of the 6th-storey podium of Building B are required. The predicted sound level on the norther part of the 6th-storey podium of Building B was predicted to be 55 dBA.

OLAs are indicated on the 6-storey podiums of Buildings A and B in Block 3. The predicted sound level in these OLAs with a minimum 1.07 m solid parapet wall is up to 56 dBA. The 1 dBA excess is acceptable to the MECP if it is acceptable to the municipality with the use of a noise warning clause. To achieve 55 dBA, an acoustic barrier 2.5 m in height is required.

OLAs are indicated on Block 4: on the 6 -storey podium of Buildings A and B. The predicted sound level in these OLAs with a minimum 1.07 m solid parapet wall is up to 59 dBA. The 4 dBA excess is acceptable to the MECP if it is acceptable to the municipality with the use of a noise warning clause. To achieve 55 dBA, acoustic barriers 3.7 m in height along the roof edge of the OLA on Building A; and 3.3 m in height along the roof edge of the OLA on Building B are requited.

An OLA is indicated on Block 5, on the 6 -storey podium of Buildings A. The predicted sound level in these OLA with a minimum 1.07 m solid parapet wall is up to 56 dBA. The 1 dBA excess is acceptable to the MECP if it is acceptable to the municipality with the use of a noise warning clause. To achieve 55 dBA, acoustic barriers 1.5 m in height along the roof edge of the OLA on Building A is requited.

Consideration should be given in detailed design to locate OLAs such that these are shielded from the surrounding noise sources (both transportation noise sources and stationary noise sources) by the buildings themselves to avoid the need for high noise barriers.

Balconies may be provided for the dwelling units. Balconies are not considered to be OLAs by the MECP if they are less than 4 m in depth. No sound level predictions are required for these balconies.

Back to back townhouses do not typically include rear yards. The back to back townhouses may include rooftop OLA’s. The predicted sound level in any rooftop OLAs of all of the proposed

townhouse blocks are predicted to be less than 55 dBA since they are at a significant distance from the main roadways. No further physical mitigation is required.

5.2 Indoor Living Areas and Ventilation Requirements

Air Conditioning

The predicted future nighttime sound levels at the façades of the majority of the proposed buildings in the 5 blocks will be greater than 65 dBA during the daytime and greater than 60 dBA during the nighttime. To address these excesses, these units need to be equipped with central air conditioning systems so that windows may remain closed. Window or through-the-wall air conditioning units are not recommended because of the noise they produce and because the units penetrate through the exterior wall which degrades the overall sound insulating properties of the envelope. Acceptable units are those housed in their own closet with an access door for maintenance. The location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-300, as applicable.

Provision for the Future Installation of Air Conditioning

The predicted future sound levels of the proposed townhouse blocks in Block 1, 3, and 5 have predicted sound levels between 56 and 65 dBA during the daytime hours and between 51 to 60 dBA during the nighttime hours. To address these excesses, these units require forced air ventilation systems with ducts sized for the future installation of air conditioning by the occupant. The location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-300.

5.3 Building Façade Constructions

Predicted sound levels at the building façades were used to determine sound insulation requirements of the building envelope. The required acoustic insulation of the wall and window components was determined using methods developed by the National Research Council (NRC).

Exterior Wall Constructions

The exterior walls of the proposed buildings may include precast/masonry panel portions, as well as spandrel glass panels within an aluminum window system. In this analysis, it has been assumed that sound transmitted through elements other than the glazing elements is negligible in comparison. For this assumption to be true, spandrel or metal panel sections must have an insulated drywall partition on separate framing behind.

Acoustical Requirements for Glazing

Detailed floor plans and building elevations were not available for this development at the time of this report. Upgraded glazing requirements are required for the spaces in the proposed buildings. The window to floor area ratios of living/dining rooms were assumed to be 50% (40% fixed, 10% operable) and 40% for bedrooms (30% fixed, 10% operable). If more glazing is incorporated, higher STC requirements may apply. The minimum acoustical requirement for the fixed glazing elements is provided in Tables 9 – 13. Small leaks through operable doors and windows are assumed, however, tight weather seals should be provided to reduce such leakage to the extent feasible; awning windows and swing or sliding doors to balconies should have tight seals sufficient to achieve similar acoustical performance ratings. Since this is an urban area, the minimum STC recommended is 33.

Table 9: Minimum Glazing Requirements – Block 1

Block	Tower	Façade	Glazing STC
Block 1	Podium A	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Tower A	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Podium B	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Tower B	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33

Table 10: Minimum Glazing Requirements – Block 2

Block	Tower	Façade	Glazing STC
Block 2	Podium A	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Tower A	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Podium B	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Tower B	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Townhouses	--	OBC

Note: OBC – Ontario Building Code

Table 11: Minimum Glazing Requirements – Block 3

Block	Tower	Façade	Glazing STC
Block 3	Podium A	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Tower A	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Podium B	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Tower B	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Townhouses	--	OBC

Note: OBC – Ontario Building Code

Table 12: Minimum Glazing Requirements – Block 4

Block	Tower	Façade	Glazing STC
Block 4	Podium A	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Tower A	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Podium B	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Tower B	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33

Table 13: Minimum Glazing Requirements – Block 5

Block	Tower	Façade	Glazing STC
Block 5	Podium A	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Tower A	North façade	STC-33
		East façade	STC-33
		South façade	STC-33
		West façade	STC-33
	Townhouses	--	OBC

Note: OBC – Ontario Building Code

Note that acoustic performance varies with manufacturer's construction details, and these are only guidelines to provide some indication of the type of glazing likely to be required. Acoustical test data for the selected assemblies should be requested from the suppliers, to ensure that the stated acoustic performance will be achieved by their assemblies.

Further Analysis

When detailed floor plans and building elevations are available for the proposed buildings, a detailed noise study should be performed to specify wall and window requirements with sufficient acoustical insulation for the dwelling units based on actual window to floor area ratios.

5.4 Warning Clauses

The MECP guidelines recommend that warning clauses be included in the property and tenancy agreement.

Suggested wording for the building with sound levels exceeding the MECP criteria is given below:

Type A:

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

Suitable wording for future dwellings requiring central air conditioning systems is given below.

Type B:

> This dwelling unit has been supplied with a central air conditioning system which allows windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the noise criteria of the Municipality and the Ministry of the Environment, Conservation and Parks.

Suitable wording for future dwellings requiring forced air ventilation systems is given below.

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 criteria of the Municipality and the Ministry of the Environment, Conservation and Parks.

These sample clauses are provided by the MECP as examples and can be modified by the Municipality as required.

5.5 Impact of the Development on Itself

Section 5.8.1.1 of the Ontario Building Code (OBC), released on January 1, 2020, specifies the minimum required sound insulation characteristics for demising partitions, in terms of Sound Transmission Class (STC) or Apparent Sound Transmission Class (ASTC) values. In order to maintain adequate acoustical privacy between separate suites in a multi-tenant building, inter suite walls must meet or exceed STC-50 or ASTC-47. Suite separation from a refuse chute or elevator shaft must meet or exceed STC-55. In addition, it is recommended that the floor/ceiling constructions separating suites from any amenity or commercial spaces also meet or exceed STC-55. Tables 1 and 2 in Section SB-3 of the Supplementary Guideline to the OBC provide a comprehensive list of constructions that will meet the above requirements.

Tarion's Builder Bulletin B19R requires the internal design of condominium projects to integrate suitable acoustic features to insulate the suites from noise from each other and amenities in accordance with the OBC, and limit the potential intrusions of mechanical and electrical services of the building on its residents. If B19R certification is needed, an acoustical consultant is required to review the mechanical and electrical drawings and details of demising constructions and

mechanical/electrical equipment, when available, to help ensure that the noise impact of the development on itself is maintained within acceptable levels.

5.6 Impact of the Development on the Environment

Sound levels from noise sources such as rooftop air-conditioners, cooling towers, exhaust fans, etc. should not exceed the minimum one-hour L_{EQ} ambient (background) sound level from road traffic, at any potentially impacted residential point of reception. Based on the levels observed during our site visit, the typical minimum ambient sound levels in the area are expected to be above the minimum exclusionary limits of 50 dBA or more during the day and 45 dBA or more at night. Thus, any electro-mechanical equipment associated with this development (e.g. emergency generator testing, fresh-air handling equipment, etc.) should be designed such that they do not result in noise impact beyond these ranges. At the time of this study, the design of the proposed mixed-use/residential buildings was in its initial stages, and the mechanical systems had not yet been developed.

The details of the exhaust fans and mechanical equipment will be reviewed at the SPA stage when the details are available. At this point, the site plan does not indicate any vents. It is likely that the majority of rooftop mechanical equipment will be housed in a mechanical penthouse on the roofs of the proposed buildings. Any rooftop equipment not housed in the penthouse will be assessed and sufficiently shielded from neighbouring residences, as needed.

It is also HGC Engineering's experience with numerous developments, that typical HVAC equipment and parking garage exhaust fans can meet the applicable MECP noise criteria at neighbouring residential uses, either with low noise emission fans or relocation of the fans or through mitigation in the form of duct silencers or acoustic lining. Prior to building permit, an acoustical consultant should review the mechanical drawings and details of potential exhaust vents/fans, when available, to help ensure that the noise impact of the development on the environment, and of the development on itself, are maintained within acceptable levels. This is typically completed at the detailed noise study stage, at SPA.

6 Assessment of Existing Stationary Sources of Sound on the Proposed Mixed-Use/Residential Buildings

Noise sources associated with industrial/commercial facilities are assessed separately from traffic sources under MECP Guidelines. These adjacent commercial facilities are considered to be Stationary Sources of Sound and criteria for their assessment are contained in the following section.

HGC Engineering visited the subject site to observe the operations of the facilities in the area, perform sound level measurements, and identify potentially significant sources of sound. From site observations, site measurements, aerial photos and past experience with similar past projects, the noise sources identified to be potentially significant with respect to the subject site were determined.

There are various commercial/retail facilities located in the plaza including: Oceans Fresh Food Market; Toys 'R' Us; TD Canada Trust; among others. The rooftop mechanical equipment (air conditioning units), and trucks arriving/departing for deliveries at the Oceans are potentially significant stationary sources of sound.

