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Attention: Jack Mangan  
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**Re: Noise Impact Study of the Proposed Residential Development**  
210 Clearview Avenue, Ottawa, ON  
Pinchin File: 313119

Pinchin Ltd. (Pinchin) was retained by Homestead Land Holdings Limited (Client) to prepare a noise impact study report for its proposed residential development (Development) at 210 Clearview Avenue, Ottawa, ON. This report has been prepared to evaluate the noise impacts from external stationary sources and road traffic on the Development and the Development on nearby noise sensitive receptors. The purpose of the study is to support re-zoning and/or site plan control applications for the proposed Development.

The proposed Development will include the construction of one residential building. The building will include two levels of underground parking, twenty-four levels of residential units, and one level of penthouse for amenity spaces and mechanical equipment.

Figure 1, Appendix B shows the locations of the proposed Development, external stationary sources and nearby roads. Additional drawings showing the site plan, floor and elevation plans are included in Appendix C.

## **1.0 NOISE CRITERIA**

In this study, noise criteria outlined in the City of Ottawa's Environmental Noise Control Guidelines (ENCG) [1] and the Ontario Ministry of Environment, Conservation and Parks (MECP) Publication NPC-300 [2] were adopted. The applicable noise criteria for this proposed redevelopment are described as follows:

### **1.1 Outdoor Noise Criteria**

The daytime noise criterion for outdoor living areas (OLAs) is 55 dBA for road and rail noise sources. Where it is not technically, economically, or administratively feasible to meet the 55 dBA limit, up to 60 dBA is permissible with warning clauses. Where the daytime sound level is greater than 60 dBA, control measures are required to reduce the sound level to 60 dBA or less.



The proposed development has made provisions for a variety of protected indoor amenities such as screening room, party and exercise rooms, etc. that are accessible to all future occupants/owners in the proposed Development. There are also outdoor rooftop terraces on the 4<sup>th</sup> and 25<sup>th</sup> floors. In addition, there are balconies and terraces for the respective suites, and it should be noted that typically, balconies in residential condominium buildings are not considered OLAs unless both of the following conditions exist: they are at least 4 m in depth and there is no provision for protected amenities within the development.

## **1.2 External Building Façade Criteria**

Where the sound levels at the exterior of the building facades exceed 55 dBA at living/dining room windows during daytime hours and 50 dBA at bedroom windows during nighttime periods, the unit must be provided with forced air heating with provision for central air conditioning. Where the sound levels exceed by more than 10 dB (i.e. 65 dBA at living/dining room windows and 60 dBA at bedroom windows), central air conditioning must be incorporated into the building design prior to occupancy. Upgraded window glazing construction may be required and warning clauses are applicable as well.

It should be noted that in high and medium density residential developments, other forms of mechanical ventilation may be available. Ventilation methods other than central air conditioning are acceptable for high and medium density residential developments, subject to the following conditions:

- the noise produced by the proposed ventilation system in the space served does not exceed 40 dBA;
- the ventilation system complies with all national, provincial and municipal standards and codes;
- the ventilation system is designed by a heating and ventilation professional; and
- the ventilation system enables the windows and exterior doors to remain closed.

## **1.3 Noise Criteria for Stationary Sources**

The applicable MECP noise criteria at a point of reception (POR) are dictated by MECP Publication NPC-300 [2] for Class 1 Areas. These guidelines state that the one-hour sound exposures (Leq, 1 hour) from stationary noise sources in Class 1 areas shall not exceed:

- the higher of 50 dBA or background noise between 0700h and 1900h;
- the higher of 50 dBA or background noise between 1900h and 2300h; and
- the higher of 45 dBA or background noise between 2300h and 0700h (excluding outdoor PORs).



The sound level limits for the testing of emergency generator are 5 dBA higher than the above limits.

## 2.0 POINT OF RECEPTION DESCRIPTION

To evaluate the noise impact from external stationary sources, eight onsite noise sensitive receptors (ON-North, ON-West, ON-SE, ON-OLA1 to ON-OLA5) were selected from the Development's most affected locations. Receptors ON-North, ON-West and ON-SE represent 3rd floor windows on the north, west and southeast facades, respectively. Receptors ON-OLA1 to ON-OLA3 represent the outdoor living areas on the 4<sup>th</sup> level roof decks. Receptors ON-OLA4 and ON-OLA5 represent the outdoor living areas on the penthouse (25<sup>th</sup>) floor level.

To evaluate the noise impact from road traffic on the Development, two onsite noise sensitive receptors (ON-South and ON-South-OLA) were selected from the south side of the building. Receptor ON-South represents the south façade windows on the 3<sup>rd</sup> floor level. Receptor ON-South-OLA represents the rooftop OLA on the 4<sup>th</sup> level roof deck.

The following table lists the selected receptor details:

Point of Reception ID	Point of Reception Location	Point of Reception Height, m
ON_OLA1	Rooftop OLA - 11.7 m	11.7
ON_OLA2	Rooftop OLA - 11.7 m	11.7
ON_OLA3	Rooftop OLA - 11.7 m	11.7
ON_OLA4	Rooftop OLA - 75.3 m	75.3
ON_OLA5	Rooftop OLA - 75.3 m	75.3
ON_North	North Facade Windows - 10 m	10.0
ON_SE	Southeast Corner Windows - 10 m	10.0
ON_West	West Facade Windows - 10 m	10.0
ON-South	South Façade, 3rd Floor Windows	8.7
ON-South-OLA	Outdoor Living Area, Roof Deck on 4th Floor	11.7



Locations of the selected receptors are shown in Figure 2, Appendix B.

It was confirmed by the Client that outdoor at-grade amenity space is not required by the zoning bylaw. Therefore, no at-grade OLAs were selected from the Development.

To evaluate the noise impact from the Development on nearby noise sensitive land uses, four receptors (EXT-R1 to EXT-R4) were selected from nearby noise sensitive land uses. Receptor EXT-R1 represents a 3-storey townhouse located to the southeast of the Development. Receptor EXT-R2 represents a high-rise residential building located to the east of the Development. Receptor EXT-R3 represents a 3-storey apartment building located to the north of the Development. Receptor EXT-R4 represents a one storey institutional building located to the west of the Development.

Locations of the selected receptors are shown in Figures 7 and 8, Appendix B.

### **3.0 NOISE IMPACT ASSESSMENT**

#### **3.1 Noise Impact from External Stationary Sources on the Development**

A review of aerial photos of the area shows that there are four facilities/buildings that are located within 100 m of the proposed Development.

To the west of the Development is an institutional operation (Centre Jules-Léger). To the east and north of the Development are three residential towers (185, 195, and 200 Clearview Avenue). It should be noted that all three residential towers are owned and operated by the Client.

To collect the equipment sound information, a site visit was conducted on Friday July 22, 2022. At the Client's buildings (185, 195, and 200 Clearview Avenue), significant sources were identified and acoustic measurements were conducted to quantify the radiated sound. An acoustic model was developed to predict the noise impact on the Development.

The Client tried to request the permission for access to the institutional building. However, permission was not granted by the property manager. As such, Pinchin estimated the rooftop equipment sound information based on the review of aerial photos and observations during the site visit.

Further to the south of the Development are more residential buildings, a government building (Graham Spry Building) and a transformer distribution station. However, since all these buildings are located beyond the 100 m setback, they were not included in this assessment.

Based on the information collected during the site visit, the significant noise sources associated with the external buildings are provided in Table 3, Appendix A, and include the following:

#### **Centre Jules-Léger:**

- One (1) air handling unit (source CJL\_AHU1);



- One (1) HVAC unit (source CJL\_HVAC1); and
- Ten (10) make-up air units (sources CJL\_MUA1 to CJL\_MUA10).

#### **185/195/200 Clearview Avenue:**

- Two (2) cooling towers (CT195\_IN, CT195\_North, CT195\_South, CT195\_West, CT200\_East, CT200\_North, CT200\_South, and CT200\_West);
- Two (2) emergency generators (sources GEN195\_EX, GEN195\_IN, GEN200\_EX, and GEN200\_Vent);
- One (1) fan/motor casing (source F\_195\_12M); and
- Thirteen (13) exhaust fans (sources F\_195\_01 to F\_195\_13).

Equipment sound data were based on measurements collected during the site visit and Pinchin's past measurements on similar sized equipment. Table 3, Appendix A, lists the equipment sound information.

In modelling the noise impact from the external stationary sources, all equipment was assumed operating 60 minutes during daytime, evening and nighttime hours. The only exception includes the testing of the two emergency generators at 195 and 200 Clearview Avenue. The emergency generators are tested for 60 minutes during daytime hours.

The predicted noise impacts from stationary sources and emergency generator testing are summarized in Tables 4 and 5, Appendix A, respectively. Noise impact contour maps are presented in Figures 4 and 5, Appendix B.

### **3.2 Noise Impact from Transportation Sources on the Development**

A review of aerial photos showed that there are four collector roads (Lanark Avenue to the south, Sir John A. Macdonald Parkway to the north, Island Park Drive to the east and Scott Road to the south) and a bus transitway to the south. However, all these roads and bus transitway, except Lanark Avenue, are located at distances beyond 100 m setback for arterial/collector roads and BRT, as specified by the ENCG. The review of aerial photo showed that there are no CN/CP railway lines and 400-series highways within 500 m of the Development.

The proposed Development is located approximately 9 km to the northwest of the Ottawa International Airport. Annex 10 of the City's Official Plan shows that the Airport Vicinity Development Zone (AVDZ) extends up to the intersection of Baseline Road and Woodroffe Avenue to the northwest of the Airport. The distance from the proposed Development to the nearest AVDZ is approximately 3.2 km. Therefore, the aircraft noise impact was deemed insignificant and the aircraft warning clause is not required. A copy of the aircraft noise impact contour map is included in Figure 3, Appendix B.



The AADT volume for Lanark Avenue was taken from Table 1, Appendix B of the ENCG. Details of traffic data and vehicle breakdowns are provided in Table D1, Appendix D.

The sound levels at the proposed development due to road traffic were calculated using the MECP program STAMSON, Version 5.04 [3]. STAMSON uses the traffic volumes for the road and basic topographical information for the site in its calculations. Details of calculation results are provided in Appendices A and D.

### **3.3 Noise Control Measures**

The traffic noise impacts and control measures are provided in Tables 1 and 2, Appendix A. Table 1, Appendix A provides the STAMSON calculation results at most affected building facade and outdoor living area. Table 2, Appendix A, summarizes the predicted sound levels at selected units and outdoor living areas, as well as the applicable noise control requirements. An approximately 1.2 m high rooftop barrier with a combination of parapet and glass panel would be constructed on all sides of the roof deck areas. The barrier was included in the STAMSON calculations.

The predicted traffic noise impacts range from 57 dBA to 65 dBA at the selected onsite receptor. The predicted levels indicate that the units should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion. Warning clause Types A and C are required to be included in agreements of offers of purchase and sale, lease/rental agreements and condominium declarations. Details of the warning clause is included in Appendix E.

It was confirmed by the Client that all units will be equipped with central air conditioning and HRV systems. The construction will exceed the City's and MECP ventilation requirements.

Since the predicted traffic noise impacts do not exceed 65 dBA and 60 dBA during daytime and nighttime hours, respectively, no special construction requirements on building components (i.e. windows, doors and walls) are warranted. Constructions meeting the Ontario Building Code (OBC) would be sufficient to provide the required sound attenuation.

The architectural drawings show that all walls will be constructed using masonry walls (for floors 1 to 3) and EIFS (Exterior Insulation and Finish System) panels. The masonry walls and EIFS systems are anticipated to provide the STC rating exceeding the minimum OBC requirements for exterior walls.

The external stationary source noise impacts are provided in Tables 4 to 6, Appendix A. As shown in Table 4, Appendix A, the predicted stationary source noise impacts exceed the MECP exclusionary sound level limits at selected onsite receptors (ON-OLA1 and ON-SE). Calculations showed that noise abatement is required on the west façade opening of the cooling tower building (CT200\_West).



One (1) acoustic silencer or its acoustical equivalent (e.g. acoustic louvre) may be installed on the west façade opening of the cooling tower building (CT200\_West). The acoustic silencer or its acoustical equivalent should be capable of providing the following minimum values of insertion-Loss in 1/1 octave frequency bands:

Centre Frequency (Hertz)	63	125	250	500	1000	2000	4000	8000
Insertion Loss (decibel)	5	8	10	12	15	15	10	8

The predicted sound levels following the implementation of the above noise control are presented in Table 5, Appendix A, and Figure 5, Appendix B.

The Client proposes to complete the installation of the silencer or its acoustical equivalent within six (6) months after the issuance of an above grade building permit under the Building Code Act, 1992, as amended, for the proposed Development.

### **3.4 Noise Impact from the Development on Nearby Sensitive Receptors**

Based on the information provided by the Client, the significant noise sources associated with the proposed Development are included in Table 3, Appendix A, and may include the following:

- Two (2) garage exhaust fans (sources INT\_EF1, 2);
- One (1) emergency generator (source INT\_GEN);
- One (1) make-up air unit (source INT\_MUA); and
- One (1) cooling tower (sources INT\_CT\_Air, INT\_CT\_Back, INT\_CT\_Motor, INT\_CT\_End, and INT\_CT\_Top).

Pinchin was advised by the Client that the proposed equipment would be materially similar to the equipment used at the Client’s other development projects in Kingston, Ontario. Consequently, manufacturers’ sound data for the generator, make-up unit, and the cooling tower at the other developments were provided by the Client and are included in Appendix F. The sound power level for the garage fans was calculated based on the published engineering method.

CadnaA was used to predict the noise impact from external sources on the Development. The modeling protocol was similar to the modelling of the external sources.

In modelling the noise impact from the proposed equipment, the following assumptions were made. The emergency generator was assumed testing for 30 minutes during daytime hours. The Client indicates that the cooling tower will be equipped with variable speed motor(s). Consequently, the cooling tower was modelled operating for 60 minutes during daytime hours, 45 minutes during evening hours, and 30 minutes during nighttime hours. The selected duty cycles are in line with operations of typical comfort



heating equipment used at residential facilities. Both the make-up air unit and the garage fans were modelled operating continuously during daytime, evening, and nighttime hours.

The following table summarizes the modelled equipment operating schedule:

<b>Equipment</b>	<b>Daytime Operation</b>	<b>Evening Operation</b>	<b>Nighttime Operation</b>
Emergency Generator Testing (INT_GEN)	30 min/hr	No Operation	No Operation
Cooling Tower (INT_CT)	60 min/hr	45 min/hr	30 min/hr
Garage Exhaust Fans (INT_EF1, 2)	60 min/hr	60 min/hr	60 min/hr
Make-up Air Unit (INT_MUA)	60 min/hr	60 min/hr	60 min/hr

Tables 7 and 8 summarize the compliance status of the Development at each receptor location. Noise impact contour maps are presented in Figures 7 and 8, Appendix B.

#### **4.0 CONCLUSIONS**

A detailed noise impact assessment of the proposed Development was completed by modelling the noise impacts from road traffic and external stationary sources on the Development. The assessment shows that the traffic noise impact on the Development meets the NPC-300 noise criteria, with the included control measure (rooftop parapet/glass panels) and proposed installation of central air conditioning systems. In addition, the following warning clause Types A and C are required.

##### **Warning Clause Type A – From MECP NPC-300**

“Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment.”

##### **Warning Clause Type C – From MECP NPC-300**

“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.”

The predicted noise impacts from external stationary sources exceed the NPC-300 noise criteria. However, calculations show that, with the implementation of the recommended noise mitigation measure in Section 3.4, predicted worst-case external stationary source noise levels are shown to be at or below the applicable MECP NPC-300 Class 1 guideline limits at all onsite receptor locations.





The predicted noise impacts from the Development on external sensitive receptors meet the NPC-300 noise criteria. Noise control measures are not required.

## 5.0 TERMS AND LIMITATIONS

This work was performed subject to the Terms and Limitations presented or referenced in the proposal for this project.

Information provided by Pinchin is intended for Client use only. Pinchin will not provide results or information to any party unless disclosure by Pinchin is required by law. Any use by a third party of reports or documents authored by Pinchin or any reliance by a third party on or decisions made by a third party based on the findings described in said documents, is the sole responsibility of such third parties. Pinchin accepts no responsibility for damages suffered by any third party as a result of decisions made or actions conducted. No other warranties are implied or expressed.

## 6.0 CLOSURE

Should you have any questions or concerns regarding the contents of this study, please contact the undersigned.

Sincerely,

**Pinchin Ltd.**

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## 7.0 REFERENCES

1. City of Ottawa, Environmental Noise Control Guidelines: Introduction and Glossary, January 2016.
2. Ministry of the Environment Publication NPC-300, "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", August 2013.
3. Ministry of the Environment's STAMSON/STEAM Computer Programme, (Version 5.04),

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Template: Master Noise Impact Study Letter, ERC, March 5, 2020

**APPENDIX A**  
**Tables**  
**(9 Pages)**

**Table 1 - Road Traffic Noise Prediction Results**

<b>Point of Reception ID</b>	<b>Point of Reception Location</b>	<b>Point of Reception Height, m</b>	<b>Daytime Sound Level, dBA <sup>[1]</sup></b>	<b>Nighttime Sound Level, dBA <sup>[2]</sup></b>
ON-South	South Façade, 3rd Floor Windows	8.7	65	57
ON-South-OLA	Outdoor Living Area, Roof Deck on 4th Floor	11.7	58	-

Notes

1. The daytime period is from 7 am to 11 pm.
2. The nighttime period is from 11 pm to 7 am.

Table 2: Summary of Noise Control Measures

Point of Reception ID [1]	Façade/Location Description [2]	Predicted Unmitigated Sound Level at Most Affected Facades (Leq, dBA) [3]		Approximate Distance to Road, m [4]	Exterior Window STC Requirements [5]	Ventilation Requirements [6]	Wall Requirements [7]	Approximate Barrier Height [8]	Warning Clauses [9]
		Daytime (16 hr)	Nighttime (8 hr)						
ON-South	South Façade, 3rd Floor Windows	65	57	20.0	OBC	Provision	OBC	n/a	Type C
ON-South-OLA	Outdoor Living Area, Roof Deck on 4th Floor	58	-	21.5	-	-	-	m (Parapet + Glass Panel)	Type A

Notes:

- [1] Where applicable, the PORs are referred to the room dimensions. See the floor plans in Appendix C.
- [2] The north façade faces Lanark Avenue.
- [3] STAMSON predicted sound levels at the planes of windows or outdoor living areas in dBA.
- [4] The distance is measured from the façade to the centerline of the road.
- [5] The windows are specified in pane-gap-pane for double glazing or pane-gap-pane-gap-pane for triple glazing.
- [6] OBC - the window should be designed to meet the Ontario Building Code requirements.  
 Provision - the dwelling should be designed with a provision for the installation of central air conditioning in the future, at the occupant's discretion.  
 Central AC - installation of central air conditioning should be implemented.
- [7] OBC - the wall should be designed and constructed to meet the Ontario Building Code requirements.
- [8] Acoustic barriers for outdoor living areas on the roof.
- [9] For details on warning clauses, see Appendix E.

