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# **Noise Feasibility Study**

## **Proposed Residential Development**


### **230 Finch Avenue**

### **Pickering, Ontario**

Prepared for:

Highglen Homes  
10148 Warden Avenue  
Markham, ON L6C 1N3

Prepared by



Oct25/21  
C. M. M. CHAN  
100124594

*Mandy Chan*  
Mandy Chan, PEng

The seal is circular with the text "LICENSED PROFESSIONAL ENGINEER" around the top and "PROVINCE OF ONTARIO" around the bottom. Inside the seal, the name "C. M. M. CHAN" and the number "100124594" are printed. A handwritten signature "Mandy Chan" is written over the seal.

Revised: October 25, 2021

HGC Project No. 01900762



# Table of Contents

1	Introduction and Summary .....	1
2	Site Description and Noise Sources .....	2
3	Noise Level Criteria.....	2
3.1	Road and Rail Traffic Noise Criteria.....	2
4	Traffic Sound Level Assessment .....	4
4.1	Road Traffic Data .....	4
4.2	Rail Traffic Data.....	5
4.3	Traffic Noise Predictions.....	5
5	Discussion and Recommendations .....	6
5.1	Minimum Distance Setbacks .....	6
5.2	Outdoor Living Areas.....	7
5.3	Indoor Living Areas and Ventilation Requirements.....	7
5.4	Building Façade Constructions.....	8
5.4.1	Exterior Wall Constructions.....	8
5.4.2	Acoustical Requirements for Glazing .....	8
5.5	Warning Clauses.....	9
6	Summary of Recommendations.....	10
6.1	Implementation.....	12

Figure 1: Aerial Photo

Figure 2: Draft Plan of Subdivision

Figure 3: Proposed Concept Plan

Figure 4: Plan Showing Noise Barrier and Ventilation Requirements

Appendix A: CP Rail Main Line Requirements

Appendix B: Traffic Information

Appendix C: Sample STAMSON 5.04 Output

# 1 Introduction and Summary

HGC Engineering was retained by Highglen Homes to conduct a noise feasibility study for a proposed infill residential development to be located at 230 Finch Avenue, in the City of Pickering, Regional Municipality of Durham, Ontario. The study is required by the Municipality as part of the planning and approvals process. This study has been updated to incorporate the latest site plan dated September 21, 2021 and dwelling locations.

The primary source of noise is road traffic on Finch Avenue and rail traffic on the CP Bellville Subdivision. Relevant traffic data was obtained from the Region of Durham and CP Rail. The predicted sound levels were compared to the guidelines of the Ministry of Environment, Conservation and Parks (MECP) and the Region of Durham to develop noise control recommendations.

The sound level predictions indicate that with suitable noise control measures integrated into the design of the dwellings, it is feasible to achieve the indoor MECP guideline sound levels. Forced-air ventilation systems with ducts sized to accommodate the future installation of central air conditioning by the occupant are required for all lots. Upgraded exterior wall constructions are required for the lot closest to the railway. For the remaining lots, any exterior wall and double-glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation. Noise warning clauses are required to be included in the property and tenancy agreements and offers of purchase and sale to inform the future occupants of traffic noise.



## 2 Site Description and Noise Sources

Figure 1 is a key plan indicating the location of the proposed development. The proposed development is located at 230 Finch Avenue in the City of Pickering, Ontario. The draft plan of subdivision dated October 21, 2021 is attached as Figure 2. The proposed site plan prepared by Design Plan Services Inc. dated September 21, 2021 is attached as Figure 3 and shows the proposed dwelling locations. The proposed development will consist of 8 detached dwellings along with associated roadways.

The acoustical environment surrounding the site is primarily residential. The primary source of noise impacting the site was found to be road traffic on Finch Avenue and rail traffic on the CP Bellville Subdivision. There are no significant stationary sources of noise within 500 m of the subject site. The closest proposed dwelling will be approximately 160 m from the railway right-of-way and measurements of groundborne rail vibration is not required.

## 3 Noise Level Criteria

### 3.1 Road and Rail Traffic Noise Criteria

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

**Table 1: Road and Rail Traffic Noise Criteria**

	<b>Daytime <math>L_{EQ}(16 \text{ hour})</math> Road / Rail</b>	<b>Night-time <math>L_{EQ}(8 \text{ hour})</math> Road / Rail</b>
Outdoor Living Areas	55 dBA	--
Inside Living/Dining Rooms	45 dBA / 40 dBA	45 dBA / 40 dBA
Inside Bedrooms	45 dBA / 40 dBA	40 dBA / 35 dBA

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

The guidelines in the MECP publication allow the sound level in an OLA to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the purchase agreements and offers of purchase and sale for the property. When OLA sound levels exceed 60 dBA, physical mitigation is required to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible. The Region of Durham accepts sound levels of 60 dBA in the rear yards with mitigation.

Indoor guidelines are 5 dBA more stringent for rail noise than for road noise, to account for the low frequency (rumbling) character of locomotive sound, and its greater potential to transmit through exterior wall/window assemblies.

A central air conditioning system as an alternative means of ventilation to open windows is required for dwellings where night-time sound levels outside windows exceed 60 dBA or daytime sound levels exceed 65 dBA outside of the windows. A forced air ventilation system with ducts sized for the future provision of air conditioning, or some other alternative form of mechanical ventilation, is required where night-time sound levels are in the range of 51 – 60 dBA or daytime sound levels are in the range of 56 - 65 dBA.

Building components such as walls, windows and doors must be designed to achieve indoor sound level criteria when the night-time sound level at the plane of the windows is greater than 60 dBA or

the daytime sound level is greater than 65 dBA due to road traffic noise; greater than 55 dBA during the night-time or greater than 60 dBA during the daytime hours due to rail traffic noise.

Warning clauses are required to notify future residents of possible excesses when night-time sound levels exceed 50 dBA at the plane of the windows and daytime sound levels exceed 55 dBA in the outdoor living area and at the plane of the windows due to road and rail traffic.

MECP/CP policies stipulate that brick veneer or masonry equivalent is required for dwellings within 100 m of the railway right-of-way if sound levels at the façade are greater than 60 dBA. The railways also provide minimum requirements for safety as well as sound and vibration for proposed residential developments located adjacent to their rights-of-way. These include minimum required setbacks, berms, fencing and warning clauses. It is noted that the proposed closest residential building will be located approximately 160 m to the CP right-of-way. CP requirements for developments adjacent to a principal main line is attached as Appendix A.