6.1 Criteria for Acceptable Sound Levels

Under MECP guidelines, the acoustical environment in this area is classified as "urban" or "Class I", as background sound levels are set by significant volumes of road traffic on surrounding roadways during daytime and nighttime hours.

Stationary sources of sound are collectively defined as all sources that emit sound within a commercial or industrial facility boundary. The facilities to the north, northwest and west are therefore classified as a stationary source of sound. The following MECP guidelines and criteria apply in this case.

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

the development is located in an urban acoustical environment which is characterized by an acoustical environment dominated by road traffic and human activity.

Stationary Source (Steady Sound)

NPC-300 is intended for use in the planning of both residential and commercial/industrial land uses and provides the acceptability limits for sound due to commercial operations in that regard. The facade of a residence (i.e., in the plane of a window), or any associated usable outdoor area is considered a sensitive point of reception (within 30 m of a dwelling façade). NPC-300 stipulates that the exclusionary sound level limit for a stationary noise source in urban Class 1 and 2 areas are taken to be 50 dBA during daytime and evening hours (07:00 to 19:00 and 19:00 to 23:00), and 45 dBA during nighttime hours (23:00 to 07:00) at the plane of the windows of noise sensitive spaces. If the background sound levels due to road traffic exceed the exclusionary limits, then that background sound level becomes the criterion. The background sound level is defined as the sound level that occurs when the source under consideration is not operating, and may include traffic noise and natural sounds.

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

The proposed mixed-use/residential buildings are located directly to the south and east of an existing commercial plaza located to the southeast of the intersection of Hurontario Street and Eglinton Avenue. The height of the mixed-use/residential buildings range from 28-storeys to 45-storeys. Receptor locations (R1 to R6) are shown on Figure 4.

Hourly daytime traffic data was not available for the surrounding roadways (Hwy 403, Hurontario Street, Eglinton Avenue, Elia Avenue and Sorrento Drive). Using the current traffic volumes obtained from the City of Mississauga and MTO, the traffic data was applied to a generic 24 hour traffic pattern developed by the US Department of Transportation, Federal Highways Administration contained in the report titled “Summary of National and Regional Travel Trends 1970 – 1995” dated May 1996. The traffic volumes were then used to predict sound levels in the Cadna model at the

residential receptors during the day/nighttime hours to determine the minimum hour background sound levels at those locations due to the traffic on the public roadways.

The minimum hour traffic volumes used in the analysis are summarized in the following table.

Table 14: Minimum Hourly Traffic Volumes on Surrounding Roadways

Roadway	Hourly Data		Heavy Vehicle %
	Day	Night	
Hwy 403	4420	1020	6.2
Hurontario St	1218	114	2.7
Eglinton Ave	696	52	2.3
Elia Ave	130	30	1.4
Sorrento Dr	130	30	1.4

The predicted quietest daytime hour and nighttime hour sound levels at the facades of the proposed residences, which will be exposed to the industries are found to be higher than the MECP exclusionary limits in the daytime hours for the majority of facades with exposure to the major roadways. As such, the sound level limits as summarized in Table 15 are therefore used in the following sections of this report as the applicable criteria for R1 to R6.

Table 15: Applicable Sound Level Limits, L_{EQ} (dBA) for Class I Areas

Receptor	Tower		Sound Level Limits	
			Daytime & Evening (07:00 to 23:00)	Nighttime (23:00 to 07:00)
R1	Block 1, Bldg A	Podium	51	45
		OLA 5-storey Podium	55	--
R2	Block 1, Bldg B	Podium	50	45
		Tower	52	45
		OLA 1-storey Podium	50	--
		OLA 6-storey Podium	53	--
R3	Block 2, Bldg A	Podium	56	45
		Tower	54	45
		OLA 6-storey Podium	55	--
		OLA 8-storey Podium	55	--
R4	Block 2, Bldg B	Podium	54	45
		Tower	53	45
		OLA 6-storey Podium (North)	54	--
		OLA 6-storey Podium (south)	55	--
R5	Block 3, Bldg A	Podium	54	45
		Tower	53	45
		OLA 6-storey Podium	55	--
R6	Block 3, Bldg B	Podium	54	45
		Tower	52	45
		OLA 5-storey Podium	56	--

Compliance with MECP criteria generally results in acceptable levels of sound at residential receptors although there may be residual audibility during periods of low background sound.

6.2 Stationary Source Assessment

Predictive noise modelling was used to assess the potential sound impact of trucking activities, passbys and idling of engines and reefers, rooftop mechanical equipment, at the closest residential receptors. The noise prediction model was based on sound emission levels for assumed operational profiles (during the daytime and nighttime), and established engineering methods for the prediction of outdoor sound propagation. These methods include the effects of distance, air absorption, and acoustical screening by barrier obstacles.

Sound emission data for typical rooftop equipment obtained from HGC Engineering project files were used in the analysis along with measurements of equipment conducted during the site visit. The sound levels were used as input to a predictive computer model. The software used for this purpose (*Cadna-A 2021 (32 bit) build: 183.5110*) is a computer implementation of ISO Standard 9613-2.2 "Acoustics - Attenuation of Sound During Propagation Outdoors." The ISO method accounts for reduction in sound level with distance due to geometrical spreading, air absorption, ground attenuation and acoustical shielding by intervening structures such as barriers.

The assumed and measured sound power levels are listed in the table below.

Table 16: Sound Power Level Specifications for Equipment [dB re 10-12 W]

Item	Octave Band Centre Frequency [Hz]							
	63	125	250	500	1k	2k	4k	8K
Medium Truck Pass-by	108	90	92	90	94	91	84	77
Idling Medium Truck	91	87	89	84	91	88	79	71
Medium Truck Refer	101	96	97	86	86	83	77	69
York ZF036	88	86	81	77	75	70	66	71
York ZE048	85	81	80	78	75	70	67	71
York ZF048	85	81	80	78	75	70	67	71
York ZF090	90	92	89	88	84	79	74	67
York ZF102	92	94	93	89	86	81	76	71
York ZF180	90	93	91	89	86	83	80	75
York ZF240	91	94	92	89	87	83	81	76
Lennox LGA120	--	76	79	84	83	79	73	66
Lennox LGH300	--	84	85	90	90	85	80	72
Oceans Chiller Fans	84	79	78	77	76	70	63	59
Exhaust Fan	70	76	82	73	68	63	58	52
Oceans Baker Fan 1	86	94	93	91	91	86	80	76
Oceans Baker Fan 2	87	90	86	84	82	79	70	64
Oceans Baker Fan 3	85	89	93	86	89	82	74	69
Oceans Baker Fan 4	88	82	93	87	89	84	78	74
Oceans Cooling Coil	84	86	78	80	77	71	66	63
Oceans Ventilator Duct	86	89	90	83	83	79	67	59
Restaurant Exhaust Fan	92	91	89	86	84	80	72	67

6.3 Assumed Operating Scenarios

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

Oceans Fresh Food Market

- 2 medium trucks arriving for deliveries during the day, one with a reefer
- 1 medium truck arriving for delivery at night or early morning
- Garbage compactor operating for 15 minutes during the day
- Baker Exhausts operating for a full hour during the day and off during the night
- Condenser Unit operating for a full hour during the day and for 30 minutes during the night
- Remaining rooftop HVAC equipment operating for 40 minutes during the day and for 20 minutes during the night

Remaining Commercial Units

- All rooftop HVAC equipment operating for 40 minutes during the day and 20 minutes during the night
- Exhaust fans operating for 60 minutes during the day and off during the night

The operating profiles outlined above were assumed in determining the one-hour equivalent sound level, L_{EQ}, for a predictable worst-case daytime and nighttime hour at the facades of the proposed mixed-use development.

6.4 Results

The calculations consider the acoustical effects of distance and shielding by the buildings. The predicted sound levels due to the trucking activities (arriving, idling of engines, running of reefer units) and mechanical equipment at the closest proposed residential buildings (R1 to R6) during a worst-case busiest hour operating scenario, are summarized in the following table and shown on Figures 5 and 6.

Table 17: Predicted Steady Sound Levels (L_{EQ-1HR}) at Residential Receptors during a Worst-case Operating Scenario hour

Receptor	Block		Criteria Day / Night (dBA)	Predicted Sound Level (dBA)	
				Daytime & Evening (7:00 to 23:00)	Nighttime (23:00 to 7:00)
R1	Block 1, Bldg A	Tower	51/45	53	48
		OLA 5-storey Podium	55/--	48*	--
R2	Block 1, Bldg B	Podium	50/45	60	52
		Tower	52/45	57	50
		OLA 1-storey Podium	50/--	58*	--
		OLA 6-storey Podium	53/--	53*	--
R3	Block 2, Bldg A	Podium	56/45	50	46
		Tower	54/45	49	45
		OLA 6-storey Podium	55/--	47*	--
		OLA 8-storey Podium	55/--	<30*	--
R4	Block 2, Bldg B	Podium	54/45	50	47
		Tower	53/45	50	46
		OLA 6-storey Podium (North)	54/--	46*	--
		OLA 6-storey Podium (south)	55/--	49*	--
R5	Block 3, Bldg A	Podium	54/45	53	49
		Tower	53/45	52	48
		OLA 6-storey Podium	55/--	41*	--
R6	Block 3, Bldg B	Podium	54/45	55	50
		Tower	52/45	54	50
		OLA 5-storey Podium	56/--	33*	--

The results of this analysis indicate that the predicted steady sound levels due to truck passbys, idling truck engines, and operation of reefers and rooftop HVAC equipment has the potential to be in excess of the background sound level criteria during the nighttime hours by up to 10 dBA during the day and 7 dBA during the night considering a worst-case operation scenario along the façades and up

to 8 dBA in the OLA on the 1-storey podium of Building B in Block 1 during the daytime hours.

6.5 Discussion and Recommendations with Regard to the Commercial Facilities

While the MECP does not generally accept central air conditioning or mechanical ventilation as mitigation measures for stationary noise sources per se, it is noted that central air conditioning will likely be installed in each building for the residential units so that the windows can remain closed against both traffic and stationary noise.