**Table 3: External and Internal Noise Source Summary Table**

Source ID <sup>[1]</sup>	Source Description	Lw(A) <sup>[2]</sup>	Source Location <sup>[3]</sup>	Sound Characteristics <sup>[4]</sup>	Noise Control Measures <sup>[5]</sup>	Source of Data <sup>[6]</sup>
CJL_AHU1	Air Handling Unit	90	O	S	U	File
CJL_HVAC1	HVAC Unit	82	O	S	U	File
CJL_MUA1	Make-up Air Unit	81	O	S	U	File
CJL_MUA10	Make-up Air Unit	81	O	S	U	File
CJL_MUA2	Make-up Air Unit	81	O	S	U	File
CJL_MUA3	Make-up Air Unit	81	O	S	U	File
CJL_MUA4	Make-up Air Unit	81	O	S	U	File
CJL_MUA5	Make-up Air Unit	81	O	S	U	File
CJL_MUA6	Make-up Air Unit	81	O	S	U	File
CJL_MUA7	Make-up Air Unit	81	O	S	U	File
CJL_MUA8	Make-up Air Unit	81	O	S	U	File
CJL_MUA9	Make-up Air Unit	81	O	S	U	File
CT195_IN	Cooling Tower Intake - 195	78	O	S	U	Mea
CT195_North	Cooling Tower North Vent - 195	92	O	S	U	Mea
CT195_South	Cooling Tower South Vent - 195	92	O	S	U	Same as CT195_North
CT195_West	Cooling Tower West Vent - 195	92	O	S	U	Same as CT195_North
CT200_East	Cooling Tower Room Louvre - East, 200	86	O	S	U	Mea
CT200_North	Cooling Tower Room Louvre - North, 200	84	O	S	U	Mea
CT200_South	Cooling Tower Room Louvre - South, 200	90	O	S	U	Mea
CT200_West	Cooling Tower Room Louvre - West, 200	95	O	S	S	Mea
F_195_01	Exhaust Fan	76	O	S	U	Mea
F_195_02	Exhaust Fan	81	O	S	U	Mea
F_195_03	Exhaust Fan	78	O	S	U	Mea
F_195_04	Exhaust Fan	78	O	S	U	Mea
F_195_05	Exhaust Fan	78	O	S	U	Mea
F_195_06	Exhaust Fan	79	O	S	U	Mea
F_195_07	Exhaust Fan	83	O	S	U	Mea
F_195_08	Exhaust Fan	83	O	S	U	Mea
F_195_09	Exhaust Fan	78	O	S	U	Mea
F_195_10	Exhaust Fan	81	O	S	U	Mea
F_195_11	Exhaust Fan	76	O	S	U	Mea
F_195_12	Exhaust Fan	77	O	S	U	Mea
F_195_12M	Motor Casing	84	O	S	U	Mea
F_195_13	Exhaust Fan	78	O	S	U	Mea

**Table 3: External and Internal Noise Source Summary Table**

Source ID <sup>[1]</sup>	Source Description	Lw(A) <sup>[2]</sup>	Source Location <sup>[3]</sup>	Sound Characteristics <sup>[4]</sup>	Noise Control Measures <sup>[5]</sup>	Source of Data <sup>[6]</sup>
GEN195_EX	Generator Exhaust - 195	87	O	S	S	Mea
GEN195_IN	Generator Intake - 195	94	O	S	U	Mea
GEN200_EX	Generator Exhaust - 200	92	O	S	S	Mea
GEN200_Vent	Generator Vent - 200	96	O	S	U	Mea
INT_CT_Air	Cooling Tower - Air Inlet	89	O	S	U	Cal
INT_CT_Back	Cooling Tower - Back	83	O	S	U	Cal
INT_CT_End	Cooling Tower - End	81	O	S	U	Cal
INT_CT_Motor	Cooling Tower - Connection	83	O	S	U	Cal
INT_CT_Top	Cooling Tower - Top	89	O	S	U	Cal
INT_GEN	Back-up Generator - Ground	96	O	S	U	Man
INT_MUA	Make-up Air Unit	88	O	S	U	Man
INT_EF1	Garage Exhaust	81	O	S	U	Cal
INT_EF2	Garage Exhaust	81	O	S	U	Cal

**Notes:**

- [1] Wherever possible, the Source ID is identical with that used in the ESDM report.
- [2] Sound Power Levels of continuous noise sources, in dBA, do not include sound characteristic adjustments per NPC-104. Sound Power Levels of impulsive noise sources, in dBAI, are A-weighted incorporating an impulsive time weighting.
- [3] Source Location:  
O - located/installed outside the building, including on the roof  
I - located/installed inside the building
- [4] Sound Characteristic  
S = Steady  
Q = Quasi-Steady Impulsive
- [5] Noise Control Measures  
S = Silencer/Muffler/Louver  
A = Acoustic lining, plenum  
B = Barrier, berm, screening
- [6] Mea - Measured  
Cal - Engineering calculations  
File - Past measurements on similar equipment

**Table 4: Acoustic Assessment Summary Table - From External Stationary Sources on the Development, Without Abatement**

Point of Reception ID	Point of Reception Description	Time Period <sup>[1]</sup>	Total Level at POR (L <sub>eq</sub> , 1-hr) <sup>[2]</sup>	Verified by Acoustic Audit (Yes/No)	Performance Limit (L <sub>eq</sub> 1-hr) <sup>[3]</sup>	Compliance with Performance Limit (Yes/No)
ON_OLA1	Rooftop OLA - 11.7 m	Daytime	54	No	50	No
		Evening	54	No	50	No
ON_OLA2	Rooftop OLA - 11.7 m	Daytime	47	No	50	Yes
		Evening	47	No	50	Yes
ON_OLA3	Rooftop OLA - 11.7 m	Daytime	45	No	50	Yes
		Evening	45	No	50	Yes
ON_OLA4	Rooftop OLA - 75.3 m	Daytime	41	No	50	Yes
		Evening	41	No	50	Yes
ON_OLA5	Rooftop OLA - 75.3 m	Daytime	42	No	50	Yes
		Evening	42	No	50	Yes
ON_North	North Facade Windows - 10 m	Daytime	43	No	50	Yes
		Evening	43	No	50	Yes
		Nighttime	43	No	45	Yes
ON_SE	Southeast Corner Windows - 10 m	Daytime	55	No	50	No
		Evening	55	No	50	No
		Nighttime	55	No	45	No
ON_West	West Facade Windows - 10 m	Daytime	43	No	50	Yes
		Evening	43	No	50	Yes
		Nighttime	43	No	45	Yes

**Notes:**

- [1] The predictable worst-case one (1) hour period was considered in the study.
- [2] Worst-case one hour equivalent sound level from all applicable sources operating in dBA.
- [3] NPC-300 exclusionary sound level limits of one hour L<sub>eq</sub> for Class 1 Areas.



**Table 5: Acoustic Assessment Summary Table - From External Stationary Sources on the Development, With Abatement**

Point of Reception ID	Point of Reception Description	Time Period <sup>[1]</sup>	Total Level at POR (L <sub>eq</sub> , 1-hr) <sup>[2]</sup>	Verified by Acoustic Audit (Yes/No)	Performance Limit (L <sub>eq</sub> 1-hr) <sup>[3]</sup>	Compliance with Performance Limit (Yes/No)
ON_OLA1	Rooftop OLA - 11.7 m	Daytime	46	No	50	Yes
		Evening	46	No	50	Yes
ON_OLA2	Rooftop OLA - 11.7 m	Daytime	42	No	50	Yes
		Evening	42	No	50	Yes
ON_OLA3	Rooftop OLA - 11.7 m	Daytime	45	No	50	Yes
		Evening	45	No	50	Yes
ON_OLA4	Rooftop OLA - 75.3 m	Daytime	38	No	50	Yes
		Evening	38	No	50	Yes
ON_OLA5	Rooftop OLA - 75.3 m	Daytime	41	No	50	Yes
		Evening	41	No	50	Yes
ON_North	North Facade Windows - 10 m	Daytime	40	No	50	Yes
		Evening	40	No	50	Yes
		Nighttime	40	No	45	Yes
ON_SE	Southeast Corner Windows - 10 m	Daytime	45	No	50	Yes
		Evening	45	No	50	Yes
		Nighttime	45	No	45	Yes
ON_West	West Facade Windows - 10 m	Daytime	43	No	50	Yes
		Evening	43	No	50	Yes
		Nighttime	43	No	45	Yes

**Notes:**

- [1] The predictable worst-case one (1) hour period was considered in the study.
- [2] Worst-case one hour equivalent sound level from all applicable sources operating in dBA.
- [3] NPC-300 exclusionary sound level limits of one hour L<sub>eq</sub> for Class 1 Areas.

**Table 6: Acoustic Assessment Summary Table - From External Emergency Generators on the Development**

Point of Reception ID	Point of Reception Description	Time Period <sup>[1]</sup>	Total Level at POR ( $L_{eq}$ , 1-hr) <sup>[2]</sup>	Verified by Acoustic Audit (Yes/No)	Performance Limit ( $L_{eq}$ 1-hr) <sup>[3]</sup>	Compliance with Performance Limit (Yes/No)
ON_OLA1	Rooftop OLA - 11.7 m	Daytime	52	No	55	Yes
ON_OLA2	Rooftop OLA - 11.7 m	Daytime	45	No	55	Yes
ON_OLA3	Rooftop OLA - 11.7 m	Daytime	29	No	55	Yes
ON_OLA4	Rooftop OLA - 75.3 m	Daytime	39	No	55	Yes
ON_OLA5	Rooftop OLA - 75.3 m	Daytime	41	No	55	Yes
ON_North	North Facade Windows - 10 m	Daytime	44	No	55	Yes
ON_SE	Southeast Corner Windows - 10 m	Daytime	53	No	55	Yes
ON_West	West Facade Windows - 10 m	Daytime	27	No	55	Yes

**Notes:**

- [1] The predictable worst-case one (1) hour period was considered in the study.
- [2] Worst-case one hour equivalent sound level from all applicable sources operating in dBA.
- [3] NPC-300 exclusionary daytime sound level limit of one hour  $L_{eq}$  for Class 1 Areas, plus 5 dB for emergency generator testing.

**Table 7: Acoustic Assessment Summary Table - From the Development Stationary Sources on External Sensitive Receptors**

Point of Reception ID	Point of Reception Description	Time Period <sup>[1]</sup>	Total Level at POR (L <sub>eq</sub> , 1-hr) <sup>[2]</sup>	Verified by Acoustic Audit (Yes/No)	Performance Limit (L <sub>eq</sub> 1-hr) <sup>[3]</sup>	Compliance with Performance Limit (Yes/No)
EXT_R1	Home to Southeast	Daytime	37	No	50	Yes
		Evening	37	No	50	Yes
		Nighttime	37	No	45	Yes
EXT_R2	Apartment Building to East	Daytime	46	No	50	Yes
		Evening	46	No	50	Yes
		Nighttime	45	No	45	Yes
EXT_R3	Home to North	Daytime	37	No	50	Yes
		Evening	37	No	50	Yes
		Nighttime	37	No	45	Yes
EXT_R4	Institutional Building to West	Daytime	41	No	50	Yes
		Evening	40	No	50	Yes
		Nighttime	38	No	45	Yes

**Notes:**

- [1] The predictable worst-case one (1) hour period was considered in the study.
- [2] Worst-case one hour equivalent sound level from all applicable sources operating in dBA.
- [3] NPC-300 exclusionary sound level limits of one hour L<sub>eq</sub> for Class 1 Areas.

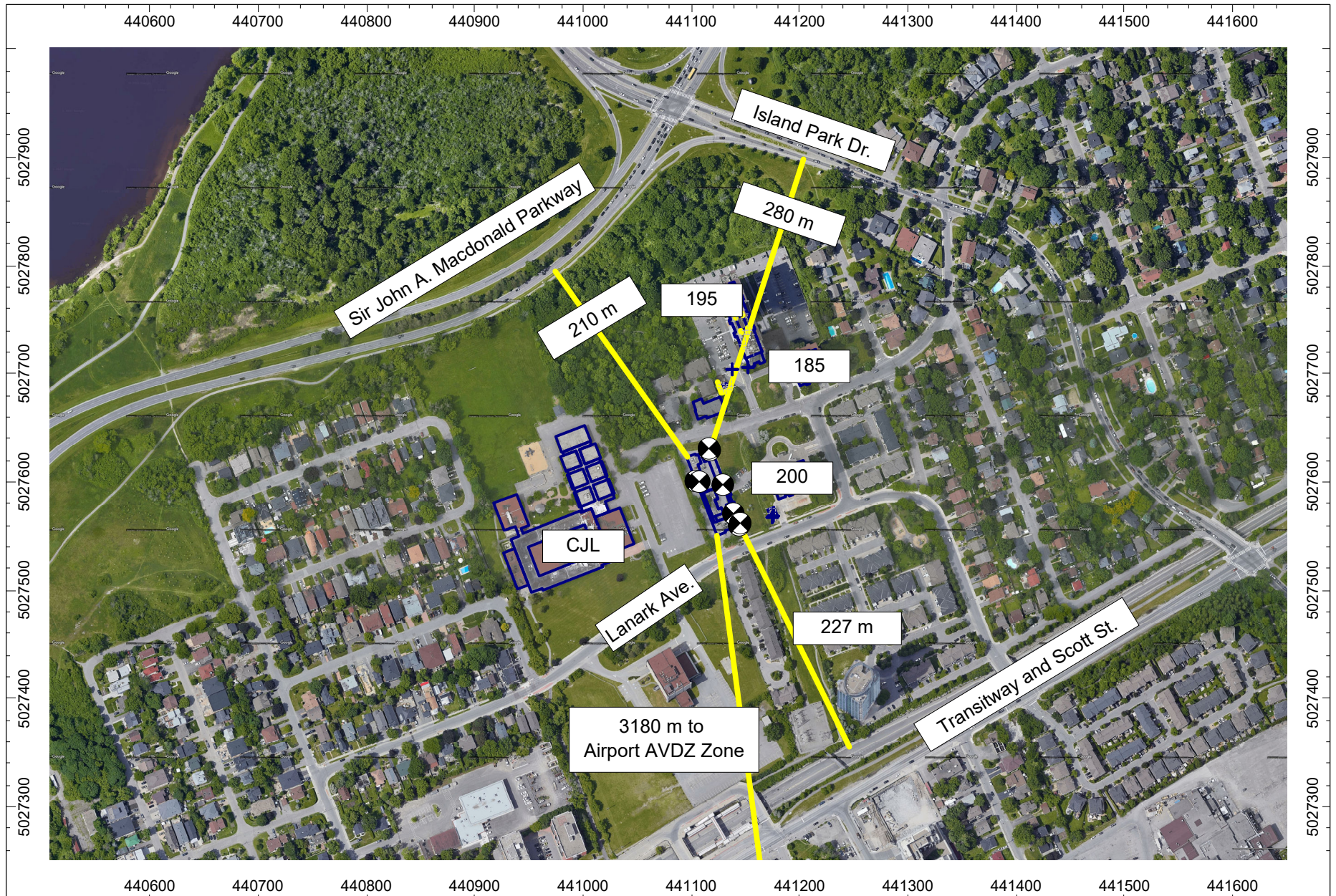
**Table 8: Acoustic Assessment Summary Table - From the Development Generator Testing on External Sensitive Receptors**

Point of Reception ID	Point of Reception Description	Time Period <sup>[1]</sup>	Total Level at POR (L <sub>eq</sub> , 1-hr) <sup>[2]</sup>	Verified by Acoustic Audit (Yes/No)	Performance Limit (L <sub>eq</sub> 1-hr) <sup>[3]</sup>	Compliance with Performance Limit (Yes/No)
EXT_R1	Home to Southeast	Daytime	36	No	55	Yes
EXT_R2	Apartment Building to East	Daytime	20	No	55	Yes
EXT_R3	Home to North	Daytime	38	No	55	Yes
EXT_R4	Institutional Building to West	Daytime	43	No	55	Yes

**Notes:**

- [1] The predictable worst-case one (1) hour period was considered in the study.
- [2] Worst-case one hour equivalent sound level from all applicable sources operating in dBA.
- [3] NPC-300 exclusionary sound level limits of one hour L<sub>eq</sub> for Class 1 Areas, plus 5 dB for emergency equipment testing.

