NOISE IMPACT STUDY

"SOPHIES LANDING LAKESIDE CLUB"
165 LAKE STREET
GRIMSBY, ON
REGION OF NIAGARA

Prepared for:

Sophies Landing
165 Lake Street
Grimsby, ON
L3M 5G7

Prepared By:

Melissa MacLean
Vice President

Our File No: 22-2240
July 2022

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21JULY2022
PROVINCE OF ONTARIO

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1.0 INTRODUCTION

dBA Acoustical Consulting Inc. has been retained to conduct a noise impact study on behalf of Sophies Landing Lakeside Club for the proposed "Sophies Landing Lakeside Club" located at 165 Lake Street, consisting of 32, 2 ½ storey dwellings, 10 of which are single detached and 22 are semi-detached, located in Grimsby, ON, Region of Niagara

The purpose of the study is to determine the noise impact from the QEW and Lake Street vehicular traffic as well as Baker Road Wastewater Treatment Plant, located at 160 Lake Street, that may impact the proposed residential development, as required for Site Plan application for the Town of Grimsby.

This study will detail noise impact relative to the site plan and recommend noise control measures necessary (if applicable) to meet Ministry of Environment Conservation and Parks (MECP) Publication NPC-300 entitled "Stationary & Transportation Sources-Approval & Planning guidelines while satisfying the planning requirements of the Town of Grimsby and the Region of Niagara. CN/CP Rail Warning Clauses are not required as the rail tracks are in excess of 450m from the proposed site.

Vibration is not considered as there are no heavy industrial operations in the proposed development. Aircraft is not a concern as the development is located outside the NEF 25 contour of the area. Due to extensive distance separation, the CN/CP Rail will have no acoustical impact on the proposed site. See attached Site Location Figure 1.

2.0 SITE DESCRIPTION

The proposed site property is located approximately 340m north of the QEW centerline. To the east and west are existing 2 - 2 1/2 storey dwellings. To the south is Baker Road Wastewater Treatment Plant, located at 160 Lake Street. The proposed development is approximately 150m north of the Treatment plant and there are houses within 70m to the west of the Treatment Plant.

Lake Street will have no traffic acoustical impact due to low-speed limit, and low traffic volumes. Site Plan is attached in Figure 2.

The QEW is 6-lanes and is the main noise source located approximately 340m north from the building façade of the proposed development. The posted speed of the QEW is 110 km/hr. and runs east and west from the proposed site.

3.0 NOISE IMPACT ASSESSMENT

3.1 NOISE CRITERIA

The MECP specifies limits for road noise relative to new residential developments. The MECP Publication NPC-300 entitled "Stationary & Transportation Sources-Approval & Planning, specifies the criteria, summarized as follows:

TABLE1- Road Traffic Sound Levels Limits	
Time Period	Leq (dBA)
07:00 – 23:00 (16 hr.)	55 Outdoor Living area
07:00 – 23:00 (16 hr.)	55 Plane of Window
23:00 – 07:00 (8 hr.)	50 Plane of Bedroom window

The OLA refers to an outdoor patio, a terrace or other area where outdoor passive recreation is expected. Noise levels are calculated at the upper storey bedroom window to represent nighttime (23:00-0700) periods.

Where noise levels estimated at the first-floor window (POW) are equal to or less than the values listed in Table 1, no noise control measures are required. Where noise levels exceed Table 1 values, the following action is required:

TABLE 2 –Noise Control Requirements		
Time Period	Noise Level Leq (dBA)	Action Required
07:00 - 23:00 Daytime (OLA)	56 to 60	Warning Clause Type "A"
	> 60	Barrier & Warning Clause Type "B"
07:00 – 23:00 Daytime (POW)	>55	Provision for A/C, Warning Clause "C"
	>65	Central A/C, Warning Clause "D"
	>65	Building Component Specification
23:00 to 07:00 Nighttime (POW)	> 50	Provision for A/C and Warning Clause Type "C"
	> 60	Building Component Specification
	> 60	Central Air and Warning Clause Type "D"

Where nighttime noise levels exceed 60 dBA, building components must be designed to meet Table 3 indoor sound level limits.

TABLE 3 - Indoor Road Sound Levels Limits	
Indoor Location	Leq (dBA)
	Road
Living/Dining/ Bedroom 7:00 – 23:00	45
Living/Dining/ Bedroom 23:00 - 07:00	40

3.2 ROAD NOISE

Predicted road traffic noise levels were calculated for QEW, the road noise source in the area. Road traffic volumes for QEW AADT 2016 (Annual Average Daily Traffic) were sourced by the MTO website. (See Appendix "A").

The MECP computer program STAMSON version 5.04 was used to carry out prediction calculations (See Appendix "A"). STAMSON version 5.04 does not support speed limits in excess of 100 km/hr, however, to calculate the total noise level from the QEW traffic at 110 km/hr we have added an extra 1 dBA to the overall noise level for each receptor. Traffic data is summarized in Table 4. The daytime/nighttime volume ratios relative to QEW is calculated using a 66/33 split and the MTO require the noise levels be calculated over a 24-hour period.

The percentage of annual growth for QEW was figured at 2% over 16 years. The AADT (Annual Average Daily Traffic) volumes were used considered the worst-case scenario. Truck volumes were factored at 5% medium and 10% heavy of the total vehicle volumes.