## 4 Traffic Sound Level Assessment

### 4.1 Road Traffic Data

Forecasted traffic data for Finch Avenue and Altona Road was obtained from the Region of Durham and is provided in Appendix B. Due to distance and intervening uses, traffic noise from Altona Road was found to be insignificant and thus not included in the assessment. A day/night split of 90/10% was used. A speed limit of 50 km/h was used in the analysis. Table 2 summarizes the traffic volume data used in this study.

**Table 2: Projected Road Traffic Data**

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
Finch Avenue	Daytime	12 690	324	486	13 500
	Night-time	1 410	36	54	1 500
	<b>Total</b>	<b>14 100</b>	<b>360</b>	<b>540</b>	<b>15 000</b>

## 4.2 Rail Traffic Data

Rail traffic data for the CP Bellville Subdivision was obtained from CP and is attached in Appendix B. This CP line is used for freight operations only and is classified as a principal main line. The maximum permissible train speed in the area of the site is 97 kph (60 mph) for the freight trains. In conformance with CP assessment requirements, the maximum speeds, maximum number of cars and locomotives per train were used in the traffic noise analysis to yield a worst case estimate of train noise. The data was projected to the year 2031 using a 2.5% per year growth rate. Table 3 summarises the CP rail traffic data used in the analysis. Whistle noise is not included as signalling is prohibited at public grade crossing except for safety reasons.

**Table 3: Rail Traffic Data Projected to Year 2031**

Type of Train	Number of Trains Day/ Night	Number of locomotives	Number of cars	Max Speed (KPH)
Freight	6.7 / 2.7	4	207	97

## 4.3 Traffic Noise Predictions

To assess the levels of road and rail traffic noise which would impact the site in the future, road and rail traffic predictions were made using STAMSON version 5.04, a computer algorithm developed by the MECP. Sample STAMSON output is included in Appendix C.

Predictions of the traffic sound levels were conducted at the top storey of the building facades most exposed to the traffic sources during the daytime hours and night-time hours to investigate ventilation requirements. Sound levels were also predicted in the outdoor living area to investigate noise barrier requirements. Dwelling locations as shown on the site plan were used. The results of these predictions are summarized in Tables 4 and 5. The acoustic requirements may be subject to modifications if the site plan is changed significantly.

**Table 4: Daytime Future Road and Rail Traffic Sound Levels, [dBA]**

Prediction Location	Daytime at Façade L <sub>EQ-16 hr</sub>		
	Road	Rail	Total
Lot 1	63	52	63
Lot 1 OLA	<45	55	55
Lot 3	64	50	64
Lot 3 OLA	62	47	62
Lot 6	53	56	57
Lot 6 OLA	52	53	55
Lot 8	48	58	58
Lot 8 OLA	47	57	58

**Table 5: Night-time Future Road and Rail Traffic Sound Levels, [dBA]**

Prediction Location	Night-time at Façade L <sub>EQ-8 hr</sub>		
	Road	Rail	Total
Lot 1	56	51	57
Lot 3	57	50	58
Lot 6	46	55	55
Lot 8	<40	57	57

## 5 Discussion and Recommendations

The sound level predictions indicate that the future traffic sound levels will exceed MECP guidelines at the dwelling units with exposure to Finch Avenue and CP rail. The following discussion outlines the ventilation requirements, building façade construction, and warning clauses to achieve the noise criteria stated in Table 1.

### 5.1 Minimum Distance Setbacks

For noise control and safety reasons, the CP policies stipulate a minimum required setback between a new dwelling and a main line. The nearest building façade is approximately 160 m from the railway right-of-way, meeting the acceptable minimum distance setback requirement.



## 5.2 Outdoor Living Areas

The predicted daytime sound levels in the OLA of the dwelling with some flanking exposure onto Finch Avenue (Lot 3) will be great than 60 dBA. Physical mitigation will be required for Lot 3. Calculations indicated a 1.8 m high noise barrier will reduce the sound level in the OLA to 56 dBA. When grading plan and dwelling location are available, the barrier height shall be refined to meet the requirements of MECP and Region of Durham. The location of the required noise barrier is shown on Figure 4.

As a general note, the wall component of the barrier should be of a solid construction with a surface density of no less than 20 kg/m<sup>2</sup>. The walls may be constructed from a variety of materials such as wood, brick, pre-cast concrete or other concrete/wood composite systems provided that it is free of gaps or cracks. The heights and extents of the barriers should be chosen to reduce the sound levels in the OLA's to below 60 dBA and as close to 55 dBA as is technically, administratively and economically feasible, subject to the approval of the municipality respecting any applicable fence height by-laws.

For Lot 7 and 8, the predicted daytime sound levels in the OLA are 57 and 58 dBA. Physical mitigation is not required with the provision of a warning clause. For the remaining lots, the predicted sound levels in the OLA are 55 dBA or less, physical mitigation is not required.

## 5.3 Indoor Living Areas and Ventilation Requirements

### Provision for the Future Installation of Air Conditioning

The predicted future sound levels outside the top storey windows of the remaining units of Lots 1 to 8 will be between 56 and 65 dBA during daytime hours and between 51 and 60 dBA during night-time hours. To address these excesses, the MECP guidelines recommend that these dwellings be equipped with a forced air ventilation system with ducts sized to accommodate the future installation of air conditioning by the occupant.

Figure 4 shows the ventilation requirements for the development. The location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MECP publication NPC-300, as applicable.

## 5.4 Building Façade Constructions

The predicted sound levels at the lot closest to the CP railway line will exceed 55 dBA at night and 60 dBA during the day due to rail noise or 60dBA at night and 65 dBA during the day due to road noise, sound attenuating building constructions (windows, doors and walls) need to be specified for the dwelling units.

Calculations have been performed to determine the building envelope constructions likely to be required to maintain indoor sound levels within MECP guidelines. The calculation methods were developed by the National Research Council (NRC). They are based on the predicted future sound levels at the building facades and the anticipated area of the façade components (walls, windows and doors) relative to the floor area of the adjacent room.

### 5.4.1 Exterior Wall Constructions

CP guidelines recommend brick exterior or masonry equivalent walls from foundation to rafters as a minimum construction for any dwellings that are in the first row of dwellings with exposure to the CP rail line. MECP guidelines recommend brick exterior walls from foundation to rafters as a minimum construction for any dwellings with a 24-hour  $L_{EQ}$  that is greater than 60 dBA which are within 100 m of the right of way of the railway. This applies to the Lot 8.

