ENVIRONMENTAL NOISE IMPACT STUDY

"PALGRAVE ESTATES II SUBDIVISION"
Part of Lot 19,
Concession 8 and Lot 9, Plan 43M-1787
Township of Albion
Town of Caledon
Regional Municipality of Peel

Prepared for:

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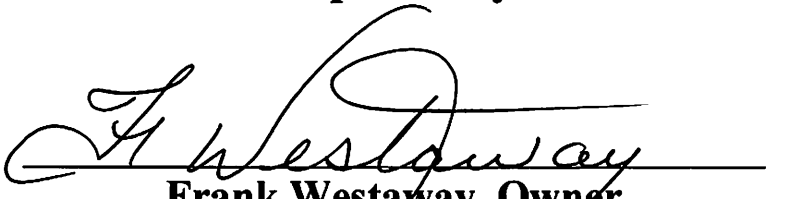

Frank Westaway, Owner
Since 1986 Noise & Vibration Consultants

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1.0 INTRODUCTION

dBA Acoustical Consultants Inc. has conducted a noise impact study for the proposed "Palgrave Estates II Subdivision" Development located at Part of Lot 19, Concession 8 and Lot 9, Plan 42M-1787, Township of Albion, Town of Caledon, Regional Municipality of Peel.

The purpose for this study is to determine the noise impact from Mt Pleasant Rd and Old Church Rd as required for draft plan condition approval in the Town of Caledon. Proposed for the development are eight (8) three (3) storey single-family dwelling developments. This study will detail noise impact relative to the proposed site plan and recommend noise control measures necessary (if applicable) to meet MOE guidelines, while satisfying the planning requirements of the Town of Caledon. Vibration was not considered as there are no CN\CP Rail lines or Heavy Industry in the area. Aircraft is not considered as there is no airport in the immediate vicinity of the development. Key May is attached as Figure 1.

2.0 SITE DESCRIPTION

Proposed for the development are eight (8) three (3) storey single-family dwellings located on the south side of Mt. Pleasant Rd, Caledon Ont. To the west and north of the proposed development are existing Rural Residential dwellings and to the south and east are existing Estate Residential dwellings. Site Plan is attached as Figure 2.

Mt. Pleasant Rd is a 2-lane vehicular roadway and is the main road noise source relative to the proposed development. Old Church Rd is located approximately 850 meters west of the proposed development and has no traffic noise impact on the proposed development. Mt. Pleasant Rd is located approximately 37 meters east to the centerline traffic which runs east and west relative to the proposed development. (See Figure 2, Site Plan) Both roadways have posted speed limits of 60km\hr.

3.0 NOISE IMPACT ASSESSMENT

3.1 NOISE CRITERIA

The Ministry of Environment (MOE) specifies limits for road and rail noise relative to new residential developments. The MOE Publication NPC 300, entitled "Noise Assessment Criteria in Land Use Planning", specifies the criteria, summarized as follows:

TABLE 1 - Road Traffic Sound Levels Limits

Time Period	L_{eq} (dBA)
07:00 – 23:00 (16 hr.)	55 Outdoor Living Area (OLA)
23:00 – 07:00 (8 hr.)	50 Plane of Bedroom Window (POW)

The OLA refers to an outdoor patio, a backyard, a terrace or other area where outdoor passive recreation is expected to occur on the residential property. As this is considered a daytime use (0:700 -23:00) noise levels are calculated at the upper stored bedroom window to represent night time (23:00 - 07:00) periods.

Where noise levels estimated in the Outdoor Living Area (OLA) and at an upper storey 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)	55 to 60	Barrier or Warning Clause Type "A"
07:00 - 23:00 Daytime (OLA)	> 60	Barrier & Warning Clause Type "B"
23:00 to 07:00 Nighttime (POW)	> 50 to 60	Provision for Air Conditioning and Warning Clause Type "C"
23:00 to 07:00 Nighttime (POW)	> 60 > 60	Building Component Specification Central Air Conditioning and Warning Clause Type "D"

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

TABLE 3 - Indoor Road Sound Levels Limits

Indoor Location	Leq(dBA)	
	Road	Rail
Living/Dining 7:00 – 23:00	45	N/A
Bedroom 23:00 - 07:00	40	N/A

