



7085 Goreway Drive

**Environmental Noise Assessment
Mississauga, ON**

SLR Project No: 241.20055.00000

April 2020



ENVIRONMENTAL NOISE ASSESSMENT

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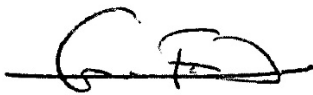
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This document has been prepared by SLR Canada. The material and data in this report were prepared under the supervision and direction of the undersigned.

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1. INTRODUCTION

SLR Consulting (Canada) Ltd., now including Novus Environmental Inc. (SLR-Novus), was retained by Redwood Properties to conduct an Environmental Noise Assessment for the proposed 7085 Goreway Drive development (site), located in Mississauga, Ontario. This assessment was completed in support of the Zoning By-law Amendment (ZBA) application for the development.

1.1 FOCUS OF REPORT

In keeping with City of Mississauga requirements, this report examines the potential for:

- Impacts of the environment on the proposed development;
- Impacts of the proposed development on the environment; and
- Impacts of the proposed development on itself.

1.2 NATURE OF THE SUBJECT LANDS

The proposed development is located at 7085 Goreway Drive, on the east side, north of Derry Road East. The site is currently occupied by a vacant grocery store and parking lot. The site plan and architectural drawings of the proposed development is provided in **Appendix A**.

The proposed development consists of two towers on a two-storey podium on the south half of the site with three 2-storey townhouse blocks on the north half. The West Tower is 18 storeys tall, plus a mechanical penthouse, for a total height of approximately 60 m. The East Tower is 16 storeys tall, plus a mechanical penthouse.

The development outdoor amenity spaces are located on Level 3, atop the podium, at ground level south of the East tower and in the northeast edge of the development between townhouses blocks 1 and 2.

1.3 NATURE OF THE SURROUNDINGS

Immediately surrounding the site are residential lands in all directions. Commercial buildings are located to the north of the development site along Goreway Drive. Fire Station #105 is located north of the development's two towers, on the adjacent property. To the east and south of the development is the Malton Greenway Park. Mid-rise residential towers are located to the south, with additional commercial/industrial lands located further south on the opposite side of Derry Road East.

Surrounding transportation sources with the potential to impact the development include Goreway Drive and Derry Road East. Aircraft noise from Toronto Pearson International Airport (Pearson) also has the potential to impact the development.

The topography of the immediate surrounding area is considered to be essentially flat with no significant variations, other than the ravine through Malton Greenway Park.

A context plan can be found in **Figure 1**.

PART 1: IMPACTS OF THE ENVIRONMENT ON THE DEVELOPMENT

In assessing potential impacts of the environment on the proposed development, the focus of this report is to assess the potential for:

- Aircraft and Roadway noise impacts on the development; and
- Stationary noise impacts from the surrounding commercial/industrial lands on the development.

2. TRANSPORTATION NOISE IMPACTS

2.1 TRANSPORTATION NOISE SOURCES

Transportation sources of interest with the potential to produce noise at the proposed development are aircraft noise (Pearson) and roadway noise (Goreway Drive and Derry Road East).

The level of noise from these sources has been predicted, and this information has been used to identify façade, ventilation, and warning clause requirements.

2.2 TRANSPORTATION NOISE CRITERIA – MECP NPC-300

Ministry of the Environment, Conservation and Parks (MECP) Publication NPC-300 provides sound level criteria for noise sensitive developments. The applicable portions of NPC-300 are Part C – Land Use Planning and the associated definitions outlined in Part A – Background.

2.2.1 MECP AIRCRAFT NOISE GUIDELINES

Aircraft noise criteria for noise-sensitive developments as found in MECP NPC-300, have been applied for this development. As the development is a hotel, the supplementary criteria have been applied for the noise sensitive spaces. These are summarized in **Table 1**.

2.2.2 ROADWAY AND RAILWAY GUIDELINES

Location Specific Criteria

Table 2 summarizes criteria in terms of energy equivalent sound exposure (L_{eq}) levels for specific noise-sensitive locations. Both outdoor and indoor locations are identified, with the focus of outdoor areas being amenity spaces. Indoor criteria vary with sensitivity of the space. As a result, sleep areas have more stringent criteria than Living / Dining room space.

Outdoor Amenity Areas

Table 3 summarizes the noise mitigation requirements for communal outdoor amenity areas (“Outdoor Living Areas” or “OLAs”).

For the assessment of outdoor sound levels, the surface transportation noise impact is determined by combining road and rail traffic sound levels. Whistle noise due to railway trains is not included in the determination of levels.

Table 1: MECP Publication NPC-300 - Aircraft Noise Control Measures

Receiver Category	Time Period	Applies at	Outdoor NEF ^[1]	Noise Control Requirements
Outdoor	Averaged over 24 hrs	OLA Anywhere on Property	NEF < 30	<ul style="list-style-type: none"> None
			NEF > 30	<ul style="list-style-type: none"> OLA's are not normally permitted above NEF 30 unless it can be demonstrated that there will be no negative impacts on the long-term function of the airport. Warning clause
Indoor Receivers	Averaged over 24 hrs	Sleeping Quarters	Less than NEF 25	<ul style="list-style-type: none"> Special ventilation provisions not required Compliance with Ontario Building Code is sufficient to meet indoor sound level criteria of NEF 0 Warning clause not required
			Greater or equal to NEF 25 to less than NEF 30	<ul style="list-style-type: none"> Provision for central air conditioning Building Components (walls, windows, etc.) must be designed to achieve indoor sound level criteria of NEF 0 Warning Clause required
			Greater than NEF 30	<ul style="list-style-type: none"> Central air conditioning is required Building Components (walls, windows, etc.) must be designed to achieve indoor sound level criteria of NEF 0 Warning Clause required
Indoor Receivers	Averaged over 24 hrs	Living/Dining Areas	Less than NEF 25	<ul style="list-style-type: none"> Special ventilation provisions not required Compliance with Ontario Building Code is sufficient to meet indoor sound level criteria of NEF 5 Warning clause not required
			Greater or equal to NEF 25 to less than NEF 30	<ul style="list-style-type: none"> Provision for central air conditioning Building Components (walls, windows, etc.) must be designed to achieve indoor sound level criteria of NEF 5 Warning Clause required
			Greater than NEF 30	<ul style="list-style-type: none"> Central air conditioning is required Building Components (walls, windows, etc.) must be designed to achieve indoor sound level criteria of NEF 5 Warning Clause required

Notes: [1] Outdoor sound levels assumed to be the same at all building facades and related building OLA. Indoor sound levels are within the building with windows closed

Table 2: MECP Publication NPC-300 Sound Level Criteria for Road and Rail Noise

Type of Space	Time Period	Equivalent Sound Exposure Level - L _{eq} (dBA)		Assessment Location
		Road	Rail ^[1]	
Outdoor Living Area (OLA)	Daytime (0700-2300h)	55	55	Outdoors ^[2]
Living / Dining Room	Daytime (0700-2300h)	45	40	Indoors ^[4]
	Night-time (2300-0700h)	45	40	Indoors ^[4]
Sleeping Quarters	Daytime (0700-2300h)	45	40	Indoors ^[4]
	Night-time (2300-0700h)	40	35	Indoors ^[4]

Notes: [1] Whistle noise is excluded for OLA noise assessments, and included for Living / Dining Room and Sleeping Quarter assessments.
[2] Road and Rail noise impacts are to be combined for assessment of OLA impacts.
[3] An assessment of indoor noise levels is required only if the criteria in **Table 4** are exceeded.

Table 3: MECP Publication NPC-300 Outdoor Living Area Mitigation Requirements

Time Period	Equivalent Sound Level in Outdoor Living Area (dBA)	Ventilation Requirements
Daytime (0700-2300h)	≤ 55	• None
	55 to 60 incl.	• Noise barrier OR Warning Clause A
	> 60	• Noise barrier to reduce noise to 55 dBA OR • Noise barrier to reduce noise to 60 dBA and Warning Clause B

Ventilation and Warning Clauses

Table 4 summarizes requirements for ventilation where windows potentially would have to remain closed as a means of noise control. Despite implementation of ventilation measures where required, if sound exposure levels exceed the guideline limits in **Table 2**, warning clauses advising future occupants of the potential excesses are required. Warning clauses also apply to OLAs.

Table 4: MECP Publication NPC-300 Ventilation & Warning Clause Requirements

Assessment Location	Time Period	Energy Equivalent Sound Exposure Level - L _{eq} (dBA)		Ventilation and Warning Clause Requirements ^[2]
		Road	Rail ^[1]	
Outdoor Living Area	Daytime (0700-2300h)	56 to 60 incl.		Type A Warning Clause
Plane of Window	Daytime (0700-2300h)	≤ 55		None
		56 to 65 incl.		Forced Air Heating /provision to add air conditioning + Type C Warning Clause
		> 65		Central Air Conditioning + Type D Warning Clause
	Night-time (2300-0700h)	51 to 60 incl.		Forced Air Heating/ provision to add air conditioning + Type C Warning Clause
		> 60		Central Air Conditioning + Type D Warning Clause

Notes: [1] Rail whistle noise is excluded.
[2] Road and Rail noise is combined for determining Ventilation and Warning Clause requirements.

Building Shell Requirements

Table 5 provides sound level thresholds which if exceeded, require the building shell and components (i.e., wall, windows) to be designed and selected accordingly to ensure that the **Table 4 and 5** indoor sound criteria are met.

Table 5: MECP Publication NPC-300 Building Component Requirements

Assessment Location	Time Period	Energy Equivalent Sound Exposure Level - L_{eq} (dBA)		Component Requirements
		Road	Rail ^[1]	
Plane of Window	Daytime (0700-2300h)	> 65	> 60	Designed/ Selected to Meet Indoor Requirements ^[2]
	Night-time (2300-0700h)	> 60	> 55	

Notes: [1] Including whistle noise.

[2] Building component requirements are assessed separately for Road and Railway noise. The resultant sound isolation parameter is required to be combined to determine an overall acoustic parameter.

2.3 TRAFFIC DATA AND FUTURE PROJECTIONS

2.3.1 AIRPORT NEF CONTOURS

The approved Noise Exposure Forecast (NEF) contours for Pearson was taken from the GTAA website, and include the NEF 40, NEF 35, NEF 30 and NEF 25 contours. A copy of the approved NEF contours, is included in **Appendix B**.

2.3.2 ROADWAY TRAFFIC DATA

The ultimate traffic data for Goreway Drive, including AADT; day/night split; and commercial breakdown, were obtained directly from the City of Mississauga.

Road traffic volumes for Derry Road East was provided by Region of Peel transportation department, including AADT; day/night split; and commercial breakdown.

Copies of the traffic data are included in **Appendix B**. The following **Table 6** summarizes the railway traffic volumes used in the analysis.