**APPENDIX B**  
**Figures**  
**(8 Pages)**



**Figure 1- Scaled Area Plan, Showing Proposed Building, Stationary Sources and Roads**

Homestead Land Holdings Limited, 210 Clearview Avenue, Ottawa, ON

Pinchin Project: 313119

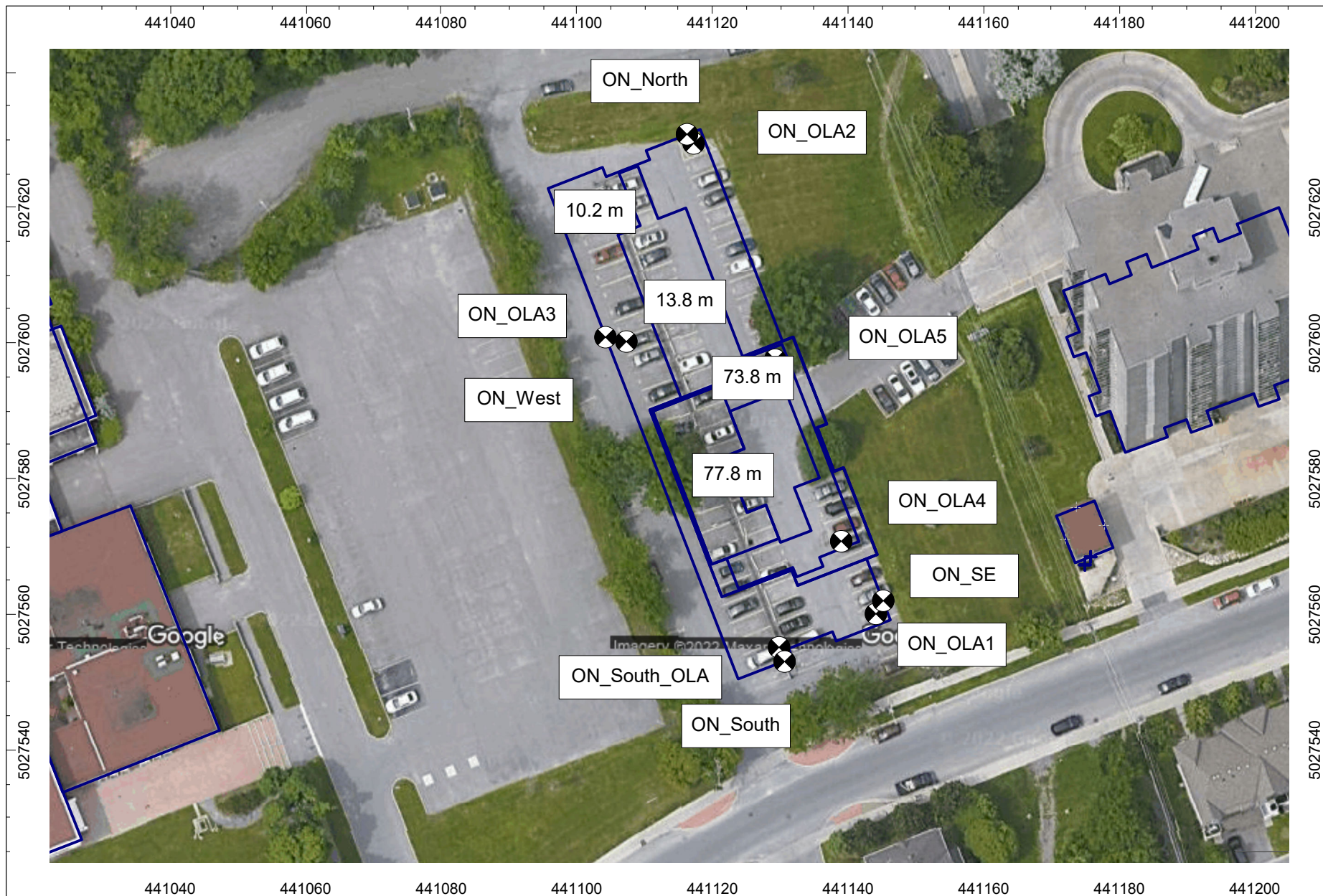


Drawn by: WNL

Scale: 1:5,000

Date: August 22, 2024





**Figure 2- Site Plan, Showing Proposed Building and Onsite Receptors**



Drawn by: WNL

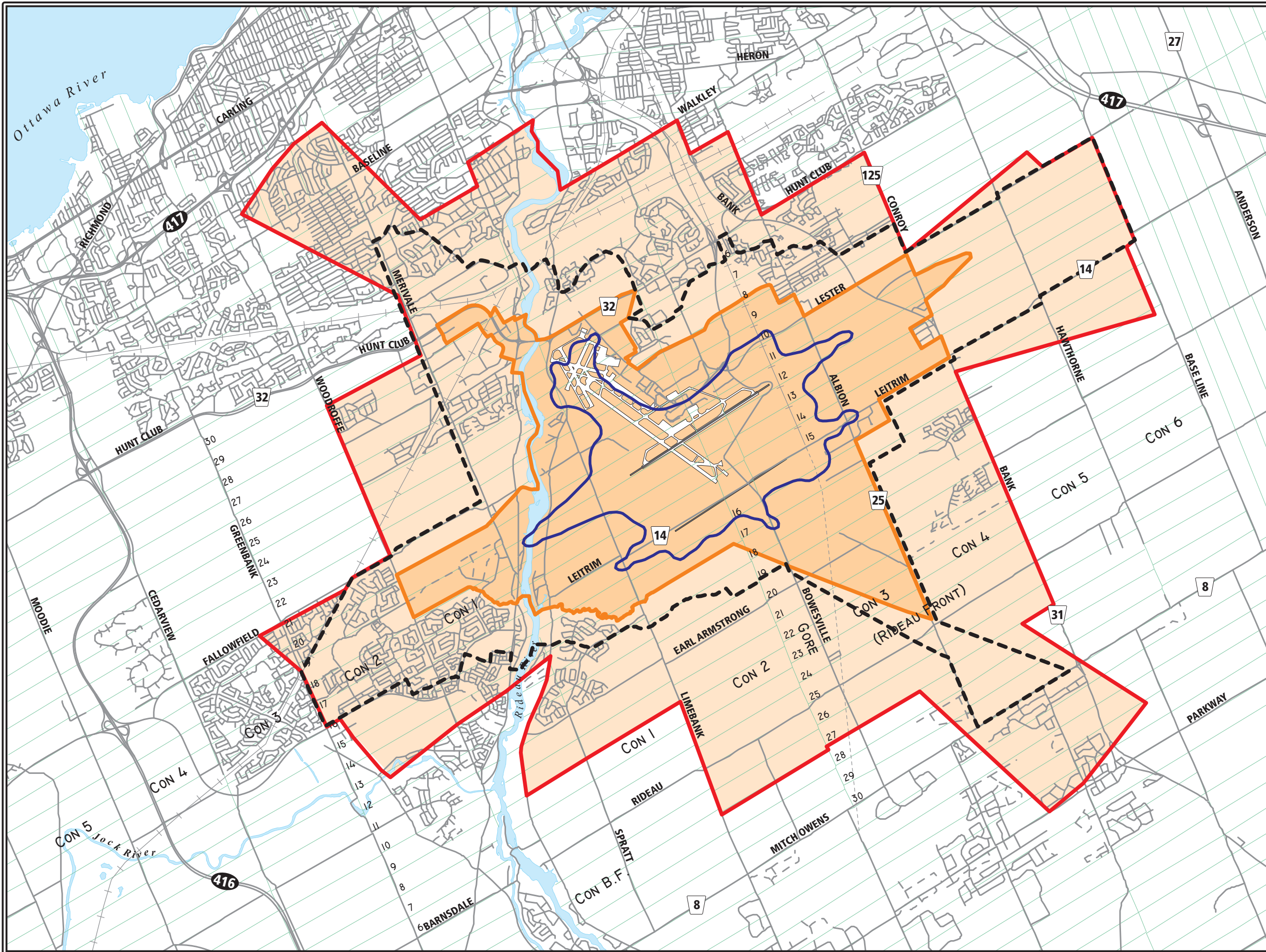
Scale: 1:800

Date: August 22, 2024

Homestead Land Holdings Limited, 210 Clearview Avenue, Ottawa, ON

Pinchin Project: 313119





# OFFICIAL PLAN - ANNEX 10

## Land Use Constraints Due to Aircraft Noise

Prepared by: City of Ottawa,  
Department of Planning, Transit and the Environment,  
September 2011

# PLAN OFFICIEL - APPENDICE 10

## Contraintes limitant l'utilisation en raison du bruit des avions

Préparé par : Ville d'Ottawa,  
Le Service de l'urbanisme, du transport en commun et de l'environnement,  
septembre 2011

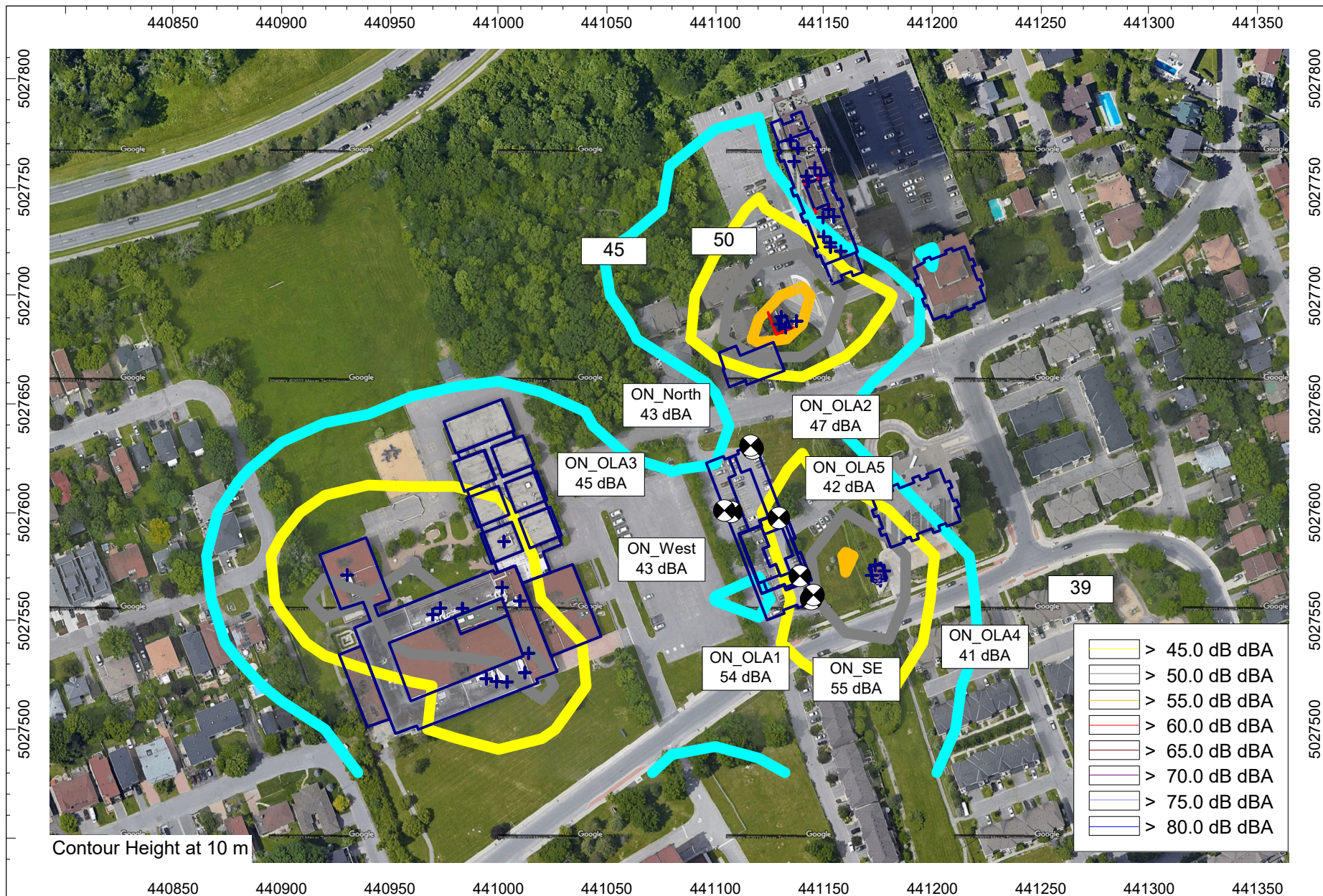
- Airport Vicinity Development Zone  
Zone d'aménagement dans le voisinage de l'aéroport
- 25 Line (Composite of 25 NEF/NEP)  
Ligne 25 (ensemble des courbes NEF et NEP 25)
- 35 Line Noise Exposure Protection (NEP 2023)  
Ligne 35 : prévisions à long terme de l'ambiance sonore (NEP 2023)
- Airport Zoning Regulations  
Règlements de zonage applicables à de l'Aéroport
- Airport Operating Influence Zone  
Zone d'influence d'exploitation de l'aéroport

**Note:**  
The boundaries of the Ottawa Airport Operating Influence Zone and the Airport Vicinity Development Zone, are not subject to interpretation and their precise locations should be read from a map at a scale of 1:50,000 available from the City of Ottawa and the Ottawa International Airport Authority.