3.2 ROAD NOISE LEVELS

Road traffic noise levels were calculated for Mt. Pleasant Rd the proposed development. The Annual Average Daily Traffic (AADT) for Mt. Pleasant Rd road traffic volumes were sourced verbally by Mr. Dew Labonte, "Town of Caledon Engineering Department for the year 2010. The 16/8 hour L_{eq} with 90/10 split, as required by the MOE, was calculated for Mt. Pleasant Rd. Although Mt. Pleasant Rd is not established as a designated truck route, the percentage of annual growth was figured based on 2.0% over 13 years and truck volumes were factored at 4% of the total vehicle volume with 2% classified as medium and 2% heavy.

The current AADT traffic for Mt. Pleasant Rd was calculated at 1276 total vehicles for Mt. Pleasant Rd. The future traffic noise levels were calculated using the aforementioned data, and the MOE computer prediction program Stamson version 5.4. The total traffic volumes for Mt. Pleasant Rd are below the minimum traffic volume of 40 vehicles per hour required for the MOE computer prediction program Stamson version 5.4. MOE computer prediction program Stamson version 5.4 does not support traffic volumes less than 40 vehicles per hour. A Stamson version 5.4 computer program sample sheet with nearly double the traffic volume has been included in Appendix "A" for comparison.

Table 4 summarizes the prediction results for Mt. Pleasant Rd road noise levels at Lot 8 receptor location.

TABLE 4 – Predicted Road Traffic Noise Levels		
Location	**07:00 – 23:00**	**23:00 – 07:00**
R1- Lot 8	Less than 55	Less than 50
	1.5m Receiver Height - 1st Floor	*4.5M Receiver Height – 2nd Floor*

4.0 RECOMMENDATIONS - NOISE CONTROL

4.1 OUTDOOR LIVING AREAS

The proposed residential dwellings are provided with rear yard outdoor living area (OLA). Traffic noise levels are below the minimum noise levels noted in Table 1 for outdoor amenity spaces and therefore; mitigation measures are not required.

4.2 INDOOR NOISE LEVELS

Predicted noise levels are the outside façade of the closest dwelling to the roadways is Lot 15 which was used to determine the appropriate building components to satisfy MOE indoor sound level limits. The building components are specified using the STC method.

Indoor building design specifications were not made available prior to report writing, therefore AIF calculations summarized in Table 5 following with minimum window door and wall construction specified for each room. The STC was calculated for each room type, based on typical window to floor ratios of 20% for bedrooms and 30% for living areas. A maximum of two components were factored per room. Receptor location Lot 8 is noted in Figure 2, Receptor Location.

Central air conditioners are not required for any Lots throughout the development. Windows noted in the following Table 5 are required throughout the complete development.

TABLE 5 – Recommended Wall and Window Construction for All Lots			
LOCATION	**STC Value to be used**	**Wall Construction**	**Window Glazing***
All Lots			
Bedroom	**25**	**OBC**	3mm (16mm) 3mm
Living room	**21**	**OBC**	3mm (16mm) 3mm

** Double pane windows - first number denotes glass thickness, followed by spacing, and thickness of second pane, OBC denotes minimum requirements of the Ontario Building Code will suffice. Recommendations assume windows are well-fitted, weather-stripped units that can be opened.*

4.3 VENTALATION/WARNING CLAUSE

In addition to the inclusion of the specified minimum building components, warning clauses are not required for this development as they are well below the minimum noise limits noted in Table 1.

5.0 SUMMARY OF RECOMMENDATIONS

The following noise control measures are required to satisfy the indoor and outdoor noise level criterion:

- The proposed development outdoor living areas, mitigation measures for OLA's are not required.
- The window and wall construction of OBC is required throughout the development.

6.0 CONCLUSIONS

dBA Acoustical Consultants Inc. has completed a noise impact study for the "Palgrave Estates II Subdivision" Development located at Part of Lot 19, Concession 8 and Lot 9, Plan 42M-1787, Township of Albion, Town of Caledon, Regional Municipality of Peel.