Table 6: Summary of Road Traffic Data Used in the Transportation Analysis

Roadway Link	Ultimate Traffic Volumes (AADT)	% Day/ Night Volume Split		Commercial Traffic Breakdown		Vehicle Speed (km/h)
		Daytime	Night-time	% Medium Trucks	% Heavy Trucks	
Goreway Drive	24,400	90	10	2.8	2.3	60
Derry Road East	48,600	86	14	2.6/2.3 ^[1]	7.3/8.5 ^[1]	60

Notes: [1] Day/Night % of medium and heavy trucks respectively, provided by the Region of Peel

2.4 PROJECTED SOUND LEVELS

2.4.1 AIRCRAFT NEF CONTOURS

The site specific NEF levels, (site between NEF 30 and NEF 31) were interpolated for the development, using procedures outlined in the CMHC Publication “New Housing and Airport Noise”. The interpolated noise contour lines (NEF30, 30.5 and 31) are shown relative to the development in **Figure 2**.

2.4.2 ROADWAY NOISE MODELLING

Future road traffic sound levels at the proposed development were predicted using Cadna/A, a commercially available noise propagation modelling software. Roadways were modelled as line sources of sound, with sound emission rates calculated using the ORNAMENT algorithms, the road traffic noise model of the MECP. These predictions were validated and are equivalent to those made using the MECP’s ORNAMENT or STAMSON v5.04 road traffic noise models. Validation files are included in **Appendix C**.

Sound levels were predicted along the facades of the proposed development using the “building evaluation” feature of Cadna/A. This feature allows for noise levels to be predicted across the entire façade of a structure. Facades considered to be non-noise sensitive (e.g. blank walls, lobby space) were excluded from the analysis.

Ground absorption was assessed as a reflective surface, as the majority of the intervening ground is paved with the exception of the Malton Greenway Park which was considered as an absorptive surface.

2.4.3 FAÇADE SOUND LEVELS

Figure 2 shows the development relative to the interpolated NEF noise contours.

Roadway façade sound levels were predicted at all noise sensitive spaces within the proposed development. The transportation façade sound levels of the development, showing the ranges of predicted daytime and night-time sound levels are shown in **Figure 3** and **Figure 4** for roadway impacts.

A summary of the worst-case façade sound levels for each are presented in **Table 7**.

The façade roadway sound levels are predicted to exceed 65 dBA during the daytime periods, and 60 dBA during the night-time periods on the west facade of the west tower. In addition, the development is located within the NEF25 noise contours. Therefore, an assessment of indoor sound levels is required.

2.4.4 OUTDOOR AMENITY AREAS

Common amenity space Outdoor Living Areas (OLA) of the proposed development are located on Level 3 atop podium and also at ground level south of the 16-storey Tower. **Figure 5** shows the location of the OLAs.

As the development includes common amenity spaces for all occupants, the private terraces are not considered to be the only outdoor amenity space available. Therefore, an assessment of private terraces was excluded based on the definitions outlined in NPC-300. In addition, private terraces are less than 4 m in depth and do not meet the MECP minimum requirements for inclusion. Therefore, only an assessment of impacts within the common amenity spaces was completed.

Table 7: Summary of Transportation Facade Sound Levels

Building	Façade ^[1]	Aircraft Noise Levels ^[2]	Roadway Sound Levels	
			L _{eq} Day (dBA)	L _{eq} Night (dBA)
West Tower	North	NEF 31/65 dBA	63	56
	East	NEF 31/65 dBA	53	49
	South	NEF 31/65 dBA	64	58
	West	NEF 31/65 dBA	67	60
East Tower	North	NEF 30/64 dBA	57	51
	East	NEF 30/64 dBA	54	49
	South	NEF 30/64 dBA	59	54
	West	NEF 30/64 dBA	61	55
Townhouse Block 1	North	NEF 30/64 dBA	53	47
	East	NEF 30/64 dBA	49	45
	South	NEF 30/64 dBA	54	49
	West	NEF 30/64 dBA	55	49
Townhouse Block 2	North	NEF 30/64 dBA	49	43
	East	NEF 30/64 dBA	54	49
	South	NEF 30/64 dBA	56	52
	West	NEF 30/64 dBA	54	49
Townhouse Block 3	North	NEF 30/64 dBA	52	46
	East	NEF 30/64 dBA	54	49
	South	NEF 30/64 dBA	56	51
	West	NEF 30/64 dBA	54	48

Notes: [1] Façade locations are shown in **Figure 3** and **Figure 4**
[2] NEF to L_{eq}(24) dBA levels Converted based on procedures outlined in BPN56.

Table 8: Summary of Transportation Noise Impacts - OLAs

ID	Location	Aircraft Noise Levels	Transportation Impacts L _{eq} Day (dBA)
OLA 1	Level 3, Podium	NEF 30	60
OLA 2	Ground Level, South of 16-storey Tower	NEF 30	59
OLA 3	Ground Level, Development Northeast Edge	NEF 30	48

OLAs noise levels at all locations are predicted to be in compliance with the aircraft and roadway outdoor criteria, therefore, physical noise control measures are not required.

2.5 NOISE CONTROL MEASURES

2.5.1 GLAZING REQUIREMENTS

An indoor noise level assessment is required providing the development is located within the NEF25 noise contours. Similarly, an assessment of indoor noise levels is required providing the façade sound levels due to road traffic exceed 65 dBA/60 dBA during the daytime/night-time periods. Based on the above results, an in-room noise assessment is required for all the facades in both towers and townhouses in the proposed development.

Indoor sound levels and required facade Sound Transmission Classes (STCs) were estimated using the procedures outlined in National Research Council Building Practice Note BPN-56.

Based on discussions with Redwood Properties, the residential tower and townhouse blocks will all be constructed as a concrete slab structure. The top floors of the development (towers and townhouse blocks) are expected to have a 200 mm concrete slabs. Therefore, aircraft noise through the roof is not anticipated to be a concern. Glazing calculations for all units were completed based on noise entering the units through the wall components only.

Detailed floor plans were not available at the time of the assessment. For the analysis in the East and West towers, generic bedrooms and living rooms have been considered based on the following assumptions:

- 50 % glazing was assumed for the living room and bedroom facades;
- living/dining rooms were assumed to have a façade-to-floor area ratio of 50%;
- sleeping quarters were assumed to have a façade-to-floor area ratio of 100%; and
- a spandrel panel wall rating of STC 45 was assumed for all locations in the towers.

The following assumptions were considered for the Townhouses:

- 35% glazing for front facades in living rooms;
- 15% glazing on side façades in living rooms of end units;
- 55% glazing on rear façades in living rooms;
- 35% glazing in Bedrooms; and
- a spandrel panel wall rating of STC 45 was assumed for all locations in the townhouses.

The acoustical requirements are provided below in **Table 9**, which is the composite STC rating taking into consideration roadway and aircraft noise. Detailed Façade Calculations are included in **Appendix D**.

As generic room dimensions were applied in the assessment, the final acoustical requirements should be reviewed by and Acoustical Consultant once detailed floor and façade plans are available.

The combined glazing and frame assembly must be designed to ensure the overall sound isolation performance for the entire window unit meets the sound isolation requirements. It is recommended window manufacturers test data be reviewed to confirm acoustical performance is met.

Table 9: Summary of Glazing Requirements

Building	Façade	Glazing Requirements	
		Living Room	Bedroom
West Tower	corner unit - north	32 ^[1]	39 ^[1]
	mid-span – north	OBC	36
	corner unit - east	31 ^[1]	39 ^[1]
	mid-span – east	OBC	36
	corner unit - south	32 ^[1]	39 ^[1]
	mid-span – south	OBC	36
	corner unit - west	32 ^[1]	39 ^[1]
	mid-span – west	OBC	36
East Tower	corner unit - north	30 ^[1]	38 ^[1]
	mid-span – north	OBC	35
	corner unit - east	30 ^[1]	38 ^[1]
	mid-span – east	OBC	35
	corner unit - south	30 ^[1]	38 ^[1]
	mid-span – south	OBC	35
	corner unit - west	31 ^[1]	38 ^[1]
	mid-span – west	OBC	35
Townhouse Block 1	end unit – all exposed facades	OBC ^[1]	37 ^[1]
	mid-span unit – north and south	OBC	34
Townhouse Block 2	end unit – all exposed facades	OBC ^[1]	37 ^[1]
	mid-span unit – east and west	OBC	34
Townhouse Block 3	end unit – all exposed facades	OBC ^[1]	37 ^[1]
	mid-span unit – north and south	OBC	34

Notes: OBC = Ontario Building Code, meeting a rating of STC 29

[1] for end/corner units, the STC rating is applicable for all exposed façades.

2.5.2 VENTILATION AND WARNING CLAUSE REQUIREMENTS

The requirements regarding warning clauses are summarized in **Table 1** and **Table 4**. Where required, the Warning Clauses should be included in agreements registered on Title and included in all agreements of purchase and sale or lease, and all rental agreements.

As the proposed development is located above the NEF 30 contours, central air conditioning systems should be implemented with a **Type B** and **Type D** warning clause. The **Type B** and **Type D** warning clauses are included in **Appendix E**.

As the Aircraft noise levels already recommend the **Type B** and **Type D** warning clauses, all roadway warning clause requirements are considered to be met.

3. STATIONARY SOURCE NOISE IMPACTS

A review has been conducted for the potential impacts on the development from “stationary” industrial/commercial noise sources.

SLR completed a site visit on April 22, 2020 to the development lands and surrounding area. The purpose of the site visit was to identify any local industries and commercial properties, and to understand the potential for noise impacts on the proposed development.

The site was found to be primarily surrounded by residential lands in all directions, with commercial lands located to the north and south along Goreway Drive. Industrial lands are located to the south on the opposite side of Derry Road East.

The acoustic environment in the surrounding area is dominated by roadway noise and an “urban hum”, with no significant stationary noise audible at the proposed development site.

Noise from the industrial lands south of Derry Road East are expected to meet the MECP NPC-300 guideline limits at the intervening mid-rise residential buildings south of the development. Therefore, stationary noise impacts are not a concern for the proposed development and a detailed assessment of stationary noise was not completed.

Similarly, the commercial properties along Goreway Drive are expected to meet the MECP NPC-300 guideline limits at the closer surrounding residential homes. Therefore, commercial building stationary noise impacts are not a concern for the proposed development and a detailed assessment was not completed.

The Mississauga Fire Station #105 is located on the adjacent property, north of the two residential towers. Periodic siren testing is anticipated at the fire station, in addition to operation of the sirens during emergencies. Sirens are not considered noise sources in NPC-300, as they are normally addressed in a qualitative manner in the municipal by-laws. On review of the City of Mississauga Noise Control By-law (360-79), operation of a siren is prohibited by time and place unless required or authorized by law. As the fire-station operation of the siren is considered required and authorized by law, an assessment of siren noise impacts was not completed.