Figure 3

Scale / Échelle  
1km 0 1 2 3 km





**Figure 4 - Noise Impact Contour Map, Stationary Sources Without Abatement**



Drawn by: WNL

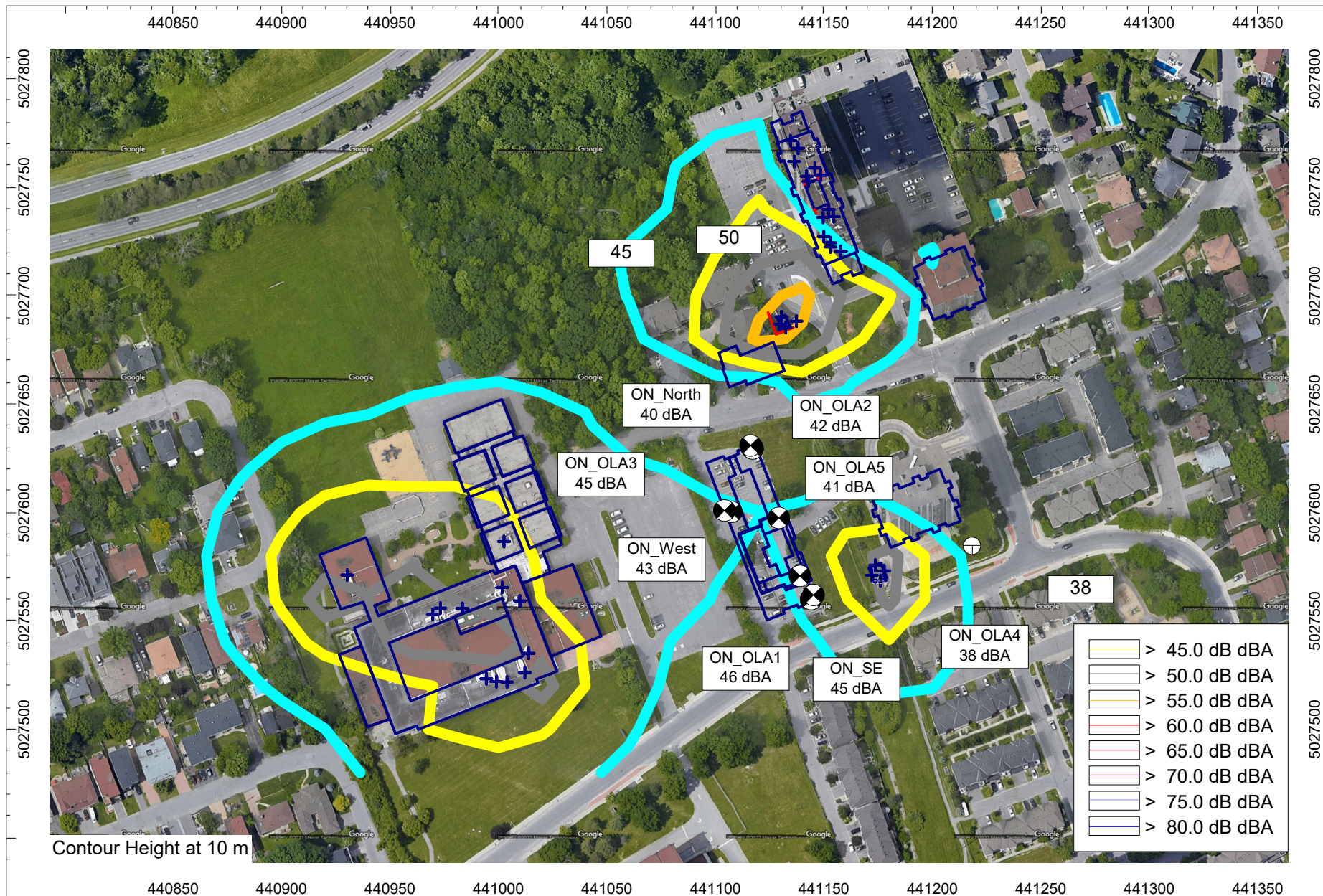
Scale: 1:2,500

Date: August 22, 2024

Homestead Land Holdings Limited, 210 Clearview Avenue, Ottawa, ON

Pinchin Project: 313119





**Figure 5 - Noise Impact Contour Map, Stationary Sources With Abatement**



Drawn by: WNL

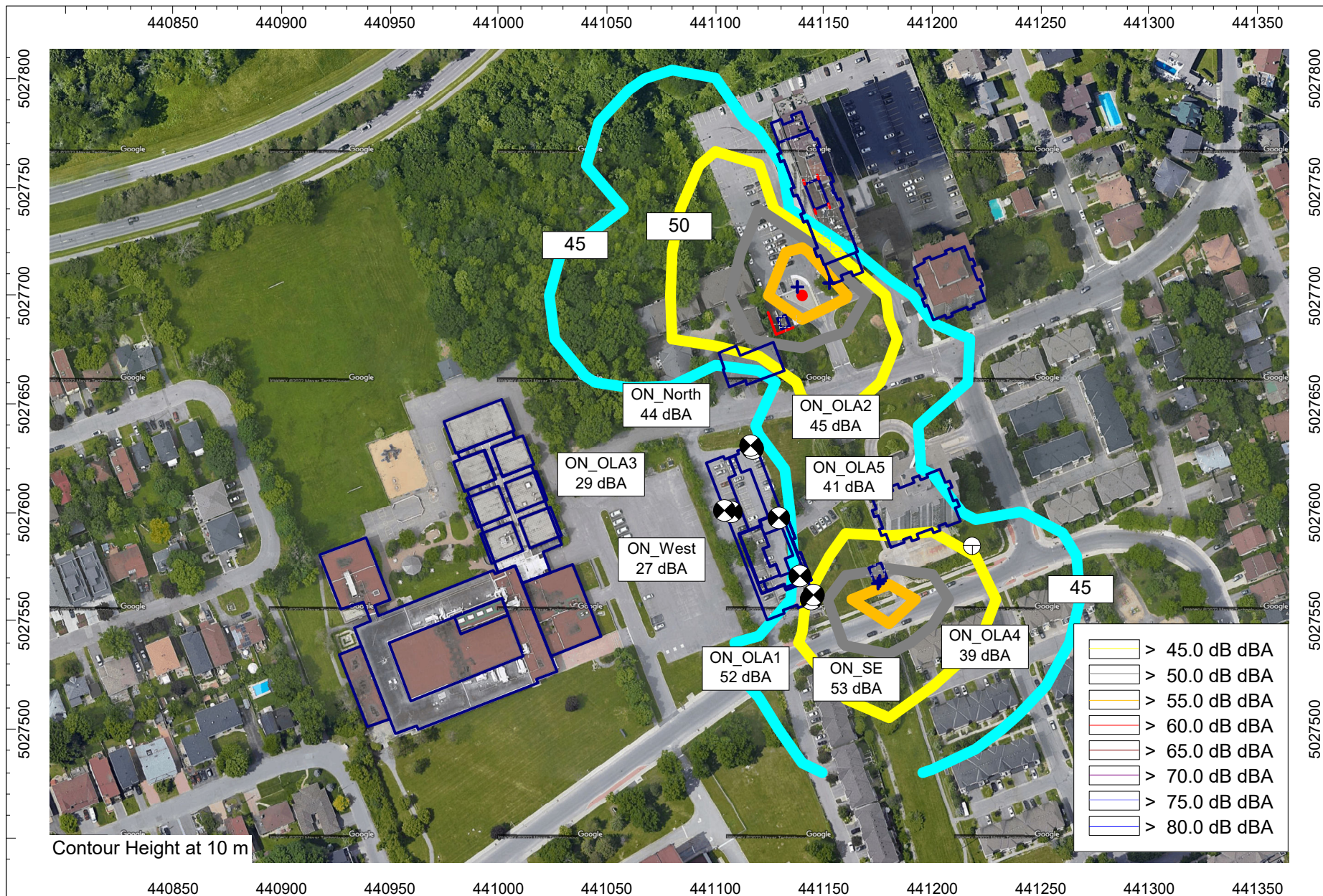
Scale: 1:2,500

Date: August 22, 2024

Homestead Land Holdings Limited, 210 Clearview Avenue, Ottawa, ON

Pinchin Project: 313119





**Figure 6 - Daytime Noise Impact Contour Map, Emergency Generator Testing**



Drawn by: WNL

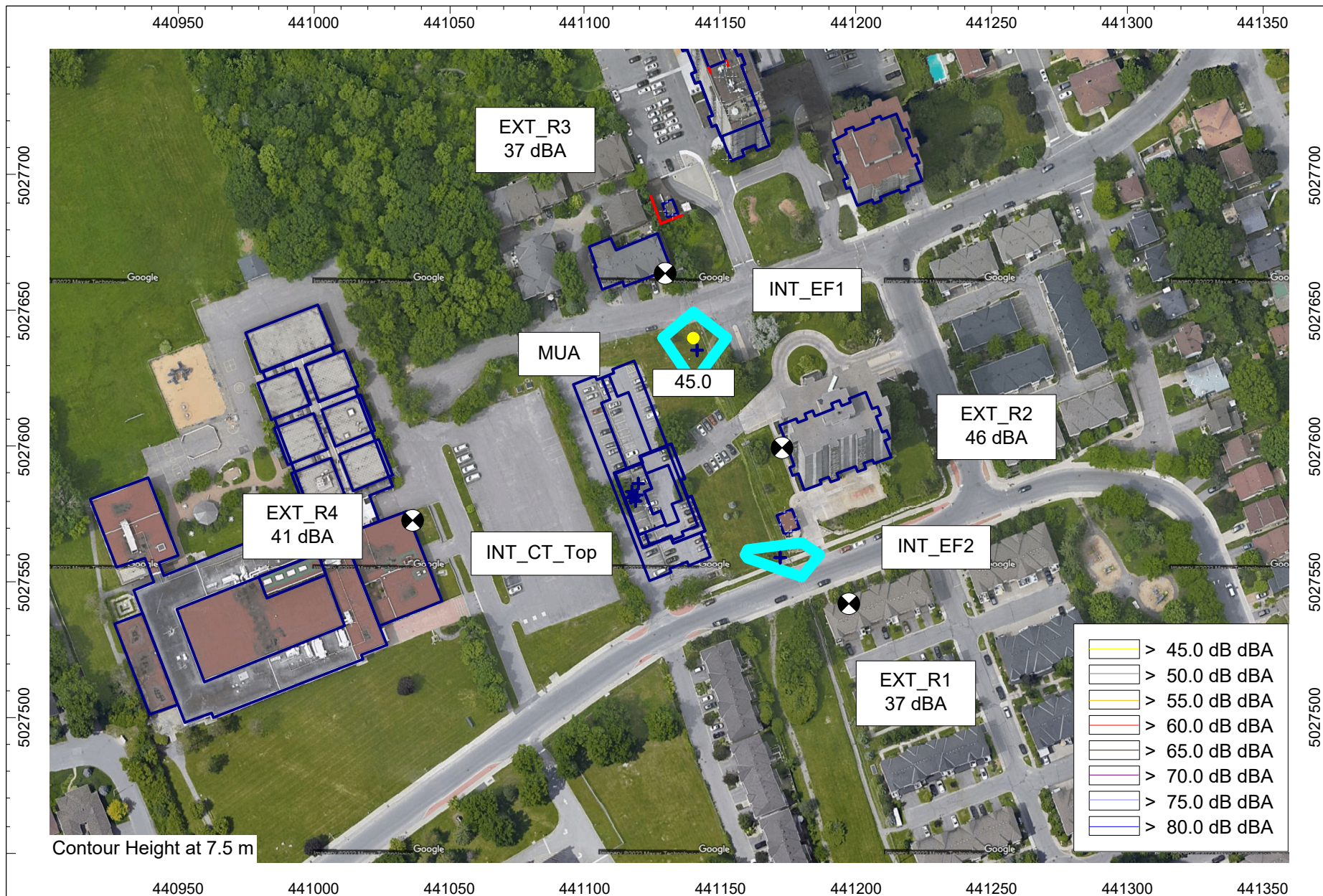
Scale: 1:2,500

Date: August 22, 2024

Homestead Land Holdings Limited, 210 Clearview Avenue, Ottawa, ON

Pinchin Project: 313119





**Figure 7 - Noise Impact Contour Map, From Development Stationary Sources on External Receptors**

Homestead Land Holdings Limited, 210 Clearview Avenue, Ottawa, ON

Pinchin Project: 313119

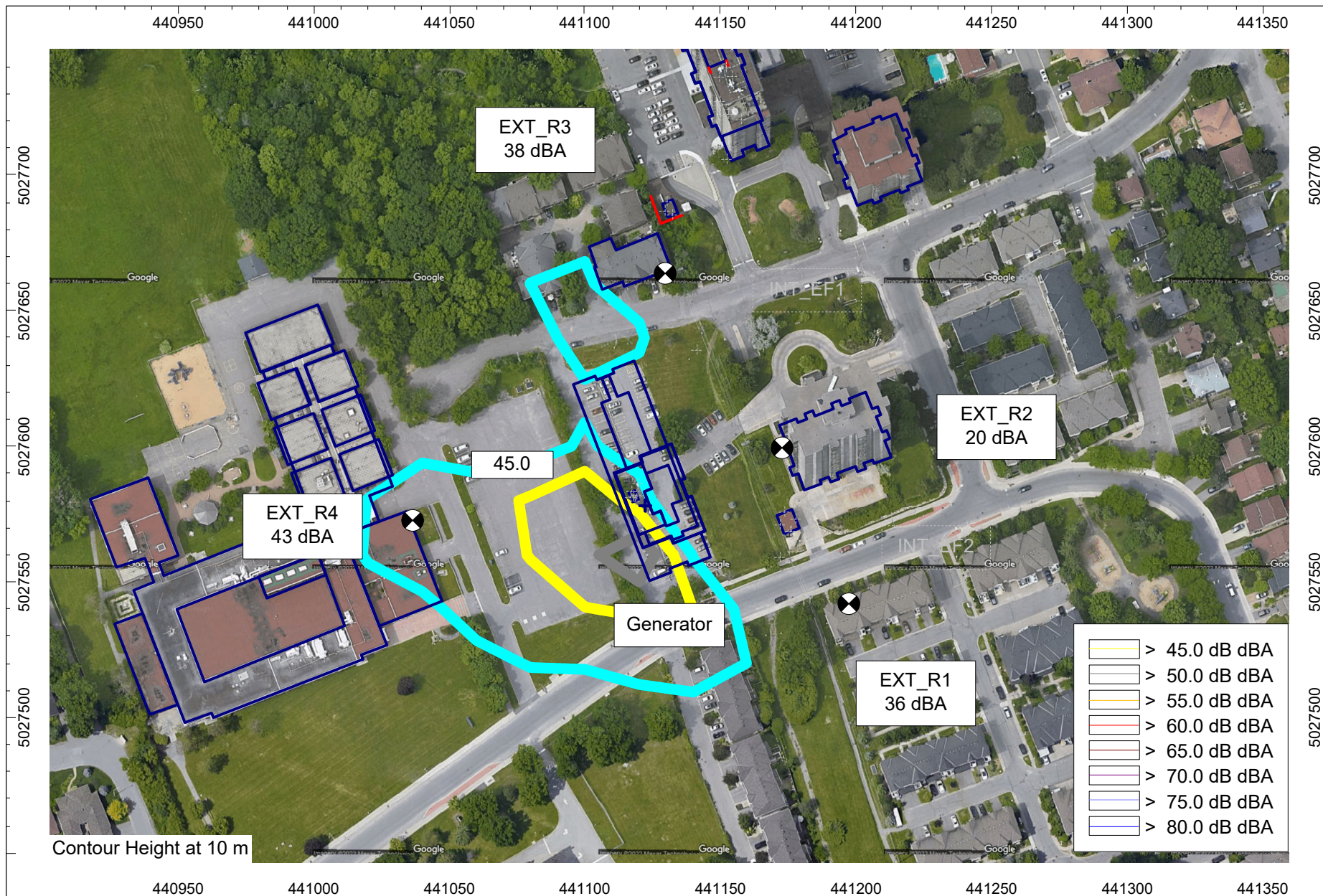


Drawn by: WNL

Scale: 1:2,000

Date: August 22, 2024





**Figure 8 - Noise Impact Contour Map, From Development Generator Testing on External Receptors**

Homestead Land Holdings Limited, 210 Clearview Avenue, Ottawa, ON

Pinchin Project: 313119



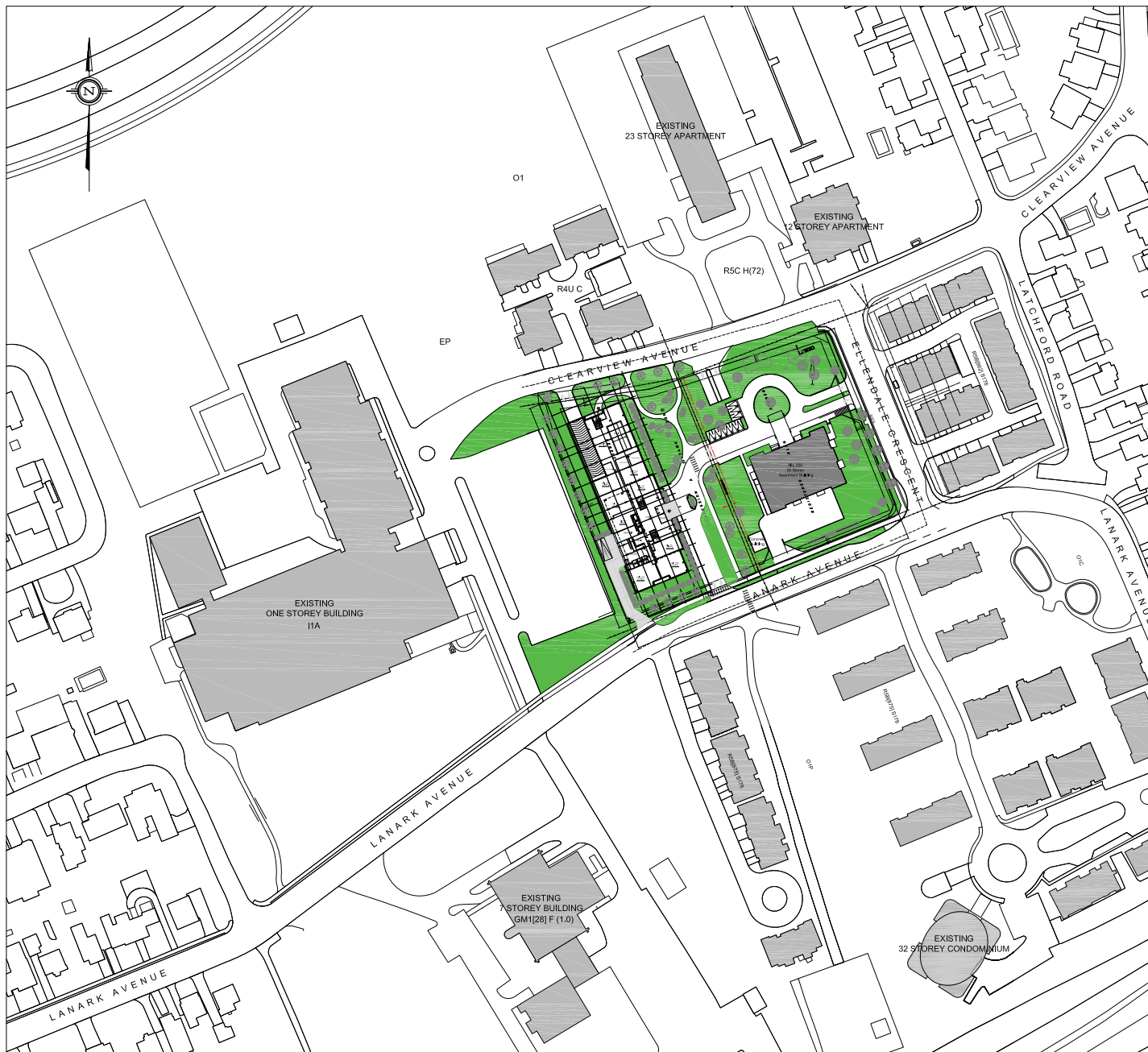
Drawn by: WNL

Scale: 1:2,000

Date: August 22, 2024



**APPENDIX C**  
**Additional Drawings**  
**(21 Pages)**

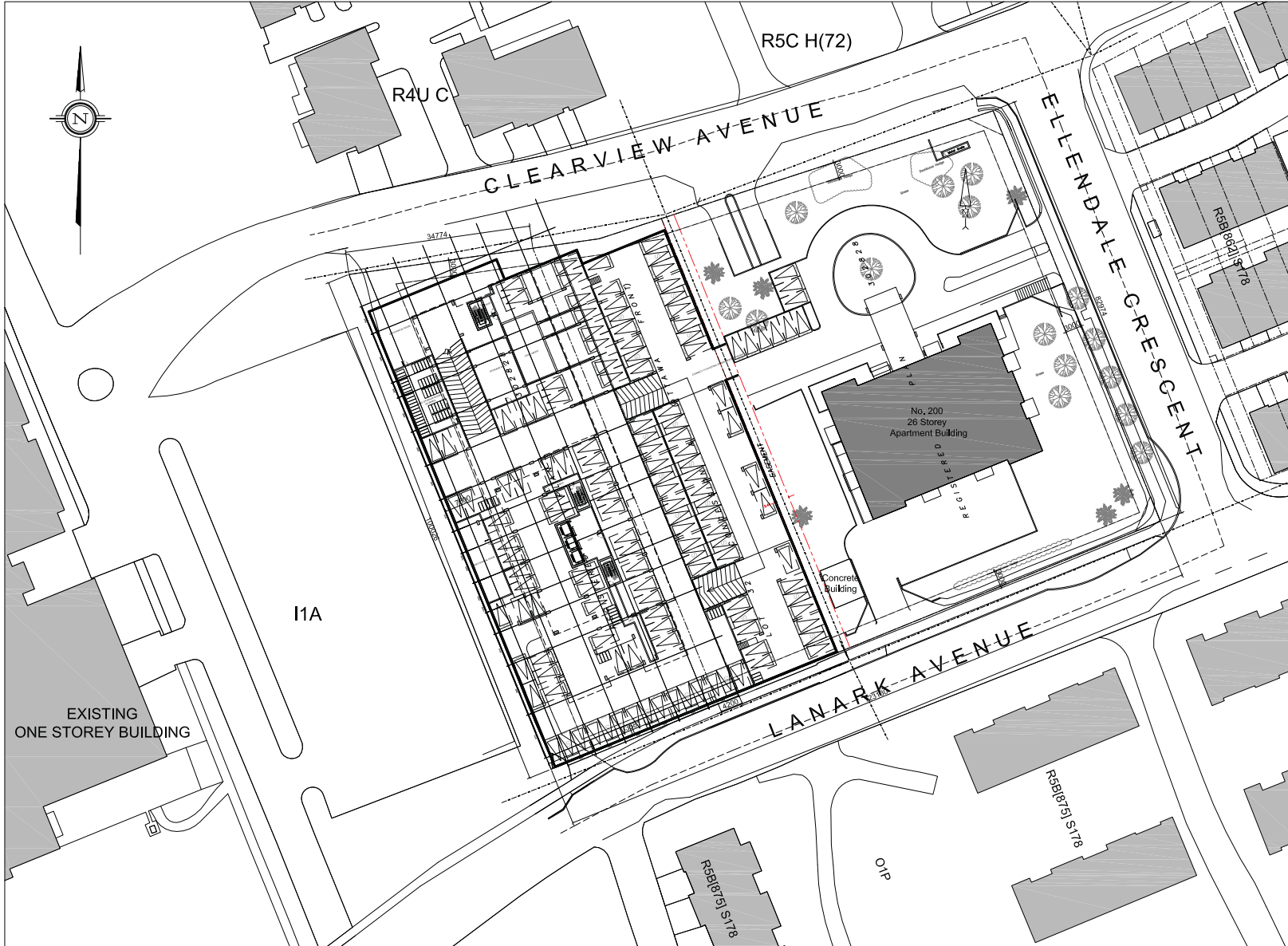


**SITE INFO.**

<b>SITE AREA</b>	10967.2 sq. m.
<b>EXISTING ZONING</b>	
AREA A	R5C H(28)
AREA B	O1 [313] S216
AREA C	O1 [313]
AREA D	R5C H(78)
<b>GROSS FLOOR AREA (ZONING DEFINITION)</b>	
EXISTING APARTMENT	~19300 SQ.M.
	224 units
	110 Indoor parkings