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FIGURE 1

SITE LOCATION

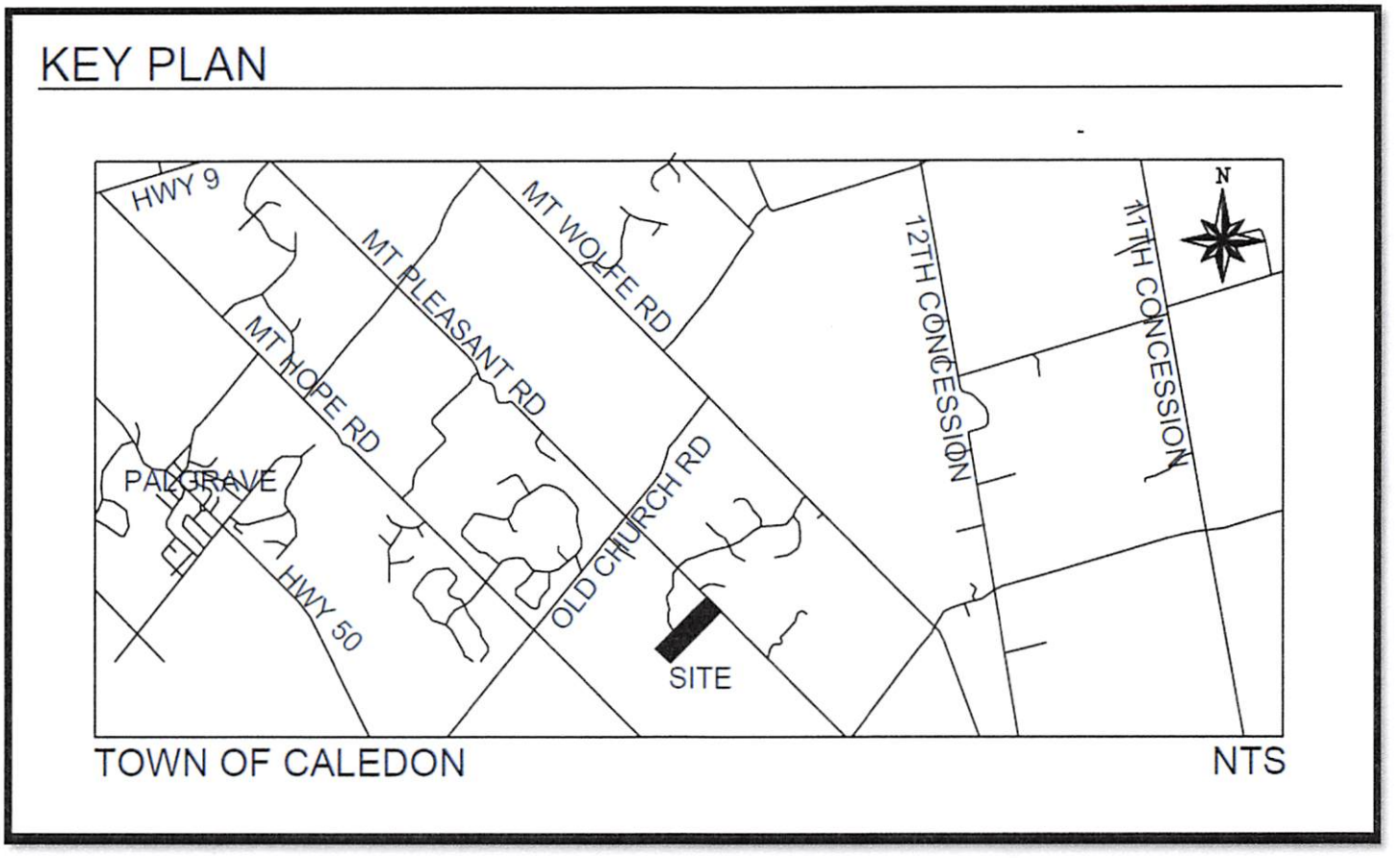
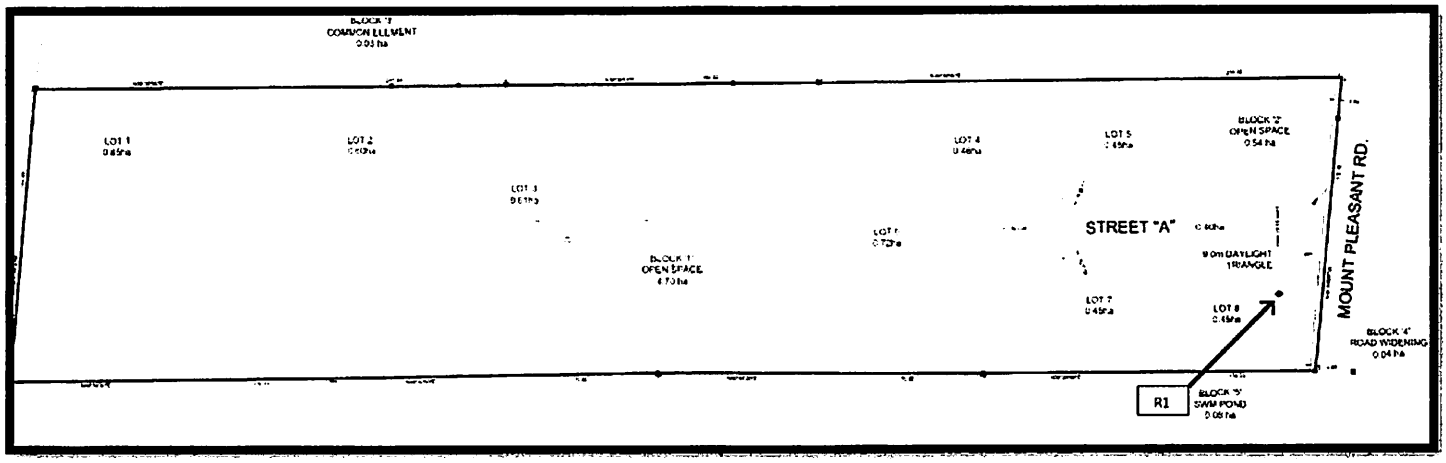


