

# Environmental Noise Assessment Proposed Ladies Golf Club of Toronto Development Toronto, ON

Novus Reference No. 17-0386

Final v01

February 22, 2018

**NOVUS PROJECT TEAM:**

Scientist: Jafar Al-Khalaf, B.Eng.  
Senior Specialist: R. L. Scott Penton, P.Eng.



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## 1.0 Introduction

Novus Environmental Inc. (Novus) was retained 2526574 Ontario Ltd. to conduct an Environmental Noise Assessment for a proposed residential development to be located on a small portion (2.5 acres) of the Ladies Golf Club of Toronto, located in Markham, Ontario. This assessment is in support of the Official Plan Amendment and Zoning By-Law Amendment (ZBA) applications for the project.

### 1.1 Nature of the Subject Lands

The proposed development is located on the west side of Bayview Avenue, to the south of Royal Orchard Boulevard and north of John Street. The site is currently occupied by one par 3 golf hole. A context plan can be found in **Figure 1**.

A portion of the golf club property will be subdivided to create a new lot at the corner, which is approximately 2.5 acres (1 Ha) in size. The development includes two (2) mid-rise residential buildings, Buildings A and B, located on a common one-storey podium. Building A at the north end is 12-storeys high; Tower B at south end is 14-storeys high. The site plan and excerpts from the architectural drawings of the proposed development are provided in **Appendix A**

### 1.2 Nature of the Surroundings

Immediately surrounding the proposed development are:

- Low-rise residential developments to the north of Royal Orchard Boulevard;
- The golf course lands to the west (133 acres);
- Shouldice Hernia Hospital and the Glynnwood Retirement Community to the south; and
- The Landmark residential condominium complex to the east (three towers).

The CN / Metrolinx “Bala” Railway Subdivision is located approximately 160 m to the north of the proposed development.

## 2.0 Focus of the Assessment

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

- 1) Transportation noise impacts from the CN / Metrolinx “Bala” Railway Subdivision; and
- 2) Transportation noise impacts from Bayview Avenue.

There are no significant commercial or industrial land uses near the site; therefore, a “stationary noise source” assessment is not required. Stationary noise impacts at the proposed development are not anticipated.

The CN/Metrolinx Bala Railway corridor is approximately 160 from the development property line. Under both CN and Metrolinx noise and vibration guidelines, a vibration impact assessment is not

required for developments located more than 75 m from the railway right-of-way. Railway vibration impacts at the proposed development are not anticipated.

## 3.0 Transportation Noise Impacts

### 3.1 Transportation Noise Sources

Transportation noise sources of interest with the potential to produce noise at the proposed development are:

- Railway activity on the CN/ Metrolinx Bala Railway Subdivision; and
- Road traffic noise along Bayview Avenue.

Sound exposure levels at the development have been predicted, and this information has been used to identify façade, ventilation and warning clause requirements.

### 3.2 Transportation Noise Criteria

#### 3.2.1 Ministry of the Environment Publication NPC-300

Ministry of the Environment and Climate Change (MOECC) 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. **Tables 1 to 5** below summarizes the applicable surface transportation (road and rail) criteria limits.

#### *Location Specific Criteria*

**Table 1** 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.

**Table 1: MOECC 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 <sup>[1]</sup>	
Outdoor Living Area (OLA)	Daytime (0700-2300h)	55	55	Outdoors <sup>[2]</sup>
Living / Dining Room <sup>[3]</sup>	Daytime (0700-2300h)	45	40	Indoors <sup>[4]</sup>
	Night-time (2300-0700h)	45	40	Indoors <sup>[4]</sup>
Sleeping Quarters	Daytime (0700-2300h)	45	40	Indoors <sup>[4]</sup>
	Night-time (2300-0700h)	40	35	Indoors <sup>[4]</sup>

**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] Residence area Dens, Hospitals, Nursing Homes, Schools, Daycares are also included. During the night-time period, Schools and Daycares are excluded.

[4] An assessment of indoor noise levels is required only if the criteria in **Table 4** are exceeded.

## Outdoor Amenity Areas

**Table 2** summarizes the noise mitigation requirements for outdoor amenity areas (“Outdoor Living Areas” or “OLAs”). This would include the communal amenity areas on the podium roofs.

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 2: MOECC Publication NPC-300 Outdoor Living Area Mitigation Requirements**

Time Period	Equivalent Sound Level in Outdoor Living Area (dBA)	Ventilation Requirements
Daytime (0700-2300h)	≤ 55	<ul style="list-style-type: none"> <li>• None</li> </ul>
	55 to 60 incl.	<ul style="list-style-type: none"> <li>• Noise barrier <b>OR</b></li> <li>• Warning Clause A</li> </ul>
	> 60	<ul style="list-style-type: none"> <li>• Noise barrier to reduce noise to 55 dBA <b>OR</b></li> <li>• Noise barrier to reduce noise to 60 dBA and Warning Clause B</li> </ul>

## Ventilation and Warning Clauses

**Table 3** 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 **Tables 1**, warning clauses advising future occupants of the potential excesses are required. Warning clauses also apply to OLAs.

**Table 3: MOECC Publication NPC-300 Ventilation & Warning Clause Requirements**

Assessment Location	Time Period	Energy Equivalent Sound Exposure Level - Leq (dBA)		Ventilation and Warning Clause Requirements <sup>[2]</sup>
		Road	Rail <sup>[1]</sup>	
Outdoor Living Area	Daytime (0700-2300h)	56 to 60 incl.		Type A Warning Clause
		≤ 55		None
Plane of Window	Daytime (0700-2300h)	56 to 65 incl.		Forced Air Heating with 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 with 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 4** 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 3 and 4** indoor sound criteria are met.

**Table 4: MOECC Publication NPC-300 Building Component Requirements**

Assessment Location	Time Period	Energy Equivalent Sound Exposure Level - Leq (dBA)		Component Requirements
		Road	Rail <sup>[1]</sup>	
Plane of Window	Daytime (0700-2300h)	> 65	> 60	Designed/ Selected to Meet Indoor Requirements <sup>[2]</sup>
	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.

In addition to the building component criteria outlined in **Table 4**, NPC-300 also includes a façade construction requirement for rail noise only, outlined in **Table 5**. The façade construction requirements are necessary only for portions of the development located in the first row adjacent to the track:

**Table 5: MOECC Publication NPC-300 Rail Noise Façade Requirements**

Assessment Location	Distance to Railway	Leq – 24hr <sup>[1][2]</sup> (dBA)	Noise Control Requirement
Plane of Bedroom	Less than 100 m	≤ 60	No additional requirement
		> 60	Brick Veneer or Acoustic Equivalent Required
Window	Greater than 100 m	≤ 60	No additional requirement
		> 60	No additional requirement

**Notes:** [1] Assessed for developments located within the first row of dwellings.

[2] Including whistle noise.

As the development is greater than 100 m away from the railway corridor, there is no requirement for upgraded wall types.

### 3.2.2 Metrolinx-GO Transit Guidelines

Both CN and Metrolinx have published updated noise guidelines for new residential developments located adjacent to their railway corridors. The Bala Subdivision are classified as a Principal Main Line. Accordingly, the applicable guideline limits are presented below:



**Table 6: CN / Metrolinx Sound Level Criteria for Rail Noise**

Type of Space	Equivalent Sound Level $L_{eq}$ (dBA)		Assessment Location
	Daytime (7am to 11 pm)	Night-time (11 pm to 7 am)	
Bedrooms, Sleeping Quarters	--	35	Indoors
Living / Dining Room	40	--	Indoors
Outdoor Living Area	55	--	Outdoors

Warning Clauses are also required for developments located within 300 m of the CN and Metrolinx railways rights-of-way.

### 3.3 Traffic Data and Future Projections

#### 3.3.1 Roadway Traffic Data

Future 2026 road traffic data for the adjacent roadways was obtained from York Region. Copies of all traffic data used, and calculations can be found in **Appendix B**. The following table summarizes the road traffic volumes used in the analysis.

**Table 7: Summary of Road Traffic Data Used in the Transportation Noise Analysis**

Roadway Link	Ultimate Traffic Levels (AADT)	Day/ Night Volume Split <sup>[1]</sup>		Commercial Traffic Breakdown		Vehicle Speed (km/h)
		Daytime	Night-time	% Medium Trucks	% Heavy Trucks	
Bayview Avenue	62,000	57,660	4,340	1.0	2.0	60

**Notes:** [1] A Day / Night split of 93% / 7% was used, as provided by the Region of York.

#### 3.3.2 Railway Traffic Data

Rail traffic data for the Canadian National Railway (“CN”) was obtained from CN. A growth rate of 2.5% was applied to the rail data (required by CN). Copies of the rail traffic data are provided in **Appendix B**.