### 5.4.2 Acoustical Requirements for Glazing

#### *Lot 8*

For Lot 8, an acoustical insulation factor (AIF) of 24 is required for the bedrooms based on the possibility of sound entering the dwelling through the windows only. Glazing constructions with a Sound Transmission Class (STC) rating of 29 will provide sufficient acoustical insulation for the bedrooms as long as the window to floor area ratio does not exceed 80%. Any glazing construction meeting the requirements of the Ontario Building Code will provide sufficient sound insulation for the living/dining rooms/dens.



### ***Remaining Lots***

For the remaining lots, any exterior wall, and double-glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation.

When detailed floor plans and elevations are available for Lots 3 and 8, the glazing constructions should be refined based on actual window to floor area ratios and the exterior wall constructions should be verified.

## **5.5 Warning Clauses**

The MECP guidelines recommend that warning clauses be included in the property and tenancy agreements and offers of purchase and sale for all units with anticipated traffic sound level excesses. Examples are provided below.

Suggested wording for the units which there are sound level excesses is given below.

Type A:

Purchasers/tenants are advised that sound levels due to increasing road and rail traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the Ministry of the Environment, Conservation and Park's noise criteria.

Suggested wording for future dwellings with daytime OLA sound levels exceeding the MECP criteria by 6 dB or more, for which physical mitigation has been provided is given below.

Type B:

Purchasers/tenants are advised that despite the inclusion of noise control features in the development and within the building units, sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the Municipality's and the Ministry of the Environment's noise criteria.

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

Type C:

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



within the sound level limits of the Municipality and the Ministry of the Environment.

Suitable wording for dwellings required central air conditioning is given below.

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, Conservation and Parks.

CP may require a standard warning clause as this development is located near a principal mainline. The following sample clause is typical of those included in agreements of purchase and sale or lease on the Lands that are within 300 meters of the railway right-of-way. CP planning personnel should be contacted for further clarification of their requirements in this specific case.

Type E:

Warning: Purchasers or tenants are to be advised that Canadian Pacific Railway or its successors or assigns, have an operating right-of-way within 300 metres from the land subject hereof and there may be alterations to the right-of-way including the possibility that the Railway may expand its operations, which expansion may affect the living environment of the residents notwithstanding the inclusion of any noise and vibration attenuating measures in the design of the subdivision and individual units, and that the Railway will not be responsible for complaints or claims arising from use of its facilities and/or operations.

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

## 6 Summary of Recommendations

The following list and Table 6 summarize the recommendations made in this report. The reader is referred to the Figure 4 and previous sections of the report where these recommendations are applied and discussed in more detail.

1. An acoustical barrier is required for Lot 3. When grading plan and dwelling location are available, they shall be reviewed to confirm the acoustical barrier height requirements to meet the guidelines of NPC-300 and the requirements of Region of Durham.

2. Forced air ventilation systems with ducts sized to accommodate the future installation of central air conditioning by the occupant is required for all lots.
3. Brick or masonry exterior wall construction from foundation to rafters is required for Lot 8.
4. Upgraded glazing constructions are required for Lot 8. Any exterior wall, and double-glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation for the remaining lots. When detailed floor plans and building elevations are available for the proposed dwelling units on Lot 8, an acoustical consultant should provide revised glazing construction based on actual window to floor area ratios.
5. Noise warning clauses should be included in the Development Agreements registered on titles, and in purchase, sale and lease agreements, to inform future owners of noise concerns from transportation and sources in the area.

**Table 6: Summary of Noise Control Requirements and Noise Warning Clauses**

Lot No.	Acoustic Barrier	Ventilation Requirements*	Type of Warning Clause	Upgraded Building Constructions	
				Glazing	Brick Exterior Façade+
1 to 2	--	Forced Air	A, C, E	OBC	--
3	1.8 m	Forced Air	A, B, C, E	OBC	--
4, 5	--	Forced Air	A, C, E	OBC	--
6, 7	--	Forced Air	A, C, E	OBC	--
8	--	Forced Air	A, C, E	LR/DR: OBC BR: AIF-24	✓

Notes:

-- no specific requirement

\* The location, installation and sound rating of the air conditioning condensers must be compliant with MOE Guideline NPC-300, as applicable.

+ Brick or masonry exterior wall construction will be required from foundation to rafters

OBC – Ontario Building Code

LR/DR – Living/Dining Room BR – Bedroom

## 6.1 Implementation

To ensure that the noise control recommendations outlined above are fully implemented, it is recommended that:

- 1) When grading plan and dwelling location are available, they shall be reviewed to confirm the acoustical barrier height requirements for Lot 3.
- 2) Prior to the issuance of building permits for this development, a Professional Engineer qualified to perform acoustical engineering services in the Province of Ontario should review the architectural plans and building elevations to refine glazing requirement based on actual window to floor areas ratios for Lot 8.
- 3) Prior to the issuance of occupancy permits for this development, the City's building inspector or a Professional Engineer qualified to provide acoustical engineering services in the Province of Ontario should certify that the noise control measures for the development have been properly incorporated, installed and constructed.





Figure 1: Aerial Photo

**DRAFT PLAN of PROPOSED SUBDIVISION**  
**PART OF LOT 33 CON. 2**  
 (GEOGRAPHIC TOWNSHIP OF PICKERING)  
 CITY of PICKERING  
 REGIONAL MUNICIPALITY OF DURHAM



**KEY PLAN** 1:3000  
 Metric Scale  
 Subject Property

AREA TABLE	
Residential Lots 1-8	0.46 ha.
Roads	0.05 ha.
Sight Triangle Block 1	21.2 m <sup>2</sup>
<b>Total</b>	<b>0.51 ha.</b>

UNIT COUNT	
Single-Detached "A"	8 u

ROAD LENGTHS	
18 m R.O.W	28.6 m

LEGEND	
	Boundary of Subdivision
	Low Density Residential
	Single Detached
	Landscaped/Open space

**ADDITIONAL INFORMATION REQUIRED UNDER THE PLANNING ACT**

D. Residential  
 H. Piped water to be provided  
 I. Primarily clayey silt.  
 K. Sanitary and storm sewers to be provided

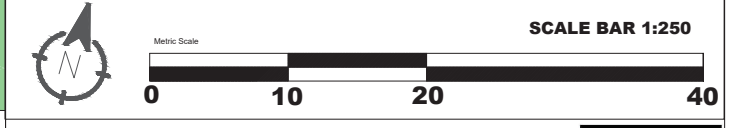
**NOTES**  
 All measurements are in metres.  
 All elevations refer to Geodetic Datum.  
 All curbs shown are diagrammatic only.