PART 2: IMPACTS OF THE DEVELOPMENT ON THE SURROUNDING AREA

4. IMPACTS ON SURROUNDING PROPERTIES

In terms of the noise environment of the area, it is expected that the project will have a negligible effect on the neighbouring properties.

The traffic related to the proposed development will be small relative to the existing traffic volumes within the area and is not of concern with respect to noise impact.

Other possible development noise sources with possible adverse impacts on the surrounding neighbourhood are the potential mechanical equipment (make up air units, cooling units, and parking garage vents). This equipment is required to meet MECP Publication NPC-300 requirements at the worst-case off-site noise sensitive receptors.

Potential impacts should be assessed as part of the final building design. The criteria can be met at all surrounding and on-site receptors by the appropriate selection of mechanical equipment, by locating equipment with sufficient setback from noise sensitive locations, and by incorporating control measures (e.g., silencers, barriers) into the design.

It is recommended the mechanical systems be reviewed by an Acoustical Consultant prior to final selection of equipment.

PART 3: IMPACTS OF THE DEVELOPMENT ON ITSELF

5. NOISE IMPACTS FROM THE DEVELOPMENT MECHANICAL SYSTEMS ON ITSELF

Additional mechanical equipment is expected to be included within the proposed development. Mechanical ventilation, additional cooling and emergency power systems may be required. Based on our experience, the type and size of units which will likely be required, and their probable location, are not anticipated to result in adverse noise impacts.

Regardless, potential impacts should be assessed as part of the final building design. The criteria can be met at all surrounding and on-site receptors by the appropriate selection of mechanical equipment, by locating equipment with sufficient setback from noise sensitive locations, and by incorporating control measures (e.g., silencers) into the design. This can be confirmed at either the site plan approval or building permit approval stages.

6. CONCLUSIONS AND RECOMMENDATIONS

The potential for noise impacts on and from the proposed development have been assessed. Impacts of the environment on the development, the development on itself, and the development on the surrounding area have been considered. Based on the results of the study, the following conclusions have been reached:

6.1 TRANSPORTATION NOISE

- An assessment of transportation noise impacts from roadways and aircraft has been completed.
- Based on transportation façade sound levels upgraded glazing is required within the development, as outlined in outlined in **Section 2.5.1**.
- Noise impacts within the common outdoor amenity areas are predicted to be within acceptable levels and no physical mitigation measures are required, as outlined in **Section 2.4.1**
- Warning Clauses should be included in agreements registered on Title for the residential units, and included in agreements of purchase and sale, as outlined in **Sections 2.5**. Warning clauses are included in **Appendix E**.

6.2 STATIONARY NOISE

- SLR-Novus completed a site visit on April 22, 2020 to the review existing stationary sources within surrounding area.
- No significant noise sources were identified during the site visit by SLR personnel, the surrounding area is dominated by roadway noise and “urban hum”. Potential for noise impacts from surrounding stationary sources are not anticipated to be a concern as surrounding industries and commercial properties are expected to meet the NPC-300 guideline limits at closer intervening noise sensitive buildings.
- Siren noise from Mississauga Fire Station No. 105 was not assessed as this source is normally addressed through the municipal Noise By-law and not considered a noise source in NPC-300. On review of the City of Mississauga Noise By-law, siren operation is considered acceptable where required and authorized by law. Therefore, a detailed assessment was not completed.

6.3 OVERALL ASSESSMENT

- Impacts of the environment on the proposed development can be adequately controlled through the feasible mitigation measures, and warning clauses detailed in **Part 1** of this report.
- Impacts of the proposed development on the surrounding area are anticipated to be adequately controlled by following the design guidance outlined in **Part 2** of this report.
- Impacts of the proposed development on itself are anticipated to be adequately controlled by following the design guidance outlined in **Part 3** of this report.
- As generic room dimensions were applied in the assessment, the final acoustical requirements should be reviewed by and Acoustical Consultant once detailed floor and façade plans are available.

-
- As the mechanical systems for the proposed development have not been designed at the time of this assessment, the acoustical requirements above should be confirmed by an Acoustical Consultant as part of the final building design.

7. REFERENCES

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Ontario Ministry of the Environment, Conservation and Parks, Publication NPC-300: *Environmental Noise Guideline, Stationary and Transportation Sources – Approval and Planning*, 2013.

U.S. Department of Transportation - Federal Transit Administration (FTA), 2006. *Transit Noise and Vibration Impact Assessment*, FTA-VA-90-1003-06

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for 2-sided printing purposes

FIGURES

Environmental Noise Assessment
7085 Goreway Drive
SLR Project No.: 241.20055.00000

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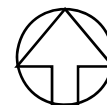


REDWOOD PROPERTIES

7085 GOREWAY DRIVE

CONTEXT PLAN

True North



Scale: 1:4,000

Date: Apr 29, 2020

Rev 1.0

Project No. 241-20055-0000

METRES

Figure No.

1





REDWOOD PROPERTIES

7085 GOREWAY DRIVE

AIRCRAFT NEF CONTOURS

True North



Scale: 1:1,000

Date: Apr 29, 2020

Rev 1.0

Project No. 241-20055-0000

METRES

Figure No.

2



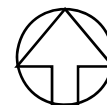


REDWOOD PROPERTIES

7085 GOREWAY DRIVE

FAÇADE SOUND LEVELS – ROADWAY – DAYTIME

True North



Scale: 1:1,000

Date: Apr 29, 2020

Rev 1.0

Project No. 241-20055-0000

METRES

Figure No.

3



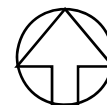


REDWOOD PROPERTIES

7085 GOREWAY DRIVE

FAÇADE SOUND LEVELS – ROADWAY – NIGHTTIME

True North



Scale: 1:1,000

Date: Apr 29, 2020

Rev 1.0

Project No. 241-20055-0000

METRES

Figure No.

4





REDWOOD PROPERTIES

7085 GOREWAY DRIVE

OUTDOOR LIVING AREAS – ROADWAY

True North



Scale: 1:1,000

Date: Apr 29, 2020

Rev 1.0

Project No. 241-20055-0000

METRES

Figure No.

5



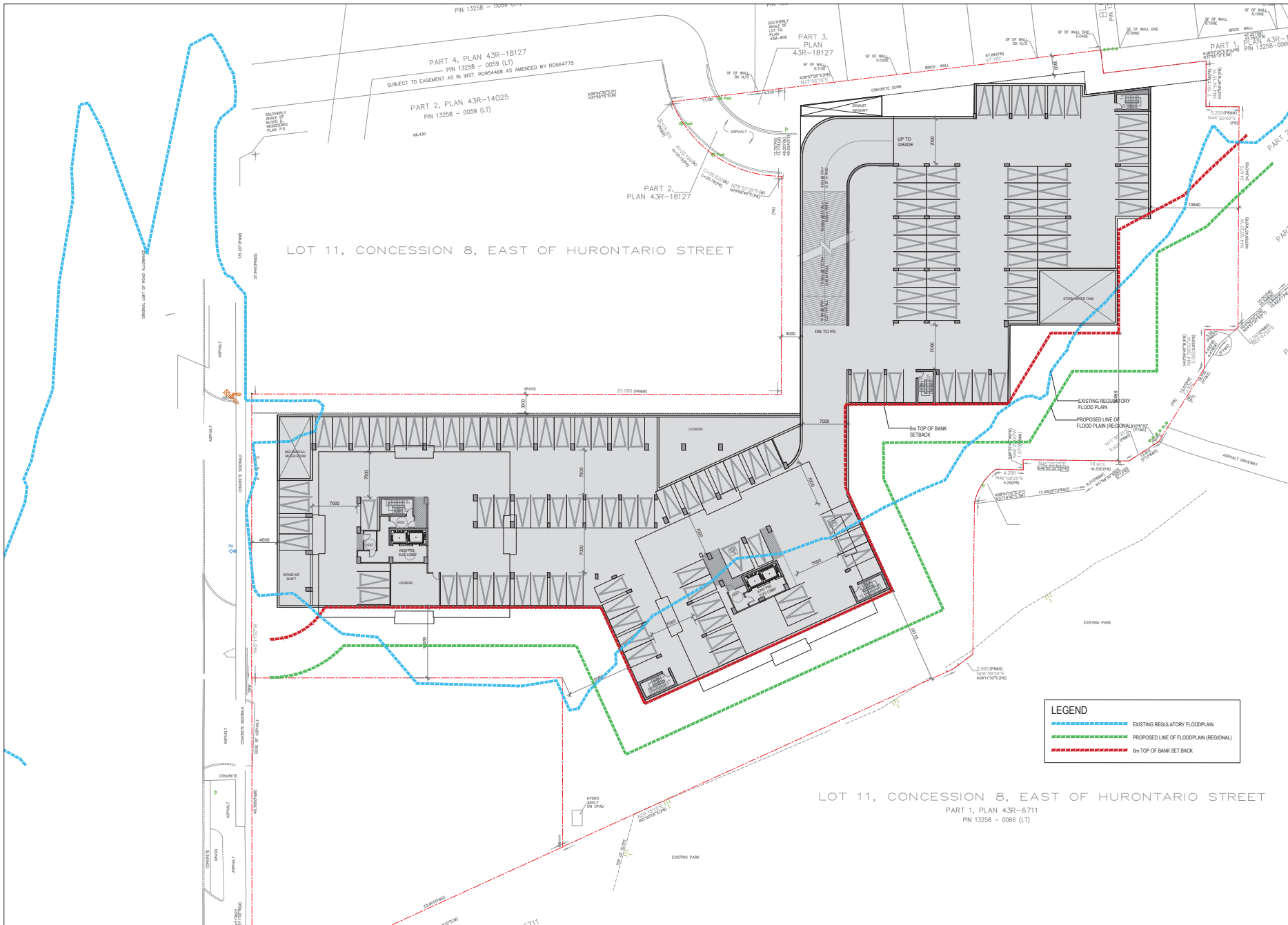
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APPENDIX A

Development Drawings

Environmental Noise Assessment
7085 Goreway Drive
SLR Project No.: 241.20055.00000

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KEY PLAN



SUBMISSION

NO.	DATE	BY	FOR
1	2019-09-06	DH	ISSUED FOR OPA
2	TBD	DH	ISSUED FOR OPA
3	TBD	DH	ISSUED FOR OPA
4	TBD	DH	ISSUED FOR OPA
5	TBD	DH	ISSUED FOR OPA



SEAL :



PROJECT :