NPC-300 encourages noise mitigation at the source if possible. The owner of the commercial plaza prefers to mitigate any rooftop mechanical units by either providing silencers, mitigation in the form of acoustic screens or enclosures or replacements of the units to quieter models or relocation of the units to meet NPC-300 noise criteria. For the loading area of the Oceans, a higher wing wall or enclosed loading area may also be investigated further along with administrative controls such as turning reefer units off during the deliveries and/or reducing the duty cycle of the rooftop units further to minimize noise excesses at the proposed residential receptors.

Figure 7 identifies the rooftop units and loading areas which will require mitigation strategies. This can be outlined at the detailed noise study stage.

There are no stationary noise excesses expected at the townhouses of Blocks 2 and 3, as well as for the buildings in Blocks 4 and 5, due to their distance from the noise sources. Any minor excesses at the west end of the buildings may be address through modification to the buildings themselves. The following are some conceptual mitigation measures to achieve Class I criteria.

- At the west façade of Buildings, A and B of Block 2, the podiums may include office space or windows to non-noise sensitive spaces such as storage, parking, indoor amenity areas, restaurants or indoors gyms. Figure 8 indicates the areas for potential noise mitigation at the building using architectural solutions of Block 2.

- The owner of the commercial plaza is expected to address any sound level excesses through mitigation at the source. Options include: silencers, mitigation in the form of acoustic screens

or enclosures or replacements of the units to quieter models or relocation of the units to meet NPC-300 noise criteria. For the loading area of the Oceans, a higher wing wall or enclosed loading area may also be investigated further along with administrative controls such as turning reefer units off during the deliveries and/or reducing the duty cycle of the rooftop units further to minimize noise excesses at the proposed residential receptors.

- Any minor excesses along any façade may be mitigated with at receptor mitigation. This could be in the form of architectural solutions such as utilizing balconies of appropriate height (solid parapet made of glass) to shield any windows to sensitive spaces behind.

- Any excesses in the common OLAs can be addressed with acoustic barriers in the form of roof edge solid parapet walls.

- A warning clause should be included in purchase and tenancy agreements to inform future occupants of the existing commercial facilities. Suggested wording is included below:

  Type D:

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

7 Summary of Recommendations

The following recommendations are provided in regard to noise mitigation.

Transportation Noise

1. Central air conditioning is required for the majority of buildings and will likely be included in any case.

2. Upgraded building constructions are required for the majority of facades of the proposed buildings as indicated in Section 3.3.3. When detailed floor plans and building elevations are available for each building, an acoustical consultant should revise the glazing constructions based on actual window to floor area ratios.

3. Warning clauses should be included in the property and tenancy agreements and offers of purchase and sale to inform the future owners/residents of the presence of the roadways and the nearby commercial operations.

4. When detailed drawings are available and Phasing information is available, at SPA or as a condition, a detailed noise study should be conducted to refine the glazing constructions based on actual window to floor area ratios.

5. Tarion's Builder Bulletin (B19R) requires that the internal design of condominium projects integrates suitable acoustic features to insulate the suites from noise from each other and amenities in accordance with the OBC, and limit the potential intrusions of mechanical and electrical services of the buildings on its residents. If B19R certification is needed, an acoustical consultant is required to review the mechanical and electrical drawings and details of demising constructions and mechanical/electrical equipment, when available, to help ensure that the noise impact of the development on itself are maintained within acceptable levels. Outdoor sound emissions should also be checked to ensure compliance with the City's by-law.

Stationary Noise

6. Minor sound level excesses may be expected under Class I designation for Blocks 1, 2, and 3. A number of options are provided conceptually, including at the north façade of Buildings A and B of Block 1; west façades of Buildings A, B of Blocks 2 and 3; and OLA on the 1-storey podium of Building B in Block 1. The podiums may include office space or windows to non-noise sensitive spaces such as storage, parking, indoor amenity areas, restaurants or indoors gyms. Any sound level excesses attributed to the rooftop units of the plaza and/or loading area are expected to be mitigated on site in the form of: silencers, mitigation in the form of acoustic screens or enclosures or replacements of the units to quieter models or relocation of the units to meet NPC-300 noise criteria. For the loading area of the Oceans, a higher wing wall or enclosed loading area may also be investigated further along with administrative controls such as turning reefer units off during the deliveries and/or reducing the duty cycle of the rooftop units further to minimize noise excesses at the proposed residential receptors.

7. To address the potential for audible sound from the nearby light industrial/office facilities, railway yard, and nuisance sources, specific noise warning clauses are required as indicated throughout the noise report.

8 Conclusions

Based on the assessment presented herein, the conceptual development proposal is considered to be feasible from a noise impact perspective. Transportation noise can be mitigated by standard building envelope assemblies. Preliminary noise modelling of the nearby commercial facilities indicates results to be within criteria at the majority of residential facades, with the exception of proposed buildings in Block 1, 2, and 3. Conceptual recommendations for mitigation were provided to achieve Class I criteria. Detailed noise studies are recommended for each building and each phase as the development proposal proceeds.