**SURVEYOR'S CERTIFICATE**  
 I hereby certify that the boundaries of the lands to be subdivided as shown on this plan, and their relationship to the adjacent lands are correctly and accurately shown.

\_\_\_\_\_  
 Signature Day Month Year

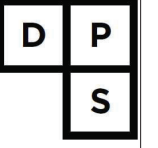
**OWNERS AUTHORIZATION**  
 We, \_\_\_\_\_ representing the registered owners of the registered lands hereby authorize DESIGN PLAN SERVICES INC. to prepare a draft plan of subdivision for submission and approval.

\_\_\_\_\_  
 Signature Day Month Year



**DESIGN PLAN SERVICES INC.**  
 Town Planning Consultants

900 The East Mall, Suite 300  
 Toronto, ON M9B 6K2  
 Telephone: 416.626.5445  
 www.designplan.ca



1:250 Scale	OCT 21st /2021 Date	1963-11 Drawing Number	Rev.	Drawn	RW Design
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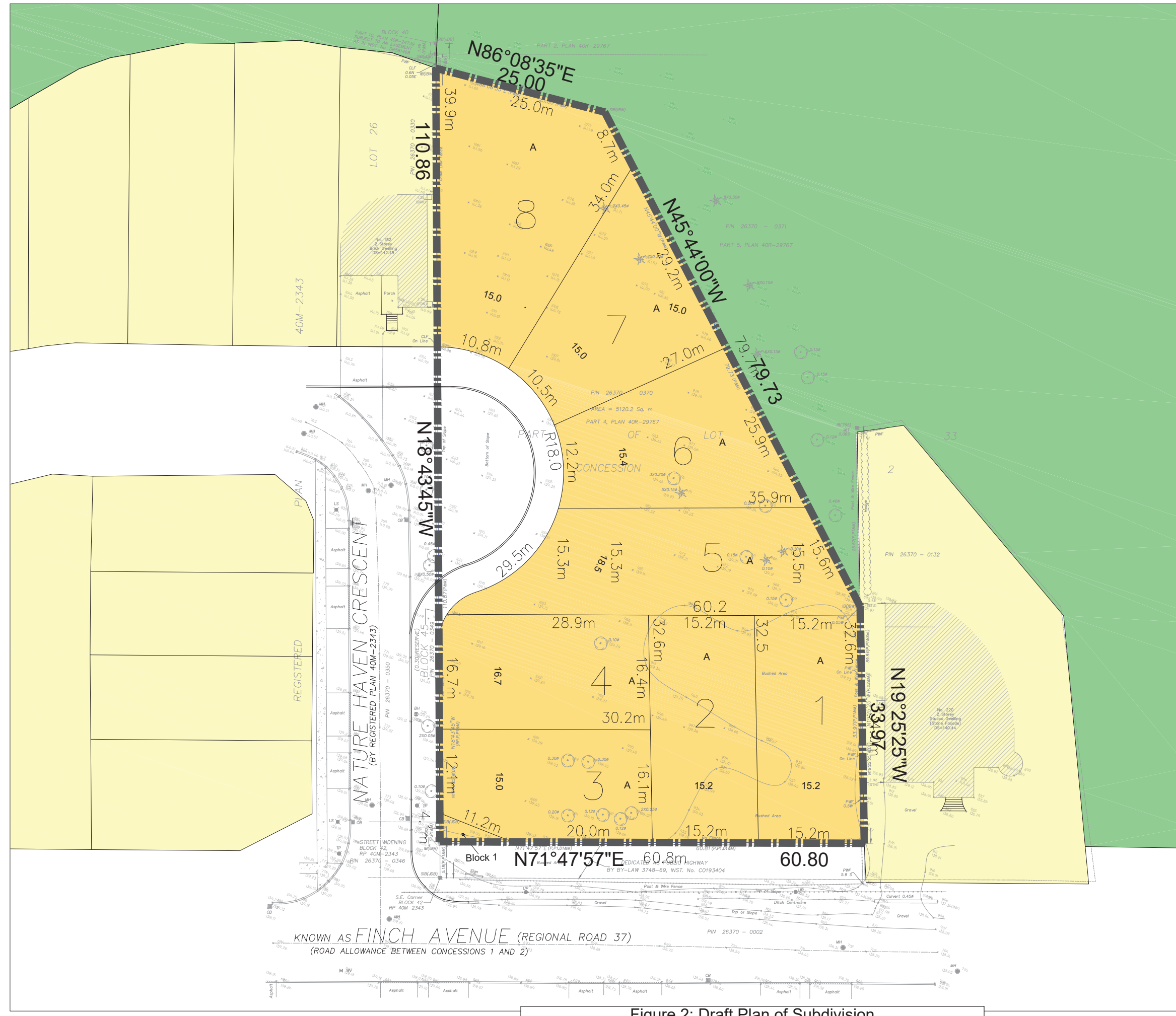
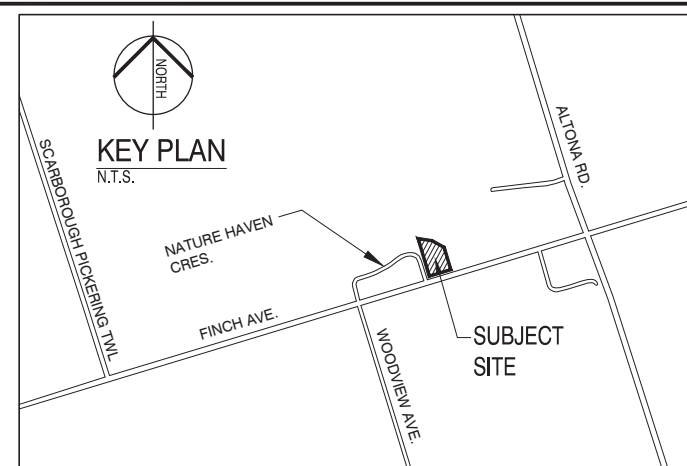


Figure 2: Draft Plan of Subdivision





### OVERALL SITE STATISTICS

<b>ROAD WIDENING</b>	515.22
<b>BLOCK 1</b>	21.30
<b>NET LOT AREA (MINUS ROAD WIDENING &amp; BLOCK 1 AREA)</b>	4584.79
<b>TOTAL AREA</b>	<b>5121.31m<sup>2</sup></b>
<b>RESIDENTIAL ZONE:</b>	<b>BASED ON "S3-7 ZONE"</b>
<b>TOTAL UNITS</b>	<b>8 SINGLE DETACHED (2 STOREY UNITS)</b>
<small>(MAX U.P.H. 0.46379 ha / 8 = 17.25)</small>	