TABLE 4 – Future Road Traffic Volumes			
QEW	AADT 136318 Vehicles		
	Cars	Medium Trucks	Heavy Trucks
24 Hours	115870	6816	13632

The following Table 5 summarizes QEW "free field" traffic noise prediction results, modeled at 6 receptor locations representing the 1st and 3rd floor south façades. (See Figure 3 Receptor Locations).

TABLE 5 – Predicted QEW Future Traffic Noise (dBA) 2032	
Location	24 Hours - Leq
R1 - 1st Floor South Façade – Lots 1, 7, 12 & 17	61 (1.5m)
R2 - 3rd Floor South Façade – Lots 1, 7, 12 & 17	64 (7.5m)
R3 - 1st Floor South Façade – Lots 2, 8, 13 & 18	58 (1.5m)
R4 - 3rd Floor South Façade – Lots 2, 8, 13 & 18	61 (7.5m)
R5 - 1st Floor OLA - Lots 1, 7, 12 & 17	55 (2.43m)
R6 - 1st Floor OLA - Lots 2, 8, 13 & 18	55 (2.43m)

4.0 RECOMMENDATIONS - NOISE CONTROL

4.1 OUTDOOR LIVING AREAS

Calculated road noise levels for the rear yard outdoor amenity areas exceed the 55 dBA daytime criteria outlined in Table 1 for Lots 1, 2, 7, 8, 12, 13, 17 & 18. The rear yard outdoor amenity areas require a 2.43m noise barrier for noise mitigation measures.

In compliance with MECP guidelines, the noise barrier must have a minimum surface density of 20 kg/m^2 and be designed and constructed with no cracks or gaps. Any gap under the noise barrier that is necessary for drainage purposes must be minimized and must not distract from the acoustical performance.

4.2 INDOOR NOISE LEVELS

Calculated nighttime road noise levels at the Plane of Window (POW) for all dwellings exceed the 50 dBA criteria outlined in Table 1 for indoor space. Specific building components (walls, windows, doors etc.) are required and confirmed using the STC (Sound Transmission Class) method. Building design specifications were not made available during report writing therefore, STC calculations summarized in Table 6 following with minimum window door and wall construction specified for each floor. All windows throughout the residential development should have the same STC value as it is cost efficient and less likely to result in an installation error.

The STC values were calculated for each room type, based on typical acoustically tested window to floor ratios of 20% for bedrooms and 30% for living areas. A maximum of two components were factored per room. Receptor locations are labelled on Figure 3. Acoustically tested windows must be installed and verified by a letter from the appropriate window company be issued to confirm the STC values have been achieved.

The QEW is a major traffic corridor near this site area with a posted speed of 110km/hr and is the predominant noise source at the proposed development site. As the QEW traffic speed varies at times more than 110km/hr, dBA staff have recommended that all residential dwellings in the site development have Central Air Conditioning units installed along with appropriate Warning Clauses. We have also recommended that all windows have the same STC rating at the highest noise level for R1 throughout the development to ensure that the QEW traffic noise is not a noise concern in the future.

TABLE 6 –Door and Window Construction Requirements			
LOCATION	STC To Be Achieved	Patio Door Construction	Exterior Walls STC Rating
All Residential Units	Example	Example	Example
Bedroom All Facades	32	32	40
Living Room All Facades	32	32	40

5.0 VENTILATION / WARNING CLAUSES

In addition to the inclusion of the specified building components for all units as noted in Table 6 above and specifically worded Warning Clauses and Building Component Specification are noted below.

TABLE 7 - Ventilation and Warning Clause Requirements		
LOCATION	VENTILATION	WARNING CLAUSES
Lots 1, 2, 7, 8, 12, 13, 17 & 18	Central Air	Type "B" and "D" Building Component Specification
All Remaining lots	Central Air	Type "D"

TYPE B:

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

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 Municipality's and the MECP's noise criteria."

6.0 REGULATORY CONTEXT

6.1 BAKER ROAD WASTEWATER TREATMENT PLANT

The MECP Publication NPC-300, Stationary & Transportation Sources-Approval & Planning guidelines defines a point of reception/receptor as *"any point on the premises of a person where the sound or vibration originating from other than those premises are received."*

The point of reception may be located on any of the following, or zoned for future use, premises including but not limited to the following: residential homes, retirement homes, etc.

The areas surrounding the proposed Baker Road Wastewater Treatment Plant is indicative of a "Class 1 Area" as defined in MECP Publication NPC-300, Stationary & Transportation Sources-Approval & Planning guidelines.

The applicable sound limits are the higher of:

- The existing ambient sound level; or
- The minimum values of Table 8.

No restrictions apply to stationary sources if the one-hour equivalent sound exposure (Leq) is lower than the levels in the following Table 8.

Traffic background noise levels result in higher noise levels than the following Table 8, Minimum Sound Level Limits.