REDWOOD ON GOREWAY

7085 Goreway Drive,
Mississauga, Ontario

TITLE : P1 Parking Plan

DATE : 2019-09-06

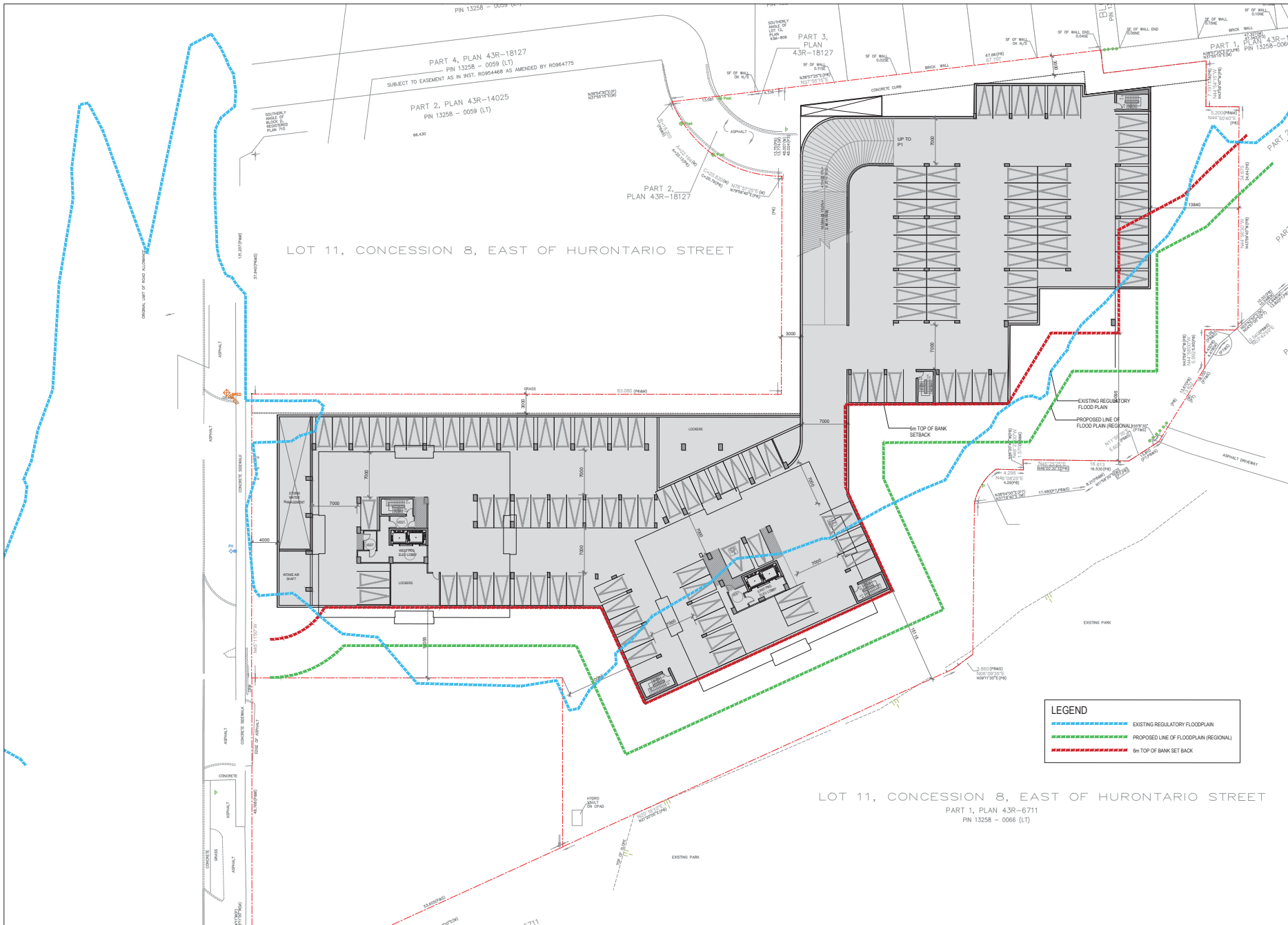
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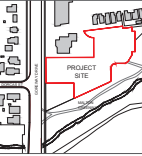
PROJ. NO. 120212

A-102a



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KEY PLAN



SUBMISSION

NO.	DATE	BY	FOR
1	2019-09-06	DH	ISSUED FOR OPA
2	TBD	DH	ISSUED FOR OPA
3	TBD	DH	ISSUED FOR OPA
4	TBD	DH	ISSUED FOR OPA
5	TBD	DH	ISSUED FOR OPA



SEAL :



PROJECT :



REDWOOD ON GOREWAY

7085 Goreway Drive,
Mississauga, Ontario

TITLE : P2 & P3 Plan

DATE : 2019-09-06

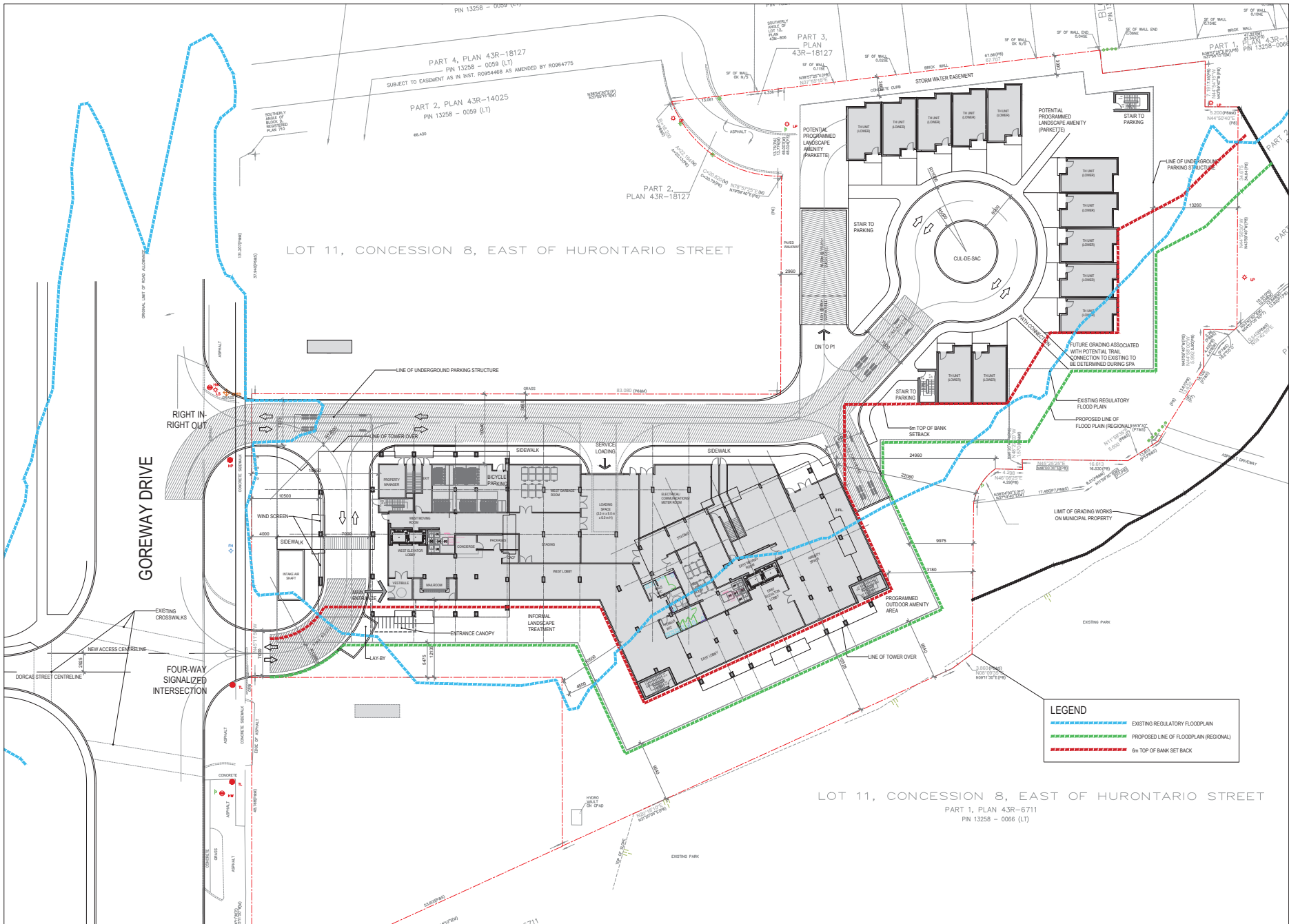
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CHECKED : DH

PROJ. NO. 120212

A-102b



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KEY PLAN



SUBMISSION

NO.	DATE	BY	FOR
1	2019-11-12	PC/DV/SL	ISSUED FOR OPA
2	2019-11-12	PC/DV/SL	ISSUED FOR OPA
3	2019-11-12	PC/DV/SL	ISSUED FOR OPA
4	2019-11-12	PC/DV/SL	ISSUED FOR OPA
5	2019-11-12	PC/DV/SL	ISSUED FOR OPA
6	2019-11-12	PC/DV/SL	ISSUED FOR OPA
7	2019-11-12	PC/DV/SL	ISSUED FOR OPA
8	2019-11-12	PC/DV/SL	ISSUED FOR OPA
9	2019-11-12	PC/DV/SL	ISSUED FOR OPA
10	2019-11-12	PC/DV/SL	ISSUED FOR OPA



SEAL:



PROJECT:



REDWOOD ON GOREWAY

7085 Goreway Drive,
Mississauga, Ontario

TITLE: Ground Floor Plan

DATE: 2019-11-12

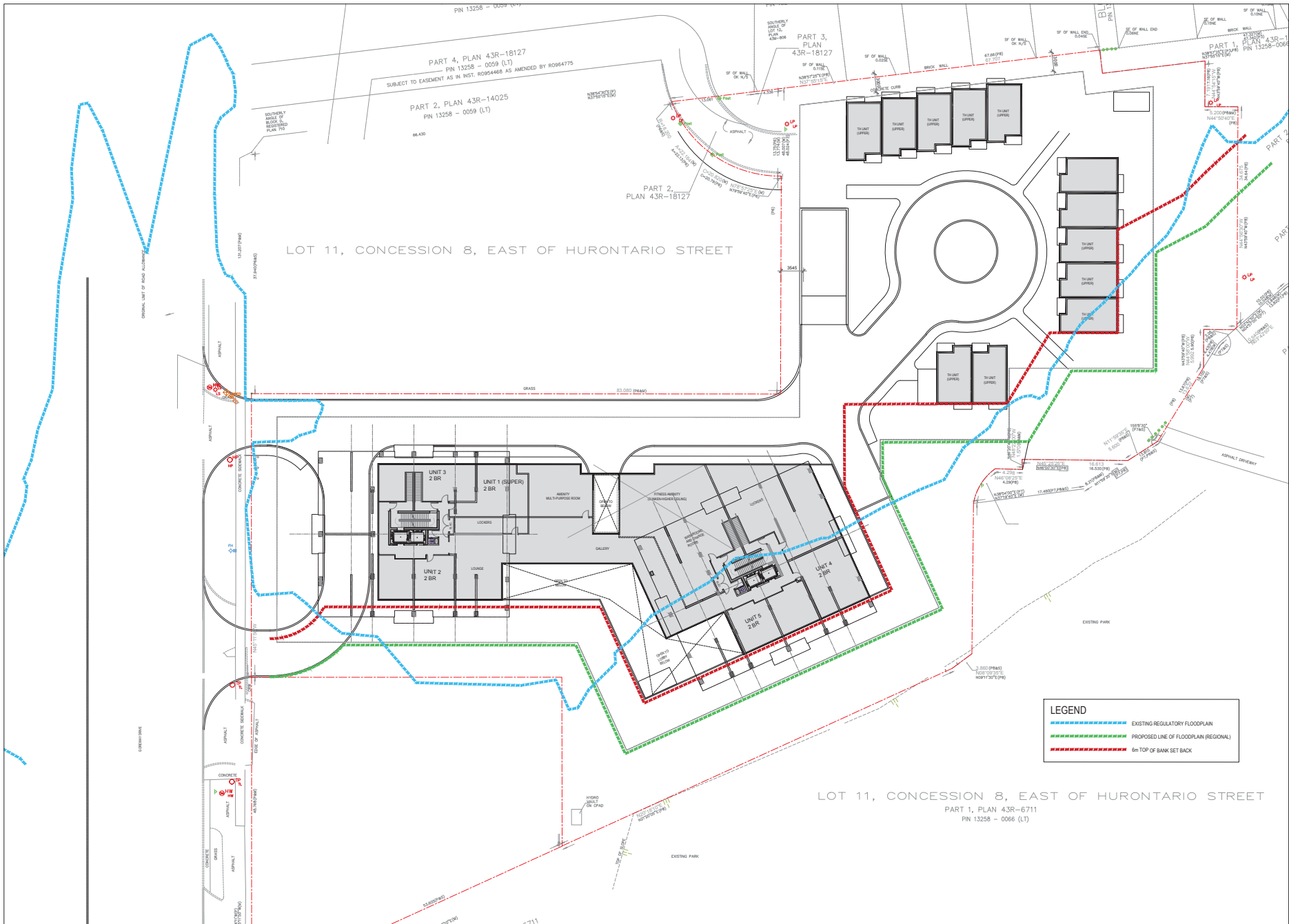
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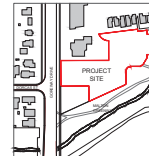
PROJ. NO. 120212

A-103



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bgroup.com

KEY PLAN



SUBMISSION

NO.	DATE	BY	FOR
1	2019-09-06	CH	ISSUED FOR OPA
2	TBD	CH	ISSUED FOR OPA
3	TBD	CH	ISSUED FOR OPA
4	TBD	CH	ISSUED FOR OPA
5	TBD	CH	ISSUED FOR OPA
6	TBD	CH	ISSUED FOR OPA
7	TBD	CH	ISSUED FOR OPA
8	TBD	CH	ISSUED FOR OPA
9	TBD	CH	ISSUED FOR OPA
10	TBD	CH	ISSUED FOR OPA



SEAL :



PROJECT :



REDWOOD ON
GOREWAY

7085 Goreway Drive,
Mississauga, Ontario

TITLE : Second Floor Plan

DATE : 2019-09-06

SCALE : 1:250

DRAWN : PC/DV/SL

CHECKED : DH

PROJ. NO. 120212

A-104



KEY PLAN



SUBMISSION

2	TBO	DH	ISSUED FOR OPA
1	2019.09.08	DH	ISSUED FOR DARIC
#	Date	By	Comment



SEAL :



PROJECT :



REDWOOD ON GOREWAY

7085 Goreway Drive,
Mississauga, Ontario

TITLE : Typical Floor Plan

DATE : 2019-11-12

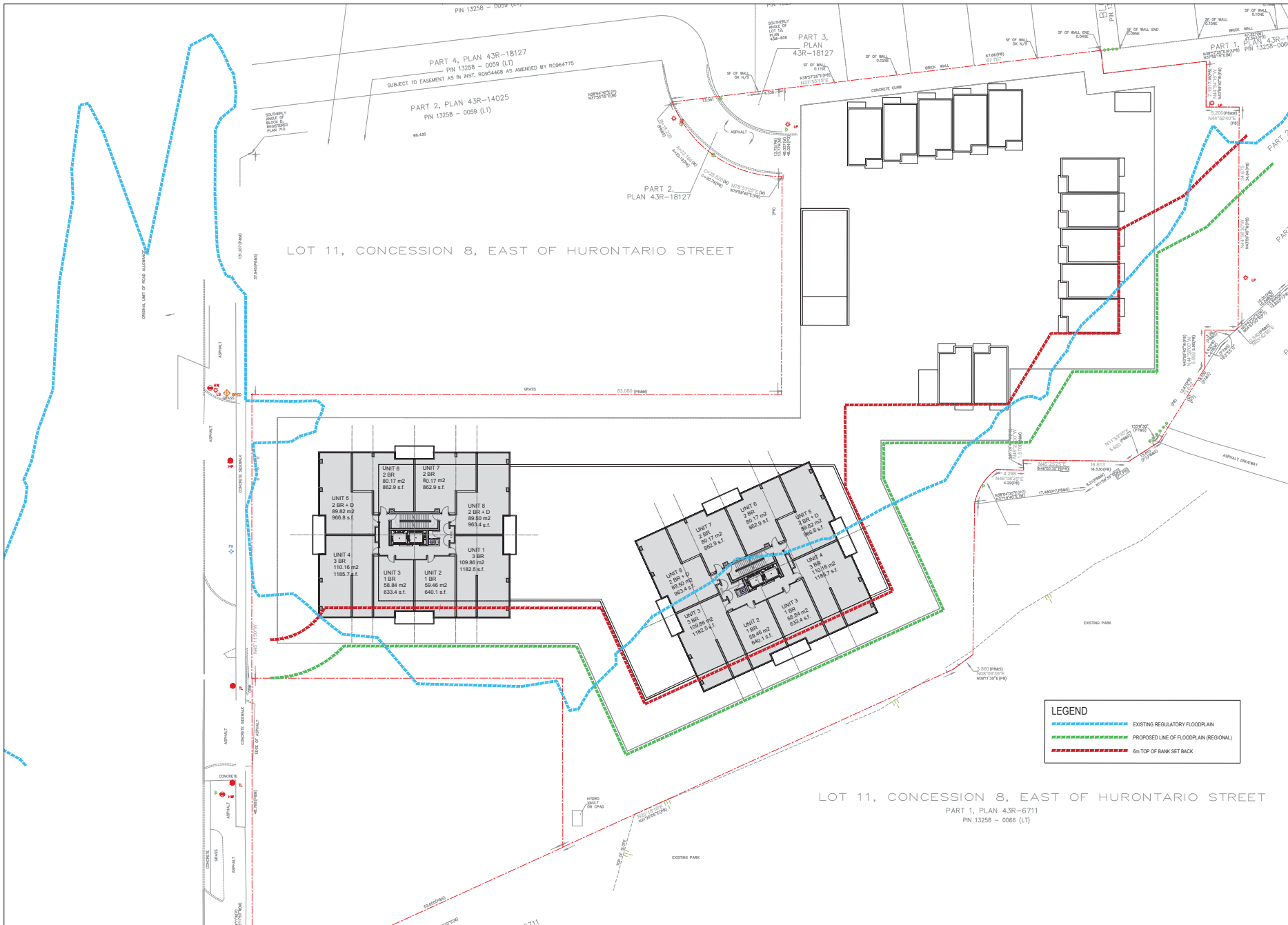
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DRAWN : PC/DV/SL

CHECKED: DH

PROJ. NO. 120212

A-106



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70 Hurontario St. Cedar Avenue West
Toronto ON M4V 2Y7 Canada
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KEY PLAN



SUBMISSION

NO.	DATE	BY	REVISION
1	2019-11-12	DH	ISSUED FOR OPA
2	2019-11-12	DH	ISSUED FOR OPA
3	2019-11-12	DH	ISSUED FOR OPA
4	2019-11-12	DH	ISSUED FOR OPA
5	2019-11-12	DH	ISSUED FOR OPA
6	2019-11-12	DH	ISSUED FOR OPA
7	2019-11-12	DH	ISSUED FOR OPA
8	2019-11-12	DH	ISSUED FOR OPA
9	2019-11-12	DH	ISSUED FOR OPA
10	2019-11-12	DH	ISSUED FOR OPA



SEAL:



PROJECT:



REDWOOD ON GOREWAY

7085 Goreway Drive,
Mississauga, Ontario

TITLE: Typical Floor Plan

DATE: 2019-11-12

SCALE: 1:250

DRAWN: PC/DV/SL

CHECKED: DH

PROJ. NO. 120212

A-105



2	TBO	DH	ISSUED FOR OPA
1	2019.09.08	DH	ISSUED FOR DARIC
#	Date	By	Comment



redwood
PROPERTIES

TITLE : Typical Floor Plan

A 105



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KEY PLAN



SUBMISSION

1	TBD	CH	ISSUED FOR OPA
2	TBD	CH	ISSUED FOR OPA
3	TBD	CH	ISSUED FOR OPA
4	TBD	CH	ISSUED FOR OPA
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100	TBD	CH	ISSUED FOR OPA



SEAL :



PROJECT :