FIGURE 2

SITE PLAN



APPENDIX "A"

STAMSON 5.04 NORMAL REPORT Date: 13-03-2013 15:51:27
MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT

Filename: Palgrave.te Time Period: Day/Night 16/8 hours
Description: **R1-Lot 8 Free Field Mt. Pleasant Rd**

TOTAL Leq FROM ALL SOURCES (DAY): 51.01 (OLA)
(NIGHT): 45.16

Road data, segment # 1: Mt.Pleasant (day/night)

```
Car traffic volume  :  2852/317   veh/TimePeriod  *
Medium truck volume :    29/3     veh/TimePeriod  *
Heavy truck volume  :    29/3     veh/TimePeriod  *
Posted speed limit  :    60 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):   2500
    Percentage of Annual Growth        :   2.00
    Number of Years of Growth          :  13.00
    Medium Truck % of Total Volume     :   1.00
    Heavy Truck  % of Total Volume     :   1.00
    Day (16 hrs) % of Total Volume     :  90.00
```

Data for Segment # 1: Mt.Pleasant (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  :  37.00 / 35.00  m
Receiver height           :   1.50 / 4.50   m
Topography                :      1       (Flat/gentle slope; no barrier)
Reference angle           :   0.00
```

Results segment # 1: Mt.Pleasant (day)

```
Source height = 1.00 m

ROAD (0.00 + 51.01 + 0.00) = 51.01 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.66  58.97   0.00  -6.51  -1.46   0.00   0.00   0.00  51.01
-------------------------------------------------------------------------------
Segment Leq : 51.01 dBA
```

Total Leq All Segments: 51.01 dBA

Results segment # 1: Mt.Pleasant (night)

```
Source height = 0.98 m

ROAD (0.00 + 45.16 + 0.00) = 45.16 dBA
Angle1 Angle2  Alpha RefLeq  P.Adj  D.Adj  F.Adj  W.Adj  H.Adj  B.Adj SubLeq
-------------------------------------------------------------------------------
   -90     90   0.59  52.32   0.00  -5.83  -1.33   0.00   0.00   0.00  45.16
-------------------------------------------------------------------------------

Segment Leq : 45.16 dBA
```

Total Leq All Segments: 45.16 dBA