TABLE 8 Minimum Sound Level Limits (Class 1Area)	
Time Period	L_{eq} (dBA)
07:00 - 19:00	50
19:00 - 23:00	50
23:00 – 07:00	45

An on-site visit was conducted on June 28th, 2022, at the entrance to the Baker Road Wastewater Treatment Plant to obtain noise levels generated from the Plant that may exceed the MECP NPC-300 noise criteria. dBA staff contacted the Region of Niagara and spoke to the person responsible for maintaining the Plant. (See attached for contact information)

dBA staff was informed that the Baker Road Wastewater Treatment Plant has a MECP Certificate of Air and Noise Certificate in place to ensure all noise levels generated from the Plant site complied with the MECP noise Certificate. The result of the June 28th, 2022, on-site visit was over 6 hours and dBA staff confirmed that the Baker Road Wastewater Treatment Plant did not generate any noise from the Plant Facility during our visit. The only noise was waste trucks periodic entering and leaving the plant. The predominant noise source at the Wastewater Treatment Plant was the QEW traffic background noise.

7.0 SUMMARY OF RECOMMENDATIONS

The following noise control measures are required for this development:

- STC requirements for window, walls, and any patio doors throughout the site development to be confirmed prior to issuance of a building permit,
- Appropriate Warning Clauses be inserted into all sales and rental agreements.
- Lots 1, 2, 7, 8, 12, 13, 17, & 18, requires a 2.43m noise barrier.

It is recommended that a Qualified Acoustical Consultant certify that the required noise control measures have been incorporated into the builder's plans, prior to issuance of a building permit.

Prior to issuance of an occupancy permit, it is recommended the Qualified Acoustical Consultant certify that the approved noise control measures have been property installed.

8.0 CONCLUSIONS

dBA Acoustical Consulting Inc. has provided a noise impact study on behalf of Sophies Landing Lakeside Club for the proposed "Sophies Landing Lakeside Club" located at 165 Lake Street, consisting of 32, 2 ½ storey dwellings, located in Grimsby, ON, Region of Niagara

The study determined the noise impact from the QEW and Lake Street vehicular traffic as well as Baker Road Wastewater Treatment Plant, located at 160 Lake Street, that impacted the proposed residential development, as required for Site Plan application for the Town of Grimsby.