**PROJECT INFO.**

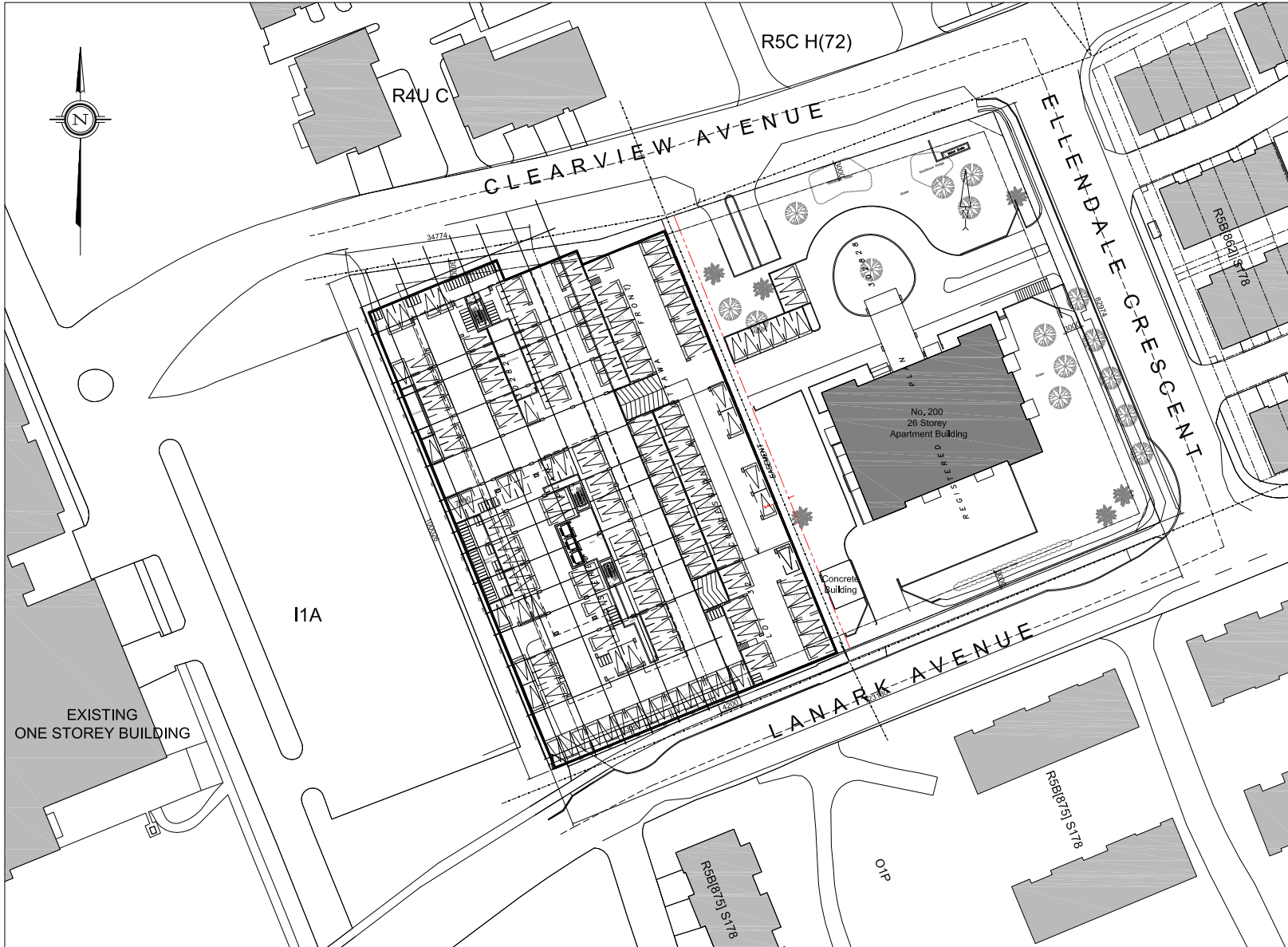
<b>BUILDING HEIGHT</b>	25 STOREY
<b>RESIDENTIAL UNITS</b>	197
ONE BEDROOM	71
TWO BEDROOM	126
<b>CAR PARKING REQUIRED</b>	138
RESIDENTIAL (0.5)	99
VISITOR (0.2)	39
<b>BIKE PARKING REQUIRED</b>	
RESIDENTIAL (0.5)	99
<b>CAR PARKING PROVIDED</b>	278
P1	129
P2	149
<b>BIKE PARKING PROVIDED</b>	169
P1	71
P2	98
<b>AMENITY REQUIRED (6 SQ.M. PER UNITS)</b>	1182 SQ.M.
MIN. COMMUNAL	591 SQ.M.
<b>AMENITY PROVIDED (ROOF DECK AND INDOOR)</b>	1934 SQ.M.
GROUND FLOOR	412 SQ.M.
4TH FLOOR	1030 SQ.M.
25TH FLOOR	492 SQ.M.
PRIVATE BALCONY	1430 SQ.M.
<b>LANDSCAPED AREA</b>	50%



FLOOR INFO.	
FLOOR AREA	5114.8 sq. m.
CAR PARKING	129
BIKE PARKING	71

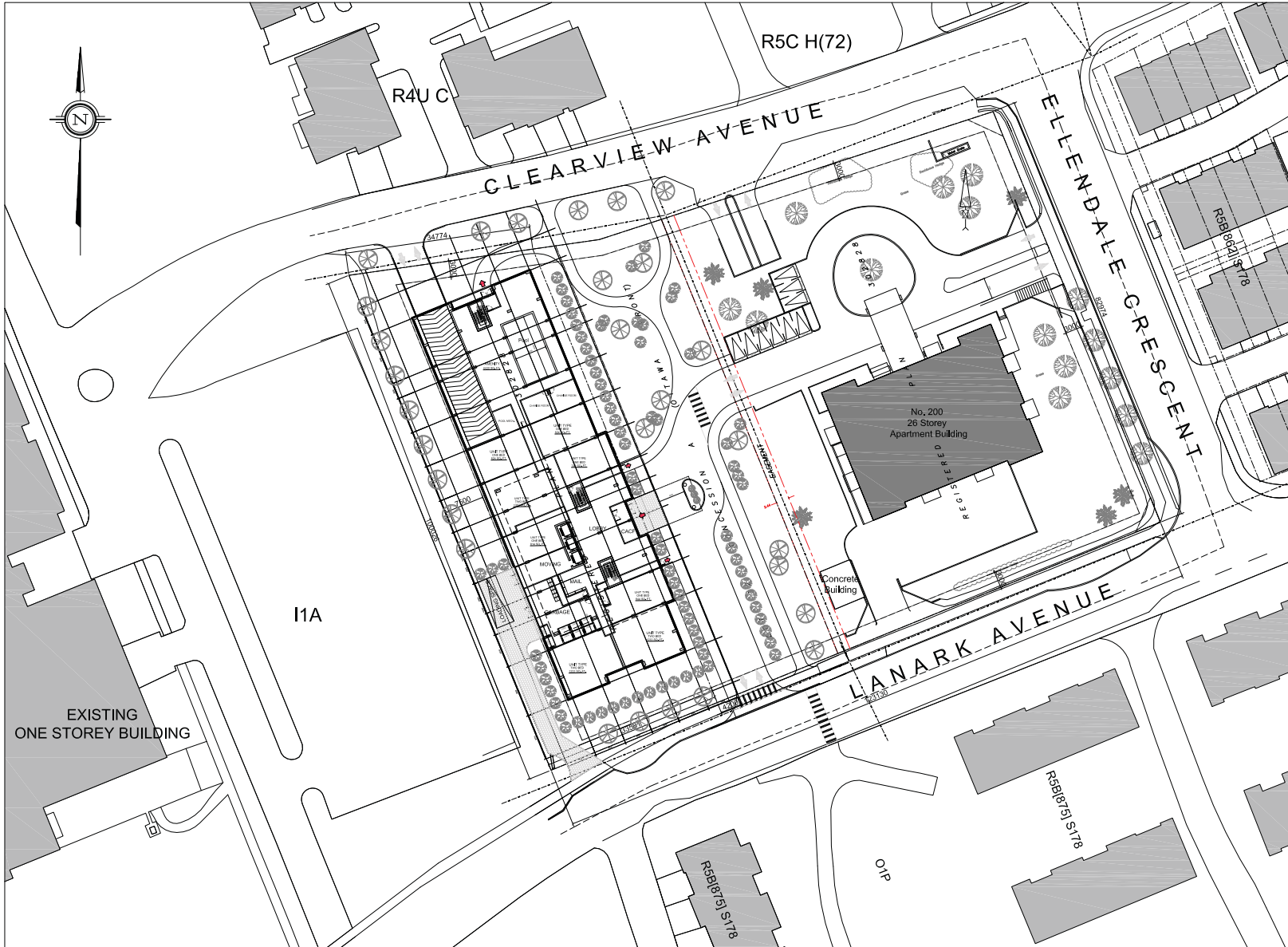
P1 FLOOR PLAN





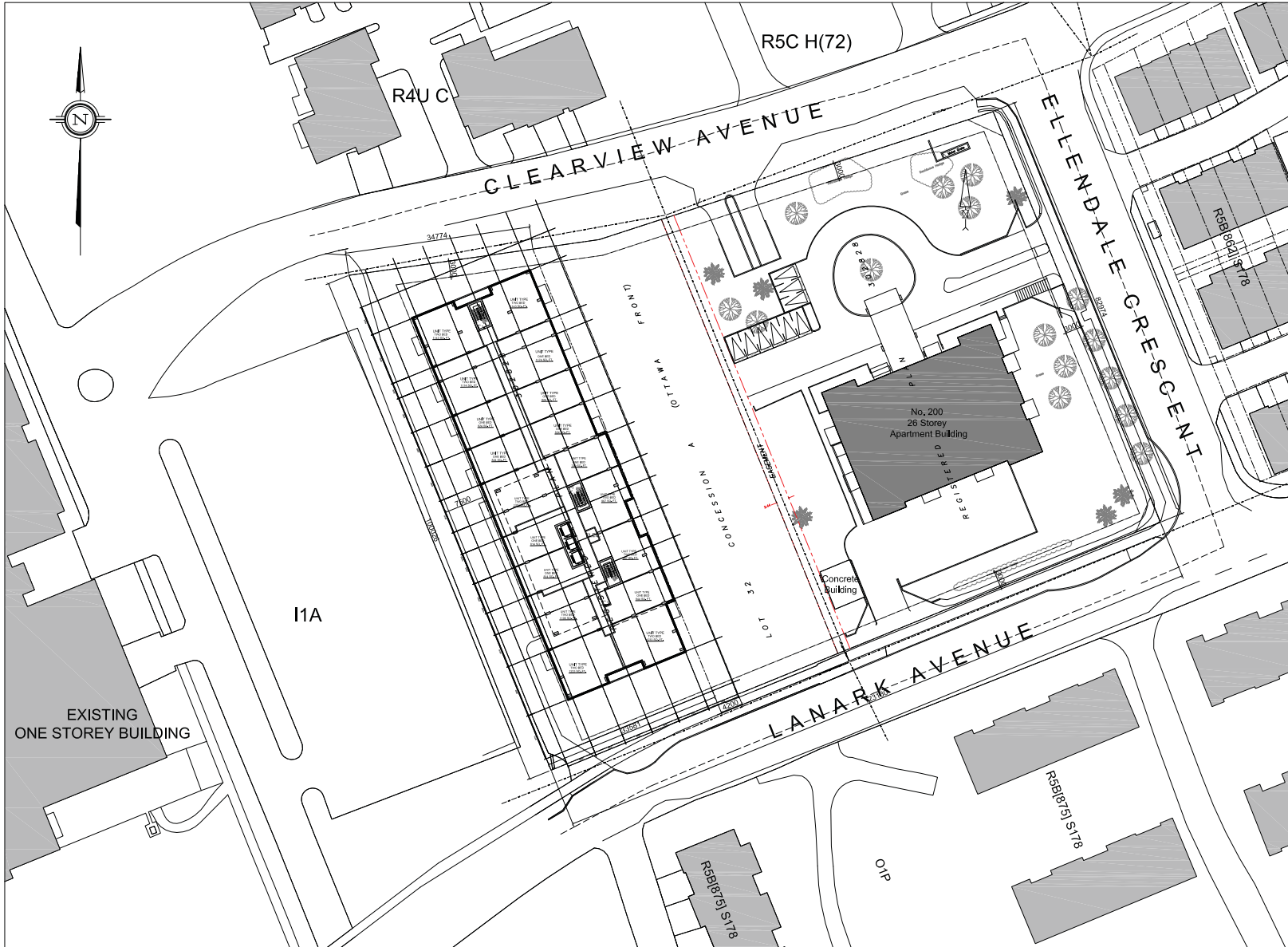
FLOOR INFO.	
FLOOR AREA	5114.8 sq. m.
CAR PARKING	149
BIKE PARKING	98

P2 FLOOR PLAN



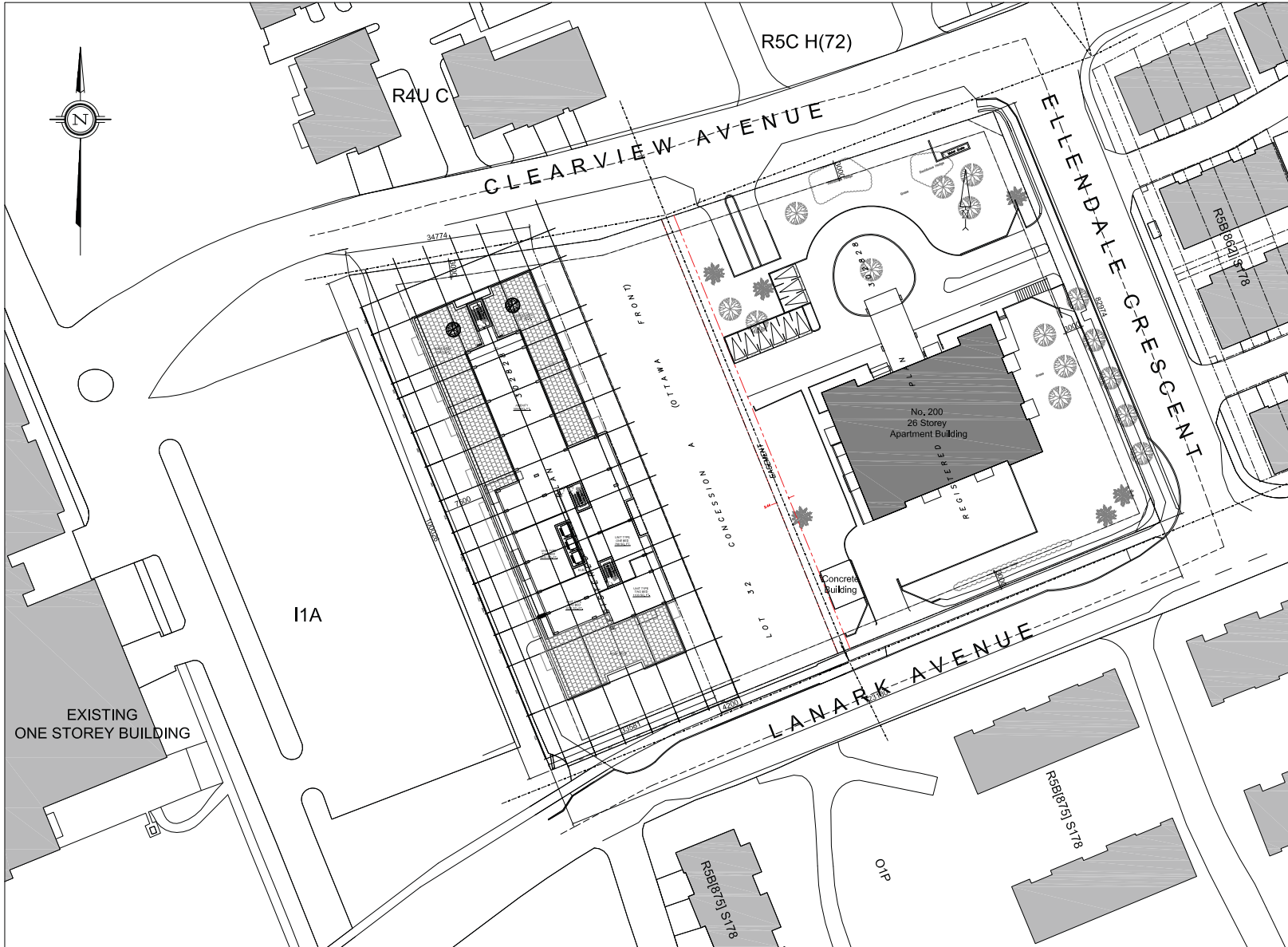
FLOOR INFO.	
FLOOR AREA	1884.0 sq. m.
RESIDENTIAL UNITS	8
ONE UNIT	5
TWO UNIT	3