LOT No.	MODEL TYPE	LOT AREA (m <sup>2</sup> )	LOT FRONTAGE (m)	BUILDING HEIGHT (m) 9.0m MAX.	UNIT G.F.A. (m <sup>2</sup> )	COVERAGE W/ PORCH (m <sup>2</sup> ) 38% MAX.	COVERAGE PERCENTAGE %	LANDSCAPE AREA (m <sup>2</sup> )	LANDSCAPE PERCENTAGE %
1	MODEL-A	495.32	15.20	9.00	000.0	188.22	38.00	000.0	0.00
2	MODEL-A	495.15	15.20	9.00	000.0	188.16	38.00	000.0	0.00
3	MODEL-C	467.26	14.39	9.00	000.0	177.55	38.00	000.0	0.00
4	MODEL-A	493.50	16.45	9.00	000.0	187.53	38.00	000.0	0.00
5	MODEL-B	707.89	15.29	9.00	000.0	268.92	38.00	000.0	0.00
6	MODEL-D	558.20	14.46	9.00	000.0	193.55	34.80	000.0	0.00
7	MODEL-D	558.75	13.92	9.00	000.0	211.56	38.00	000.0	0.00
8	MODEL-B	813.20	13.97	9.00	000.0	308.01	38.00	000.0	0.00
<b>TOTAL:</b>		<b>3215.12 m<sup>2</sup></b>	<b>90.99 m</b>	<b>9.00 m</b>	<b>0.00 m<sup>2</sup></b>	<b>1203.93 m<sup>2</sup></b>	<b>37.5 m<sup>2</sup></b>	<b>0.00 m<sup>2</sup></b>	<b>0.0 m<sup>2</sup></b>

PARKING	PROVIDED	REQUIRED
		SPACES
8 LOTS WITH 2 SPACES IN GARAGE AND 2 SPACES IN DRIVEWAY	32 SPACES	16 SPACES
<b>TOTAL</b>	<b>32 SPACES</b>	<b>16 SPACES</b>

- ### LEGEND
- STORM CONNECTION
  - - - SANITARY CONNECTION
  - WATER CONNECTION
  - HYDRO CONNECTION
  - DOUBLE CATCH BASIN
  - CATCH BASIN
  - STREET LIGHT
  - HYDRANT
  - TRANSFORMER
  - CABLE TV PEDESTAL
  - BELL PEDESTAL
  - △ ENTRANCE DOOR LOCATION
  - △ GARAGE DOOR LOCATION
  - COMMUNITY MAILBOX
  - ENGINEERED FILL LOT
  - VALVE AND CHAMBER
  - SANITARY MANHOLE
  - STORM MANHOLE
  - AIR-CONDITIONING UNIT
  - PROPOSED GRADE
  - EXISTING GRADE
  - PROPOSED SWALE GRADE
  - ESTABLISHED GRADE
  - DOWNSPOUT LOCATION
  - SUMP PUMP
  - PROPOSED BERM
  - SWALE DIRECTION
  - HYDRO METER
  - GAS METER
  - MUNICIPAL ADDRESS
  - F.F.L.R. FINISHED FLOOR ELEVATION
  - T/WALL TOP OF FOUNDATION WALL
  - F.SLAB FIN. BASEMENT FLOOR SLAB
  - U/FTG. UNDERSIDE FOOTING ELEVATION
  - TPZ FENCE
  - PROPERTY LINE

**PART OF LOT 33 CONCESSION 2**  
**GEOGRAPHIC TOWNSHIP OF PICKERING**  
**CITY OF PICKERING**  
 REGIONAL MUNICIPALITY OF DURHAM

SCALE 1 : 250  
 10 5 0 10 METRES

**BENCHMARK**  
 ELEVATIONS ARE GEODETIC AND REFERRED TO CITY OF PICKERING B.M. NO. 1-090, ELEVATION = 140.969 M

**NOTES:**  
 LEGAL SURVEY INFORMATION AND LOT DIMENSIONS SHOWN ON THIS PLAN ARE TAKEN FROM A PLAN PREPARED BY: ERTL SURVEYORS ONTARIO LAND SURVEYORS WWW.ES-OLS.COM 1254 REID STREET, UNIT 10, RICHMOND HILL L4B 1C1 TELEPHONE (905) 731-7634 FAX (905) 731-7852 EMAIL INFO@ES-OLS.COM DATED: FEB. 23 2018 WHICH MAY NOT BE FINAL AND ARE NOT GUARANTEED. THE FINAL REGISTERED PLAN OF SUBDIVISION SHALL BE REFERRED TO FOR CONFIRMATION OF THE DATA.

**PRELIMINARY**  
 NOT TO BE USED FOR CONSTRUCTION

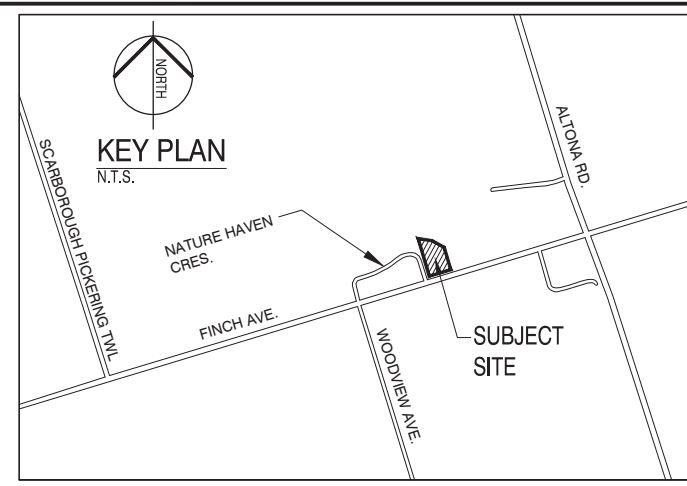
### 230 Finch Ave-Nature Haven Cres.