FIGURE 1
SITE LOCATION

FIGURE 2
SITE PLAN

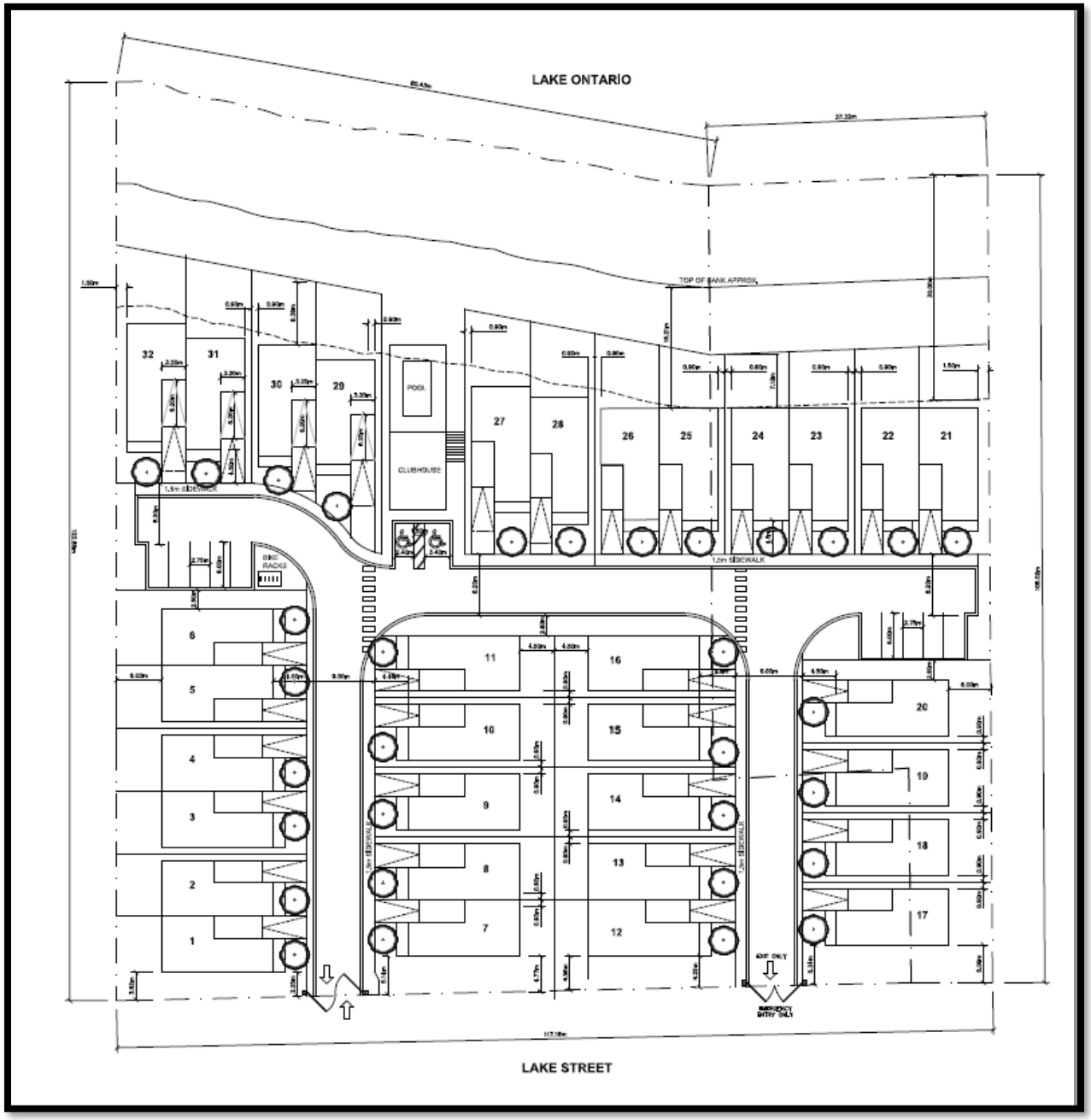


FIGURE 3