REDWOOD ON GOREWAY

7085 Goreway Drive,
Mississauga, Ontario

TITLE : South Elevation

DATE : 2019-09-06

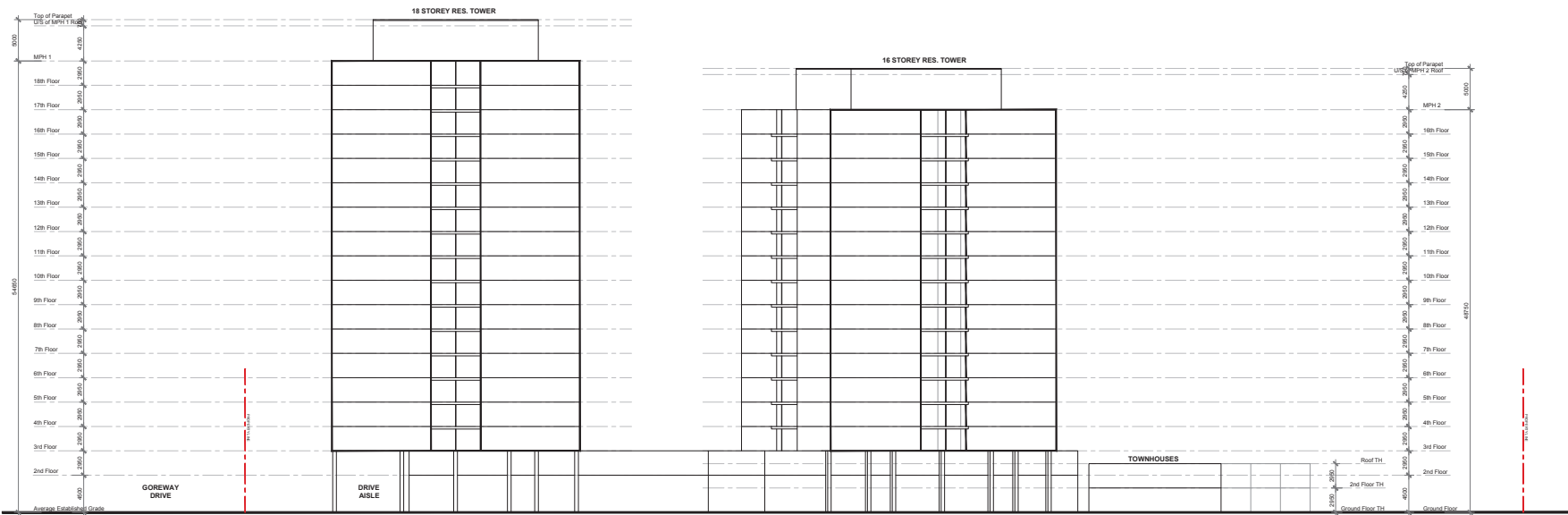
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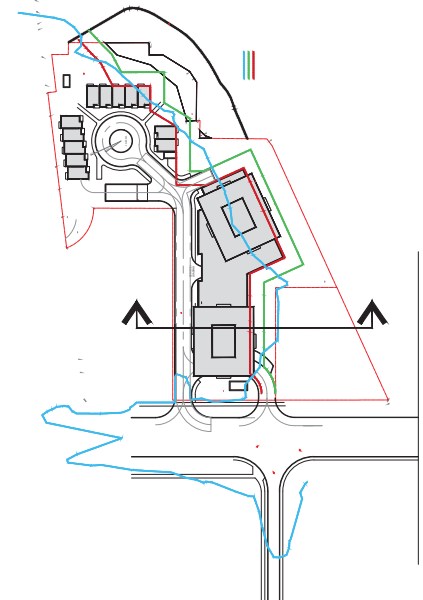
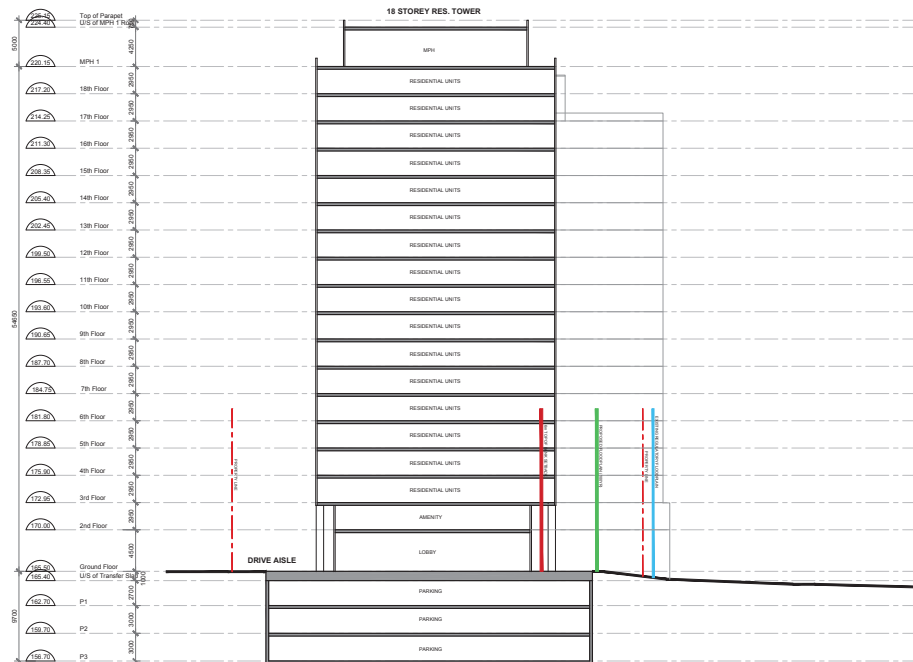
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PROJ. NO. 120212

A-200





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KEY PLAN



SUBMISSION

#	Date	By	Comment
1	2019-09-06	CH	ISSUED FOR OAC
2	TBD	CH	ISSUED FOR OPA



SEAL :



PROJECT :



REDWOOD ON GOREWAY

7085 Goreway Drive,
Mississauga, Ontario

TITLE : North-South Section A

DATE : 2019-09-06

SCALE : 1:250

DRAWN : PC/DV/SL

CHECKED : DH

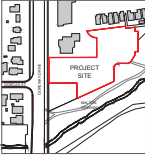
PROJ. NO. 120212

A-300



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ibi@ibi.com

KEY PLAN



SUBMISSION

#	Date	By	Comment
1	2019-09-06	DH	ISSUED FOR OPA
2	TBD	DH	ISSUED FOR OPA



SEAL :



PROJECT :



REDWOOD ON GOREWAY

7085 Goreway Drive,
Mississauga, Ontario

TITLE : North-South Section B

DATE : 2019-09-06

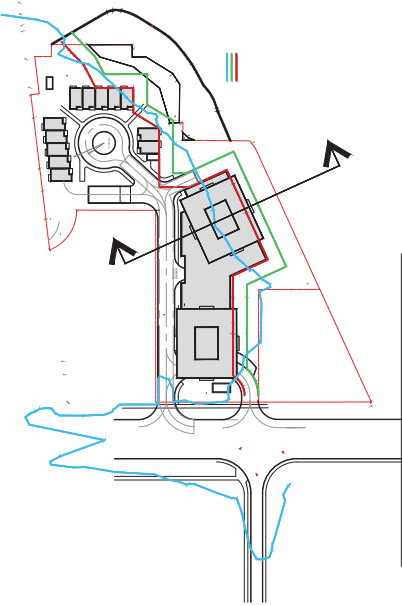
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CHECKED : DH

PROJ. NO. 120212

A-301

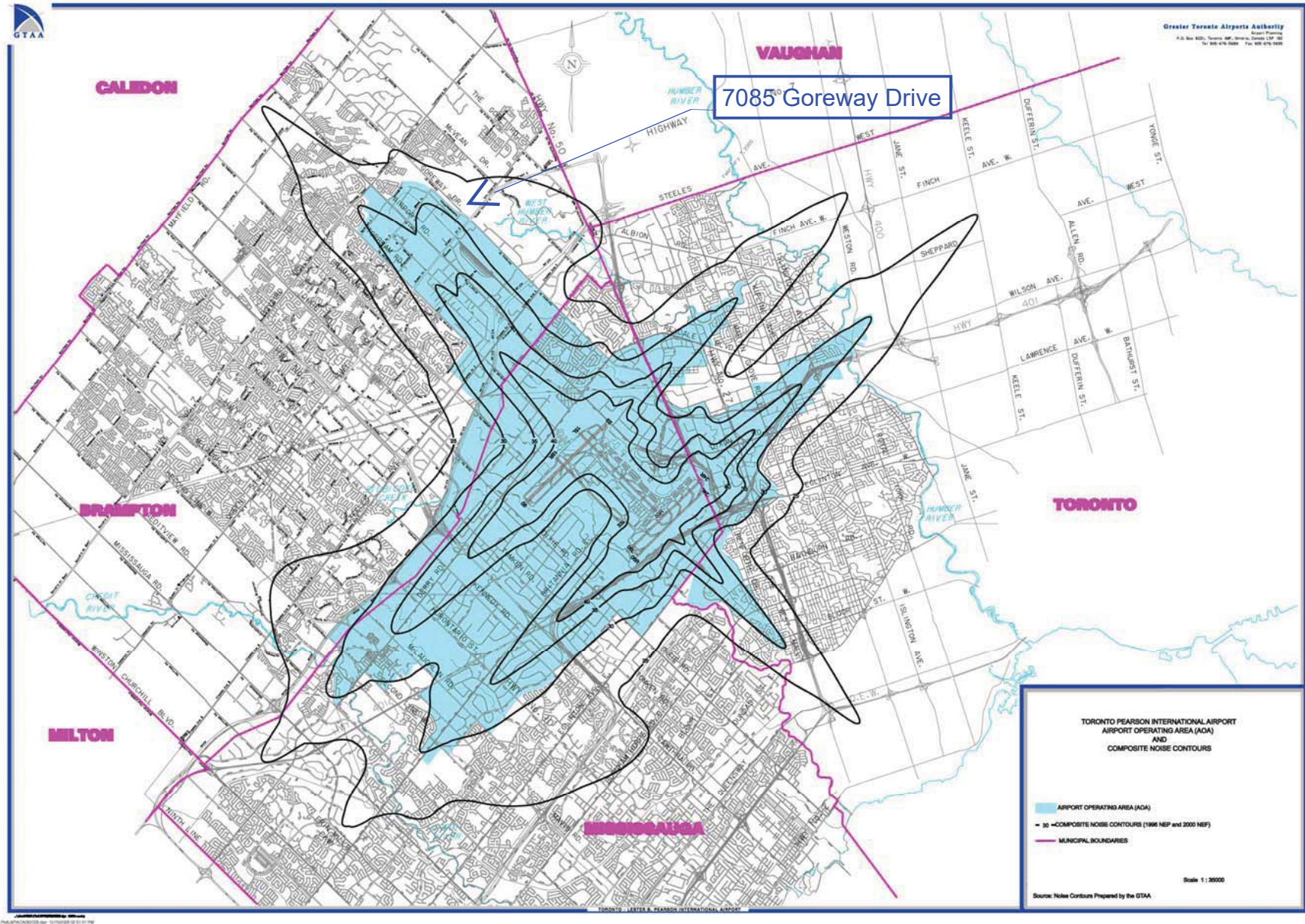


APPENDIX B

Traffic Data and Calculations

Environmental Noise Assessment
7085 Goreway Drive
SLR Project No.: 241.20055.00000

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Noise Exposure Forecast

Transport Canada has developed a Noise Exposure Forecast (NEF) model to calculate long-term aircraft noise exposure based on forecasted flights, and the assessed level of noise annoyance in those areas. Contour lines are drawn on a map connecting points of equal noise impact representing 25, 30, 35 and 40 NEF. It is important to remember that the NEF contour does not measure decibel levels for individual flights, but is a cumulative noise value of overall forecasted flights, and noise annoyance.

Airport Operating Area

The GTAA has established the Toronto Pearson Airport Operating Area (AOA), which uses well-defined natural and manmade boundaries to approximate the 30 NEF contour on the ground. Surrounding municipalities have included this operating area in their Official Plans and have approved associated policies that limit incompatible land uses within these areas.