Rail traffic data for the Metrolinx activities was requested directly from Metrolinx. A copy of our correspondence can be found in **Appendix B**. At the time of publication of this report, data from Metrolinx was not available. In its absence, recently provided rail traffic data for the Metrolinx Stouffville corridor was used in its place. This data is also provided in **Appendix B**. The traffic volumes used represent a 350% increase in traffic from current conditions (12 trains per day). The rail traffic data used in the assessment is summarized in the following table:

**Table 8: Summary of 2028 Rail Traffic Data Used in the Transportation Noise Analysis**

Train Type	No. of Engines	No. of Cars	No of Trains		Maximum Speed (km/h)
			Daytime (7am to 11pm)	Night-time (11pm to 7am)	
Diesel GO Train Commuter	1	12	38	5	153
CN Freight	4	140	12	7	80
VIA Passenger	2	10	2	0	97

### 3.4 Projected Sound Levels

Future (2028) 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 ORNAMENT algorithms, the road traffic noise model of the MOECC.

Future rail operation sound levels at the proposed development were predicted using the FTA/FRA modelling algorithms included in the Cadna/A. FTA reference sound levels were used for diesel-electric locomotives, diesel multiple units (DMU), and rail cars.

Predicted worst-case façade sound levels are presented in **Table 9**. The transportation façade sound levels of the development, showing the ranges of predicted daytime and night-time sound levels are shown in **Figure 2A** and **Figure 2B**, respectively, for overall impacts.

**Table 9: Summary of Rail Façade Sound Levels**

Building Section	Façade <sup>[1]</sup>	Roadway Sound Levels		Railway Sound Levels		Combined Road and Rail	
		L <sub>eq</sub> Day (dBA)	L <sub>eq</sub> Night (dBA)	L <sub>eq</sub> Day (dBA)	L <sub>eq</sub> Night (dBA)	L <sub>eq</sub> Day (dBA)	L <sub>eq</sub> Night (dBA)
Building A	North	60	52	60	59	63	59
	East	65	57	60	59	66	61
	South	64	56	56	55	65	58
	West	54	46	55	54	56	54
Building B	North	60	51	57	55	64	58
	East	67	59	58	57	67	60
	South	65	57	56	55	66	59
	West	60	52	54	54	61	55

**Notes:** [1] Façade locations are shown in **Figure 2A** and **Figure 2B**.

## 3.5 Façade Recommendations

### 3.5.1 Glazing Requirements

Based on the railway noise levels shown in **Table 9**, façade sound levels were predicted to exceed 60 dBA during the daytime and/or 55 dBA during the night-time on the North and East façades of Building A as well as on the East façade of Building B. Therefore, an assessment of glazing requirements is required to ensure that the indoor sound level guidelines outlined in **Table 1** are met.

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.

As detailed floor plans were not available at the time of the analysis, living rooms/day-time receptor locations were assumed to have a glazing-to-façade area ratio of 70%. Similarly, bedrooms/night-time receptor locations were also assumed to also have a glazing-to-façade area ratio of 70%.

Preliminary acoustical requirements are provided below in **Table 10**.

**Table 10: Summary of Wall and Window STC Requirements**

Building	Façade <sup>[1]</sup>	Wall STC Requirement	Window STC Requirements <sup>[2,3,4,5]</sup>	
			Living Rooms	Bedrooms
Building A	North	OBC	OBC	31
	East	OBC	30	32
	South	OBC	OBC	OBC
	West	OBC	OBC	OBC
Building B	North	OBC	OBC	OBC
	East	OBC	OBC	31
	South	OBC	OBC	OBC
	West	OBC	OBC	OBC

**Notes:** [1] Façade locations are shown in **Figure 2A** and **Figure 2B**.

[2] Window STC ratings shown are the combined acoustical parameter determined from the individual road, locomotive, wheel, and bell noise impacts. The worst-case daytime and night-time period impacts were considered, with the highest STC requirement shown for each façade location.

[3] An increase of approximately 3 STC points may be required for some corner units, where sound may enter the affected space through multiple exposed facades. Final recommendations should be reviewed during Site Plan Approval stage.

[4] As detailed floor plans were not available at the time of the analysis the following assumptions were made:  
Daytime (Living Rooms): A glazing-to-wall ratio of 70%.  
Night-time (Bedrooms): A glazing-to-wall ratio of 50%.

[5] OBC: Any configuration meeting the minimum structural and safety requirements of the Ontario Building Code, which generally produces a minimum STC for glazed elements of STC 29.

Upgraded glazing is required on living room windows along the east façade of Building A, and on bedrooms along the north and east façades. For Building B, upgrade glazing is only required on bedrooms along the east façade. OBC glazing and non-glazing portions are considered to be sufficient for the remainder of the development.

All noise mitigation measures are summarized in **Appendix C**. Final acoustical requirements should be reviewed as part of the final design at the Site Plan Approval stage, or prior to the issuance of building permit drawings.

### 3.6 Outdoor Living Areas

Outdoor living areas (OLA) of the proposed development include rooftop outdoor amenity terraces at the following locations:

- Building A Level 10;
- Building A Level 11;
- Building A Level 12;
- Building A Roof;
- Building B Level 12;
- Building B Level 13;
- Building B Level 14; and
- Building B Roof.

Based on a review of the current development floor plans, all other terraces and private balconies do not meet the MOECC minimum depth requirements of 4 m, and are not considered to be OLAs / open space for the purposes of the guidelines.

Assessment locations and predicted noise impacts from the adjacent roadways and rail line are summarized in the following table and shown in **Figure 3A**.

**Table 11: Summary of Unmitigated Road and Rail Noise Impacts - OLAs**

Location	Predicted Sound Level	Applicable Guideline Limit [1]	Meets Criteria?
	$L_{eq}$ Day (dBA)	$L_{eq}$ Day (dBA)	(Yes/No)
Building A Level 10 OLA	63	60	No
Building A Level 11 OLA	63	60	No
Building A Level 12 OLA	63	60	No
Building A Roof OLA	62	60	No
Building B Level 12 OLA	62	60	No
Building B Level 13 OLA	62	60	No
Building B Level 14 OLA	61	60	No
Building B Roof OLA	62	60	No

**Notes:** [1] NPC-300 criterion is 55 dBA; however, sound levels up to 60 dBA are allowed with requiring physical noise mitigation measures, provided that a Type A noise warning clause is provided. See **Table 2**.

Unmitigated sound levels are predicted to be above 60 dBA at all the terraces of Building A & B. Noise mitigation in the form of a parapet is warranted. **Figure 3B** displays the parapet locations with the required dimensions. Noise impacts at the OLA's as a result of implementing the noise mitigation are also shown in **Figure 3B**. The resulting sound levels are summarized below in **Table 12**.

**Table 12: Summary of Mitigated Road and Rail Noise Impacts - OLAs**

Location	Noise Barrier Height (m)	Predicted Sound Level Leq Day (dBA)	Applicable Guideline Limit Leq Day (dBA) <sup>[1]</sup>	Meets Criteria? (Yes/No)	Required Noise Warning Clause
Building A Level 10 OLA	1.3	60	60	Yes	Type B
Building A Level 11 OLA	1.1	60	60	Yes	Type B
Building A Level 12 OLA	1.2	60	60	Yes	Type B
Building A Roof OLA	1.1	58	60	Yes	Type B
Building B Level 12 OLA	1.1	59	60	Yes	Type B
Building B Level 13 OLA	1.1	58	60	Yes	Type B
Building B Level 14 OLA	1.1	58	60	Yes	Type B
Building B Roof OLA	1.1	59	60	Yes	Type B

**Notes:** [1] Sound levels up to 60 dBA are allowed with the use of a Type B Warning Clause.

The noise barrier can be composed of solid walls and glass/plexiglass panels. The panels should be selected so that they have sufficient mass to adequately attenuate the noise (a minimum of 20 kg/m<sup>2</sup> face density). The panels and frames should be free of gaps and cracks on the sides and bottom. The system should also be designed to withstand any wind loading.

### 3.7 Ventilation and Warning Clause Requirements

Based on the predicted sound levels, warning clauses are required to be included in all agreements of purchase and sale or lease and all rental agreements for the residential units.

Forced air heating with provisions for future installation of central air conditioning, and a **Type C** warning clause, is required for all affected units with façade sound levels from road and rail traffic that are between 56 and 65 dBA during the daytime, or between 51 and 60 dBA during night-time hours. This affects:

- Building A:
  - North façade;
  - West façade; and
  - South façade.
- Building B:
  - North façade; and
  - West façade.

Central air conditioning, and a **Type D** warning clause, is required for all affected units with façade sound levels from road and rail traffic that exceed 65 dBA during the daytime, or exceed 60 dBA during night-time hours. This affects:

- Building A:
  - East façade.

- Building B:
  - East facade; and
  - South façade.

In addition, both CN and Metrolinx Warning Clauses are also required for all residential suites. The required warning clauses for this development are outlined in **Appendix C**.