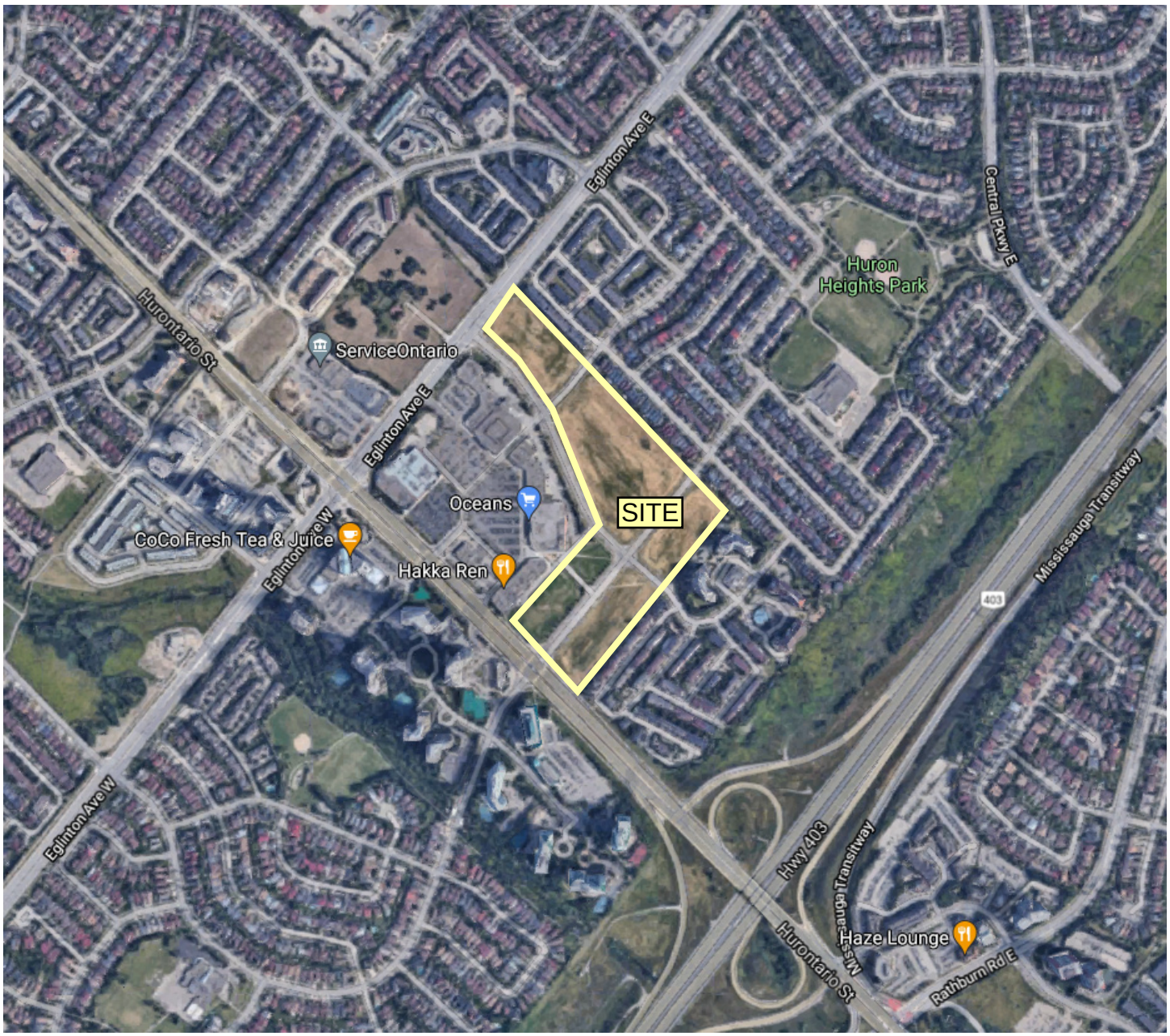


Figure 1 - Key Plan

1 A001.S Overall Site Plan- Phasing Plan

Figure 2 - Proposed Site Phasing Plan

Figure 3 - Aerial Photo Indicating Surrounding Land Uses

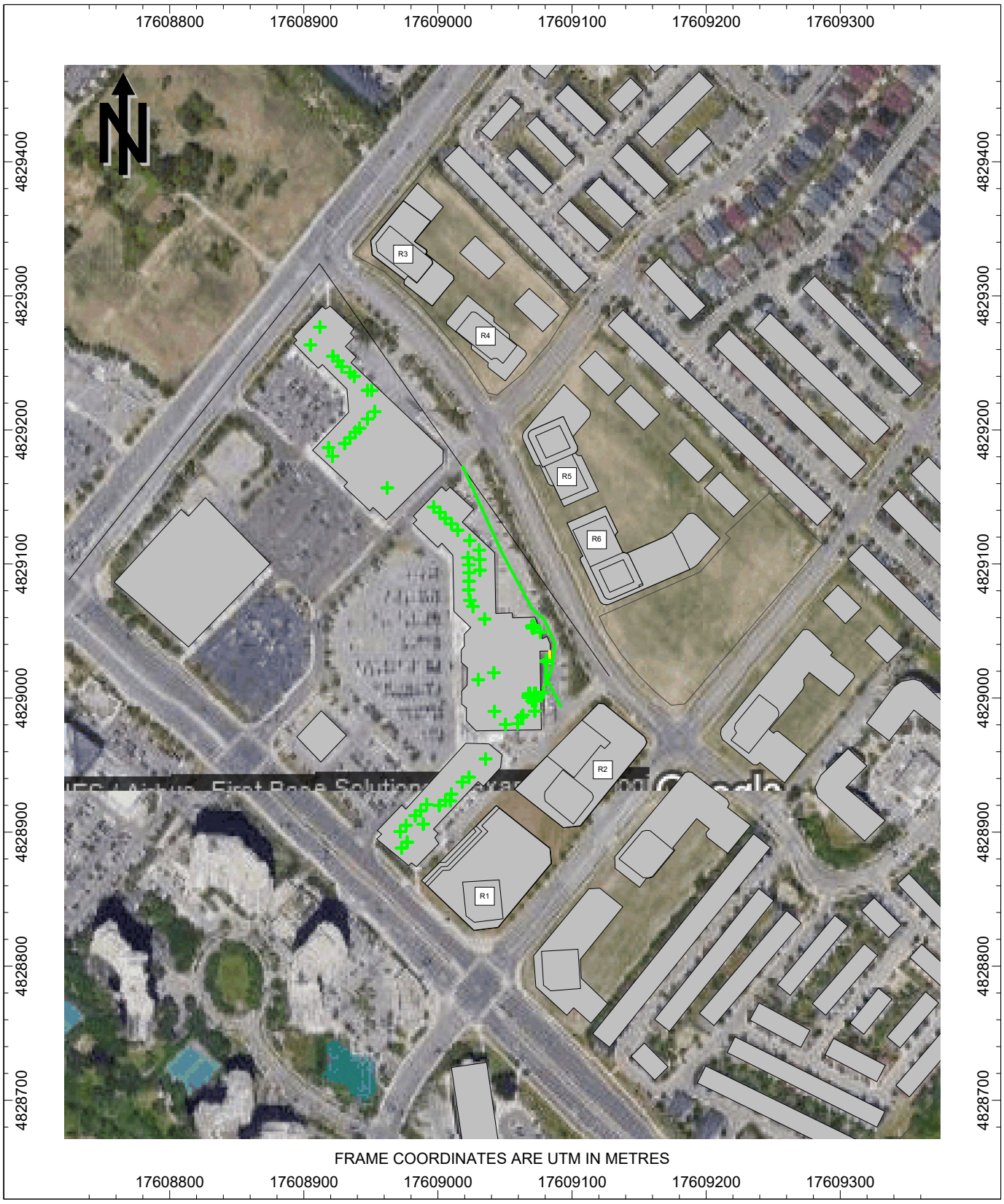


Figure 4: Sketch Indicating Receptor Locations

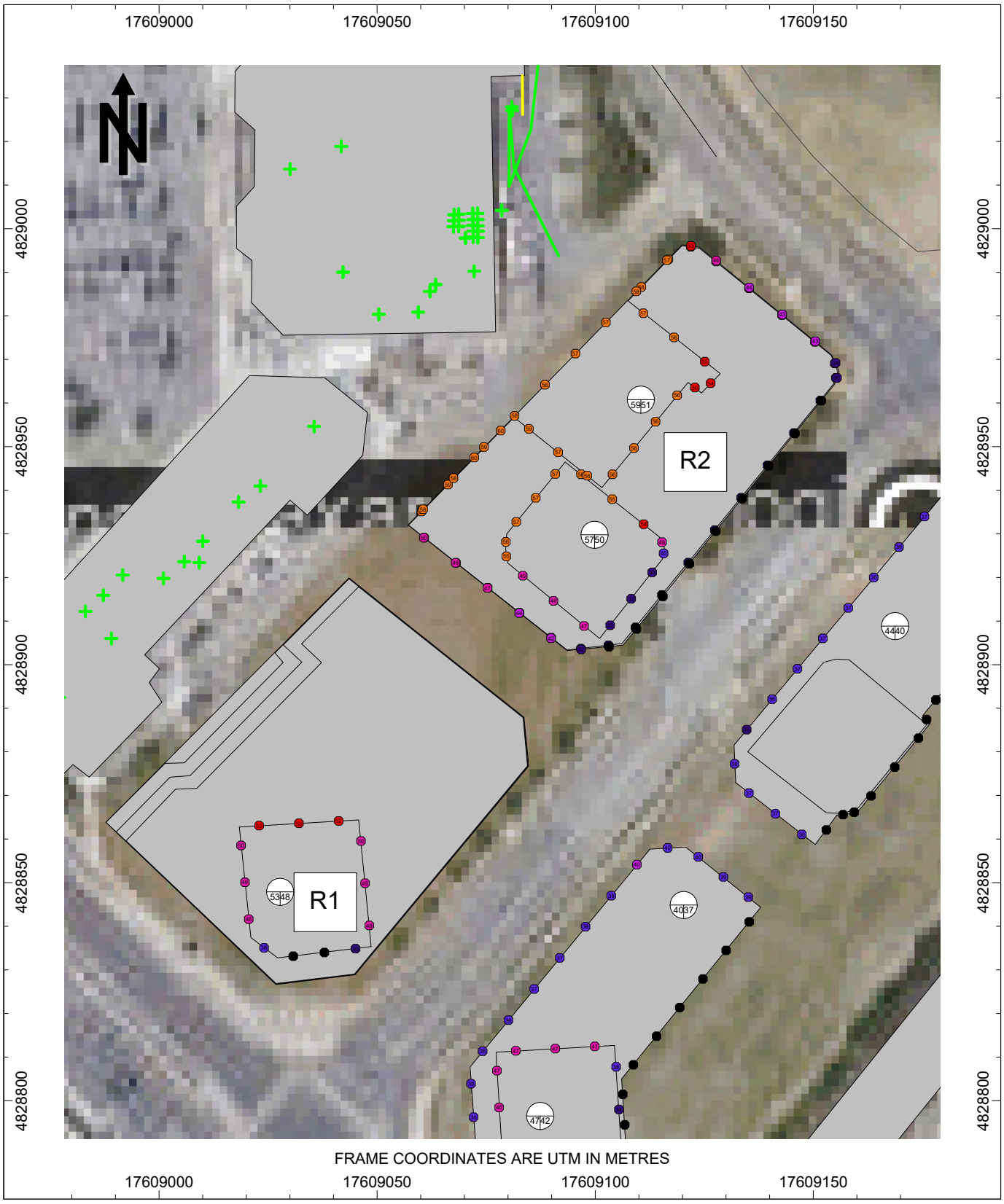


Figure 5a: Block 1 Sound Levels Due to Steady Stationary Noise Sources, Daytime

Figure 5b: Block 2 Sound Levels Due to Steady Stationary Noise Sources, Daytime

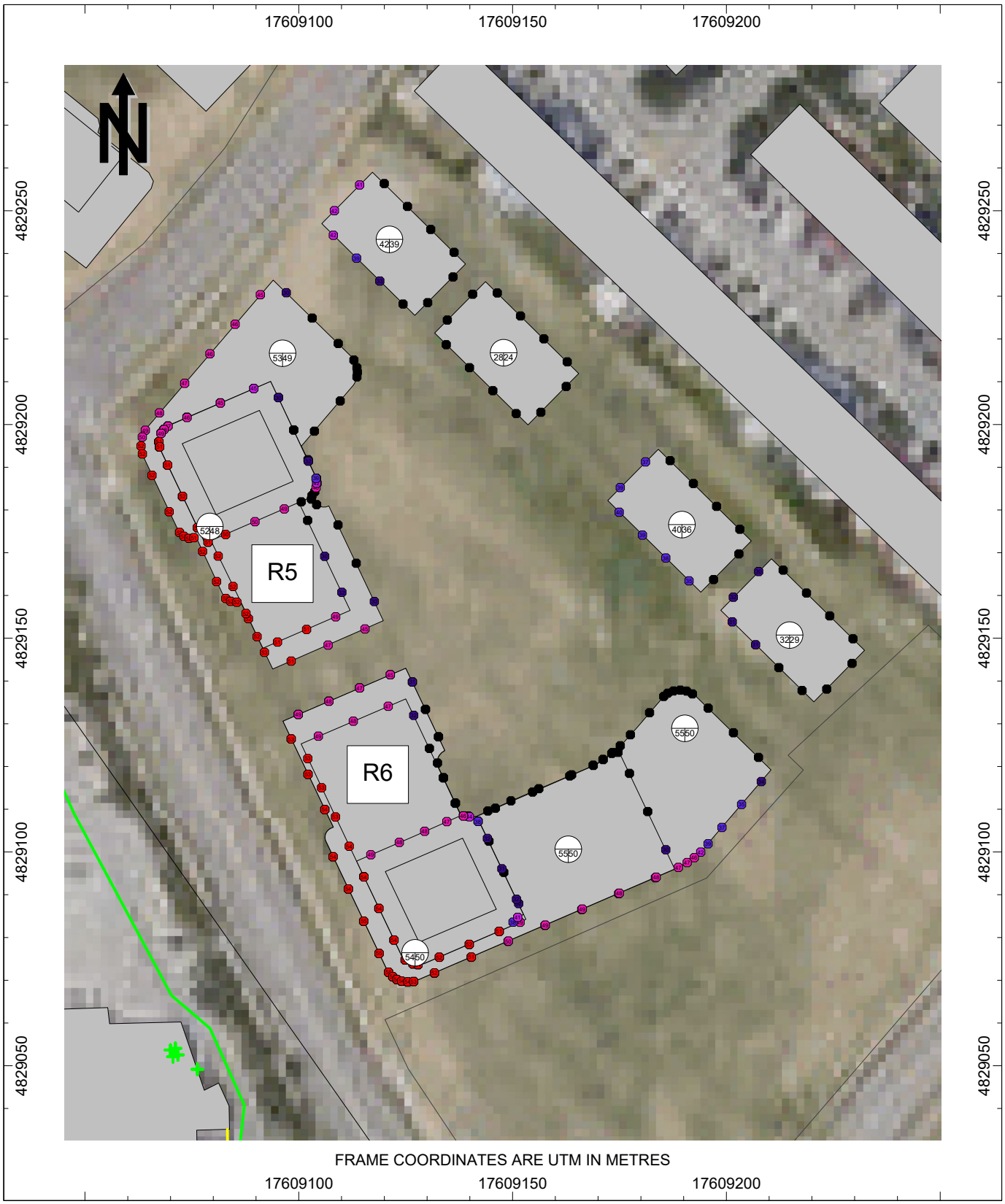


Figure 5c: Block 3 Sound Levels Due to Steady Stationary Noise Sources, Daytime

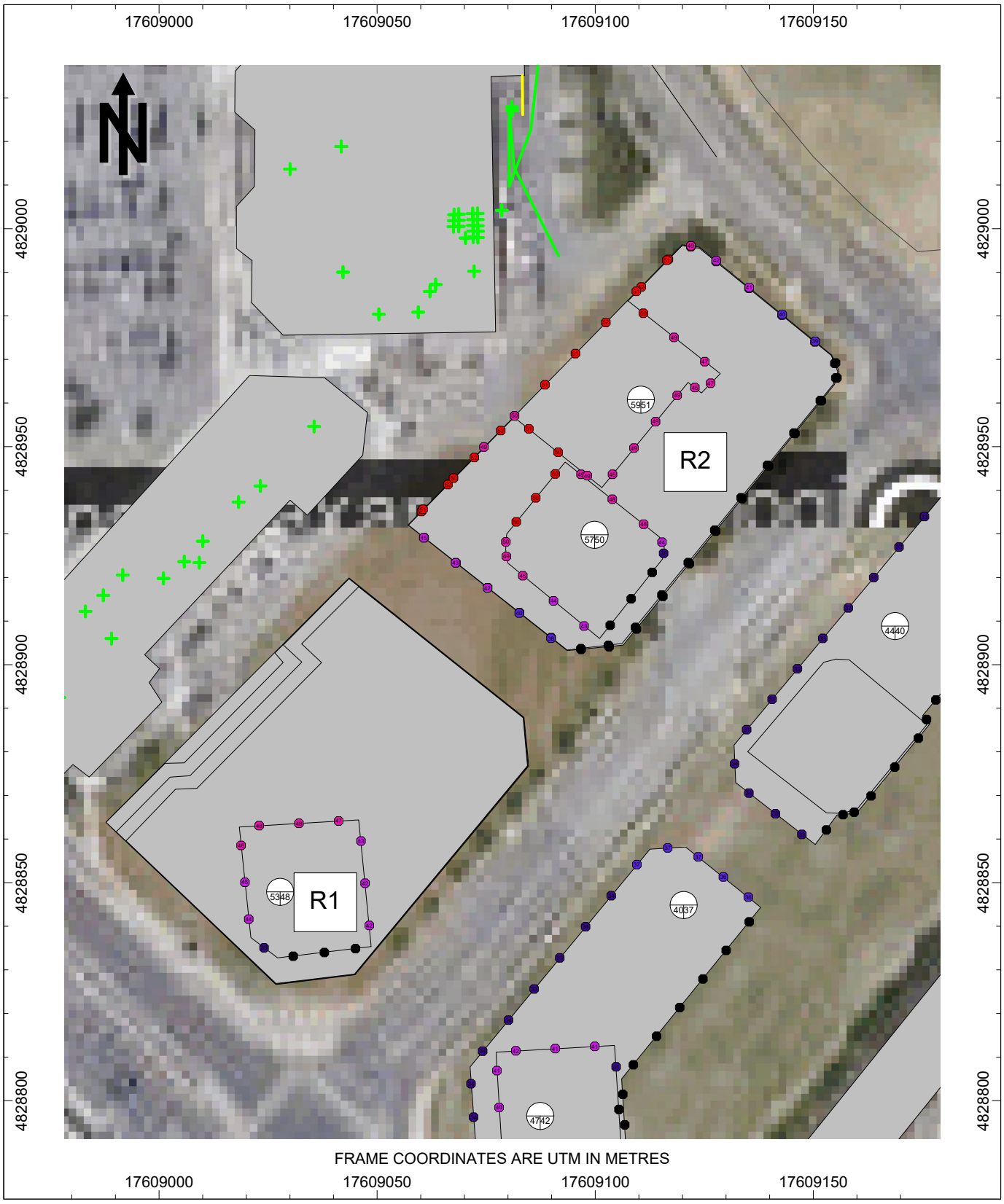


Figure 6a: Block 1 Sound Levels Due to Steady Stationary Noise Sources, Daytime

Figure 6b: Block 2 Sound Levels Due to Steady Stationary Noise Sources, Daytime

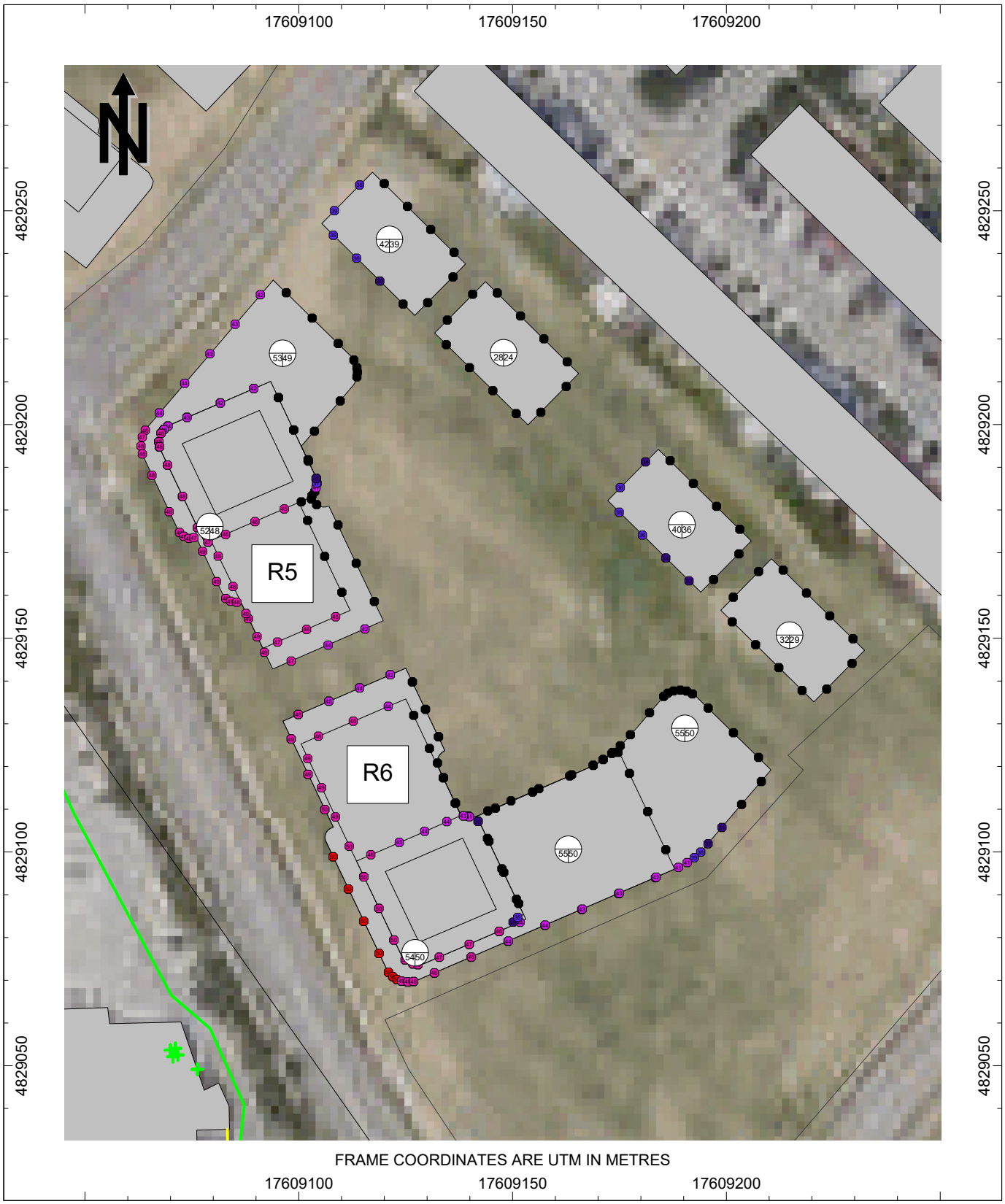


Figure 6c: Block 3 Sound Levels Due to Steady Stationary Noise Sources, Daytime

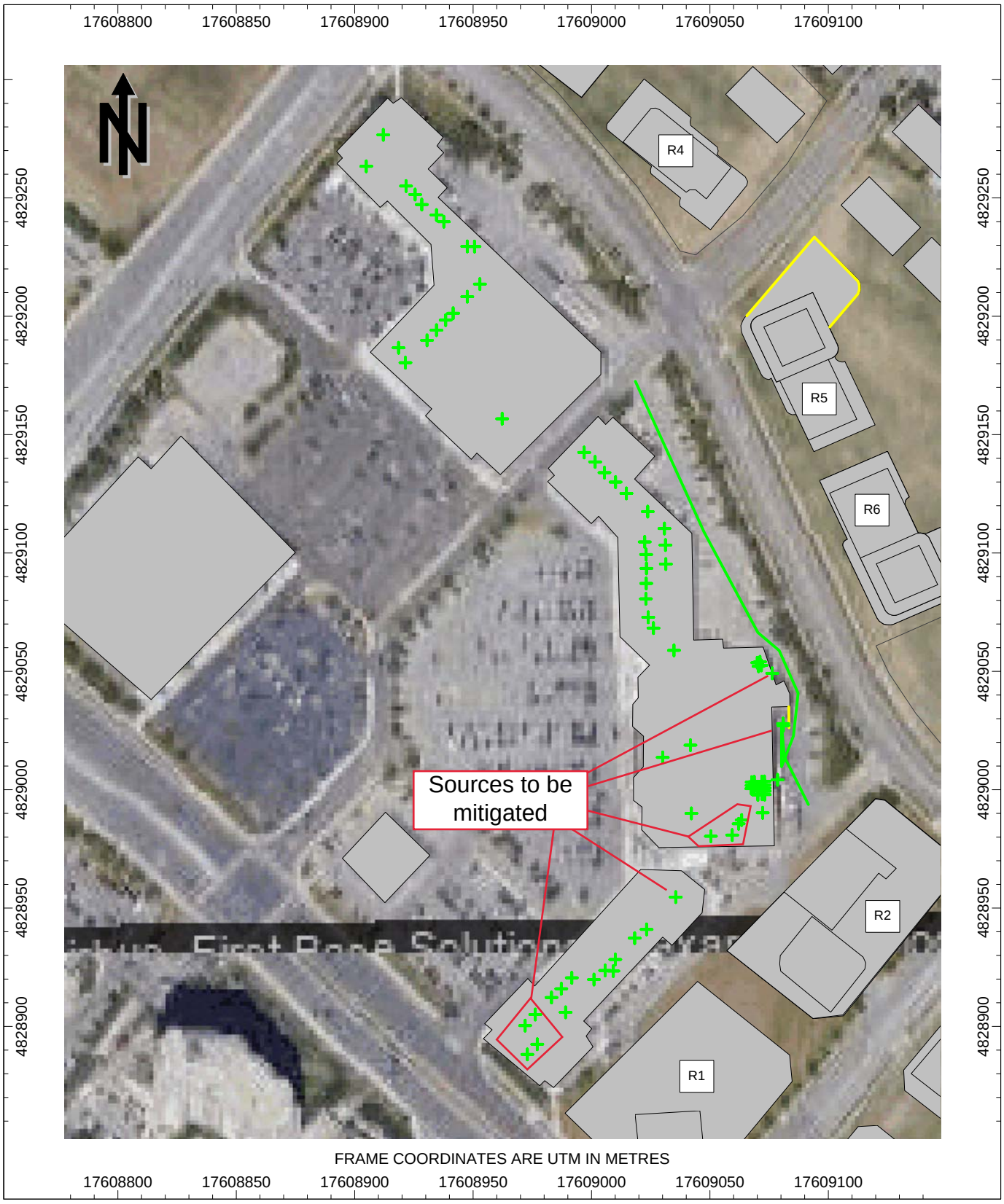


Figure 7: Sketch Showing Sources to be Mitigated

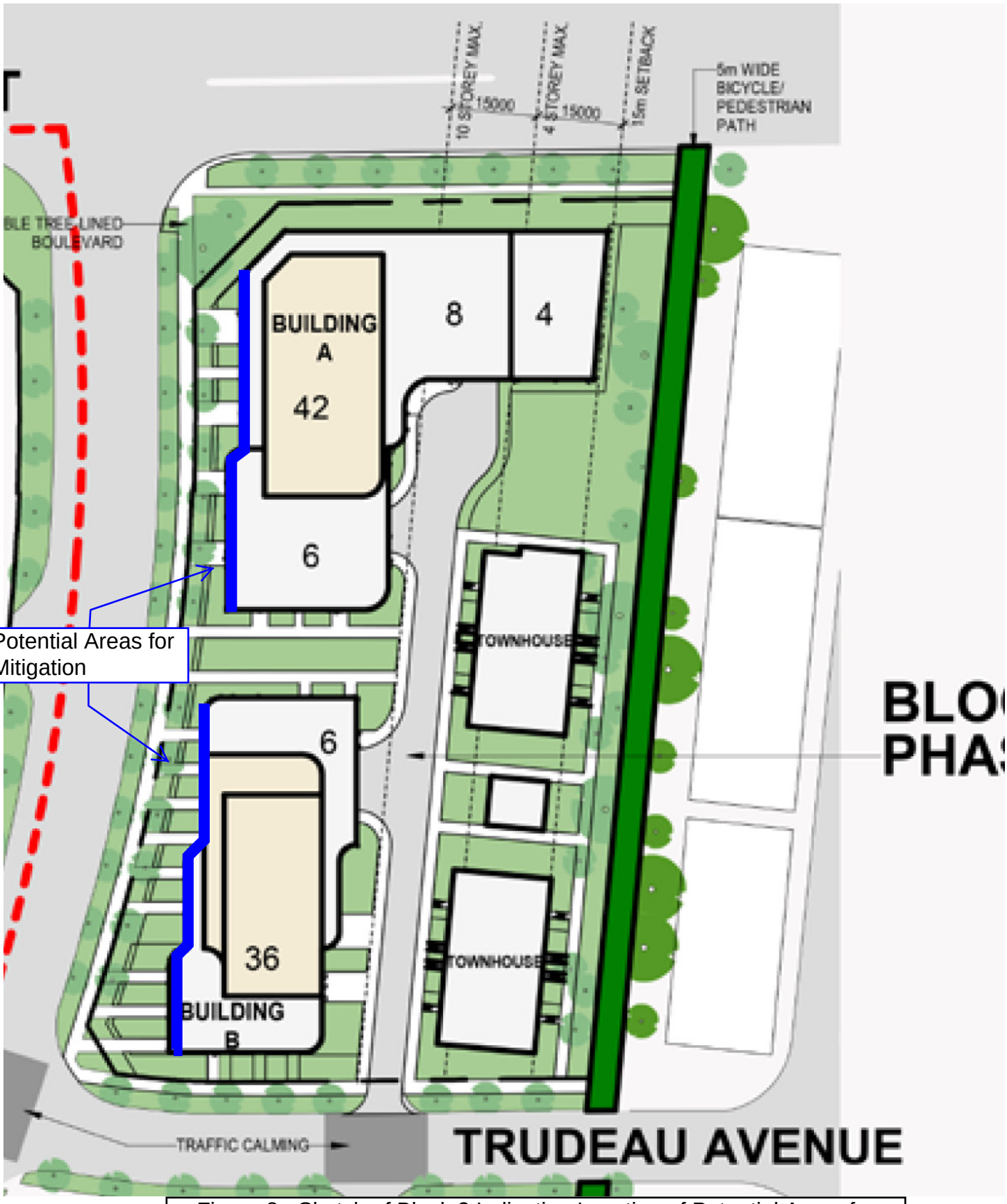


Figure 8 - Sketch of Block 2 Indicating Location of Potential Areas for Mitigation to Achieve Class I

APPENDIX A

Road Traffic Information

Highway	Location Description	Dist. (KM)	Year	Pattern Type	AADT	SADT	SAWDT	WADT	AR
			2002	UC	155,100	165,300	182,500	145,200	0.6
			2003	UC	161,300	171,000	190,300	151,600	0.7
			2004	UC	167,600	177,100	196,300	158,300	0.7
			2005	UC	173,800	183,900	203,300	163,000	0.6
			2006	UC	180,100	190,500	210,500	169,500	0.6
			2007	UC	186,300	197,600	215,600	174,800	0.9
			2008	UC	192,600	203,400	191,000	180,200	0.8