GROSS SITE AREA: 5121.31 m<sup>2</sup> / 1.265 Ac / 0.512 Ha

<span style="display:inline-block; width:15px; height:15px; background-color:#90EE90; border:1px solid black;"></span> LANDSCAPED AREA / OPEN SPACE:	Approx. 2689.57 m <sup>2</sup> ± 52.5% (GROSS SITE AREA)
<span style="display:inline-block; width:15px; height:15px; background-color:#FFB6C1; border:1px solid black;"></span> BUILDING AREA:	Approx. 1645.41 m <sup>2</sup> ± 32.1% (GROSS SITE AREA)
<span style="display:inline-block; width:15px; height:15px; background-color:#A9A9A9; border:1px solid black;"></span> DRIVEWAY AREA:	Approx. 450.53 m <sup>2</sup> ± 8.8% (GROSS SITE AREA)
<span style="display:inline-block; width:15px; height:15px; background-color:#808080; border:1px solid black;"></span> HARD SURFACE AREA: <small>(Parking, Roadway &amp; Walkways)</small>	Approx. 335.80 m <sup>2</sup> ± 6.6% (GROSS SITE AREA)

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3	REV. LOT CONFIGURATION & ISSUED TO CLIENT FOR REVIEW.
2	ADDED ADDITIONAL AREA STATS & ISSUED TO CLIENT FOR REVIEW.
1	ISSUED TO CLIENT FOR REVIEW.
No.	DATE: WORK DESCRIPTION:
 64 JARDIN DR. SUITE 3A VAUGHAN ONT. L4K 3P3 TEL: 905 660-3377 FAX: 905 660-3713 EMAIL: info@jardindesign.ca	
<b>CONTEXT SITE PLAN</b> (C O L O U R) 230 Finch Ave-Nature Haven Cres. ( PICKERING )	
TYPE	SP
SCALE	1:250
PROJ. No.	No.
20-XX	A-01

Figure 3: Site Plan



### OVERALL SITE STATISTICS

ROAD WIDENING	515.22								
BLOCK 1	21.30								
NET LOT AREA (MINUS ROAD WIDENING & BLOCK 1 AREA)	4584.79								
TOTAL AREA :	<b>5121.31m<sup>2</sup></b>								
RESIDENTIAL ZONE:	BASED ON "S3-7 ZONE"								
TOTAL UNITS	8 SINGLE DETACHED (2 STOREY UNITS)								
<small>(MAX U.P.H. 0.46379 ha / 8 = 17.25)</small>									
LOT No.	MODEL TYPE	LOT AREA (m <sup>2</sup> )	LOT FRONTAGE (m)	BUILDING HEIGHT (m) 9.0m MAX.	UNIT G.F.A. (m <sup>2</sup> )	COVERAGE W/ PORCH (m <sup>2</sup> ) 38% MAX.	COVERAGE PERCENTAGE %	LANDSCAPE AREA (m <sup>2</sup> )	LANDSCAPE PERCENTAGE %
1	MODEL-A	495.32	15.20	9.00	000.0	188.22	38.00	000.0	0.00
2	MODEL-A	495.15	15.20	9.00	000.0	188.16	38.00	000.0	0.00
3	MODEL-C	467.26	14.39	9.00	000.0	177.55	38.00	000.0	0.00
4	MODEL-A	493.50	16.45	9.00	000.0	187.53	38.00	000.0	0.00
5	MODEL-B	707.89	15.29	9.00	000.0	268.92	38.00	000.0	0.00
6	MODEL-D	556.20	14.46	9.00	000.0	193.55	34.80	000.0	0.00
7	MODEL-D	556.75	13.92	9.00	000.0	211.56	38.00	000.0	0.00
8	MODEL-B	813.20	13.97	9.00	000.0	308.01	38.00	000.0	0.00
<b>TOTAL:</b>		<b>3215.12 m<sup>2</sup></b>	<b>90.99 m</b>	<b>9.00 m</b>	<b>0.00 m<sup>2</sup></b>	<b>1203.93 m<sup>2</sup></b>	<b>37.5 m<sup>2</sup></b>	<b>0.00 m<sup>2</sup></b>	<b>0.0 m<sup>2</sup></b>

PARKING	PROVIDED	REQUIRED
8 LOTS WITH 2 SPACES IN GARAGE AND 2 SPACES IN DRIVEWAY	32 SPACES	16 SPACES
<b>TOTAL</b>	<b>32 SPACES</b>	<b>16 SPACES</b>

### LEGEND

- STORM CONNECTION
- - - SANITARY CONNECTION
- WATER CONNECTION
- HYDRO CONNECTION
- DOUBLE CATCH BASIN
- CATCH BASIN
- STREET LIGHT
- HYDRANT
- TRANSFORMER
- CABLE TV PEDESTAL
- BELL PEDESTAL
- ENTRANCE DOOR LOCATION
- GARAGE DOOR LOCATION
- COMMUNITY MAILBOX
- ENGINEERED FILL LOT
- VALVE AND CHAMBER
- SANITARY MANHOLE
- STORM MANHOLE
- AIR-CONDITIONING UNIT
- PROPOSED GRADE
- EXISTING GRADE
- PROPOSED SWALE GRADE
- ESTABLISHED GRADE
- DOWNSPOUT LOCATION
- SUMP PUMP
- PROPOSED BERM
- SWALE DIRECTION
- HYDRO METER
- GAS METER
- MUNICIPAL ADDRESS
- F.F.L.R. FINISHED FLOOR ELEVATION
- T/WALL TOP OF FOUNDATION WALL
- F.SLAB FIN. BASEMENT FLOOR SLAB
- U/FTG. UNDERSIDE FOOTING ELEVATION
- TPZ FENCE
- PROPERTY LINE

NOTE:

**PART OF LOT 33 CONCESSION 2**  
**GEOGRAPHIC TOWNSHIP OF PICKERING**  
**CITY OF PICKERING**  
**REGIONAL MUNICIPALITY OF DURHAM**

SCALE 1 : 250

**BENCHMARK**  
 ELEVATIONS ARE GEODETIC AND REFERRED TO CITY OF PICKERING B.M. NO. 1-090, ELEVATION = 140.969 M

**NOTES:**  
 LEGAL SURVEY INFORMATION AND LOT DIMENSIONS SHOWN ON THIS PLAN ARE TAKEN FROM A PLAN PREPARED BY: ERTL SURVEYORS ONTARIO LAND SURVEYORS WWW.ES-OLS.COM 1254 REID STREET, UNIT 10, RICHMOND HILL, L4B 1C1 TELEPHONE (905) 731-7834 FAX (905) 731-7852 EMAIL INFO@ES-OLS.COM DATED: FEB. 23 2018 WHICH MAY NOT BE FINAL AND ARE NOT GUARANTEED. THE FINAL REGISTERED PLAN OF SUBDIVISION SHALL BE REFERRED TO FOR CONFIRMATION OF THE DATA.