### 3.7.1 Outdoor Amenity Areas

A **Type B** warning clause related to the increased sound levels for the outdoor amenity areas is required for all suites. See **Appendix C** for a summary of all warning clause details.

## 4.0 Conclusions and Recommendations

The potential for noise impacts on and from the proposed development have been assessed. Impacts of the environment on the development. Based on the results of our studies, the following conclusions have been reached:

- As required by MOECC Publication NPC-300, facade walls and windows will require acoustical upgrades in areas outlined in **Section 3.5**.
- Warning Clauses and Noise Barriers are required for the outdoor amenity areas, as outlined in **Section 3.6**.
- A number of units within the development will require mandatory central air conditioning, as outlined in **Section 3.7**.
- As required by MOECC Publication NPC-300, a number of Noise Warning Clauses should be included in agreements registered on Title. Warning Clause requirements are summarized in **Appendix C**.
- Given the early stage of design and the conservative analysis that has been completed, it is recommended that the acoustical requirements above should be refined by an Acoustical Consultant as the design progresses.

## 5.0 References

Canadian National Railways (CN), 2008, Principal Main Line Requirements

GO Transit / Metrolinx, 2010, Principal Main Line Requirements For New Development

Ontario Ministry of the Environment and Climate Change (MOECC, 2013), Publication NPC-300: Environmental Noise Guideline: Stationary and Transportation Sources – Approval and Planning

Ontario Ministry of the Environment and Climate Change, 1989, Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT).

Ontario Ministry of the Environment (MOECC), 1996, STAMSON v5.04: Road, Rail and Rapid Transit Noise Prediction Model.

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

[http://www.fta.dot.gov/documents/FTA\\_Noise\\_and\\_Vibration\\_Manual.pdf](http://www.fta.dot.gov/documents/FTA_Noise_and_Vibration_Manual.pdf)

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# Figures

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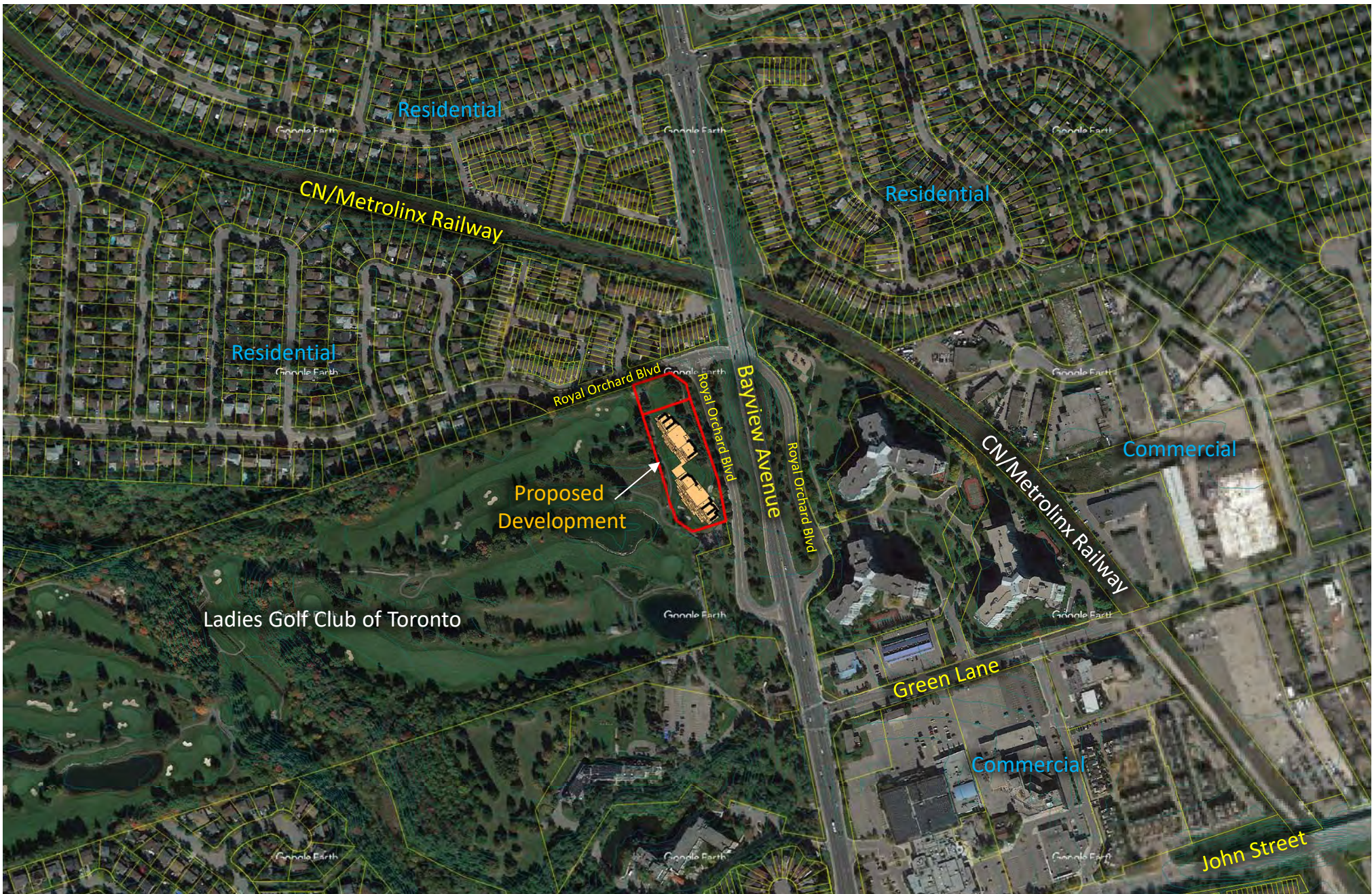


Figure No. 1  
**Context Plan**

Noise Assessment – Ladies Golf Club of Toronto  
 169 Royal Orchard Blvd, Markham, ON



True  
 North

Scale: 1: 6,000  
 Date: 18/02/13  
 File No.: 17-0386  
 Drawn By: JAK



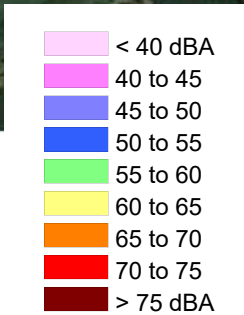
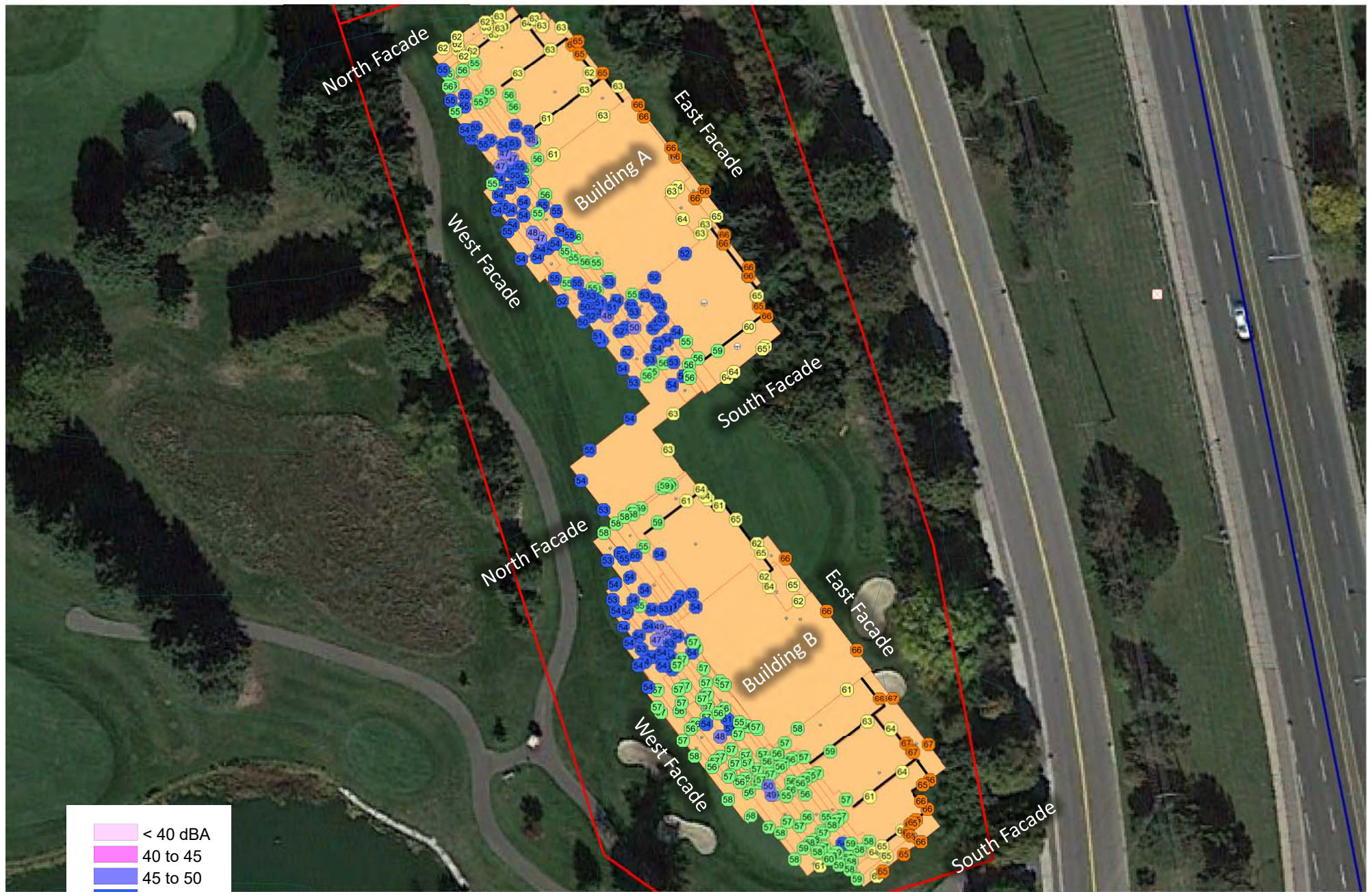