RECEPTOR LOCATIONS

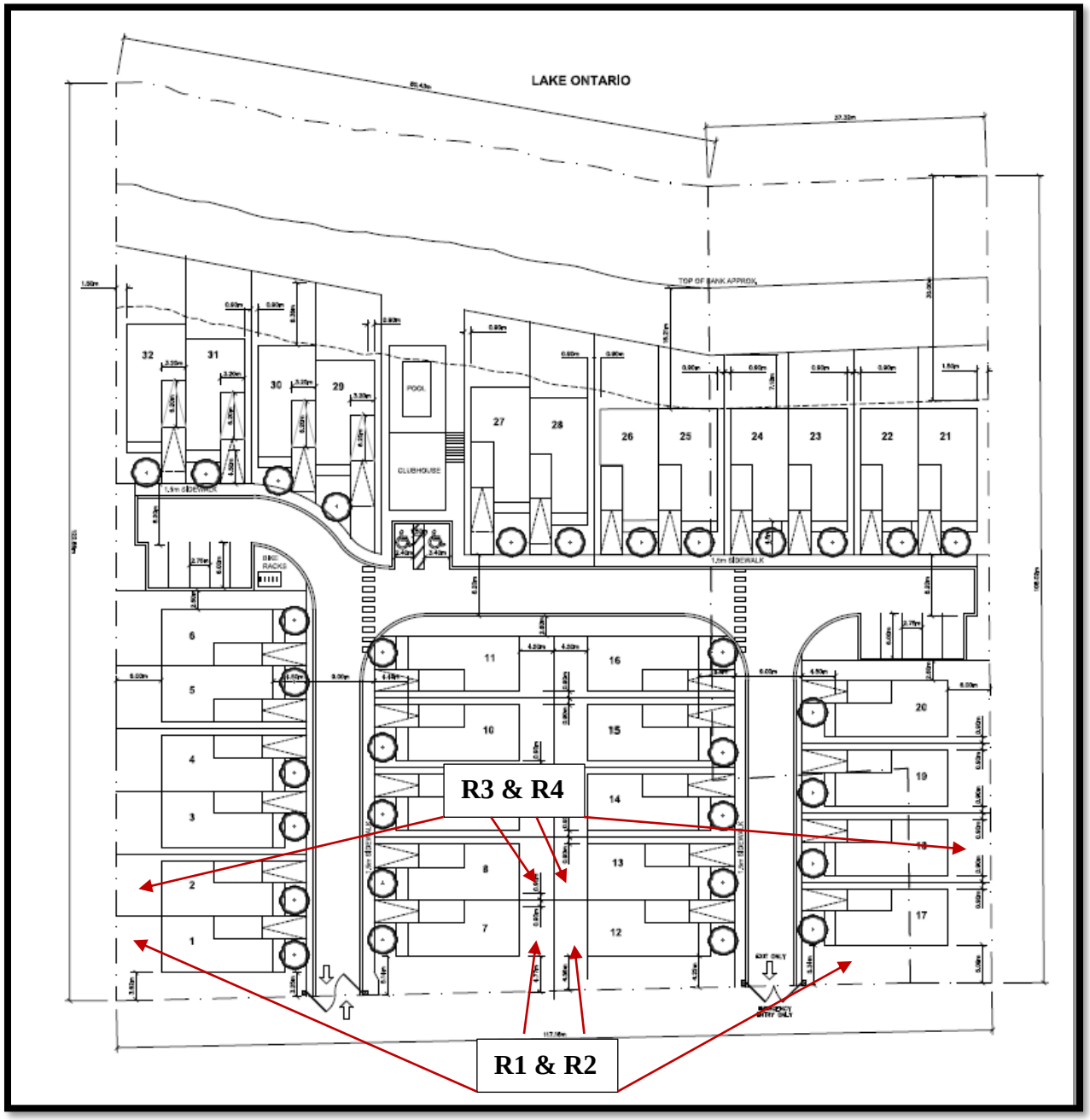
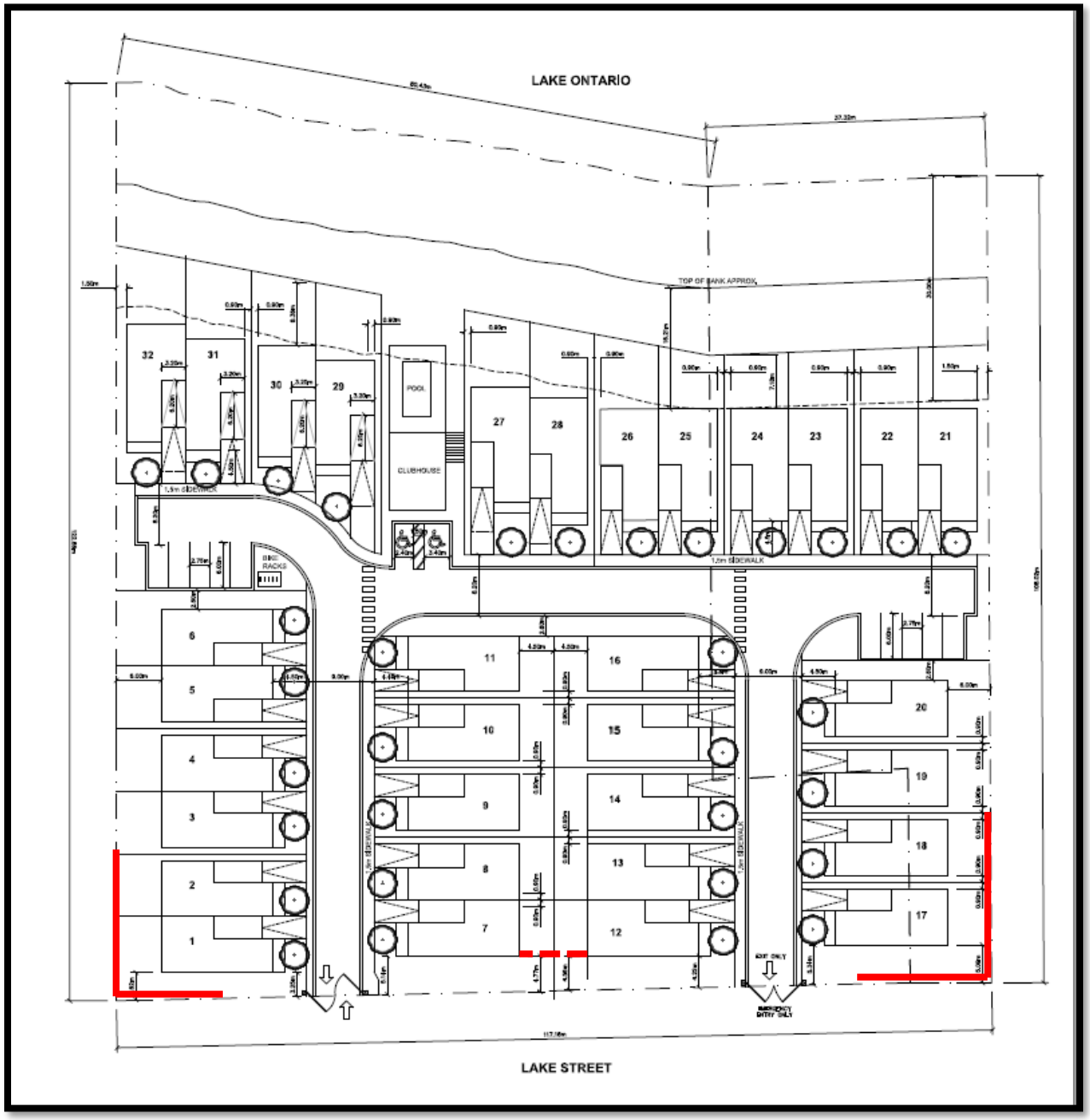