GROUND FLOOR PLAN



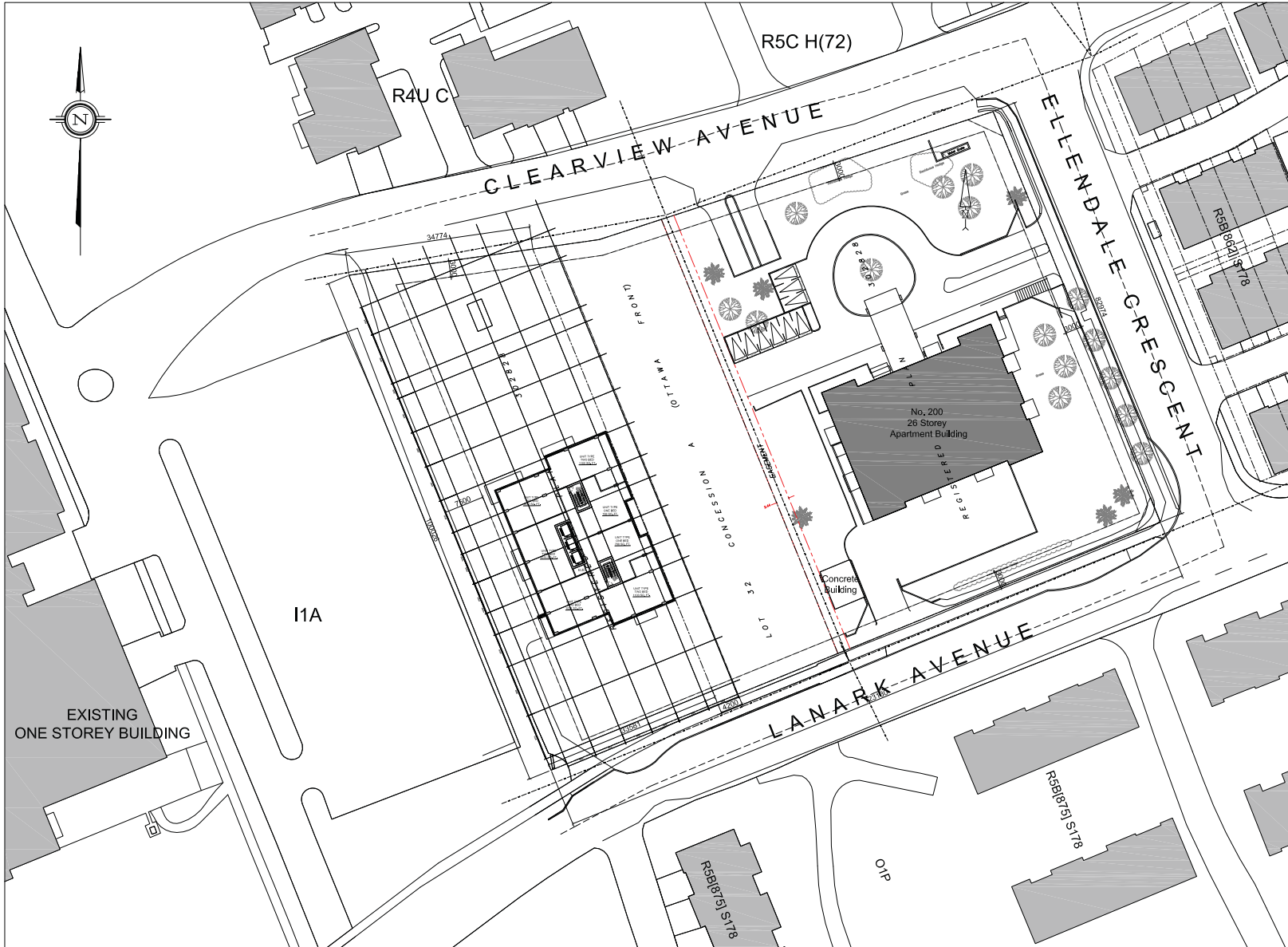
FLOOR INFO.	
FLOOR AREA	1884.0 sq. m.
RESIDENTIAL UNITS	18
ONE UNIT	9
TWO UNIT	9

2ND-3RD FLOOR PLAN



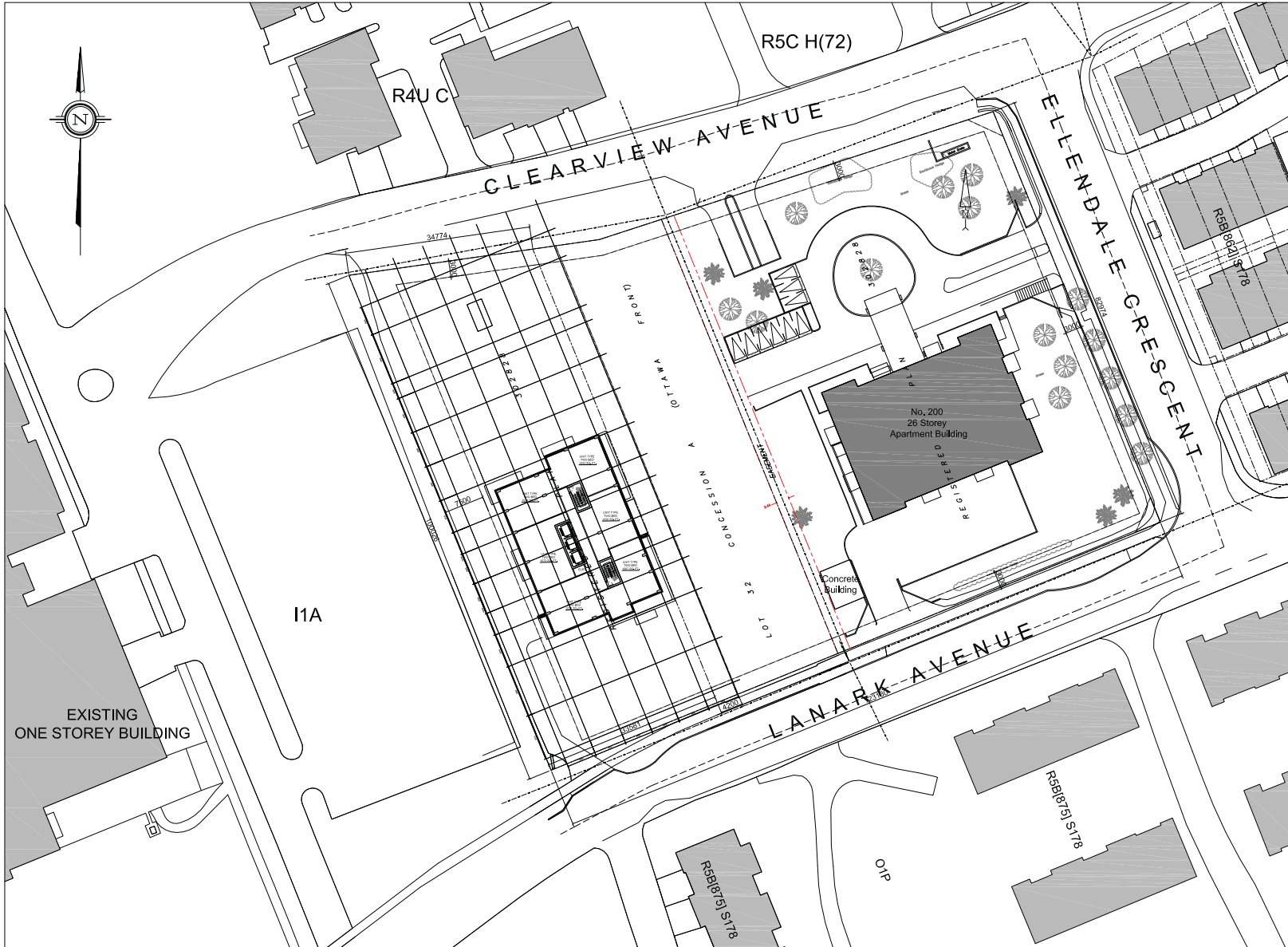
FLOOR INFO.	
FLOOR AREA	1062,8 sq. m.
RESIDENTIAL UNITS	4
ONE UNIT	1
TWO UNIT	3

4TH FLOOR PLAN



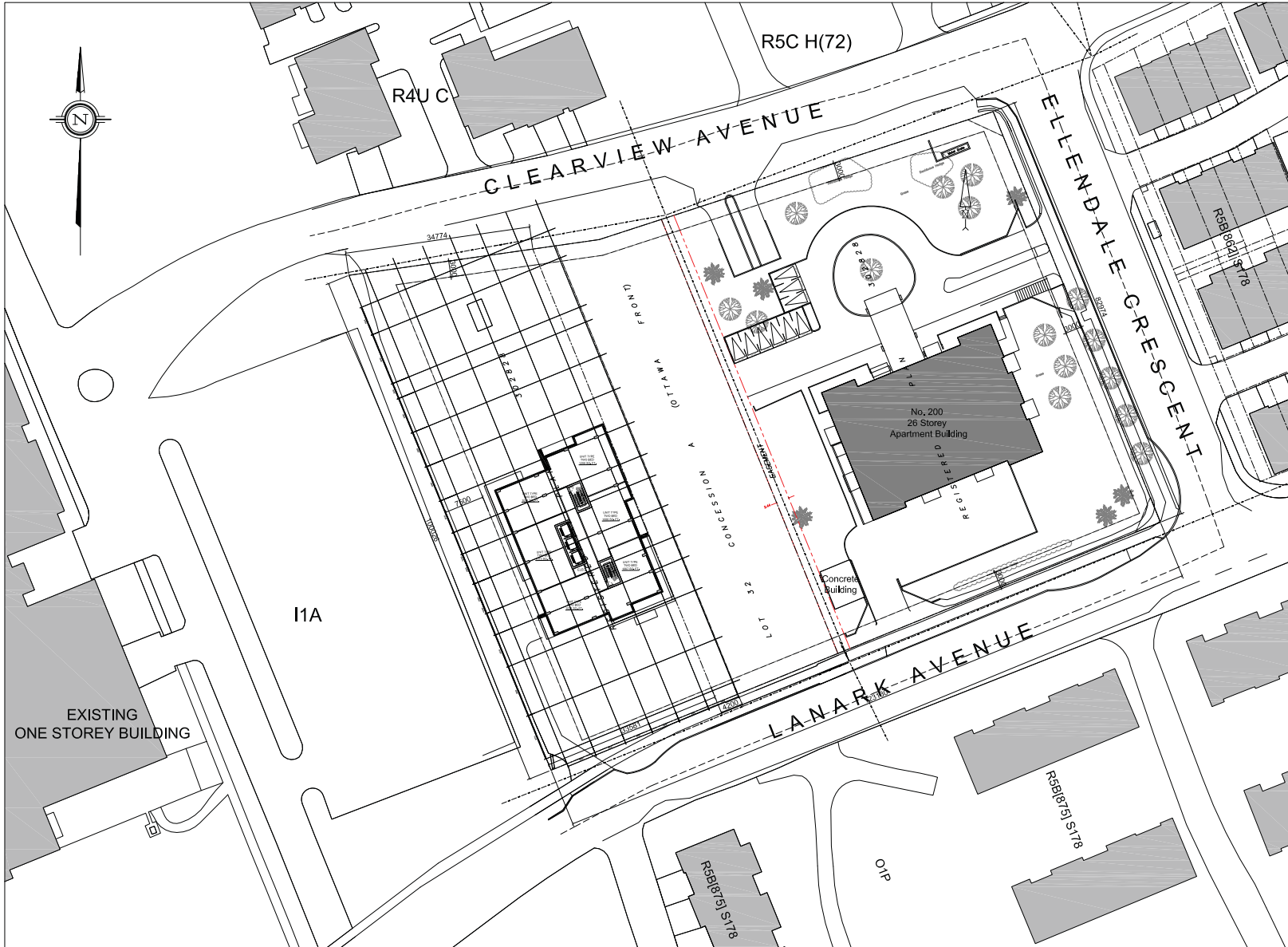
FLOOR INFO.	
FLOOR AREA	743,1 sq. m.
RESIDENTIAL UNITS	7
ONE UNIT	2
TWO UNIT	5

5TH-20TH FLOOR PLAN



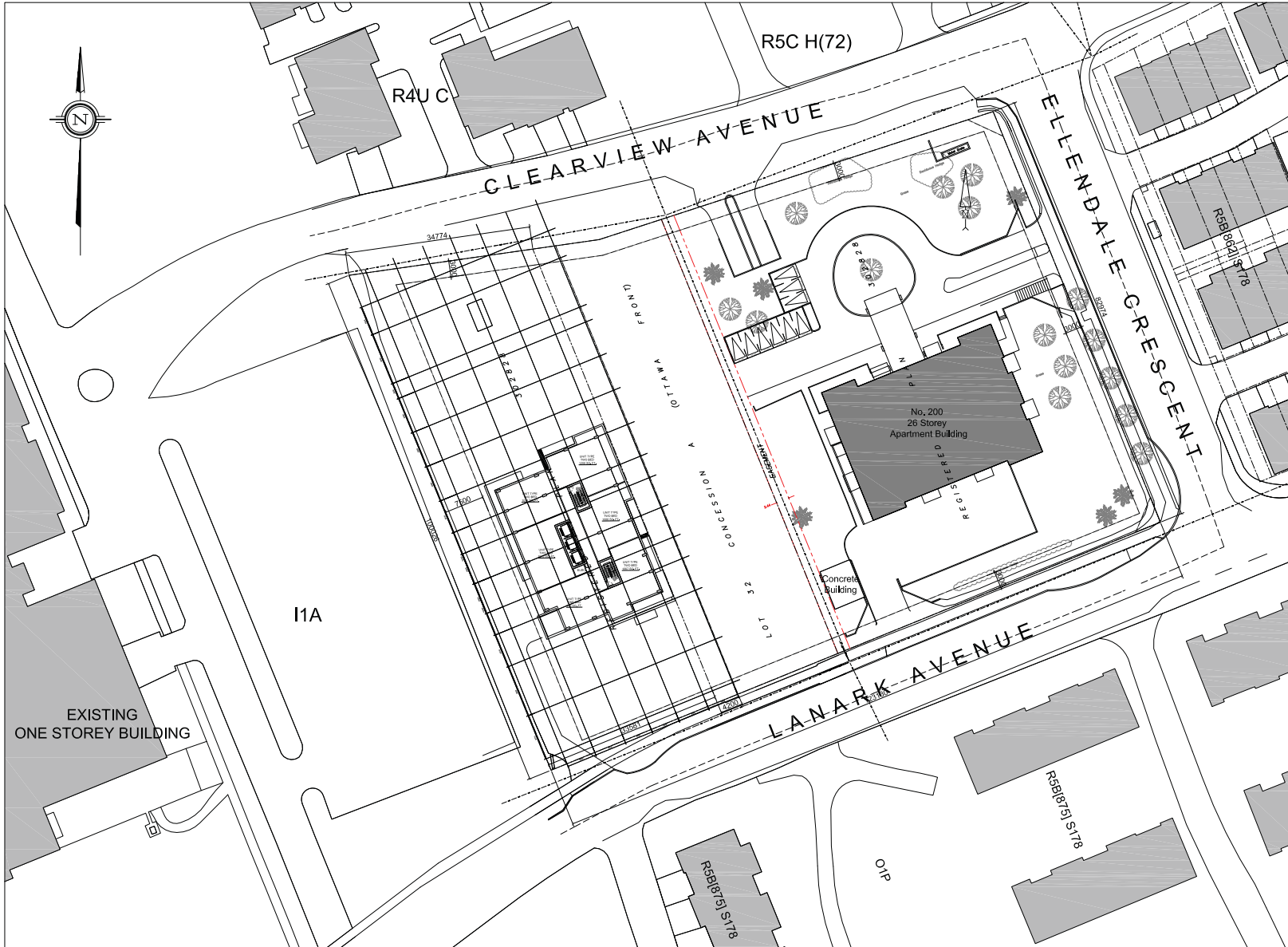
FLOOR INFO.	
FLOOR AREA	682.7 sq. m.
RESIDENTIAL UNITS	6
ONE UNIT	6
TWO UNIT	6