Figure No. 2A

**Transportation Sound Levels  
Facades, Daytime**

Noise Assessment – Ladies Golf Club of Toronto  
169 Royal Orchard Blvd, Markham, ON



True  
North

Scale: 1 : 725

Date: 18/02/13

File No.: 17-0386

Drawn By: JAK



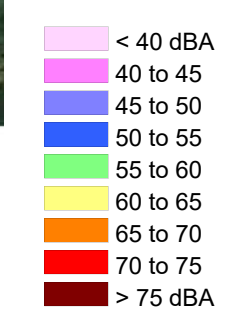
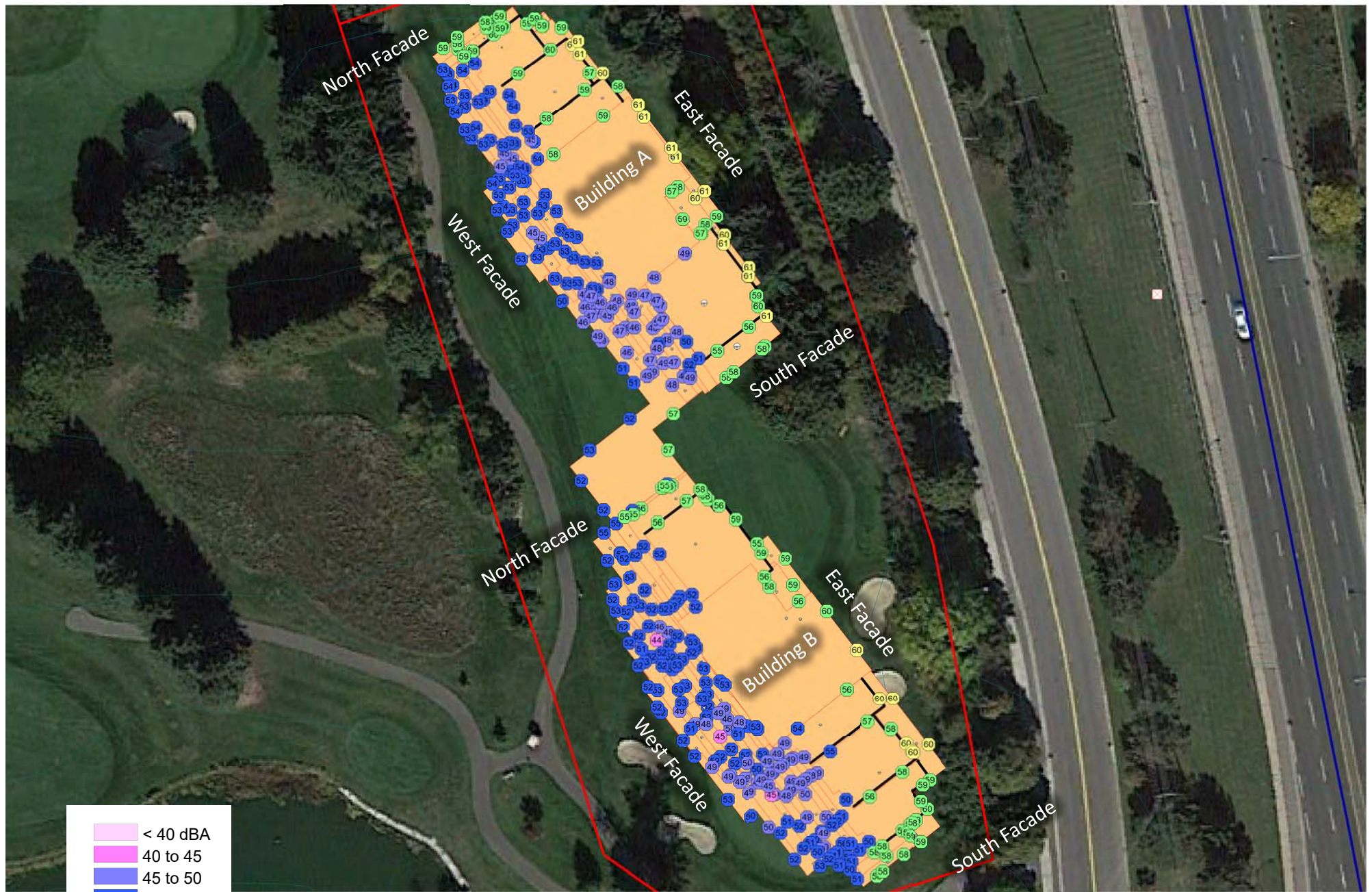


Figure No. 2B

**Transportation Sound Levels  
Facades, Night-time**

Noise Assessment – Ladies Golf Club of Toronto  
169 Royal Orchard Blvd, Markham, ON



True  
North

Scale: 725

Date: 18/02/13

File No.: 17-0386

Drawn By: JAK





Figure No. 3A

**Transportation Sound Levels  
Outdoor Living Areas – Unmitigated**

Noise Assessment – Ladies Golf Club of Toronto  
169 Royal Orchard Blvd, Markham, ON