FIGURE 4
NOISE BARRIER LOCATIONS



Represents a 2.43m noise barrier location

Represents Lots 7 & 12 a 2.43m acoustical gate for the rear yard OLA's.

APPENDIX "A"

MTO 2016 QEW TRAFFIC DATA

Highway	Location Description From	Location Description To	Dist. (KM)	2016 AADT
QEW	FORT ERIE-GODERICH ST-PEACE BRIDGE PLAZA	CENTRAL AV IC	0.2	14,600
QEW	CENTRAL AV IC	CONCESSION RD IC-1	0.9	18,700
QEW	CONCESSION RD IC-1	THOMPSON RD IC-2	1.0	15,500
QEW	THOMPSON RD IC-2	GILMORE RD IC-5	2.4	17,700
QEW	GILMORE RD IC-5	BOWEN RD IC-7	2.0	24,200
QEW	BOWEN RD IC-7	NETHERBY RD IC-12 NIAGARA FALLS LTS	5.5	25,700
QEW	NETHERBY RD IC-12 NIAGARA FALLS LTS	SODOM RD IC-16	3.2	22,000
QEW	SODOM RD IC-16	LYONS CREEK RD IC-21	6.6	29,000
QEW	LYONS CREEK RD IC-21	MCLEOD RD IC-27	4.4	36,700
QEW	MCLEOD RD IC-27	HWY 420 IC-30	2.9	45,100
QEW	HWY 420 IC-30	THOROLD STONE RD IC-32	2.0	70,400
QEW	THOROLD STONE RD IC-32	MOUNTAIN RD IC-34	2.5	67,400
QEW	MOUNTAIN RD IC-34	HWY 405(WBL)IC-37	2.4	71,000
QEW	HWY 405(WBL)IC-37	GLENDALE AV IC-38	1.3	88,100
QEW	GLENDALE AV IC-38	NIAGARA ST SERVICE RDS	4.8	90,500
QEW	NIAGARA ST SERVICE RDS	NIAGARA ST IC-44	1.2	78,600
QEW	NIAGARA ST IC-44	LAKE ST IC-46	1.6	81,900
QEW	LAKE ST IC-46	ONTARIO ST IC-47	1.3	117,000
QEW	ONTARIO ST IC-47	MARTINDALE RD IC-48	0.7	97,400
QEW	MARTINDALE RD IC-48	HWY 406 IC-49	0.7	74,400
QEW	HWY 406 IC-49	SEVENTH ST IC-51	1.9	97,100
QEW	SEVENTH ST IC-51	JORDAN RD IC-55	4.3	98,100
QEW	JORDAN RD IC-55	VICTORIA AV IC-57	2.8	104,300
QEW	VICTORIA AV IC-57	ONTARIO ST IC-64	6.7	105,100
QEW	ONTARIO ST IC-64	BARTLETT AV IC-68	3.8	99,800
QEW	BARTLETT AV IC-68	MAPLE AV IC-71	2.5	99,300
QEW	MAPLE AV IC-71	CASABLANCA BV IC-74	3.6	107,100
QEW	CASABLANCA BV IC-74	FIFTY RD IC-78	3.5	112,300
QEW	FIFTY RD IC-78	FRUITLAND RD IC-83	5.1	120,300
QEW	FRUITLAND RD IC-83	HAMILTON 20 IC 88-CENTENNIAL PKWY	5.2	119,000
QEW	HAMILTON 20 IC 88-CENTENNIAL PKWY	BURLINGTON ST IC-89	1.6	130,000
QEW	BURLINGTON ST IC-89	EASTPORT RD IC-93 (7189)	4.0	135,000
QEW	EASTPORT RD IC-93 (7189)	HAMILTON HARBOUR ENTRANCE	0.9	149,400
QEW	HAMILTON HARBOUR ENTRANCE	NORTH SHORE BLVD IC 97	2.3	271,300
QEW	NORTH SHORE BLVD IC 97	FAIRVIEW ST IC-99	2.3	161,300
QEW	FAIRVIEW ST IC-99	HWY 403/407 IC-100	1.0	172,900
QEW	HWY 403/407 IC-100	BRANT ST IC 101	0.8	164,300
QEW	BRANT ST IC 101	GUELPH LINE IC-102	1.8	162,100
QEW	GUELPH LINE IC-102	WALKERS LINE IC-105	2.0	195,000
QEW	WALKERS LINE IC-105	APPLEBY LINE IC-107	2.0	190,000
QEW	APPLEBY LINE IC-107	BURLOAK DR IC-109	1.9	195,000
QEW	BURLOAK DR IC-109	BRONTE SERVICE RD IC-110	1.5	204,000
QEW	BRONTE SERVICE RD IC-110	REG. RD 25(N) BRONTE RD(S) IC-111	0.4	202,200
QEW	REG. RD 25(N) BRONTE RD(S) IC-111	THIRD LINE RD IC 113	2.0	191,300

2016 Provincial Highways Annual Average Daily Traffic (AADT) Page 1 of 55

TOWN OF GRIMSBY
LAKE STREET TRAFFIC DATA

Hi Frank,

As per our discussion, the AADT for the section of Lake Street near 165 Lake Street is 2400 veh/day.

If you have any additional questions please contact me.

Regards,

Michael Palomba *C.E.T., PTP, RSP$_1$*
Transportation Engineering Technologist
Department of Public Works
Town of Grimsby |160 Livingston Ave | Grimsby, ON | L3M 0J5
T: 905-945-9634
mpalomba@grimsby.ca | www.grimsby.ca

TOWN OF GRIMSBY

Please consider the environment before printing this e-mail.

STAMPSON CALCULATIONS

```
STAMSON 5.04        SUMMARY REPORT        Date: 19-07-2022 01:12:16
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: R1Lake.te            Time Period: 24 hours
Description: R1 Lots 1, 7, 12 & 17 South Facades QEW Free Field
                     TOTAL Leq FROM ALL SOURCES:                    60.13
                     SPEED LIMIT ADJUSTMENT (+ 1 dBA)               61.13

Road data, segment # 1: QEW
---------------------------
Car traffic volume  : 115870 veh/TimePeriod  *
Medium truck volume :  6816 veh/TimePeriod  *
Heavy truck volume  : 13632 veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: QEW
-------------------------
Angle1   Angle2          : -90.00 deg   90.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0
Surface                  :      1       (Absorptive ground surface)
Receiver source distance : 340.00 m
Receiver height          :   1.50 m
Topography               :      1       (Flat/gentle slope; no barrier)
Reference angle          :   0.00

Result summary
--------------
                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !    (m)   !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.QEW              !     1.78 !    60.13 !    60.13
--------------------+---------+---------+---------
                                    Total                    60.13 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 19-07-2022 01:42:00
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r2lake.te            Time Period: 24 hours
Description: R2 Lots 1, 7, 12 & 17 South Facades QEW Free Field
                     TOTAL Leq FROM ALL SOURCES:                    62.89
                     SPEED LIMIT ADJUSTMENT (+ 1 dBA)               63.89

Road data, segment # 1: QEW
---------------------------
Car traffic volume  : 115870 veh/TimePeriod  *
Medium truck volume :  6816 veh/TimePeriod  *
Heavy truck volume  : 13632 veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: QEW
-------------------------
Angle1   Angle2          : -90.00 deg   90.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0
Surface                  :      1       (Absorptive ground surface)
Receiver source distance : 340.00 m
Receiver height          :   7.50 m
Topography               :      1       (Flat/gentle slope; no barrier)
Reference angle          :   0.00

Result summary
--------------
                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.QEW              !     1.78 !    62.89 !    62.89
--------------------+---------+---------+---------
                                    Total                   62.89 dBA
```