			2009	UC	198,800	209,900	231,600	187,000	0.7
			2010	UC	205,100	216,800	238,700	192,900	0.6
			2011	UC	211,300	211,300	217,700	200,800	N/A
			2012	UC	217,600	217,600	232,800	206,700	N/A
			2013	UC	210,000	210,000	212,100	199,500	N/A
			2014	UC	200,000	200,000	192,000	190,000	N/A
			2015	UC	190,000	190,000	182,400	180,500	N/A
			2016	UC	180,000	180,000	172,800	171,000	N/A
403	HURONTARIO ST IC-MISSISSAUGA	2.0	1988	UC	83,100	89,600	97,900	74,700	0.6
			1989	UC	89,600	98,500	107,500	79,700	0.8
			1990	UC	95,900	105,400	115,000	85,300	0.4
			1991	UC	94,000	103,400	113,700	83,600	0.5
			1992	UC	97,800	103,600	110,500	89,900	0.5
			1993	UC	99,800	105,700	114,700	95,800	0.8
			1994	UC	101,800	107,900	114,000	93,700	0.7
			1995	UC	103,800	110,000	115,200	95,500	0.8
			1996	UC	109,300	116,300	127,900	103,800	0.7
			1997	UC	114,700	120,400	134,200	107,800	0.8
			1998	UC	123,200	131,100	144,100	117,000	0.6
			1999	UC	127,400	135,600	149,100	121,000	0.6
			2000	UC	137,000	145,800	161,400	128,800	0.5
			2001	UC	140,000	149,800	165,200	131,600	0.7
			2002	UC	143,800	153,200	169,200	134,600	0.5
			2003	UC	145,900	154,700	172,200	137,100	0.6
			2004	UC	154,700	163,500	181,200	146,100	0.5
			2005	UC	146,700	155,200	171,600	137,600	0.7

Highway	Location Description	Dist. (KM)	Year	Pattern Type	AADT	SADT	SAWDT	WADT	AR
			2006	UC	149,900	158,500	175,200	141,100	0.7
			2007	UC	153,100	162,400	177,200	143,600	0.9
			2008	UC	156,200	165,000	154,900	146,100	0.8
			2009	UC	159,400	168,300	185,700	150,000	0.8
			2010	UC	162,600	171,900	189,200	152,900	0.6
			2011	UC	171,300	171,300	176,500	162,800	N/A
			2012	UC	175,100	175,100	187,400	166,400	N/A