True  
North

Scale: 1: 900

Date: 18/02/13

File No.: 17-0386

Drawn By: JAK



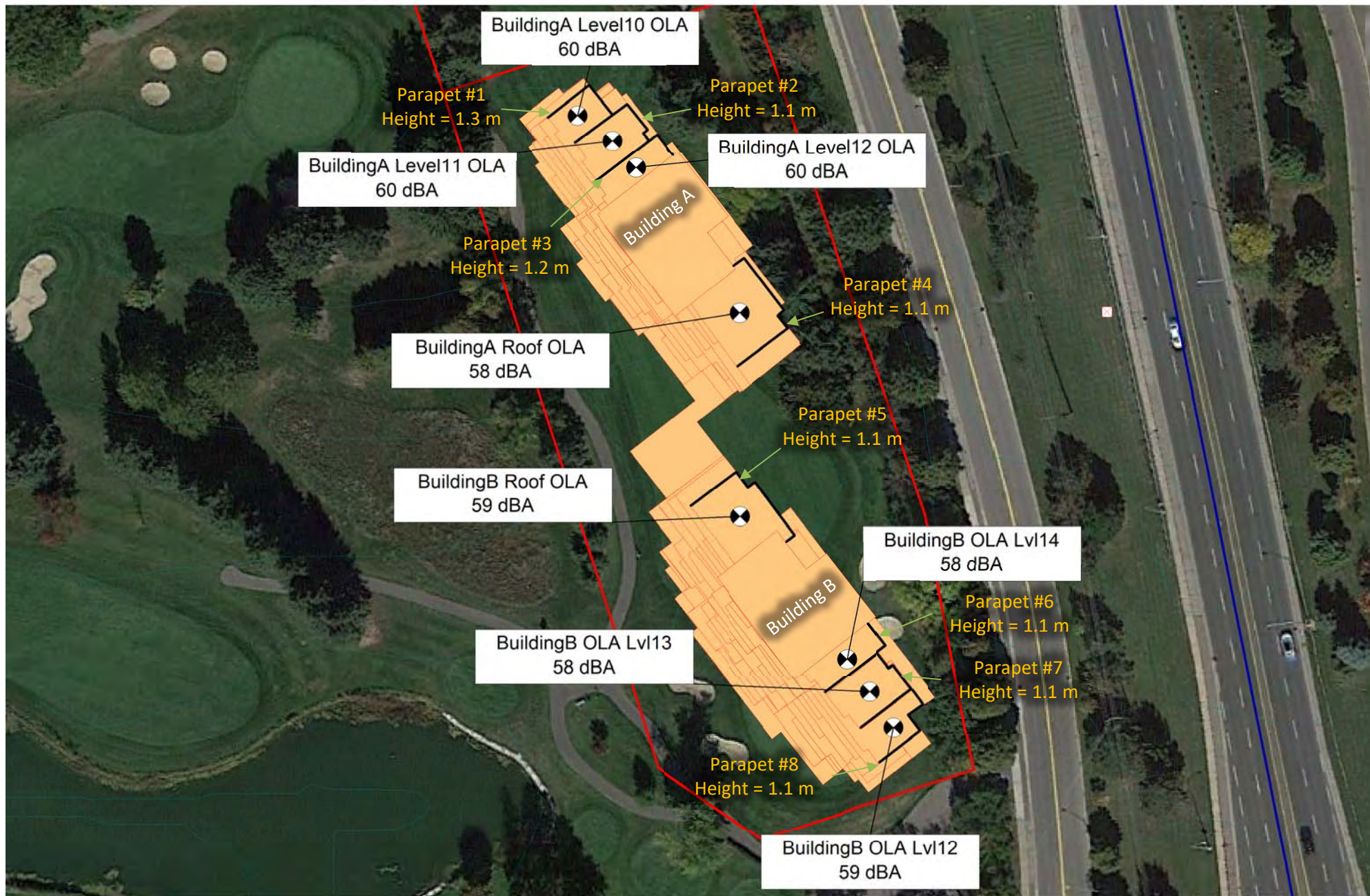


Figure No. 3B

**Transportation Impacts  
Outdoor Living Areas – Mitigated**

Noise Assessment – Ladies Golf Club of Toronto  
169 Royal Orchard Blvd, Markham, ON



True  
North

Scale: 1: 1,100

Date: 18/02/13

File No.: 17-0386

Drawn By: JAK



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## **Appendix A**

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Contractor Must Check And Verify All Dimensions On The Job.  
 Do Not Scale The Drawings.  
 All Drawings, Specifications And Related Documents Are The Copyright Of  
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 Architect.  
 Date:



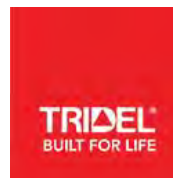
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**RE-ZONING PROGRESS SET**  
**JANUARY 19, 2018**

# LADIES GOLF CLUB OF TORONTO

ROYAL ORCHARD BLVD.  
 MARKHAM, ONTARIO



No. \_\_\_\_\_ Issued For: \_\_\_\_\_ Date: \_\_\_\_\_

Drawing Title:

Cover Sheet

Project:  
 Tridel

Ladies' Golf Club of Toronto

7859 Yonge Street

Scale:

Drawn by:

Author

Checked by:

Checker

17-069 Project No.:

JANUARY 19, 2018 Date:

Drawing No.:

**A0.0**

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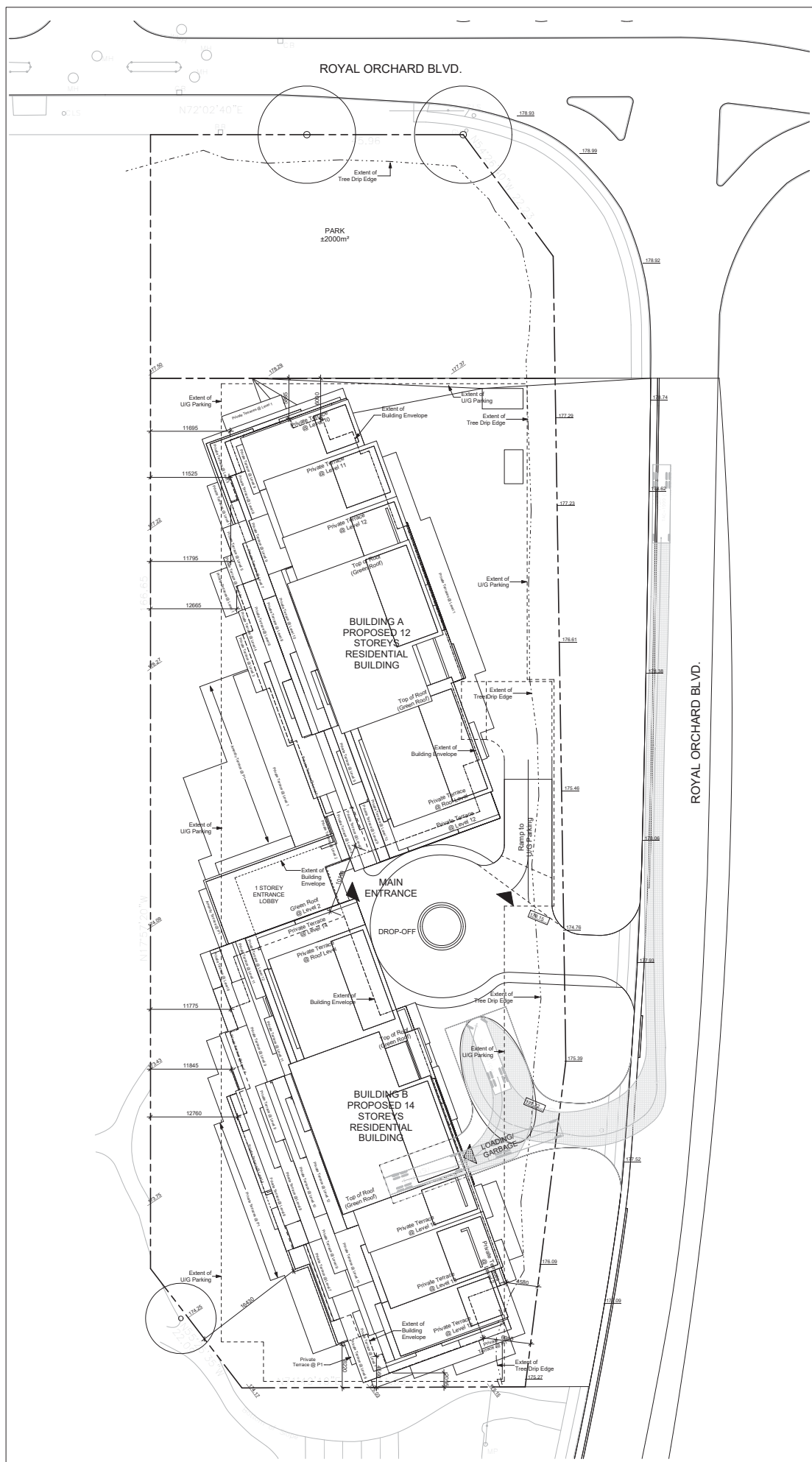
Drawing Title:  
**Site Plan**  
 Project:  
 Tridel

**Ladies' Golf Club of Toronto**  
 7859 Yonge Street  
 Scale:  
 1 : 250

Drawn by:  
 Author  
 Checked by:  
 Checker  
 17-069 Project No.:  
 Date:  
**JANUARY 19, 2018**  
 Drawing No.:



**A1.3**



Floor Plan Level 1  
 Scale: 1 : 250

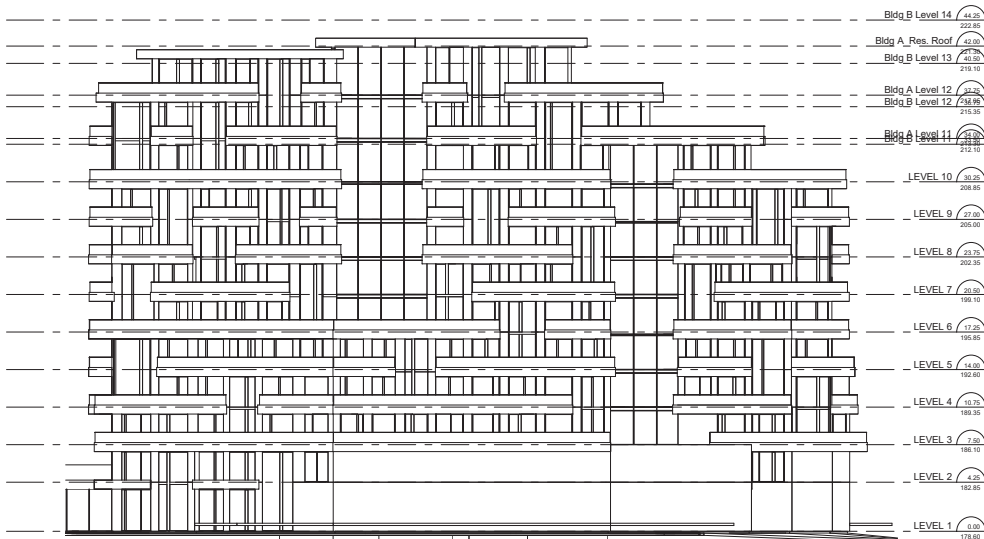
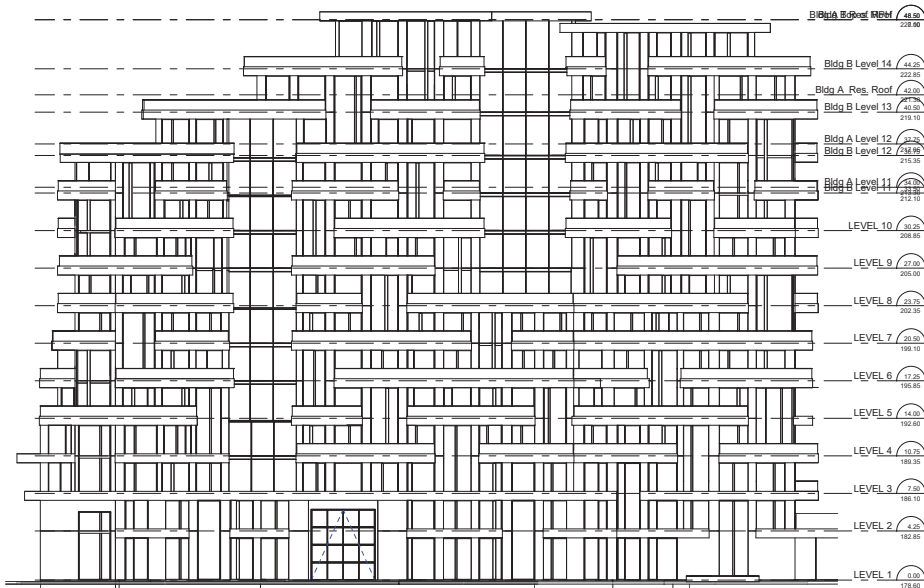
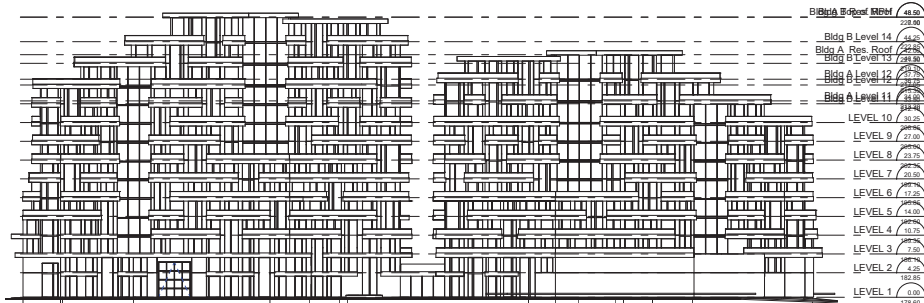
1 / A1.3

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No.: Revision: Date:



JANUARY 19, 2018

No. Issued For: Date:

Drawing Title:

East Elevations

Project:  
Tridel

Ladies' Golf Club of Toronto

7859 Yonge Street  
Scale:

As indicated

Author Drawn by:

Checker Checked by:

17-069 Project No.:

JANUARY 19, 2018 Date:

Drawing No.:

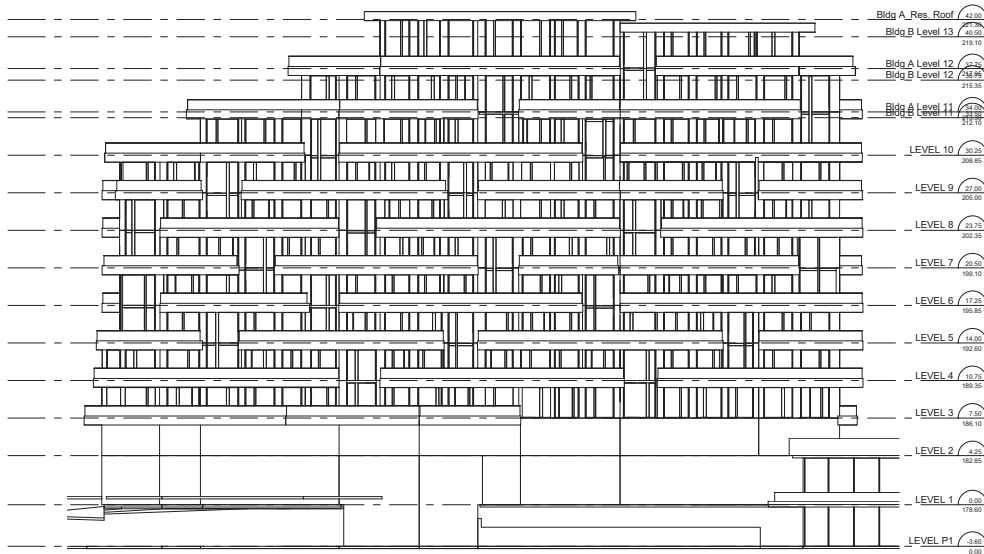
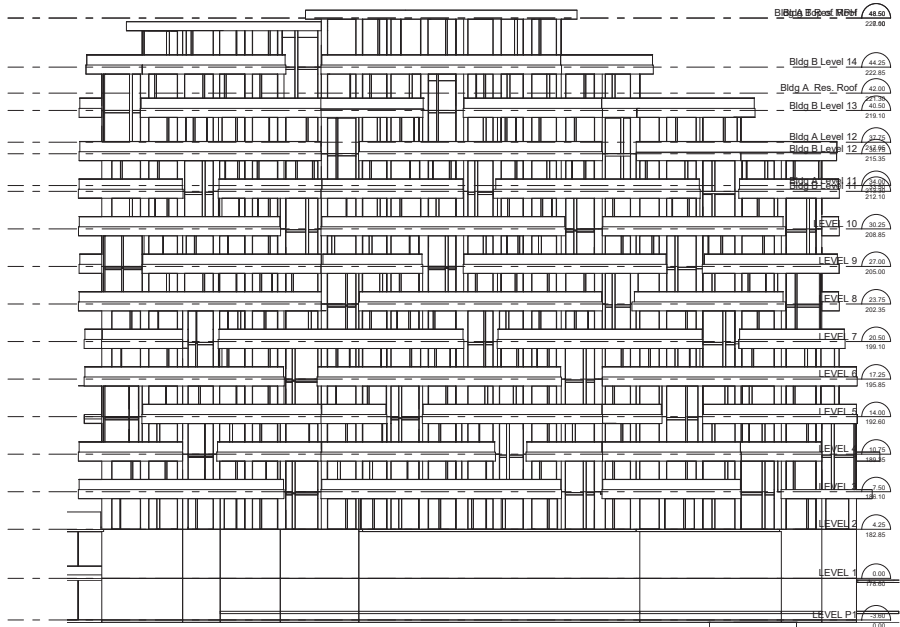
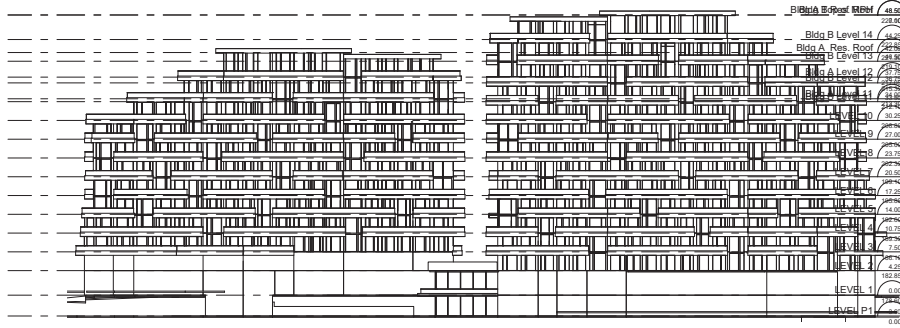
A4.1

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No.: Revision: Date:



No. Issued For: Date:

Drawing Title:

**West Elevations**

Project:  
Tridel

**Ladies' Golf Club of Toronto**

7859 Yonge Street  
Scale:

As indicated

Author Drawn by:

Checked by:

Checker

Project No.:

17-069

Date:

JANUARY 19, 2018

Drawing No.:

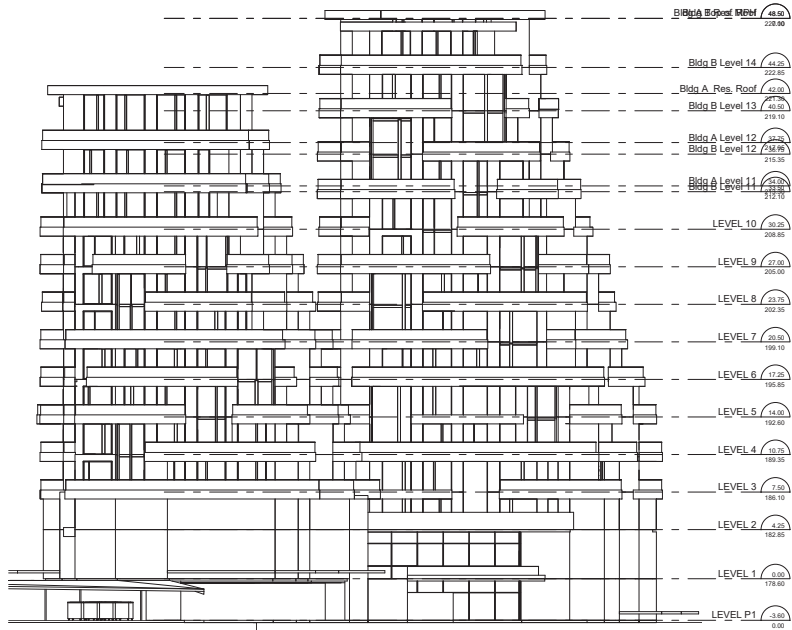
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No.: Revision: Date:



No. Issued For: Date:

Drawing Title:

North & South Elevations

Project:  
Tridel

Ladies' Golf Club of Toronto

7859 Yonge Street

Scale:  
1 : 200

Author Drawn by:

Checker Checked by:

17-069 Project No.:

JANUARY 19, 2018 Date:

Drawing No.:

A4.3

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## **Appendix B**

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Transportation Services Department  
Transportation and Infrastructure Planning

January 17, 2018

Jafar Al-Khalaf  
Novus Environmental Inc.  
150 Research Lane, Suite 105  
Guelph, ON N1G 4T2

**Re: Request for Traffic Data  
File No. T09, Forecasts - Markham**

As requested, the traffic data for your study are summarized below.