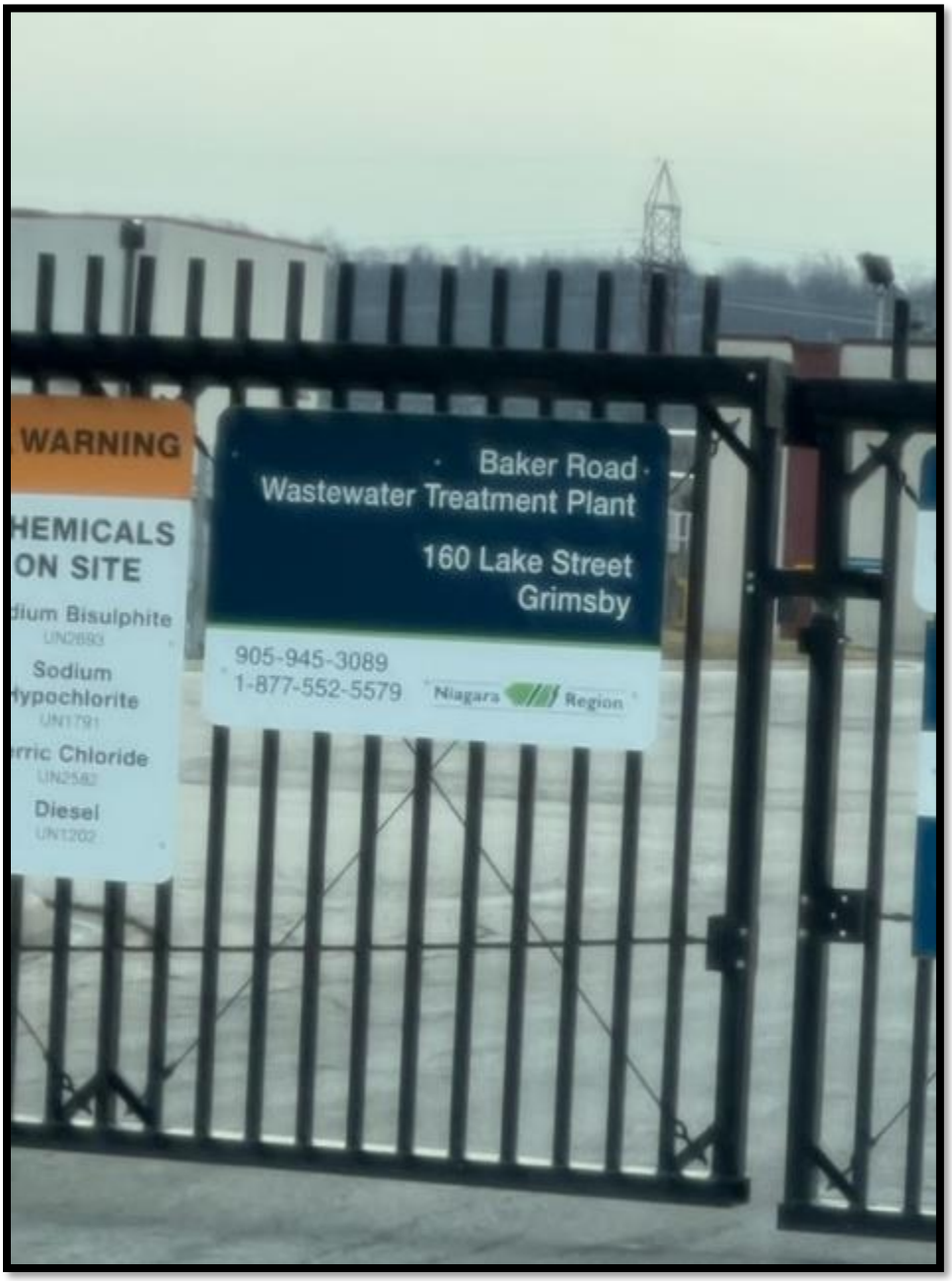
```
STAMSON 5.04        SUMMARY REPORT        Date: 19-07-2022 02:09:53
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r3lake.te            Time Period: 24 hours
Description: R3 Lots 2, 8,13 & 18 South Facades QEW Free Field
                     TOTAL Leq FROM ALL SOURCES:                    56.81
                     SPEED LIMIT ADJUSTMENT (+ 1 dBA)               57.81

Road data, segment # 1: QEW
---------------------------
Car traffic volume  : 115870 veh/TimePeriod  *
Medium truck volume :  6816 veh/TimePeriod  *
Heavy truck volume  : 13632 veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: QEW
-------------------------
Angle1   Angle2          : -90.00 deg   0.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0
Surface                  :      1       (Absorptive ground surface)
Receiver source distance : 355.00 m
Receiver height          :   1.50 m
Topography               :      1       (Flat/gentle slope; no barrier)
Reference angle          :   0.00

Result summary
--------------
                   !  source  !   Road   !  Total
                   !  height  !   Leq    !   Leq
                   !   (m)    !  (dBA)   !  (dBA)
-------------------+---------+---------+---------
 1.QEW             !     1.78 !    56.81 !    56.81
-------------------+---------+---------+---------
                                  Total                  56.81 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 19-07-2022 02:20:29
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r4lake.te            Time Period: 24 hours
Description: R4 Lots 2, 8,13 & 18 South Facades QEW Free Field
                     TOTAL Leq FROM ALL SOURCES:                    59.88
                     SPEED LIMIT ADJUSTMENT (+ 1 dBA)               60.88

Road data, segment # 1: QEW
---------------------------
Car traffic volume  : 115870 veh/TimePeriod  *
Medium truck volume :  6816 veh/TimePeriod  *
Heavy truck volume  : 13632 veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: QEW
-------------------------
Angle1   Angle2          : -90.00 deg   0.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0
Surface                  :      1       (Absorptive ground surface)
Receiver source distance : 340.00 m
Receiver height          :   7.50 m
Topography               :      1       (Flat/gentle slope; no barrier)
Reference angle          :   0.00

Result summary
--------------
                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.QEW              !     1.78 !    59.88 !    59.88
--------------------+---------+---------+---------
                      Total                 59.88 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 19-07-2022 02:52:20
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r5lake.te            Time Period: 24 hours
Description: R5 Lots South Facades QEW 2.43m Barrier
                      TOTAL Leq FROM ALL SOURCES:                    54.27
                      SPEED LIMIT ADJUSTMENT (+ 1 dBA)               55.27

Road data, segment # 1: QEW
---------------------------
Car traffic volume  : 115870 veh/TimePeriod  *
Medium truck volume :  6816 veh/TimePeriod  *
Heavy truck volume  : 13632 veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: QEW