			2013	UC	178,900	178,900	180,700	170,000	N/A
			2014	UC	173,000	173,000	166,100	164,400	N/A
			2015	UC	172,000	172,000	165,100	163,400	N/A
			2016	UC	170,000	170,000	163,200	161,500	N/A
403	MAVIS RD IC-MISSISSAUGA	4.5	1988	C	76,700	82,800	90,500	69,000	0.5
			1989	C	87,400	96,000	104,800	77,700	0.7
			1990	C	95,200	104,700	114,200	84,700	0.6
			1991	C	93,300	102,600	112,800	83,000	0.5
			1992	C	96,600	102,300	109,100	88,800	0.6
			1993	C	98,600	104,500	113,300	94,600	0.7
			1994	C	101,500	107,600	113,700	93,400	0.7
			1995	C	104,400	110,700	115,900	96,000	0.4
			1996	C	107,300	114,200	125,500	101,900	0.4
			1997	C	110,200	115,700	128,900	103,600	0.5
			1998	C	116,800	124,300	136,700	111,000	0.4
			1999	C	120,700	128,400	141,200	114,700	0.3
			2000	C	129,900	138,200	153,000	122,100	0.3
			2001	C	128,800	137,800	152,000	121,100	0.3
			2002	C	132,900	141,600	156,300	124,400	0.3
			2003	C	134,500	142,600	158,700	126,400	0.4
			2004	C	140,900	148,900	165,100	133,100	0.4
			2005	C	143,700	152,100	168,100	134,800	0.5
			2006	C	147,500	156,000	172,400	138,800	0.7
			2007	C	153,100	162,400	177,200	143,600	0.6
			2008	C	157,100	173,400	171,000	141,000	0.6
			2009	C	153,800	169,700	171,400	138,400	0.4

Sheeba Paul

From: Bee, Christopher (MTO) <Christopher.Bee@ontario.ca>
Sent: November-09-20 5:05 PM
To: Sheeba Paul
Cc: Bee, Christopher (MTO)
Subject: RE: commercial % at 403 near Hurontario St

Follow Up Flag: Follow up
Flag Status: Flagged

To Sheeba Paul, HGC:

Hwy 403 at Hurontario has "% commercial" at a steady 10%, stable for 10 years from 2007 to 2016 latest.
There is no more recent official MTO data.