	<u>Bayview Avenue</u>
Section No.	34-03
Location	North of John Street
Existing AADT	44,180 (2016)
Ultimate AADT	62,000
No. of Lanes	4 (future 6*)
Posted Speed	60 km/h
Trucks (Med/Heavy)	1% / 2%
Grade	Up to 7%
Day/Night Split	93/7
Planned ROW	Up to 43 m

Note:

\*The additional 2 lanes in the future would be HOV lanes.

I trust that this will be satisfactory for your study. The invoice will be mailed to you separately.

Sincerely,

Wenli Gao  
Transportation Planning, Forecasting

WG/wg

YORK-#8112096-v1-180005\_Al-Khalaf\_Bayview\_north\_John.docx

# 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 Absorption G	PWL (dBA)	Source Height, s (m)	Reference Leq (dBA)
Bayview Avenue_avg_D	Bayview Avenue	Daytime Impacts	60	16	57660	97.0%	1.0%	2.0%	55930	577	1153	0	0.00	88.2	1.2	73.1
Bayview Avenue_avg_N	Bayview Avenue	Nighttime Impacts	60	8	4340	97.0%	1.0%	2.0%	4210	43	87	0	0.00	79.9	1.2	64.9



# Train Count Data

**System Engineering  
Engineering Services**

1 Administration Road  
Concord, ON, L4K 1B9  
T: 905.669.3264  
F: 905.760.3406

## TRANSMITTAL

*To:* Novus Environmental      *Project :* BAL-16.93 – 169 Royal Orchard Blvd, Markham, ON  
*Destinataire :* 150 Research Lane, Suit  
105,  
Guelph, ON  
N1G 4T2

*Att'n:* Jafar Al-Khalaf      *Routing:* jafara@novusenv.com

*From:* Michael Vallins      *Date:* 01/22/2018  
*Expéditeur :*

*Cc:* Adjacent Development  
CN via e-mail

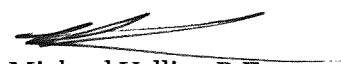
Urgent    For Your Use    For Review    For Your Information    Confidential

**Re: Train Traffic Data – CN Bala Subdivision near Royal Orchard Blvd in Markham, ON**

Please find attached the requested Train Traffic Data; this data does not reflect GO Metrolinx Traffic. The application fee in the amount of **\$500.00** +HST will be invoiced.

Should you have any questions, please do not hesitate to contact the undersigned at 905-669-3264.

Sincerely,  
CN Design & Construction

  
Michael Vallins P.Eng  
Manager of Public Works  
public\_works\_gld@cn.ca

**Date:** 2018/01/22

**Project Number:** BAL-16.93 – 169 Royal Orchard Blvd, Markham, ON

Dear Jafar Al-Khalaf:

**Re: Train Traffic Data – CN Bala Subdivision near Royal Orchard Blvd in Markham, ON**

The following is provided in response to Jafar Al-Khalaf 2018/01/11 request for information regarding rail traffic in the vicinity of Royal Orchard Blvd, in Markham, ON at approximately Mile 16.93 on CN's Bala Subdivision.

Typical daily traffic volumes are recorded below. However, traffic volumes may fluctuate due to overall economic conditions, varying traffic demands, weather conditions, track maintenance programs, statutory holidays and traffic detours that when required may be heavy although temporary. For the purpose of noise and vibration reports, train volumes must be escalated by 2.5% per annum for a 10-year period.

Typical daily traffic volumes at this site location are as follows:

**\*Maximum train speed is given in Miles per Hour**

	0700-2300			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	9	140	50	4
Way Freight	0	25	50	4
Passenger	1	10	60	2

	2300-0700			
Type of Train	Volumes	Max.Consist	Max. Speed	Max. Power
Freight	5	140	50	4
Way Freight	0	25	50	4
Passenger	0	10	60	2

The volumes recorded reflect westbound and eastbound freight and passenger operations on CN's Bala Subdivision.

Except where anti-whistling bylaws are in effect, engine-warning whistles and bells are normally sounded at all at-grade crossings. There is one at-grade crossing in the immediate vicinity of the study area at Mile 16.52 (Green Lane). Anti-whistling bylaws are in effect at this crossing. Please note that engine warning whistles may be sounded in cases of emergency, as a safety and or warning precaution at station locations and pedestrian crossings and occasionally for operating requirements.

With respect to equipment restrictions, the gross weight of the heaviest permissible car is 286,000 lbs.

The double mainline track is considered to be continuously welded rail throughout the study area.

The Canadian National Railway continues to be strongly opposed to locating developments near railway facilities and rights-of-way due to potential safety and environmental conflicts. Development adjacent to the Railway Right-of-Way is not appropriate without sound impact mitigation measures to reduce the incompatibility. For confirmation of the applicable rail noise, vibration and safety standards, Adjacent Development, Canadian National Railway Properties at [Proximity@cn.ca](mailto:Proximity@cn.ca) should be contacted directly.

I trust the above information will satisfy your current request.

Sincerely,



Michael Vallins P.Eng  
Manager of Public Works  
[public\\_works\\_gld@cn.ca](mailto:public_works_gld@cn.ca)

## Scott Penton

---

**From:** Jafar Al-Khalaf  
**Sent:** January 19, 2018 10:52 AM  
**To:** Scott Penton  
**Subject:** FW: Rail Traffic Data Request - GO @ Ladies' Golf Club of Toronto

Hi Jafar,

GO Transit does operate our Richmond Hill GO Train service on the adjacent line. Unfortunately, we are currently internally reviewing our rail forecasts over the GO network and I am waiting for the numbers to be finalized before responding to any requests.

I will follow up with your request once our review is completed.

Thanks,

**BRANDON GAFFOOR, B.E.S.**  
Intern - Rail Corridor Management Office  
Metrolinx  
335 Judson Street | Toronto | Ontario | M8Z 1B2  
T: 416.202.7294 C: 647.289.1958