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Date: January 31, 2020
 From: Marcus Li, SLR Consulting
 Re: Derry Road – 0.2 km West of Highway 427 SB Off Ramp

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

	Existing	Ultimate
24 Hour Traffic Volume	47327	48,600
# of Lanes	6	6
Day/Night Split	86/14	86/14
Day Trucks (% of Total Volume)	2.6% Medium 7.31% Heavy	2.6% Medium 7.31% Heavy
Night Trucks (% of Total Volume)	2.3% Medium 8.5% Heavy	2.3% Medium 8.5% Heavy
Right-of-Way Width	45 meters	
Posted Speed Limit	60 km/h	

Please note:

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

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

Regards,

Brenden Lavoie
 Transportation Analyst, Transportation System Planning
 Transportation Division, Public Works, Region of Peel
 10 Peel Centre Drive, Suite B, 4th Floor, Brampton, ON, L6T 4B9
 E: brenden.lavoie@peelregion.ca • W: 905-791-7800 x4810

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Date: 30-Jan-20

NOISE REPORT FOR PROPOSED DEVELOPMENT

REQUESTED BY:

Name: Marcus Li
Company: SLR Consulting



PREPARED BY:

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

Location: Goreway Drive - North of Derry Road East

ID#: 455

ON SITE TRAFFIC DATA

Specific	Street Names				
	Goreway Road				
AADT:	24,400				
# of Lanes:	4 lanes				
% Trucks:	5%				
Medium/Heavy Trucks Ratio:	55/45				
Day/Night Traffic Split:	90/10				
Posted Speed Limit:	60 km/h				
Gradient of Road:	<2%				
Ultimate R O W:	35m				

Comments: - Ultimate Traffic Data only

ORNAMENT - Sound Power Emissions & Source Heights

Ontario Road Noise Analysis Method for Environment and Transportation

Road Segment ID	Roadway Name	Link Description	Speed (kph)	Period (h)	Total Traffic Volumes	Auto %	Med %	Hvy %	Auto	Med	Heavy	Road Gradient (%)	Cadna/A Ground Absorpti on G	PWL (dBA)	Source Height, s (m)
Goreway	Goreway Road	Daytime Impacts	60	16	21960	95.0%	2.8%	2.3%	20862	604	494	0	0.00	84.6	1.2
		Nighttime Impacts	60	8	2440	95.0%	2.8%	2.3%	2318	67	55	0	0.00	78.1	1.2
Derry	Derry Road	Daytime Impacts	60	16	41796	90.1%	2.6%	7.3%	37654	1087	3055	0	0.00	90.4	1.2
		Nighttime Impacts	60	8	6804	89.2%	2.3%	8.5%	6069	156	578	0	0.00	86.0	1.2

APPENDIX C
STAMSON Validation Files

Environmental Noise Assessment
7085 Goreway Drive
SLR Project No.: 241.20055.00000

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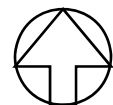


REDWOOD PROPERTIES

7085 GOREWAY DRIVE

COMPARISON OF CADNAA AND STAMSON

True North



Scale: 1:1,000

Date: Apr 29, 2020

Rev 1.0

Project No. 241-20055-0000

METRES

Figure No.

C.1



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for 2-sided printing purposes

Filename: fac_W.te Time Period: 16 hours
 Description: West Facade, Daytime

Road data, segment # 1: Goreway

 Car traffic volume : 20862 veh/TimePeriod
 Medium truck volume : 604 veh/TimePeriod
 Heavy truck volume : 494 veh/TimePeriod
 Posted speed limit : 60 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Goreway

 Angle1 Angle2 : -90.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 0
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 29.00 m
 Receiver height : 1.50 m
 Topography : 1 (Flat/gentle slope; no barrier)
 Reference angle : 0.00

Road data, segment # 2: Derry

 Car traffic volume : 37654 veh/TimePeriod
 Medium truck volume : 1087 veh/TimePeriod
 Heavy truck volume : 3055 veh/TimePeriod
 Posted speed limit : 60 km/h
 Road gradient : 0 %
 Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Derry

 Angle1 Angle2 : 0.00 deg 90.00 deg
 Wood depth : 0 (No woods.)
 No of house rows : 1
 House density : 95 %
 Surface : 2 (Reflective ground surface)
 Receiver source distance : 266.00 m
 Receiver height : 1.50 m
 Topography : 0 (Define your own alpha.)
 Barrier angle1 : 0.00 deg Angle2 : 90.00 deg
 Barrier height : 0.00 m
 Barrier receiver distance : 10.00 m
 Source elevation : 0.00 m
 Receiver elevation : 0.00 m
 Barrier elevation : 0.00 m
 Alpha : 0.70
 Reference angle : 0.00

Results segment # 1: Goreway

 Source height = 1.22 m

ROAD (0.00 + 66.68 + 0.00) = 66.68 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.00	69.55	0.00	-2.86	0.00	0.00	0.00	0.00	66.68

Segment Leq : 66.68 dBA

Results segment # 2: Derry

Source height = 1.64 m

ROAD (0.00 + 52.14 + 0.00) = 52.14 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
--------	--------	-------	--------	-------	-------	-------	-------	-------	-------	--------

0	90	0.00	75.34	0.00	-12.49	-3.01	0.00	-7.70	0.00	52.14
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Segment Leq : 52.14 dBA

Total Leq All Segments: 66.83 dBA

TOTAL Leq FROM ALL SOURCES: 66.83

Filename: ola_alp.te Time Period: 16 hours
Description: OLA, daytime

Road data, segment # 1: Goreway

Car traffic volume : 20862 veh/TimePeriod
Medium truck volume : 604 veh/TimePeriod
Heavy truck volume : 494 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 1: Goreway

Angle1 Angle2 : -70.00 deg 5.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0
Surface : 2 (Reflective ground surface)
Receiver source distance : 110.00 m
Receiver height : 1.50 m
Topography : 0 (Define your own alpha.)
Barrier angle1 : -65.00 deg Angle2 : 5.00 deg
Barrier height : 0.00 m
Barrier receiver distance : 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Alpha : 0.85
Reference angle : 0.00

Road data, segment # 2: Derry

Car traffic volume : 37654 veh/TimePeriod
Medium truck volume : 1087 veh/TimePeriod
Heavy truck volume : 3055 veh/TimePeriod
Posted speed limit : 60 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)

Data for Segment # 2: Derry

Angle1 Angle2 : -60.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 1
House density : 95 %
Surface : 2 (Reflective ground surface)
Receiver source distance : 230.00 m
Receiver height : 1.50 m
Topography : 0 (Define your own alpha.)
Barrier angle1 : -60.00 deg Angle2 : 90.00 deg
Barrier height : 0.00 m
Barrier receiver distance : 10.00 m
Source elevation : 0.00 m
Receiver elevation : 0.00 m
Barrier elevation : 0.00 m
Alpha : 0.70
Reference angle : 0.00

Results segment # 1: Goreway

Source height = 1.22 m

ROAD (0.00 + 57.09 + 0.00) = 57.09 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-70	5	0.00	69.55	0.00	-8.65	-3.80	0.00	0.00	0.00	57.09

Segment Leq : 57.09 dBA

Results segment # 2: Derry

Source height = 1.64 m

ROAD (0.00 + 54.82 + 0.00) = 54.82 dBA

Angle1	Angle2	Alpha	RefLeq	P.Adj	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-60	90	0.00	75.34	0.00	-11.86	-0.79	0.00	-7.87	0.00	54.82

Segment Leq : 54.82 dBA

Total Leq All Segments: 59.11 dBA

TOTAL Leq FROM ALL SOURCES: 59.11

APPENDIX D

Facade Calculations

Environmental Noise Assessment
7085 Goreway Drive
SLR Project No.: 241.20055.00000

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BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer), Aircraft

Receptor ID	Source Description	Sound Levels				Room / Façade Inputs					Source Inputs			Veneer - Component 1		Glazing - Component 2		
		Façade Sound Level:	Free - field Corr:	Req'd Indoor Sound Level:	Req'd Noise Red'n:	Glazing as % of Wall Area	Exp Wall Height	Exp Wall Length	Room Depth	Room Absorption:	Incident Sound Angle:	Angle Corr Factor:	Spectrum type:	Assumed Veneer STC	Component Category:	Component Category:	Req'd Glazing STC	Overall Req'd Glazing STC
		(dBA)	(dBA)	(dBA)	(dBA)		(m)	(m)	(m)		(deg)			(STC)			(STC)	(STC)
24-Hour																		
West Tower - Bedroom - North Façade	Aircraft	65	3	31	37	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	36	36
West Tower - Bedroom - East Façade	Aircraft	65	3	31	37	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	36	36
West Tower - Bedroom - South Façade	Aircraft	65	3	31	37	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	36	36
West Tower - Bedroom - West Façade	Aircraft	65	3	31	37	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	36	36
West Tower - Living Room - North Façade	Aircraft	65	3	36	32	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	28	28
West Tower - Living Room - East Façade	Aircraft	65	3	36	32	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	28	28
West Tower - Living Room - South Façade	Aircraft	65	3	36	32	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	28	28
West Tower - Living Room - West Façade	Aircraft	65	3	36	32	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	28	28
East Tower - Bedroom - North Façade	Aircraft	64	3	31	36	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	35	35
East Tower - Bedroom - East Façade	Aircraft	64	3	31	36	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	35	35
East Tower - Bedroom - South Façade	Aircraft	64	3	31	36	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	35	35
East Tower - Bedroom - West Façade	Aircraft	64	3	31	36	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	35	35
East Tower - Living Room - North Façade	Aircraft	64	3	36	31	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	27	27
East Tower - Living Room - East Façade	Aircraft	64	3	36	31	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	27	27
East Tower - Living Room - South Façade	Aircraft	64	3	36	31	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	27	27
East Tower - Living Room - West Façade	Aircraft	64	3	36	31	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	27	27

Receptor ID	Source Description	Sound Levels				Room / Façade Inputs					Source Inputs			Veneer - Component 1		Glazing - Component 2		
		Façade Sound Level: (dBA)	Free - field Corr: (dBA)	Req'd Indoor Sound Level: (dBA)	Req'd Noise Red'n: (dBA)	Glazing as % of Wall Area	Exp Wall Height (m)	Exp Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Angle Corr Factor:	Spectrum type:	Assumed Veneer STC (STC)	Component Category:	Component Category:	Req'd Glazing STC (STC)	Overall Req'd Glazing STC (STC)
Townhouse Block 1 - Living Room - North Façade	Aircraft	64	3	36	31	55%	2.7	5.5	9.1	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25	28
Townhouse Block 1 - Living Room - South Façade	Aircraft	64	3	36	31	35%	2.7	5.5	9.1	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	23	
Townhouse Block 1 - Living Room - West Façade	Aircraft	64	3	36	31	15%	2.7	9.1	5.5	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21	
Townhouse Block 1 - Bedroom South Façade	Aircraft	64	3	31	36	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	34	37
Townhouse Block 1 - Bedroom West Façade	Aircraft	64	3	31	36	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	34	
Townhouse Block 2 - Living Room - East Façade	Aircraft	64	3	36	31	55%	2.7	5.5	9.1	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25	28
Townhouse Block 2 - Living Room - South Façade	Aircraft	64	3	36	31	15%	2.7	9.1	5.5	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21	
Townhouse Block 2 - Living Room - West Façade	Aircraft	64	3	36	31	35%	2.7	5.5	9.1	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	23	
Townhouse Block 2 - Bedroom East Façade	Aircraft	64	3	31	36	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	34	37
Townhouse Block 2 - Bedroom South Façade	Aircraft	64	3	31	36	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	34	
Townhouse Block 3 - Living Room - North Façade	Aircraft	64	3	36	31	35%	2.7	5.5	9.1	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	23	28
Townhouse Block 3 - Living Room - East Façade	Aircraft	64	3	36	31	15%	2.7	9.1	5.5	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21	
Townhouse Block 3 - Living Room - South Façade	Aircraft	64	3	36	31	55%	2.7	5.5	9.1	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	25	
Townhouse Block 3 - Bedroom East Façade	Aircraft	64	3	31	36	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	34	37
Townhouse Block 3 - Bedroom South Façade	Aircraft	64	3	31	36	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	B. avg aircraft, railway wheel noise	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	34	