" % commercial" includes long trucks, short trucks, vans, buses, cars with trailers, but NOT REGULAR CARS.
There is no further detailed breakdowns.

Christopher Bee
MTO CR Traffic Office
STIRCS

From: Sheeba Paul <spaul@hgcengineering.com>
Sent: November-06-20 2:59 PM
To: Bee, Christopher (MTO) <Christopher.Bee@ontario.ca>
Subject: RE: commercial % at 403 near Hurontario St

Hello Christopher,

We are completing a noise study for a proposed residential development in Mississauga, Ontario, specifically on either side of Elia Ave.

https://www.google.com/maps/place/Taza+Xpress/@43.6032306,-79.6473125,1077m/data=!3m1!1e3!4m5!3m4!1s0x882b41b88e9e68e9:0x5ed06d116ee42c95!8m2!3d43.6057424!4d-79.6504483

Do you have commercial vehicle percentages for Highway 403 in this area (near Hurontario Street)?

Thank you.

Date:	10-Nov-20

REQUESTED BY:

Name:	Sheeba Paul
Company:	HGC Engineering

PREPARED BY:

Name	Bertuen Mickle
Tel#:	(905) 615-3200

NOISE REPORT FOR PROPOSED DEVELOPMENT

Location: Eglinton Avenue : Hurontario Street to Sorento Dr.
Hurontario Street : Eglinton Ave to Elia Ave
Elia Avenue : Hurontario Street to Sorento Drive
Sorento Drive : Elia Avenue to Eglinton Avenue
Trudeau Ave : Sorento Dr to Maxine Place

ID# 489

ON SITE TRAFFIC DATA

Specific	*Street Names*				
	Eglinton Ave East	Hurontario Street	Elia Ave	Sorento Dr.	Trudeau Ave
AADT:	43,200	44,300	5,000	5,000	5,000
# of Lanes:	6 Lanes	4 Lanes	2 Lanes	2 Lanes	2 Lanes
% Trucks:	5%	6%	3%	3%	2%
Medium/Heavy Trucks Ratio:	55/45	55/45	55/45	55/45	55/45
Day/Night Split:	90/10	90/10	90/10	90/10	90/10
Posted Speed Limit:	60 km/h	60 km/h	50 km/h	50 km/h	50 km/h
Gradient Of Road:	<2%	<2%	<2%	<2%	<2%
Ultimate R.O.W:	45m	45m	26.25m	26.25m	24m

Comments:

- Ultimate Traffic Data Only (2041 ADT)
- Ultimate Data is based on the proposed LRT project along Hurontario Street with existing lanes converted from 6 to 4 lanes with 2 LRT lanes in middle/both sides
-Please contact Farhad Shala @(905)-616-2300 ext. 3377 of farhad.shala@mississauga.ca

Volume Summary Details Report

Location..... EGLINTON AVE E btwn EGLINTON AVE W & UNNAMED UCOM

Municipality..... Mississauga **GeoID:** 352605

Date	EndTime	Eastbound	Westbound	Grand Total
28-Mar-18	12:15 AM	32	50	82
	12:30 AM	15	51	66
	12:45 AM	21	34	55
	1:00 AM	12	27	39
	1:15 AM	20	19	39
	1:30 AM	14	16	30
	1:45 AM	13	22	35
	2:00 AM	10	26	36
	2:15 AM	11	17	28
	2:30 AM	11	12	23
	2:45 AM	10	10	20
	3:00 AM	5	12	17
	3:15 AM	5	11	16
	3:30 AM	8	10	18
	3:45 AM	9	4	13
	4:00 AM	7	5	12
	4:15 AM	11	7	18
	4:30 AM	6	6	12
	4:45 AM	16	7	23
	5:00 AM	17	12	29
	5:15 AM	36	9	45
	5:30 AM	46	14	60
	5:45 AM	60	19	79
	6:00 AM	96	22	118
	6:15 AM	108	43	151
	6:30 AM	164	36	200
	6:45 AM	216	65	281
	7:00 AM	257	68	325
	7:15 AM	276	87	363
	7:30 AM	397	117	514
	7:45 AM	440	119	559
	8:00 AM	413	136	549
	8:15 AM	478	170	648
	8:30 AM	465	167	632
	8:45 AM	510	170	680
	9:00 AM	480	173	653
	9:15 AM	386	137	523
	9:30 AM	294	151	445
	9:45 AM	254	131	385
	10:00 AM	240	140	380
	10:15 AM	250	133	383
	10:30 AM	196	161	357
	10:45 AM	220	153	373
	11:00 AM	219	156	375
	11:15 AM	185	157	342

	11:30 AM	212	163	375
	11:45 AM	199	173	372
	12:00 PM	223	185	408
	12:15 PM	210	195	405
	12:30 PM	207	197	404
	12:45 PM	213	180	393
	1:00 PM	219	193	412
	1:15 PM	187	203	390
	1:30 PM	188	192	380
	1:45 PM	177	194	371
	2:00 PM	206	209	415
	2:15 PM	189	236	425
	2:30 PM	206	208	414
	2:45 PM	204	261	465
	3:00 PM	214	276	490
	3:15 PM	184	303	487
	3:30 PM	272	402	674
	3:45 PM	250	423	673
	4:00 PM	224	441	665
	4:15 PM	210	444	654
	4:30 PM	217	456	673
	4:45 PM	218	460	678
	5:00 PM	219	445	664
	5:15 PM	232	449	681
	5:30 PM	225	500	725
	5:45 PM	243	416	659
	6:00 PM	264	417	681
	6:15 PM	231	409	640
	6:30 PM	201	381	582
	6:45 PM	242	281	523
	7:00 PM	226	254	480
	7:15 PM	199	258	457
	7:30 PM	201	228	429
	7:45 PM	217	168	385
	8:00 PM	182	212	394
	8:15 PM	181	170	351
	8:30 PM	161	200	361
	8:45 PM	158	159	317
	9:00 PM	143	155	298
	9:15 PM	145	153	298
	9:30 PM	141	150	291
	9:45 PM	125	126	251
	10:00 PM	113	111	224
	10:15 PM	115	109	224
	10:30 PM	92	99	191
	10:45 PM	95	84	179
	11:00 PM	62	76	138
	11:15 PM	60	89	149
	11:30 PM	57	67	124
	11:45 PM	46	70	116
	12:00 AM	38	57	95
28-Mar-18		16182	15379	31561

Volume Summary Details Report

Location..... HURONTARIO ST btwn WATERGARDEN DR & CEREMONIAL DR

Municipality..... Mississauga **GeoID:** 2010124

Date	EndTime	Northbound	Southbound	Grand Total
10-Apr-18	12:15 AM	65	61	126
	12:30 AM	48	60	108
	12:45 AM	41	37	78
	1:00 AM	23	28	51
	1:15 AM	28	38	66
	1:30 AM	28	29	57
	1:45 AM	33	17	50
	2:00 AM	20	20	40
	2:15 AM	16	27	43
	2:30 AM	19	13	32
	2:45 AM	13	12	25
	3:00 AM	13	22	35
	3:15 AM	15	18	33
	3:30 AM	17	16	33
	3:45 AM	14	10	24
	4:00 AM	21	18	39
	4:15 AM	18	7	25
	4:30 AM	25	14	39
	4:45 AM	30	14	44
	5:00 AM	38	23	61
	5:15 AM	39	27	66
	5:30 AM	45	48	93
	5:45 AM	92	60	152
	6:00 AM	103	74	177
	6:15 AM	140	97	237
	6:30 AM	162	118	280
	6:45 AM	195	170	365
	7:00 AM	228	182	410
	7:15 AM	232	188	420
	7:30 AM	270	241	511
	7:45 AM	287	294	581
	8:00 AM	400	338	738
	8:15 AM	405	349	754
	8:30 AM	345	358	703
	8:45 AM	374	340	714
	9:00 AM	377	341	718
	9:15 AM	371	317	688
	9:30 AM	321	245	566
	9:45 AM	306	292	598
	10:00 AM	305	273	578
	10:15 AM	250	264	514
	10:30 AM	267	276	543
	10:45 AM	289	289	578
	11:00 AM	264	292	556
	11:15 AM	285	279	564