-------------------------
Angle1   Angle2           : -90.00 deg   90.00 deg
Wood depth                :      0       (No woods.)
No of house rows          :      0
Surface                   :      1       (Absorptive ground surface)
Receiver source distance  : 340.00 m
Receiver height           :   1.50 m
Topography                :      2       (Flat/gentle slope; with barrier)
Barrier angle1            : -90.00 deg   Angle2 : 90.00 deg
Barrier height            :   2.43 m
Barrier receiver distance :   3.00 m
Source elevation          :   0.00 m
Receiver elevation        :   0.00 m
Barrier elevation         :   0.00 m
Reference angle           :   0.00

Result summary
--------------
                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.QEW              !     1.78 !    54.27 !    54.27
--------------------+---------+---------+---------
                      Total                  54.27 dBA
```

```
STAMSON 5.04        SUMMARY REPORT        Date: 19-07-2022 03:07:50
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: r6lake.te            Time Period: 24 hours
Description: R6 Lots South Facades QEW 2.43m Barrier
                      TOTAL Leq FROM ALL SOURCES:                    53.59
                      SPEED LIMIT ADJUSTMENT (+ 1 dBA)               54.59

Road data, segment # 1: QEW
---------------------------
Car traffic volume  : 115870 veh/TimePeriod  *
Medium truck volume :  6816 veh/TimePeriod  *
Heavy truck volume  : 13632 veh/TimePeriod  *
Posted speed limit  :   100 km/h
Road gradient       :     0 %
Road pavement       :     1 (Typical asphalt or concrete)

Data for Segment # 1: QEW
-------------------------
Angle1   Angle2          : -90.00 deg   0.00 deg
Wood depth               :      0       (No woods.)
No of house rows         :      0
Surface                  :      1       (Absorptive ground surface)
Receiver source distance : 340.00 m
Receiver height          :   1.50 m
Topography               :      2       (Flat/gentle slope; with barrier)
Barrier angle1           : -90.00 deg   Angle2 : 0.00 deg
Barrier height           :   2.45 m
Barrier receiver distance :  18.00 m
Source elevation         :   0.00 m
Receiver elevation       :   0.00 m
Barrier elevation        :   0.00 m
Reference angle          :   0.00

Result summary
--------------
                    !  source  !   Road   !  Total
                    !  height  !   Leq    !   Leq
                    !   (m)    !  (dBA)   !  (dBA)
--------------------+---------+---------+---------
 1.QEW              !     1.78 !    53.59 !    53.59
--------------------+---------+---------+---------
                                    Total                    53.59 dBA
```

BAKER ROAD WASTEWATER TREATMENT PLANT



SITE STATISTICS

SITE STATISTICS

ZONING: ND

TOTAL DWELLING COUNT = 32

SINGLE DETACHED DWELLINGS = 10

SEMI-DETACHED DWELLINGS = 22

PUBLIC ASSEMBLY BUILDING (CLUBHOUSE) = 1

	RM1	PROPOSED
LOT AREA	225 sq.m.	200.76 sq.m.
MIN. LOT FRONTAGE	7.5 m	8.4 m
MAX LOT COVERAGE	40%	107.77 sq.m. (54%)
MAX. HEIGHT PRINCIPAL BLDGS	10 m	9.4 m
SETBACKS		
FRONT	4.5 m	4.5 m
REAR	7.5 m	4.5 m
EXTERIOR SIDE	4.5 m	2.60 m
EXTERIOR SIDE (LAKE ST.)	4.5 m	3.30 m
INTERIOR SIDE	0.9 m	.9 m
PARKING (1.5 PER UNIT)	48	48
VISITOR PARKING PARKING (25%)	12	12