**PRELIMINARY**  
 NOT TO BE USED FOR CONSTRUCTION

### 230 Finch Ave-Nature Haven Cres.

GROSS SITE AREA: 5121.31 m<sup>2</sup> / 1.265 Ac / 0.512 Ha

LANDSCAPED AREA / OPEN SPACE:	Approx. 2689.57 m <sup>2</sup> ± 52.5% (GROSS SITE AREA)
BUILDING AREA:	Approx. 1645.41 m <sup>2</sup> ± 32.1% (GROSS SITE AREA)
DRIVEWAY AREA:	Approx. 450.53 m <sup>2</sup> ± 8.8% (GROSS SITE AREA)
HARD SURFACE AREA: (Parking, Roadway & Walkways)	Approx. 335.80 m <sup>2</sup> ± 6.6% (GROSS SITE AREA)

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3	REV. LOT CONFIGURATION & ISSUED TO CLIENT FOR REVIEW.
2	ADDED ADDITIONAL AREA STATS & ISSUED TO CLIENT FOR REVIEW.
1	ISSUED TO CLIENT FOR REVIEW.
No.	DATE: WORK DESCRIPTION:

**jardin**  
 DESIGN GROUP INC  
 64 JARDIN DR. SUITE 3A  
 VAUGHAN ONT. L4K 3P3  
 TEL: 905 660-3377 FAX: 905 660-3713  
 EMAIL: info@jardindesign.ca

**CONTEXT SITE PLAN**  
 (COLOUR)  
 230 Finch Ave-Nature Haven Cres.  
 (PICKERING)

TYPE	SP
SCALE	1:250
PROJ. No.	20-XX
No.	A-01

**BILD**

Figure 4: Plan Showing Ventilation & Noise Barrier Requirements

**APPENDIX A**  
**ROAD TRAFFIC DATA**



ACOUSTICS



NOISE



VIBRATION



# The Regional Municipality of Durham

Planning and Economic  
Development Department

Planning Division

605 ROSSLAND RD. E.  
4TH FLOOR  
P.O. BOX 623  
WHITBY, ON L1N 6A3  
CANADA  
905-668-7711  
1-800-372-1102  
Fax: 905-666-6208  
E-Mail: [planning@durham.ca](mailto:planning@durham.ca)

[www.durham.ca](http://www.durham.ca)

**Brian Bridgeman, MCIP, RPP**  
Commissioner of Planning and  
Economic Development

## ROAD SEGMENT TRAFFIC FORECASTS FOR NOISE ANALYSES

This information is to be used as the basis for assessing the potential impacts of noise, generated by traffic on Provincial Highways and arterial roads, on proposed land uses that are sensitive (e.g., residential subdivisions). Arterial roads include existing and future Type A, B and C, as designated in the Durham Regional Official Plan.

Noise assessment reports recommend specific measures to be integrated into the design of sensitive developments to reduce road noise impacts to acceptable levels.

### Provided For:

Name / Name of Firm: **Mandy Chan, HGC Engineering**  
Address: **2000 Argentia Rd., Plaza One, Suite 203, Mississauga, ON**  
Telephone: **(905) 826-4044** Fax:

### Location of Proposal:

230 Finch Avenue (west of Altona Road)

Municipality: **Pickering** Lot(s): Concession:  
Durham Region File No. (if available):  
Name of Property Owner (if available):

**Date Request Received:** November-21-19 Received By: **Chris Leitch**

**Date Forecast Sent:** November-27-19

Name of Road Segment	Forecasted AADT*	No. of Lanes	% of Trucks	Heavy : Medium		Speed (km/h)
				Truck	Truck Ratio	
Finch Avenue, west of Altona Road	15,000	2	6	60	40	50
Altona Road, north of Finch Avenue	13,000	2	10	30	70	60
	0	0	0	0	0	0
	0	0	0	0	0	0

\* Average Annual Daily Traffic. Forecast based on ultimate development according to the Durham Regional Official Plan.



800 - 1290 Central Parkway West  
Mississauga, Ontario  
Canada L5C 4R3

T 905 803 3429  
E josie\_tomei@cpr.ca

November 26, 2019

Via email: machan@hgcengineering.com

Mandy Chan  
HGC Engineering  
2000 Argentia Road  
Plaza One, Suite 203  
Mississauga, ON L5N 1P7

Dear Sir/Madam:

*Re: Rail Traffic Volumes, CP Mileage 191.37, Belleville Subdivision,  
230 Finch Avenue, Pickering*

This is in reference to your request for rail traffic data in the vicinity of 230 Finch Avenue in the City of Pickering. The study area is located at mile 191.37 of our Belleville Subdivision, which is classified as a Principal Main line.

The information requested is as follows:

1. Number of freight trains between 0700 & 2300: 5  
Number of freight trains between 2300 & 0700: 2
2. Maximum cars per train freight: 207
3. Number of locomotives per train: 2, 4 maximum
4. Maximum permissible train speed: 60 mph
5. The whistle signal is prohibited approaching public grade crossings through the study area, however, the whistle may be sounded if deemed necessary by the train crew for safety reasons at any time.
6. There is 1 mainline track with continuously welded rail.

The information provided is based on recent rail traffic. Variations of the above may exist on a day-to-day basis. Specific measurements may also vary significantly depending on customer needs.

Yours truly,

Josie Tomei SR/WA  
Specialist Real Estate Sales & Acquisitions – Ontario

## **APPENDIX B SAMPLE STAMSON OUTPUT**



ACOUSTICS



NOISE



VIBRATION

STAMSON 5.0                    NORMAL REPORT                    Date: 25-10-2021 11:55:26  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 1fr.te                    Time Period: Day/Night 16/8 hours  
 Description: Predicted daytime and nighttime sound levels at the 2<sup>nd</sup> storey windows of Lot 1

Rail data, segment # 1: CP (day/night)

Train Type	! Trains	! Speed (km/h)	! # loc / Train	! # Cars / Train	! Eng type	! Cont weld
* 1.	! 6.7/2.7	! 97.0	! 4.0	! 207.0	! Diesel	! Yes

\* The identified number of trains have been adjusted for future growth using the following parameters:

Train type: No Name	! Unadj. ! Trains	! Annual % ! Increase	! Years of ! Growth
1.	! 5.0/2.0	! 2.50	! 12.00

Data for Segment # 1: CP (day/night)

Angle1 Angle2 : -90.00 deg 90.00 deg  
 Wood depth : 0 (No woods.)  
 No of house rows : 1 / 1  
 House density : 70 %  
 Surface : 1 (Absorptive ground surface)  
 Receiver source distance : 230.00 / 230.00 m  
 Receiver height : 4.50 / 4.50 m  
 Topography : 1 (Flat/gentle slope; no barrier)  
 No Whistle  
 Reference angle : 0.00