	11:30 AM	263	273	536
	11:45 AM	331	300	631
	12:00 PM	306	312	618
	12:15 PM	329	367	696
	12:30 PM	341	335	676
	12:45 PM	303	369	672
	1:00 PM	398	357	755
	1:15 PM	370	311	681
	1:30 PM	347	305	652
	1:45 PM	340	313	653
	2:00 PM	334	304	638
	2:15 PM	298	333	631
	2:30 PM	309	329	638
	2:45 PM	310	346	656
	3:00 PM	358	346	704
	3:15 PM	299	340	639
	3:30 PM	356	365	721
	3:45 PM	332	405	737
	4:00 PM	364	414	778
	4:15 PM	329	419	748
	4:30 PM	343	457	800
	4:45 PM	324	419	743
	5:00 PM	378	505	883
	5:15 PM	372	511	883
	5:30 PM	381	482	863
	5:45 PM	374	460	834
	6:00 PM	352	443	795
	6:15 PM	319	446	765
	6:30 PM	373	405	778
	6:45 PM	349	404	753
	7:00 PM	348	336	684
	7:15 PM	318	307	625
	7:30 PM	293	294	587
	7:45 PM	330	281	611
	8:00 PM	267	279	546
	8:15 PM	278	254	532
	8:30 PM	265	274	539
	8:45 PM	251	278	529
	9:00 PM	285	236	521
	9:15 PM	225	233	458
	9:30 PM	269	246	515
	9:45 PM	263	211	474
	10:00 PM	183	194	377
	10:15 PM	184	184	368
	10:30 PM	202	146	348
	10:45 PM	164	161	325
	11:00 PM	142	113	255
	11:15 PM	122	106	228
	11:30 PM	115	112	227
	11:45 PM	102	93	195
	12:00 AM	90	68	158
10-Apr-18		21755	22017	43772

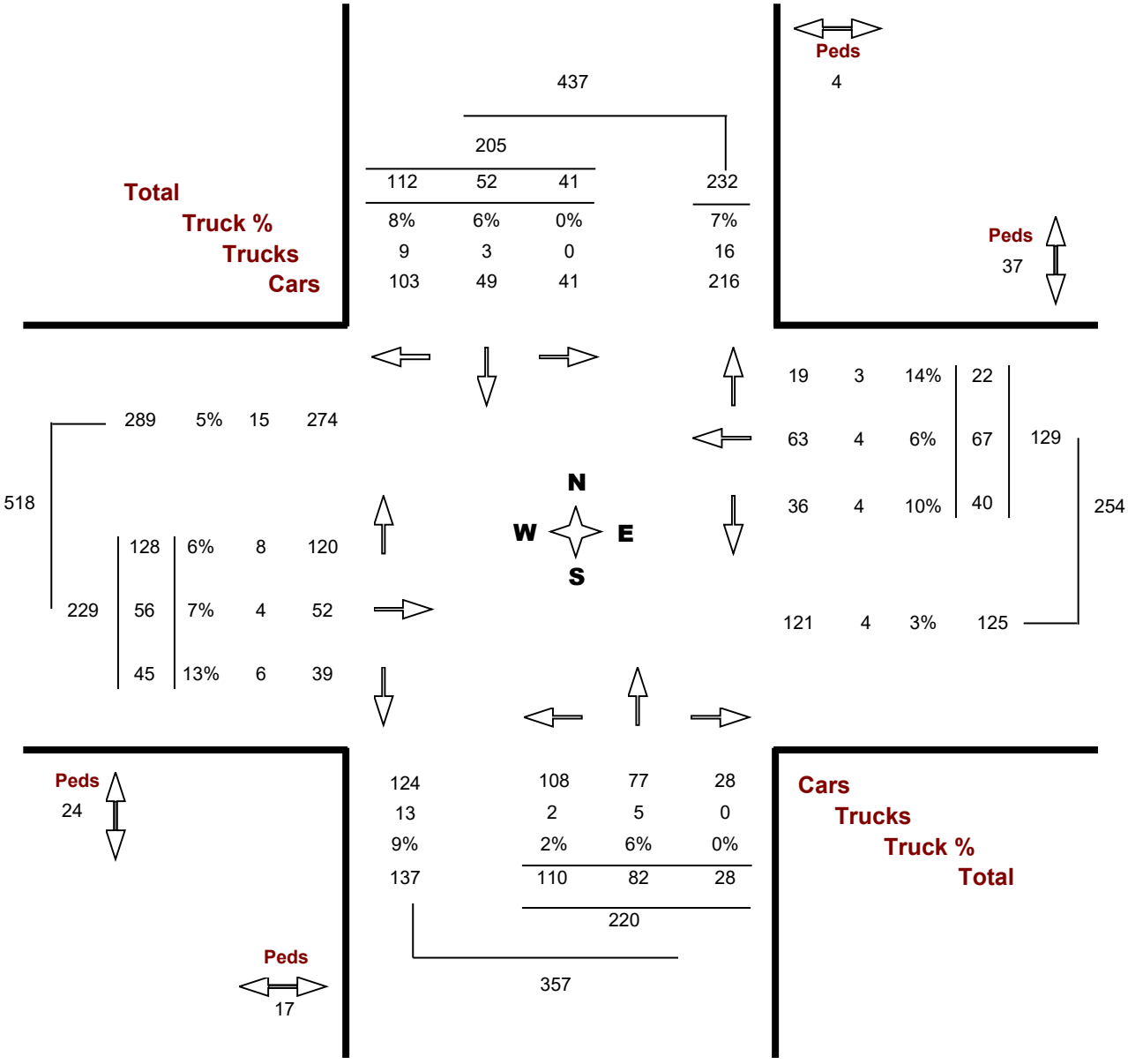
Turning Movements Report - AM Period

Location..... ACORN PL @ ELIA AVE / SORRENTO DR

Municipality..... Mississauga **GeoID.....** 348056

Count Date..... Wednesday, 23 April, 2008 **Peak Hour.....** 07:45 AM — 08:45 AM

Road 1 ACORN PL **Road 2** ELIA AVE / SORRENTO DR



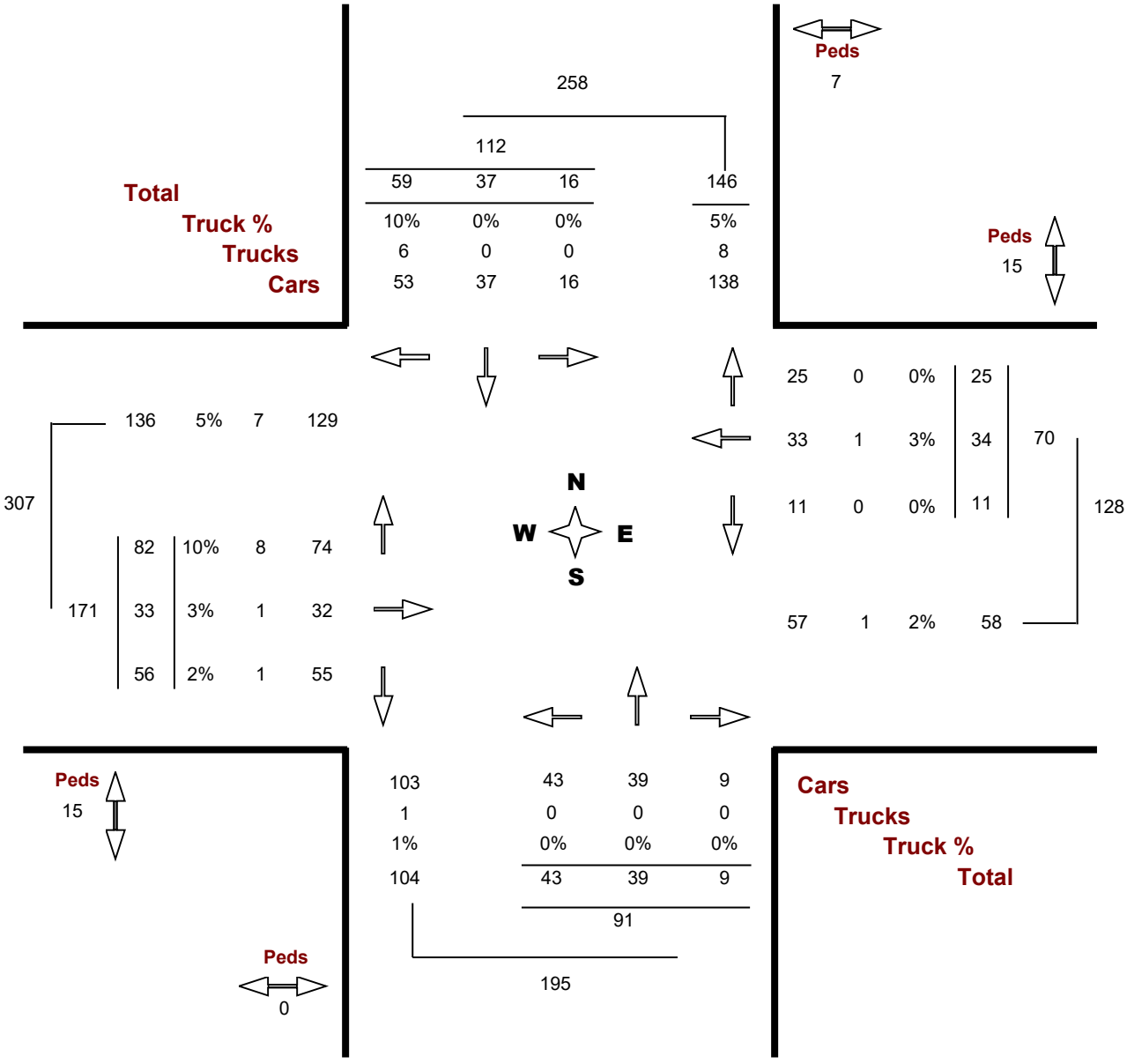
Turning Movements Report - MD Period

Location..... ACORN PL @ ELIA AVE / SORRENTO DR

Municipality..... Mississauga **GeoID.....** 348056

Count Date..... Wednesday, 23 April, 2008 **Peak Hour.....** 12:00 PM — 01:00 PM

Road 1 ACORN PL **Road 2** ELIA AVE / SORRENTO DR



Turning Movements Report - PM Period

Location..... ACORN PL @ ELIA AVE / SORRENTO DR

Municipality..... Mississauga **GeoID.....** 348056

Count Date..... Wednesday, 23 April, 2008 **Peak Hour.....** 04:15 PM — 05:15 PM

Road 1 ACORN PL **Road 2** ELIA AVE / SORRENTO DR