BPN 56 Calculation Procedure - Required Glazing STC Rating (Fixed Veneer), Roadway

Receptor ID	Source Description	Sound Levels				Room / Façade Inputs					Source Inputs			Veneer - Component 1		Glazing - Component 2		
		Façade Sound Level:	Free - field Corr:	Req'd Indoor Sound Level:	Req'd Noise Red'n:	Glazing as % of Wall Area	Exp Wall Height	Exp Wall Length	Room Depth	Room Absorption:	Incident Sound Angle:	Angle Corr Factor:	Spectrum type:	Assumed Veneer STC	Component Category:	Component Category:	Req'd Glazing STC	Overall Req'd Glazing STC
		(dBA)	(dBA)	(dBA)	(dBA)		(m)	(m)	(m)		(deg)			(STC)			(STC)	(STC)
DAYTIME																		
West Tower - Bedroom - North Façade	Roadway	63	3	45	21	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	22	22
West Tower - Bedroom - East Façade	Roadway	53	3	45	11	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12	12
West Tower - Bedroom - South Façade	Roadway	64	3	45	22	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	23	23
West Tower - Bedroom - West Façade	Roadway	67	3	45	25	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	26	26
West Tower - Living Room - North Façade	Roadway	63	3	45	21	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	20	20
West Tower - Living Room - East Façade	Roadway	53	3	45	11	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	10	10
West Tower - Living Room - South Façade	Roadway	64	3	45	22	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	21	21
West Tower - Living Room - West Façade	Roadway	67	3	45	25	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	24	24
East Tower - Bedroom - North Façade	Roadway	57	3	45	15	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16	16
East Tower - Bedroom - East Façade	Roadway	54	3	45	12	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	13	13
East Tower - Bedroom - South Façade	Roadway	59	3	45	17	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	18	18
East Tower - Bedroom - West Façade	Roadway	61	3	45	19	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	20	20
East Tower - Living Room - North Façade	Roadway	57	3	45	15	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	14	14
East Tower - Living Room - East Façade	Roadway	54	3	45	12	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	11	11
East Tower - Living Room - South Façade	Roadway	60	3	45	18	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	17	17
East Tower - Living Room - West Façade	Roadway	61	3	45	19	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	18	18

Receptor ID	Source Description	Sound Levels				Room / Façade Inputs					Source Inputs			Veneer - Component 1		Glazing - Component 2		
		Façade Sound Level: (dBA)	Free - field Corr: (dBA)	Req'd Indoor Sound Level: (dBA)	Req'd Noise Red'n: (dBA)	Glazing as % of Wall Area	Exp Wall Height (m)	Exp Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Angle Corr Factor:	Spectrum type:	Assumed Veneer STC (STC)	Component Category:	Component Category:	Req'd Glazing STC (STC)	Overall Req'd Glazing STC (STC)
Townhouse Block 1 - Living Room - North Façade	Roadway	53	3	45	11	55%	2.7	5.5	9.1	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	8	12
Townhouse Block 1 - Living Room - South Façade	Roadway	54	3	45	12	35%	2.7	5.5	9.1	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	7	
Townhouse Block 1 - Living Room - West Façade	Roadway	55	3	45	13	15%	2.7	9.1	5.5	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	6	
Townhouse Block 1 - Bedroom South Façade	Roadway	54	3	45	12	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12	17
Townhouse Block 1 - Bedroom West Façade	Roadway	55	3	45	13	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	D. sealed thick window, or exterior wall, or roof/ceiling	16	
Townhouse Block 2 - Living Room - East Façade	Roadway	54	3	45	12	55%	2.7	5.5	9.1	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	D. sealed thick window, or exterior wall, or roof/ceiling	12	16
Townhouse Block 2 - Living Room - South Façade	Roadway	56	3	45	14	15%	2.7	9.1	5.5	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	D. sealed thick window, or exterior wall, or roof/ceiling	10	
Townhouse Block 2 - Living Room - West Façade	Roadway	54	3	45	12	35%	2.7	5.5	9.1	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	D. sealed thick window, or exterior wall, or roof/ceiling	10	
Townhouse Block 2 - Bedroom East Façade	Roadway	54	3	45	12	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	D. sealed thick window, or exterior wall, or roof/ceiling	15	19
Townhouse Block 2 - Bedroom South Façade	Roadway	56	3	45	14	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	D. sealed thick window, or exterior wall, or roof/ceiling	17	
Townhouse Block 3 - Living Room - North Façade	Roadway	52	3	45	10	35%	2.7	5.5	9.1	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	5	13
Townhouse Block 3 - Living Room - East Façade	Roadway	54	3	45	12	15%	2.7	9.1	5.5	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	5	
Townhouse Block 3 - Living Room - South Façade	Roadway	56	3	45	14	55%	2.7	5.5	9.1	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	11	
Townhouse Block 3 - Bedroom East Façade	Roadway	54	3	45	12	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12	16
Townhouse Block 3 - Bedroom South Façade	Roadway	56	3	45	14	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	14	
NIGHT-TIME																		
West Tower - Bedroom - North Façade	Roadway	56	3	45	14	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	15	15
West Tower - Bedroom - East Façade	Roadway	49	3	45	7	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	8	8

Receptor ID	Source Description	Sound Levels				Room / Façade Inputs					Source Inputs			Veneer - Component 1		Glazing - Component 2		
		Façade Sound Level: (dBA)	Free - field Corr: (dBA)	Req'd Indoor Sound Level: (dBA)	Req'd Noise Red'n: (dBA)	Glazing as % of Wall Area	Exp Wall Height (m)	Exp Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Angle Corr Factor:	Spectrum type:	Assumed Veneer STC (STC)	Component Category:	Component Category:	Req'd Glazing STC (STC)	Overall Req'd Glazing STC (STC)
West Tower - Bedroom - South Façade	Roadway	58	3	45	16	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	17	17
West Tower - Bedroom - West Façade	Roadway	60	3	45	18	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	19	19
West Tower - Living Room - North Façade	Roadway	56	3	45	14	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	13	13
West Tower - Living Room - East Façade	Roadway	49	3	45	7	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	6	6
West Tower - Living Room - South Façade	Roadway	58	3	45	16	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	15	15
West Tower - Living Room - West Façade	Roadway	60	3	45	18	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	17	17
East Tower - Bedroom - North Façade	Roadway	51	3	40	14	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	15	15
East Tower - Bedroom - East Façade	Roadway	49	3	40	12	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	13	13
East Tower - Bedroom - South Façade	Roadway	54	3	40	17	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	18	18
East Tower - Bedroom - West Façade	Roadway	55	3	40	18	50%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	19	19
East Tower - Living Room - North Façade	Roadway	51	3	40	14	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	13	13
East Tower - Living Room - East Façade	Roadway	49	3	40	12	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	11	11
East Tower - Living Room - South Façade	Roadway	54	3	40	17	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	16	16
East Tower - Living Room - West Façade	Roadway	55	3	40	18	50%	2.7	3.0	6.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	17	17
Townhouse Block 1 - Living Room - North Façade	Roadway	47	3	45	5	35%	2.7	5.5	9.1	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	2	6
Townhouse Block 1 - Living Room - South Façade	Roadway	49	3	45	7	15%	2.7	5.5	9.1	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	2	
Townhouse Block 1 - Living Room - West Façade	Roadway	49	3	45	7	55%	2.7	9.1	5.5	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	0	

Receptor ID	Source Description	Sound Levels				Room / Façade Inputs					Source Inputs			Veneer - Component 1		Glazing - Component 2		
		Façade Sound Level: (dBA)	Free - field Corr: (dBA)	Req'd Indoor Sound Level: (dBA)	Req'd Noise Red'n: (dBA)	Glazing as % of Wall Area	Exp Wall Height (m)	Exp Wall Length (m)	Room Depth (m)	Room Absorption:	Incident Sound Angle: (deg)	Angle Corr Factor:	Spectrum type:	Assumed Veneer STC (STC)	Component Category:	Component Category:	Req'd Glazing STC (STC)	Overall Req'd Glazing STC (STC)
Townhouse Block 1 - Bedroom South Façade	Roadway	49	3	40	12	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12	15
Townhouse Block 1 - Bedroom West Façade	Roadway	49	3	40	12	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12	
Townhouse Block 2 - Living Room - East Façade	Roadway	49	3	45	7	55%	2.7	5.5	9.1	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	4	8
Townhouse Block 2 - Living Room - South Façade	Roadway	52	3	45	10	15%	2.7	9.1	5.5	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	3	
Townhouse Block 2 - Living Room - West Façade	Roadway	49	3	45	7	35%	2.7	5.5	9.1	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	2	
Townhouse Block 2 - Bedroom East Façade	Roadway	49	3	40	12	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	12	17
Townhouse Block 2 - Bedroom South Façade	Roadway	52	3	40	15	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	15	
Townhouse Block 3 - Living Room - North Façade	Roadway	46	3	45	4	35%	2.7	5.5	9.1	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	-1	8
Townhouse Block 3 - Living Room - East Façade	Roadway	49	3	45	7	15%	2.7	9.1	5.5	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	0	
Townhouse Block 3 - Living Room - South Façade	Roadway	51	3	45	9	55%	2.7	5.5	9.1	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	6	
Townhouse Block 3 - Bedroom East Façade	Roadway	49	3	45	7	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	7	11
Townhouse Block 3 - Bedroom South Façade	Roadway	51	3	45	9	35%	2.7	3.0	3.0	Intermediate	0 - 90	0	D. mixed road traffic, distant aircraft	43	D. sealed thick window, or exterior wall, or roof/ceiling	C. sealed thin window, or openable thick window	9	

APPENDIX E

Warning Clauses

Environmental Noise Assessment
7085 Goreway Drive
SLR Project No.: 241.20055.00000

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Warning Clauses

The following Warning Clauses should be registered on Title and/or included in the Agreement of Purchase and Sale or Lease and in the relevant Development Agreement:

MECP Type B – All Units

"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 and air traffic may on occasions interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment."

MECP Type D – All Units

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

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