Results segment # 1: CP (day)

LOCOMOTIVE (0.00 + 51.81 + 0.00) = 51.81 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.50	74.83	-17.73	-1.17	0.00	-4.12	0.00	51.81

WHEEL (0.00 + 43.11 + 0.00) = 43.11 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.60	67.56	-18.97	-1.35	0.00	-4.12	0.00	43.11

Segment Leq : 52.36 dBA

Total Leq All Segments: 52.36 dBA

Results segment # 1: CP (night)

LOCOMOTIVE (0.00 + 50.87 + 0.00) = 50.87 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.50	73.89	-17.73	-1.17	0.00	-4.12	0.00	50.87

WHEEL (0.00 + 42.17 + 0.00) = 42.17 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.60	66.62	-18.97	-1.35	0.00	-4.12	0.00	42.17

Segment Leq : 51.42 dBA

Total Leq All Segments: 51.42 dBA

Road data, segment # 1: Finch Ave (day/night)

```
-----
Car traffic volume : 12690/1410 veh/TimePeriod *
Medium truck volume : 324/36 veh/TimePeriod *
Heavy truck volume : 486/54 veh/TimePeriod *
Posted speed limit : 50 km/h
Road gradient : 0 %
Road pavement : 1 (Typical asphalt or concrete)
* Refers to calculated road volumes based on the following input:
```

```
24 hr Traffic Volume (AADT or SADT): 15000
Percentage of Annual Growth : 2.50
Number of Years of Growth : 0.00
Medium Truck % of Total Volume : 2.40
Heavy Truck % of Total Volume : 3.60
Day (16 hrs) % of Total Volume : 90.00
```

Data for Segment # 1: Finch Ave (day/night)

```
-----
Angle1 Angle2 : -90.00 deg 90.00 deg
Wood depth : 0 (No woods.)
No of house rows : 0 / 0
Surface : 1 (Absorptive ground surface)
Receiver source distance : 22.50 / 22.50 m
Receiver height : 4.50 / 4.50 m
Topography : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: Finch Ave (day)

Source height = 1.38 m

```
ROAD (0.00 + 62.78 + 0.00) = 62.78 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----
-90 90 0.57 66.86 0.00 -2.77 -1.31 0.00 0.00 0.00 62.78
-----
```

Segment Leq : 62.78 dBA

Total Leq All Segments: 62.78 dBA

Results segment # 1: Finch Ave (night)

Source height = 1.38 m

```
ROAD (0.00 + 56.25 + 0.00) = 56.25 dBA
Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-----
-90 90 0.57 60.33 0.00 -2.77 -1.31 0.00 0.00 0.00 56.25
-----
```

Segment Leq : 56.25 dBA

Total Leq All Segments: 56.25 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 63.16  
(NIGHT): 57.48



STAMSON 5.0                      NORMAL REPORT                      Date: 25-10-2021 12:42:12  
 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: 3ola2.te                      Time Period: 16 hours  
 Description: Predicted daytime sound level in the rear yard of Lot 3 with a 1.8 m high noise wall

Rail data, segment # 1: CP

Train Type	Trains	Speed (km/h)	# loc /Train	# Cars /Train	Eng type	Cont weld
* 1. Freight	6.7/2.7	97.0	4.0	207.0	Diesel	Yes

\* The identified number of trains have been adjusted for future growth using the following parameters:

Train No	Name	Unadj. Trains	Annual % Increase	Years of Growth
1.	Freight	5.0/2.0	2.50	12.00

Data for Segment # 1: CP

-----  
 Angle1    Angle2                      : -90.00 deg    90.00 deg  
 Wood depth                      :            0            (No woods.)  
 No of house rows                :            2  
 House density                    :            90 %  
 Surface                            :            1            (Abaasorptive ground surface)  
 Receiver source distance        : 270.00 m  
 Receiver height                  :            4.50 m  
 Topography                        :            1            (Flat/gentle slope; no barrier)  
 No Whistle  
 Reference angle                  :            0.00

Results segment # 1: CP

LOCOMOTIVE (0.00 + 46.68 + 0.00) = 46.68 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.50	74.83	-18.77	-1.17	0.00	-8.21	0.00	46.68

WHEEL (0.00 + 37.91 + 0.00) = 37.91 dBA

Angle1	Angle2	Alpha	RefLeq	D.Adj	F.Adj	W.Adj	H.Adj	B.Adj	SubLeq
-90	90	0.60	67.56	-20.08	-1.35	0.00	-8.21	0.00	37.91

Segment Leq : 47.22 dBA

Total Leq All Segments: 47.22 dBA

Road data, segment # 1: Finch Ave

-----  
 Car traffic volume                : 12690 veh/TimePeriod \*  
 Medium truck volume              : 324 veh/TimePeriod \*  
 Heavy truck volume                : 486 veh/TimePeriod \*  
 Posted speed limit                : 50 km/h  
 Road gradient                      : 0 %  
 Road pavement                     : 1 (Typical asphalt or concrete)

Data for Segment # 1: Finch Ave

```

-----
Angle1   Angle2           : -90.00 deg   40.00 deg
Wood depth      :           0   (No woods.)
No of house rows :           0
Surface         :           1   (Absorptive ground surface)
Receiver source distance : 26.50 m
Receiver height  :           1.50 m
Topography      :           2   (Flat/gentle slope; with barrier)
Barrier angle1   : -90.00 deg   Angle2 : 40.00 deg
Barrier height   :           1.80 m
Barrier receiver distance : 8.00 m
Source elevation :           0.00 m
Receiver elevation :           0.00 m
Barrier elevation :           0.00 m
Reference angle  :           0.00
    
```

Results segment # 1: Finch Ave

Source height = 1.38 m

Barrier height for grazing incidence

```

-----
Source      ! Receiver      ! Barrier      ! Elevation of
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)
-----+-----+-----+-----
          1.38 !          1.50 !          1.46 !          1.46
    
```

ROAD (0.00 + 55.31 + 0.00) = 55.31 dBA

```

-----
Angle1 Angle2   Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----
   -90    40    0.56  66.86   0.00  -3.84  -2.33   0.00   0.00  -5.37  55.31
-----
    
```

Segment Leq : 55.31 dBA

Total Leq All Segments: 55.31 dBA

TOTAL Leq FROM ALL SOURCES: 55.94