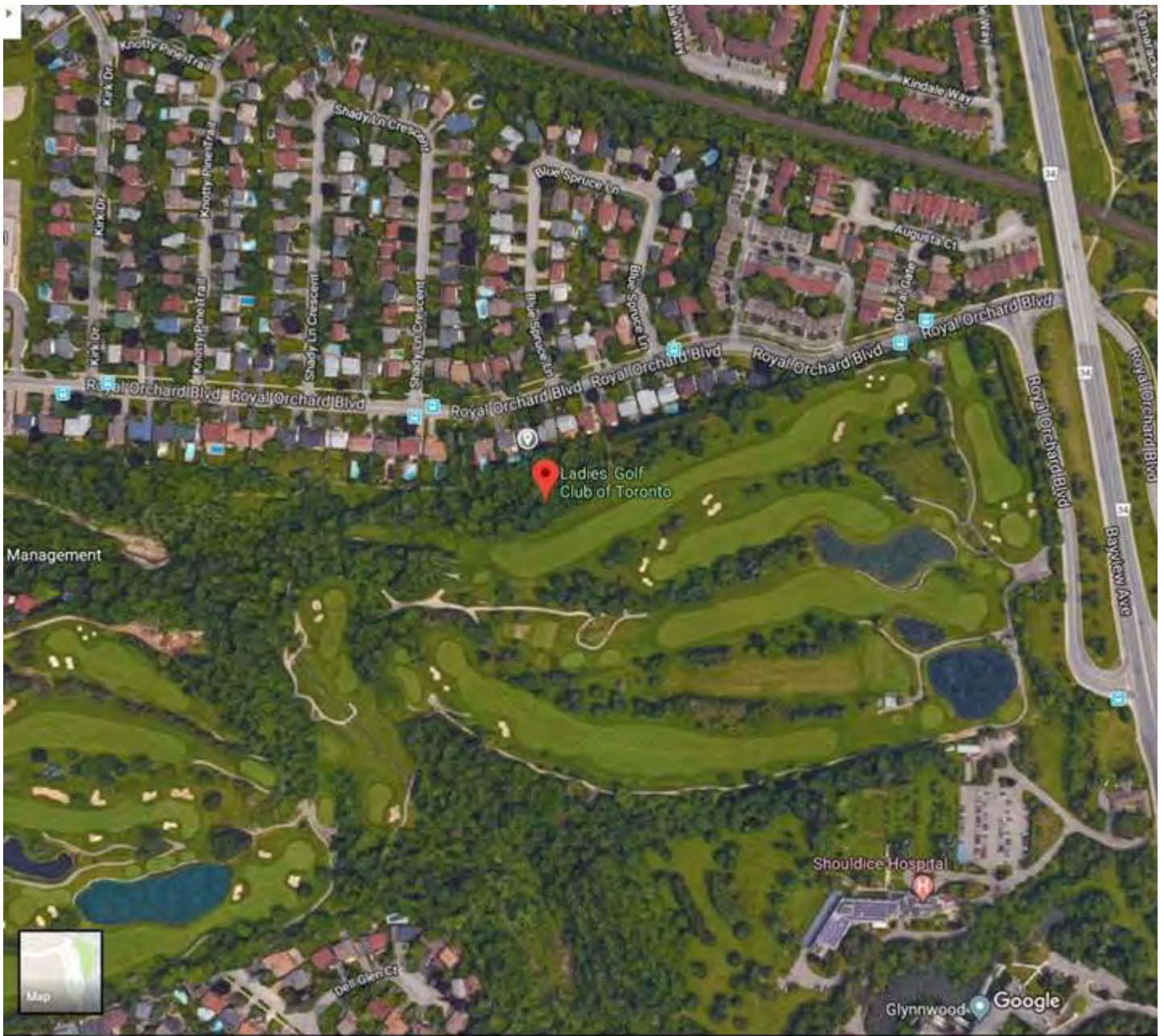
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**From:** Jafar Al-Khalaf [<mailto:jafara@novusenv.com>]  
**Sent:** January-19-18 10:24 AM  
**To:** Brandon Gaffoor  
**Cc:** Adam Snow; Adam Snow  
**Subject:** Rail Traffic Data Request - GO @ Ladies' Golf Club of Toronto

Hey Brandon,

Can you verify if GO operates on the rail line adjacent to 169 Royal Orchard Blvd (Ladies' Golf Club of Toronto) in Markham? If so, can you please provide rail traffic data? Below is a figure of the location.





**Jafar Al-Khalaf, B.eng**

*Environmental Scientist*

t 226.706.8080 x 219 | f 226.706.8081 | [jafara@novusenv.com](mailto:jafara@novusenv.com)



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**Novus West Inc.** | 906 – 12 Avenue SW, Suite 600 | Calgary, AB Canada, T2R 1K7 | t 403.990.5947

## Marcus Li

---

**From:** Brandon Gaffoor <Brandon.Gaffoor@metrolinx.com>  
**Sent:** Friday, October 13, 2017 4:11 PM  
**To:** Marcus Li  
**Cc:** Adam Snow  
**Subject:** RE: 20-22 Water Street, Markham - rail traffic data

Hi Marcus - Further to your request, the subject site (20-22 Water Street, Markham) is located within 300 metres of GO Transit's Stouffville rail corridor and Markham GO station. I note that we do not maintain information pertaining to the idling activity at stations – that would be up to you to collect that information for a typical weekday period.

It's anticipated that GO Service along this corridor will be comprised of electric trains within (at least) a 10 year time horizon. The preliminary midterm weekday train volume forecast at this location, including both revenue and equipment trips is in the order of 38 trains (33 day, 5 night). Trains will be comprised of a single locomotive and up to 12 passenger cars.

The current maximum design speed of this corridor is 25 mph (40 km/h).

With respect to future electrified rail service, it should be noted that Metrolinx has not made a final decision regarding the electric train technology or technologies to be deployed. Similarly, we are only beginning to understand potential noise and vibration implications associated with electrification. We can, however, provide the following interim information which may be helpful

1. At lower speeds, train noise is dominated by the powertrain. At higher speeds, train noise is dominated by the wheel-track interaction. Hence, at higher speeds, the noise level and spectrum of electric trains is expected to be very similar, if not identical, to those of equivalent diesel trains.
2. Along with electrification, Metrolinx will intensify service levels along all of its corridors to deliver the promised Regional Express Rail (RER) service. Everything else being equal, this will likely result in an overall increase in train noise emissions.

Given the above considerations, it would be prudent, for the purposes of acoustical analyses, to either use established model pre-sets for electrified trains or conservatively assume that the acoustical characteristics of electrified and diesel trains are equivalent. We anticipate that additional information regarding specific operational parameters for electrified trains will become available in the near future.

Operational information is subject to change and may be influenced by, among other factors, service planning priorities, operational considerations, funding availability and passenger demand.

I trust that this information is useful. Please feel free to contact me should you have any additional questions.

**Brandon Gaffoor, B.E.S.**

Intern | Rail Corridor Management Office | Rail Corridor Infrastructure | GO Transit  
**METROLINX** | 335 Judson Street | Toronto | Ontario | M8Z 1B2  
T. 416.202.7294 M. 647.289.1958



---

**From:** Marcus Li [<mailto:marcusl@novusenv.com>]  
**Sent:** October-13-17 3:48 PM  
**To:** Brandon Gaffoor  
**Cc:** Adam Snow  
**Subject:** 20-22 Water Street, Markham - rail traffic data

Hello Brandon,

I'm working on a noise study for a development located at 20 Water Street, in Markham ON. Attached is a image showing the location. Could you please provide the rail traffic data for this track segment.

Thanks

Marcus

**Marcus Li, P.Eng.**

*Specialist - Acoustics, Noise & Vibration*

☎ 226.706.8080 x 217 | [marcusl@novusenv.com](mailto:marcusl@novusenv.com)



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**Novus West Inc.** | 906 – 12 Avenue SW, Suite 600 | Calgary, AB Canada, T2R 1K7 | ☎ 403.990.5947

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## **Appendix C**

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## Noise Warning Clauses and Required Noise Mitigation Measures

Note: Final acoustical requirements should be reviewed by a qualified acoustical consultant as part of the final design prior to the issuance of building permit drawings.

### **Block 1**

Building	Facade	Ventilation		Façade STC Requirements			Stationary Source Warning Clause	Rail Warning Clause	Outdoor Amenity Area	
		Warning Clause	Type	Non-Glazing	Living Room	Bedroom			Warning Clause	Noise Barrier
A (North)	North	Type C	Forced Air	OBC	OBC	31	Not required	Type M, Type CN	Type B	Various See Table 12 and Figure 3B
	East	Type D	Mandatory AC	OBC	30	32				
	South	Type C	Forced Air	OBC	OBC	n/a				
	West	Type C	Forced Air	OBC	OBC	n/a				
B (South)	North	Type C	Forced Air	OBC	OBC	n/a	Not required	Type M, Type CN	Type B	Various See Table 12 and Figure 3B
	East	Type D	Mandatory AC	OBC	OBC	n/a				
	South	Type D	Mandatory AC	OBC	OBC	n/a				
	West	Type C	Forced Air	OBC	OBC	n/a				

**Notes:** Forced Air – a forced air heating system with provision for future installation of air conditioning is a required (at a minimum)

Mandatory AC – the units require air conditioning

OBC - Meeting minimum construction requirements of the Ontario Building Code. Where a window is not specifically identified (e.g., bathroom windows), an OBC window is required.

STC – Sound Transmission Class rating

Warning clause texts are provided at the end of this Appendix

### **Warning Clause Text**

Type B: “Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road and rail 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.”

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

- Type D: “This dwelling unit has been supplied with a central air conditioning system which will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the sound level limits of the Municipality and the Ministry of the Environment.”
- Type M: “Purchasers are advised that Metrolinx (formerly GO Transit) or its assigns or successors in interest has or have a right-of-way within 300 metres from the land the subject thereof. There may be alterations to or expansions of the rail facilities on such right-of-way in the future, including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). Metrolinx will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way.”
- Type CN: “Purchasers are advised that Canadian National Railway Company or its assigns or successors in interest has or have a right-of-way within 300 metres from the land the subject thereof. There may be alterations to or expansions of the rail facilities on such right-of-way in the future, including the possibility that the railway or its assigns or successors as aforesaid may expand its operations, which expansion may affect the living environment of the residents in the vicinity, notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the development and individual dwelling(s). CNR will not be responsible for any complaints or claims arising from use of such facilities and/or operations on, over or under the aforesaid right-of-way.”