21TH FLOOR PLAN



FLOOR INFO.	
FLOOR AREA	712.7 sq. m.
RESIDENTIAL UNITS	6
ONE UNIT	6
TWO UNIT	6

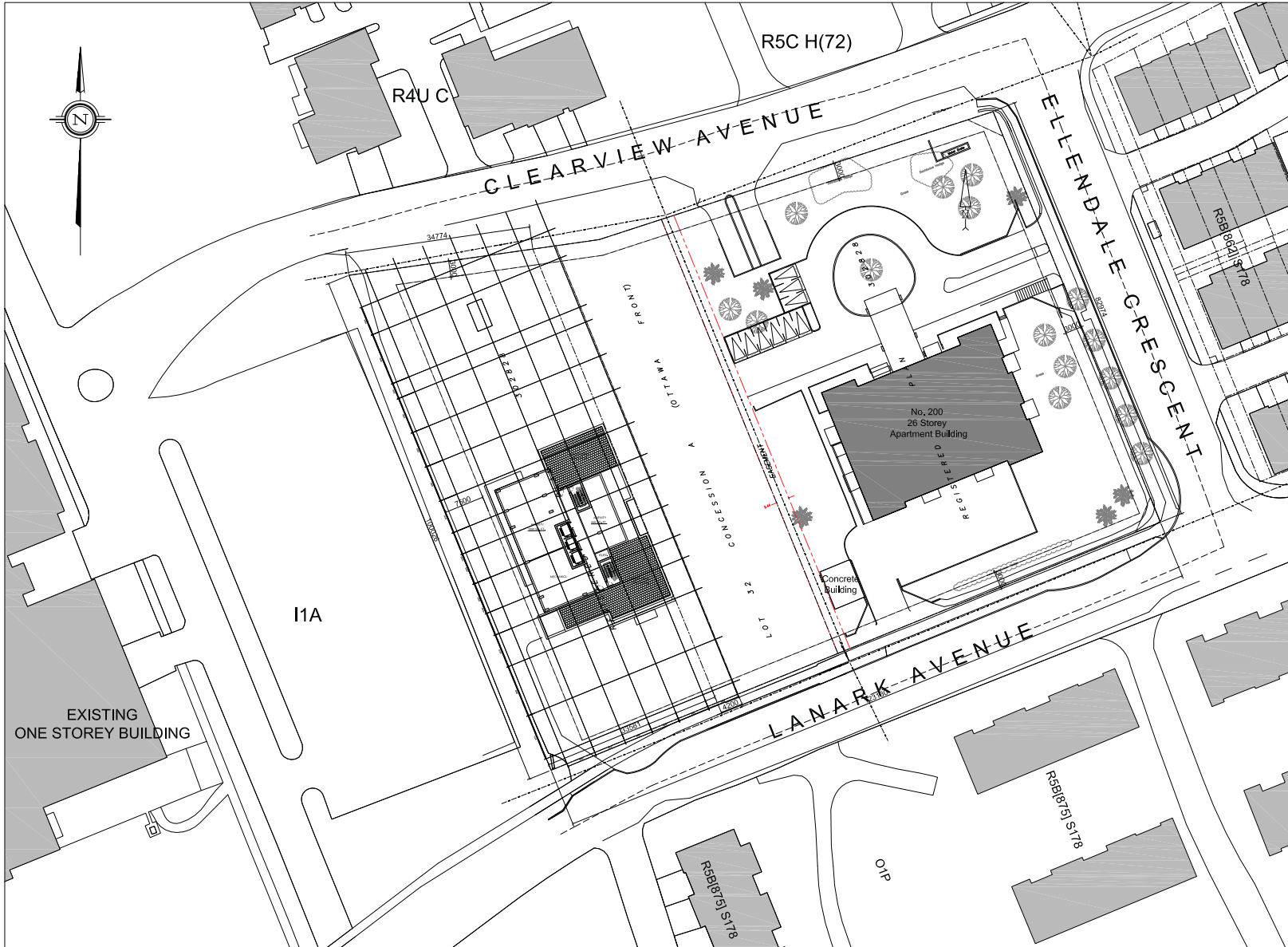
22TH FLOOR PLAN



FLOOR INFO.	
FLOOR AREA	701.7 sq. m.
RESIDENTIAL UNITS	6
ONE UNIT	1
TWO UNIT	5

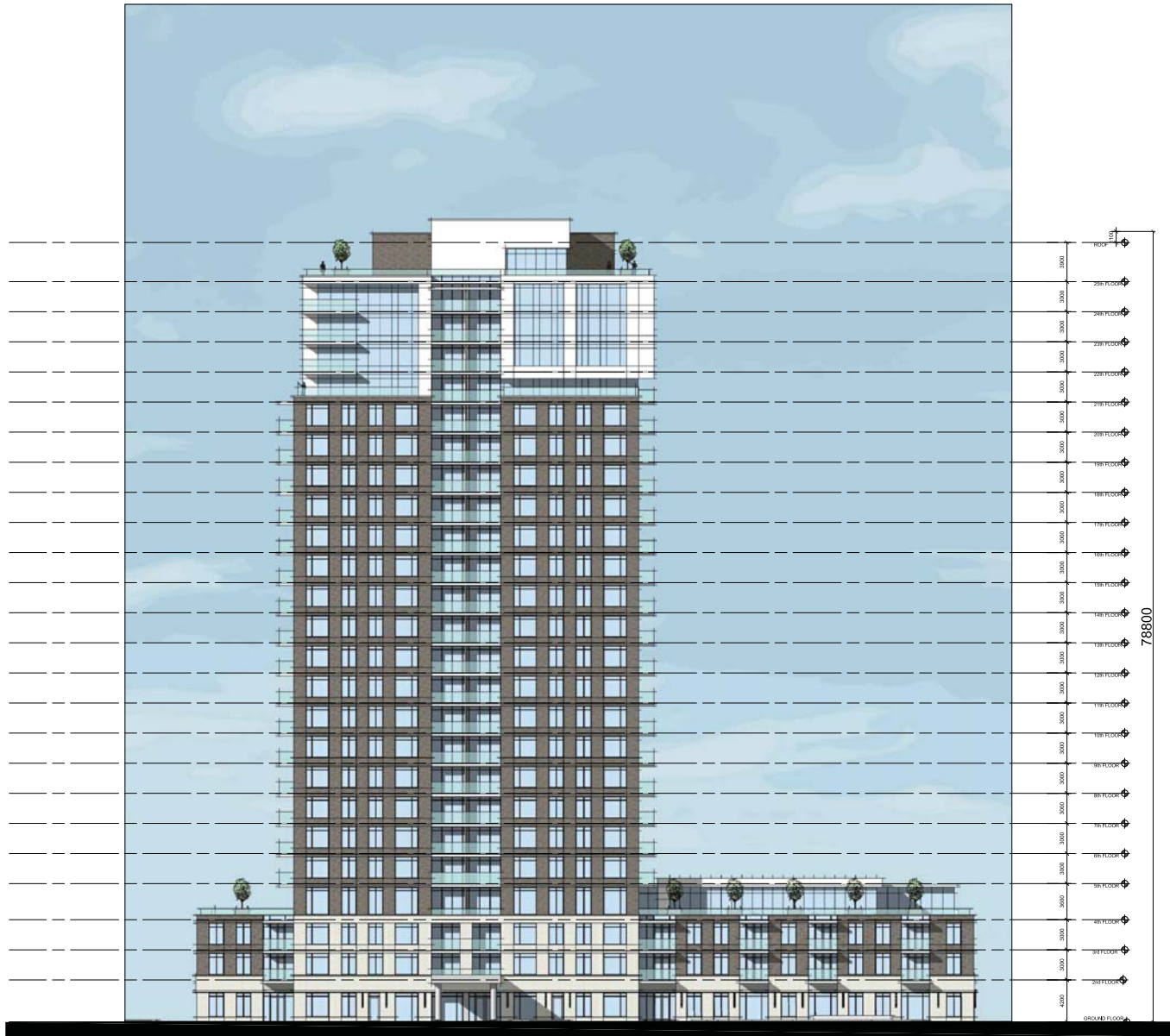
23TH-24TH FLOOR PLAN



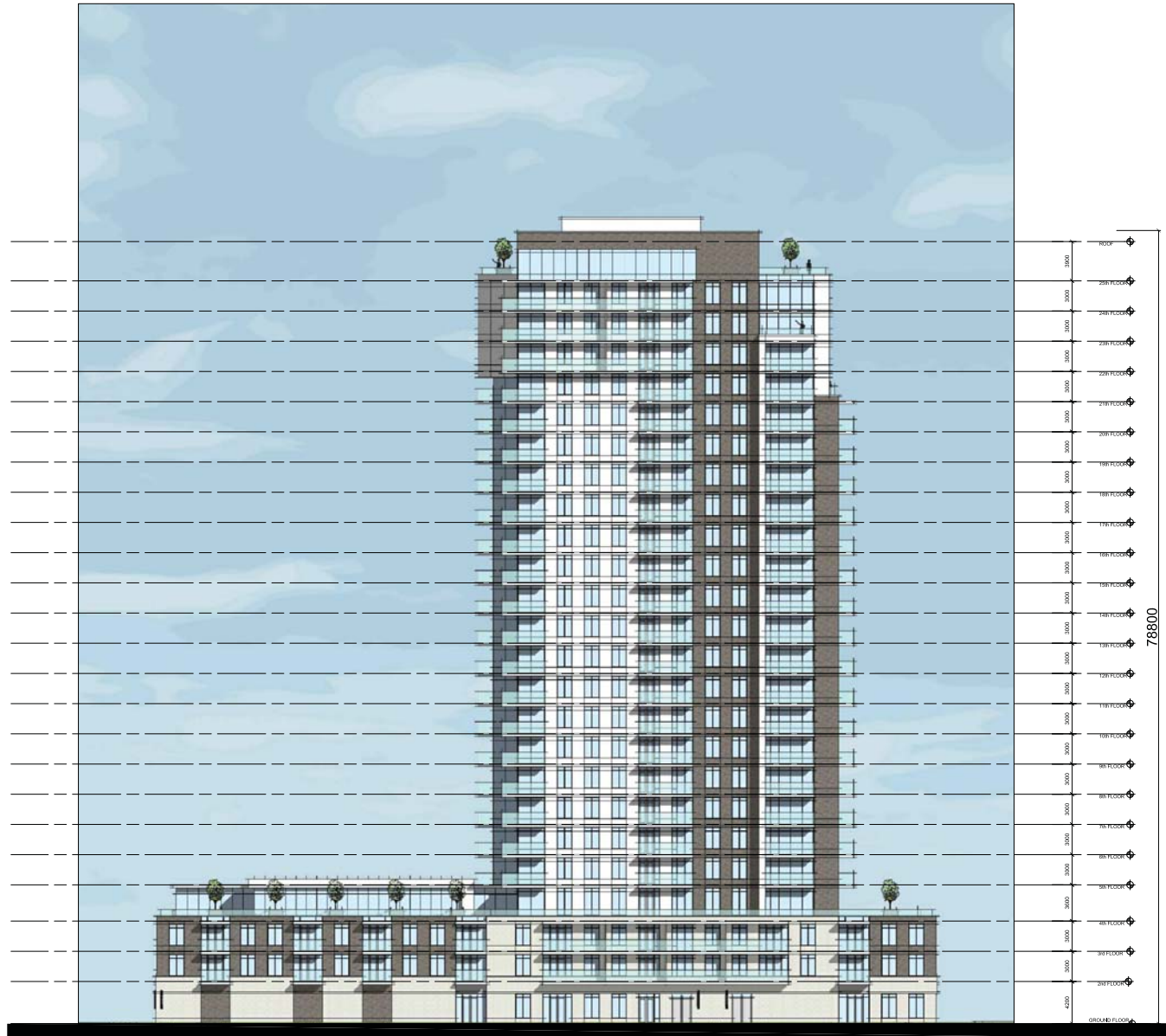


FLOOR INFO.	
FLOOR AREA	424.0 sq. m.
RESIDENTIAL UNITS	

25TH FLOOR PLAN



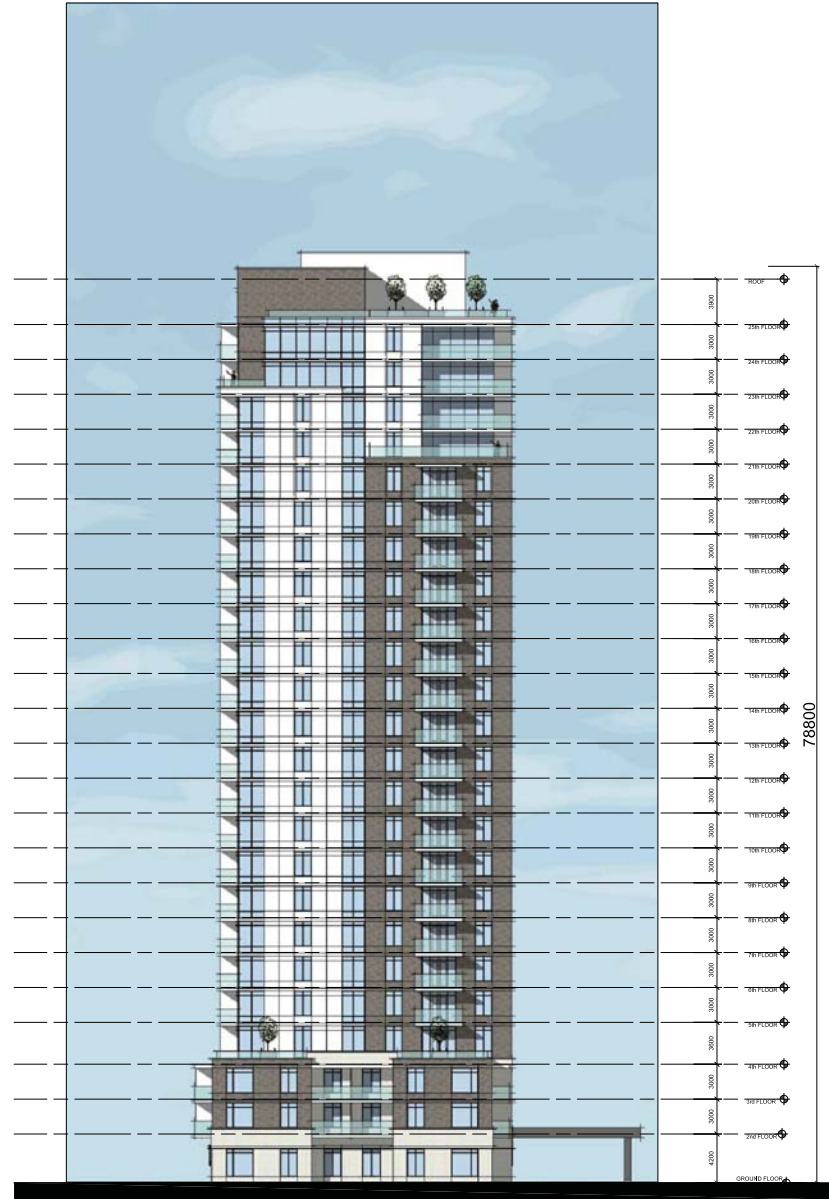
EAST ELEVATION



WEST ELEVATION



NORTH ELEVATION



SOUTH ELEVATION



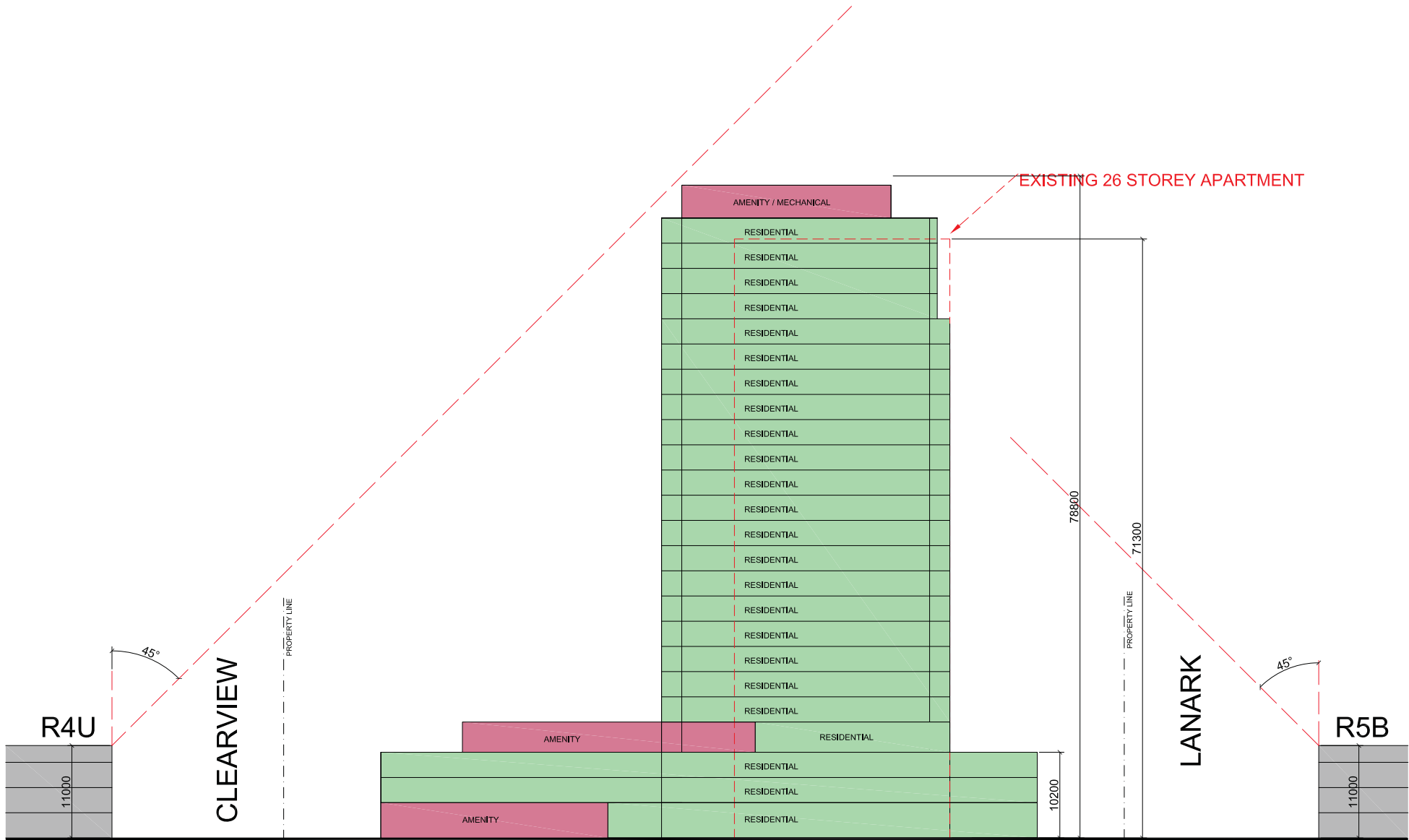












STREET SECTION

OPTION ONE ( PROPOSED OPTION)



OPTION TWO



**APPENDIX D**  
**Traffic Data and STAMSON Calculations**  
**(5 Pages)**

**Table D1 - Summary of Traffic Data and Projections**

	<b>Lanark Avenue</b>	<b>Notes</b>
AADT - Ultimate	8000	Table B1, City of Ottawa Environmental Noise Control Guidelines (ENCG)
Day Split	92%	92 / 8 %, City of Ottawa (ENCG)
Cars, 24 Hours	7040	88%, City of Ottawa (ENCG)
Medium Trucks, 24 Hours	560	7%, City of Ottawa (ENCG)
Heavy Trucks, 24 Hours	400	5%, City of Ottawa (ENCG)

Note: Other roads (e.g. Sir John A. MacDonald Parkway, Transitway, Scott Street and Island Park Drive) were not included in this assessment.

The rationale is that those roads are located at distances beyond 100 m setback for arterial/collector roads, LRT and BRT, as specified by the ENCG.

Filename: lan\_s.te                    Time Period: Day/Night 16/8 hours  
 Description: Road Traffic Noise Impact from Lanark Ave on the South  
 Façade Windows

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

```
-----
Car traffic volume   : 6477/563   veh/TimePeriod  *
Medium truck volume : 515/45    veh/TimePeriod  *
Heavy truck volume  : 368/32    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): 8000
Percentage of Annual Growth       : 0.00
Number of Years of Growth         : 0.00
Medium Truck % of Total Volume    : 7.00
Heavy Truck % of Total Volume     : 5.00
Day (16 hrs) % of Total Volume    : 92.00
```

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

```
-----
Angle1  Angle2      : -90.00 deg  90.00 deg
Wood depth      : 0 (No woods.)
No of house rows : 0 / 0
Surface        : 2 (Reflective ground surface)
Receiver source distance : 20.00 / 20.00 m
Receiver height : 8.70 / 8.70 m
Topography     : 1 (Flat/gentle slope; no barrier)
Reference angle : 0.00
```

Results segment # 1: LanarkAve (day)

Source height = 1.50 m

ROAD (0.00 + 64.50 + 0.00) = 64.50 dBA  
 Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj  
 SubLeq

```
-----
---
-90    90    0.00  65.75  0.00  -1.25  0.00  0.00  0.00  0.00
64.50
-----
---
```

Segment Leq : 64.50 dBA

Total Leq All Segments: 64.50 dBA

Results segment # 1: LanarkAve (night)

-----  
Source height = 1.50 m

ROAD (0.00 + 56.91 + 0.00) = 56.91 dBA

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

SubLeq

-----  
---  
-90        90     0.00   58.16    0.00   -1.25    0.00    0.00    0.00    0.00  
56.91  
-----  
---

Segment Leq : 56.91 dBA

Total Leq All Segments: 56.91 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 64.50  
  (NIGHT): 56.91

Filename: lan\_sola.te                    Time Period: Day/Night 16/8 hours  
Description: Road Traffic Noise Impact from Lanark Ave on the South Side  
OLA (4th Floor Roof Deck)

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

-----  
Car traffic volume : 6477/563    veh/TimePeriod \*  
Medium truck volume : 515/45    veh/TimePeriod \*  
Heavy truck volume : 368/32    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): 8000  
Percentage of Annual Growth : 0.00  
Number of Years of Growth : 0.00  
Medium Truck % of Total Volume : 7.00  
Heavy Truck % of Total Volume : 5.00  
Day (16 hrs) % of Total Volume : 92.00

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

-----  
Angle1    Angle2                    : -90.00 deg    90.00 deg  
Wood depth : 0                    (No woods.)  
No of house rows : 0 / 0  
Surface : 2                    (Reflective ground surface)  
Receiver source distance : 21.50 / 21.50 m  
Receiver height : 1.50 / 11.70 m  
Topography : 2                    (Flat/gentle slope; with  
barrier)  
Barrier angle1 : -90.00 deg    Angle2 : 90.00 deg  
Barrier height : 1.20 m  
Barrier receiver distance : 1.50 / 10.00 m  
Source elevation : 0.00 m  
Receiver elevation : 10.20 m  
Barrier elevation : 10.20 m  
Reference angle : 0.00

Results segment # 1: LanarkAve (day)

-----  
Source height = 1.50 m

Barrier height for grazing incidence

-----  
Source            ! Receiver            ! Barrier            ! Elevation of  
Height (m) ! Height (m) ! Height (m) ! Barrier Top (m)  
-----+-----+-----+-----



1.50 ! 1.50 ! 0.79 ! 10.99

ROAD (0.00 + 57.81 + 0.00) = 57.81 dBA

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

SubLeq									
-----									
---									
-90	90	0.00	65.75	0.00	-1.56	0.00	0.00	0.00	-6.38
57.81									
-----									
---									

Segment Leq : 57.81 dBA

Total Leq All Segments: 57.81 dBA

Results segment # 1: LanarkAve (night)

Source height = 1.50 m

Barrier height for grazing incidence

Source Height (m)	Receiver Height (m)	Barrier Height (m)	Elevation of Barrier Top (m)
1.50 !	11.70 !	2.21 !	12.41

ROAD (0.00 + 56.59 + 0.00) = 56.59 dBA

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

SubLeq									
-----									
---									
-90	90	0.00	58.16	0.00	-1.56	0.00	0.00	0.00	-3.54
53.05*									
-90	90	0.00	58.16	0.00	-1.56	0.00	0.00	0.00	0.00
56.59									
-----									
---									

\* Bright Zone !

Segment Leq : 56.59 dBA

Total Leq All Segments: 56.59 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 57.81  
(NIGHT): 56.59

**APPENDIX E**  
**Warning Clauses**  
**(1 Page)**

**Warning Clause Type A – From MECP NPC-300**

“Purchasers/tenants are advised that sound levels due to increasing road traffic may occasionally interfere with some activities of the dwelling occupants as the sound levels exceed the sound level limits of the Municipality and the Ministry of the Environment.”

**Warning Clause Type C – From MECP NPC-300**

“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.”

**Warning Clause from ENCG:**

Purchasers/tenants are advised that sound levels due to increasing road/rail/Light Rail/transitway traffic will interfere with outdoor activities as the sound levels exceed the sound level limits of the City and the Ministry of the Environment.

To help address the need for sound attenuation this development includes:

- multi-pane glass;
- double brick veneer;
- high sound transmission class walls.

To ensure that provincial sound level limits are not exceeded it is important to maintain these sound attenuation features.

This dwelling unit has been supplied with a central air conditioning system and other measures 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 City and the Ministry of the Environment.

**APPENDIX F**  
**Manufacturer Sound Data and Calculations**  
**(Development Stationary Sources)**  
**(5 Pages)**

**Baltimore Aircoil Company, Inc.**  
**Closed Circuit Cooling Tower Selection Program**

Version: 7.5.3 NA  
 Product data correct as of: March 03, 2017

Project Name:  
 Selection Name:  
 Project State/Province: Maryland  
 Project Country: United States  
 Date: May 05, 2017

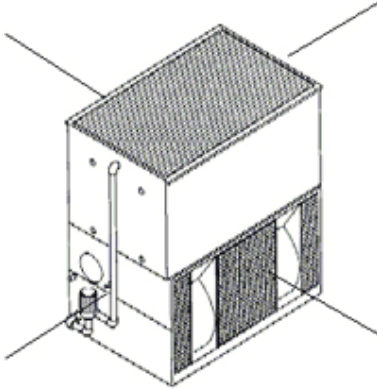
**Model Information**

Product Line: VF1 Fan Type: Standard Fan  
 Model: VF1-096-31Q Fan Motor: (1) 50.00 = 50.00 HP/Unit  
 Number of Units: 1 Total Standard Fan Power: Full Speed, 50.00 BHP/Unit  
 Coil Type: Standard Coil Total Pump Motor Power: (1) 3.00 = 3.00 HP/Unit  
 Coil Finning: None  
 Intake Option: None  
 Internal Option: None  
 Discharge Option: PCD w/ Tapered Discharge Hood  
 External Static Pressure: 0.00 in. of H2O

Octave band and A-weighted sound pressure levels (Lp) are expressed in decibels (dB) reference 0.0002 microbar. Sound power levels (Lw) are expressed in decibels (dB) reference one picowatt. Octave band 1 has a center frequency of 63 Hertz.

Top Lp Sound Pressure (dB)		
Octave Band	Distance	
	5 ft.	50 ft.
1	78	62
2	78	63
3	77	61
4	78	62
5	77	61
6	74	58
7	70	54
8	68	51
A-wgtd	<b>81</b>	<b>65</b>

Back Lp Sound Pressure (dB)		
Octave Band	Distance	
	5 ft.	50 ft.
1	73	60
2	71	60
3	69	55
4	66	55
5	67	53
6	65	49
7	59	44
8	59	39
A-wgtd	<b>72</b>	<b>58</b>



End Lp Sound Pressure (dB)		
Octave Band	Distance	
	5 ft.	50 ft.
1	77	65
2	71	61
3	68	56
4	68	56
5	68	54
6	63	50
7	59	46
8	55	41
A-wgtd	<b>72</b>	<b>59</b>

Connection End Lp Sound Pressure (dB)		
Octave Band	Distance	
	5 ft.	50 ft.
1	77	65
2	72	61
3	71	56
4	69	56
5	69	54
6	66	50
7	62	46
8	58	41
A-wgtd	<b>73</b>	<b>59</b>

Air Inlet Lp Sound Pressure (dB)		
Octave Band	Distance	
	5 ft.	50 ft.
1	79	66
2	75	65
3	76	63
4	76	62
5	76	60
6	74	57
7	72	54
8	67	49
A-wgtd	<b>81</b>	<b>65</b>

Sound Power (dB)		
Octave Band	Center Frequency (Hertz)	Lw
1	63	96
2	125	94
3	250	91
4	500	91
5	1000	90
6	2000	87
7	4000	83
8	8000	79

INT\_CT (with calculations)

**Note:** The use of frequency inverters (variable frequency drives) can increase sound levels.

Cooling Tower PWL Calculations - INT\_CT

	31.5	63	125	250	500	1000	2000	4000	8000	dBA	Note
Air Inlet Measured SPL, dB		79	75	76	76	76	74	72	67		Provided by Manufacturer
Surface Area, m2		7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0		Based on AutoCAD Drawing
<b>CT_Air - Sound Power Level, dB</b>		<b>87</b>	<b>83</b>	<b>84</b>	<b>84</b>	<b>84</b>	<b>82</b>	<b>80</b>	<b>75</b>	<b>89</b>	
Back Side Measured SPL, dB		73	71	69	66	67	65	59	59		Provided by Manufacturer
Surface Area, m2		14.7	14.7	14.7	14.7	14.7	14.7	14.7	14.7		Based on AutoCAD Drawing
<b>CT_Back - Sound Power Level, dB</b>		<b>85</b>	<b>83</b>	<b>81</b>	<b>78</b>	<b>79</b>	<b>77</b>	<b>71</b>	<b>71</b>	<b>83</b>	
End Side Measured SPL, dB		77	71	68	68	68	63	59	55		Provided by Manufacturer
Surface Area, m2		9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5		Based on AutoCAD Drawing
<b>CT_End - Sound Power Level, dB</b>		<b>87</b>	<b>81</b>	<b>78</b>	<b>78</b>	<b>78</b>	<b>73</b>	<b>69</b>	<b>65</b>	<b>81</b>	
Motor Side Measured SPL, dB		77	72	71	69	69	66	62	58		Provided by Manufacturer
Surface Area, m2		9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5		Based on AutoCAD Drawing
<b>CT_Motor - Sound Power Level, dB</b>		<b>87</b>	<b>82</b>	<b>81</b>	<b>79</b>	<b>79</b>	<b>76</b>	<b>72</b>	<b>68</b>	<b>83</b>	
Top Side Measured SPL, dB		78	78	77	78	77	74	70	68		Provided by Manufacturer
Surface Area, m2		6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3		Based on AutoCAD Drawing
<b>CT_Top - Sound Power Level, dB</b>		<b>86</b>	<b>86</b>	<b>85</b>	<b>86</b>	<b>85</b>	<b>82</b>	<b>78</b>	<b>76</b>	<b>89</b>	

**Exhaust Sound Power Level Calculations**

**1. Garage Exhaust Fans - INT\_EF1 and EF2**

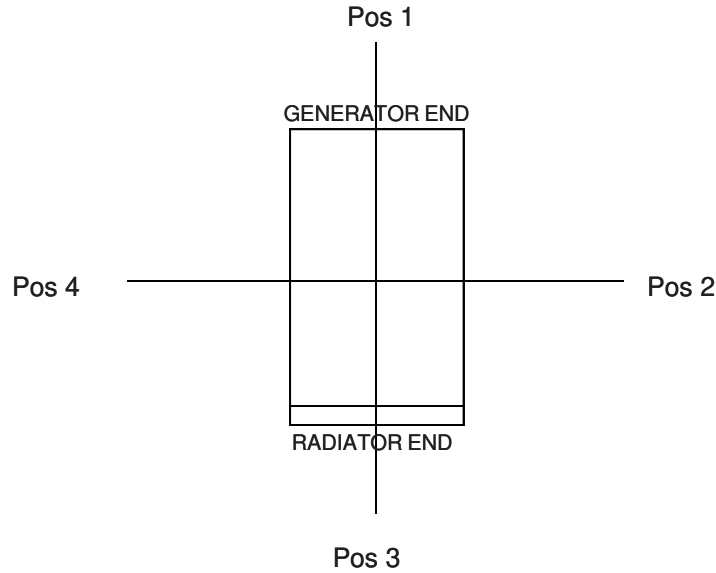
Fan Type Centrifugal  
 Flow Rate, m3/s 8.9  
 Static Pressure, in.wc. 0.75

	63	125	250	500	1000	2000	4000	8000	LwA	Notes
Specific Sound Power Level	35	35	34	32	31	26	18	10		Noise Control for Buildings, Table 7-13
Flow and Pressure Corrections	40	40	40	40	40	40	40	40		
Blade Passage Correction	0	0	3	0	0	0	0	0		BP Inc = 3 at 250Hz
Efficiency Correction	5	5	5	5	5	5	5	5		80% efficiency assumed
<b>Fan Outlet PWL</b>	<b>80</b>	<b>80</b>	<b>82</b>	<b>77</b>	<b>76</b>	<b>71</b>	<b>63</b>	<b>55</b>	<b>80.6</b>	

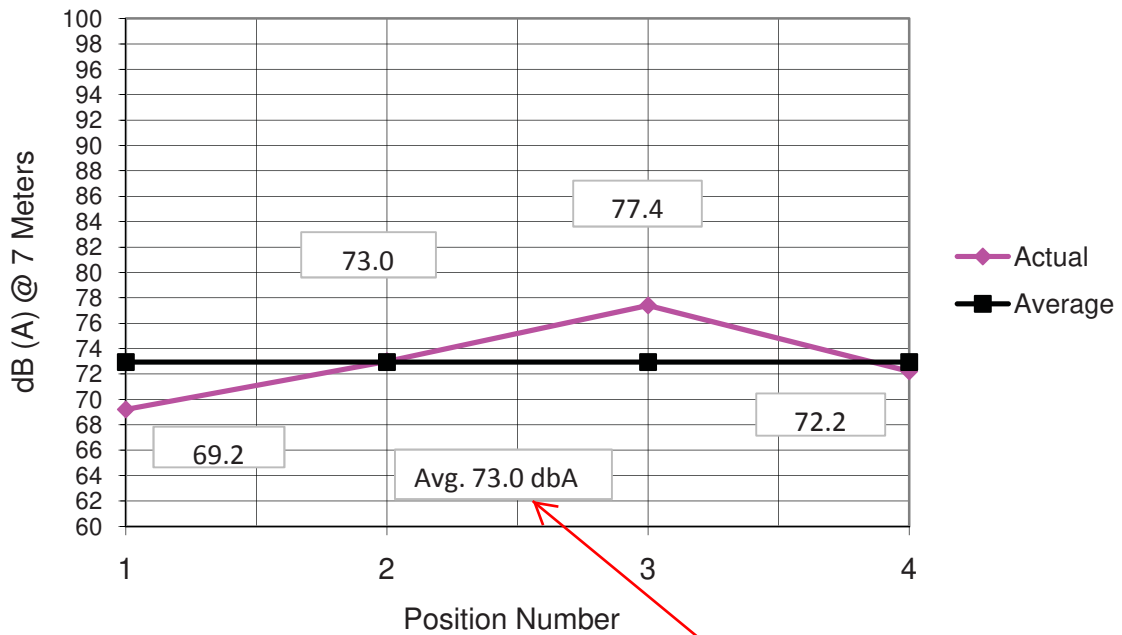
# GENERAC POWER SYSTEMS INC.

## Estimated Sound Performance

### SG175 - 13.3L Hino Level 2A Sound Attenuated Enclosure



#### Measured Sound Levels - 60 Hz



**Emergency Generator INT\_GEN**

- Notes:
1. All positions 23 ft (7M) from center of generator.
  2. Generator operating at full load.
  3. Tests are conducted on a 100 foot diameter asphalt surface.





**ENGINEERED AIR**

**SUPPLY AIR FAN PERFORMANCE**

JOB NAME: Barrett Court Condo # 2 JOB NO: (N-3796)

CUSTOMER: Veeda Inc

ENGINEER: Jain & Associates

EngA MODEL: LM15/C/O QTY: 1 TAG: MUA-1

AIRFLOW 15220 CFM E.S.P. 1.5 in.w.c. FAN MANUFACTURER LAU INDUSTRIES

FANSIZE 25/25 FC DIDW QTY. 1

**SOUND POWER DATA**

TSP 2.8 in.w.c. RPM 653 REQ'D POWER 10.88 BHP/Hz 63 125 250 500 1000 2000 4000 8000

MOTOR SIZE 15 HP ODP (1750) INLET VANES<sup>NO</sup> db: 92 89 86 86 81 80 75 69

Make-up Air Unit  
INT\_MAU

