

# 961 St. David Street North

## **Environmental Noise Assessment**

#### **Project Location:**

961 St. David Street North Fergus, ON

#### Prepared for:

2687734 Ontario Inc. c/o David Medeiros 766 Hespeler Road Cambridge, ON N3H 5L8

#### Prepared by:

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MTE File No.: 48650-100



Engineers, Scientists, Surveyors.



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## **1.0 Introduction**

MTE Consultants Inc. was retained by 2687734 Ontario Inc. to complete an Environmental Noise Assessment in support of the Zoning By-law Amendment and Vacant Lot Condominium applications for the proposed residential development to be constructed at 961 St. David Street North / King's Highway 6 (herein referred to as 'the Site') in the Township of Centre Wellington.

The Site encompasses an area of 1.402ha, and is currently comprised of a single detached dwelling, several accessory buildings, and an asphalt driveway off of 961 St. David Street North / King's Highway 6. The property is bounded to the west, south, and east by existing residential development, and to the northeast by St. David Street North / King's Highway 6. For the exact location of the Site refer to **Figure 1.1**.

The current zoning of the Site is Residential R1a Zone. A Zoning By-law Amendment will be required to re-zone the Site to Residential R3 Zone to permit the proposed vacant land condominium development.

The proposed development for the Site is a vacant land condominium, consisting of 13 single-detached houses, and 37 townhouse units, complete with a common element roadway and driveway entrance off of St. David Street North / King's Highway 6. The purpose of this Environmental Noise Assessment is to determine the noise impact from St. David Street North on the development, and recommend noise control measures to meet the Ministry of the Environment, Conservation and Parks' (MECP) guidelines while satisfying the planning requirements of the Township of Centre Wellington. Refer to **Appendix A** for a copy of the concept plan prepared by MHBC.

## 2.0 Criteria

This report and analysis have been completed using the requirements of the MECP Publication *NPC-300: Environmental Noise Guideline: Stationary and Transportation Sources – Approval and Planning* (2013).

#### 2.1 Noise Levels for Outdoor Amenity Areas

The recommended outdoor daytime noise levels, taken from Table C-1 in the Publication NPC-300 are:

Usage	Between Hours	Noise Levels
Outdoor Amenity Area	07:00 to 23:00	55dBA L <sub>eq</sub>

**Table 2.1** summarizes the noise control measures required for road traffic noise sources.

	Table 2.1 - Rec	uired Noise	Control N	leasures fo	r Outdoor	Living	Areas
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Daytime (07:00-23:00)	Exceeds Objective By	Noise Control Measures
≤ 55dBA	0dBA	No requirements or conditions
56-60dBA	1-5dBA	Noise Warning Clause
> 60dBA	> 5dBA	Alternative Land Use Alternative Draft Plan Designs Barriers



March 16, 2022 — 10:33 a.m. — Plotted By: RChen

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#### 2.2 Indoor Noise Level Limits

Similar to outdoor noise levels limits, the recommended indoor noise levels taken from Table C-2 in the Publication NPC-300 are:

Usage	Between Hours	Noise Levels ( $L_{eq}$ )
Indoor Living Area	07:00 to 23:00	45dBA
Indoor Living Area (Sleeping Quarters)	23:00 to 07:00	40dBA

Outdoor sound levels (calculated at the plane of window) are used to determine if acoustical mitigation measures are required. **Table 2.2** summarizes control measures, for indoor sound levels, based on a 10dBA reduction for a standard wall section applied to the outdoor sound levels due to road traffic.

			<b>J</b>	
Daytime (07:00-23:00)	Nighttime (23:00-07:00)	Exceeds Objective By	Noise Control Measures	
≤ 45dBA	≤ 40dBA	0dBA	No requirements or conditions	
46-55dBA	41-50dBA	1-10dBA	Noise Warning Clause Provisions for central A/C	

> 10dBA

Table 2.2 - Required Noise Control Measures for Indoor Living Areas

#### 2.3 Calculation Parameters

> 50dBA

> 55dBA

As previously noted, the allowable outdoor noise level for outdoor living areas is 55dBA with up to 60dBA being allowed with a noise warning clause. The allowable indoor daytime (07:00 - 23:00) and nighttime (23:00 - 07:00) noise levels are 45dBA and 40dBA, respectively. Indoor noise levels are assumed to be 10dBA less than outdoor noise levels, measured at the plane of window, for buildings with standard wall construction.

Noise Warning Clause Central A/C or other ventilation system installed prior to occupancy

Building components designed to achieve indoor sound level criteria

Daytime and nighttime noise calculations for indoor noise levels at locations which represent the worst-case impact have been included. Based on preliminary concepts, it is assumed that proposed buildings onsite will be constructed with two storeys. However, as a conservative approach, calculations were performed assuming the worst-case daytime and nighttime noise levels are 7.5m above ground level. This will allow the resulting conclusion of this report to still be true, should development plans change to include a third storey.

Elevations used for this assessment have been based on proposed grades within the site and the existing grades along St. David Street North, under the assumption that the site is generally on a flat or gentle slope.

## 3.0 Analysis Procedures

#### 3.1 Road Traffic Data

The noise source considered for this analysis includes:

• St. David Street North.

#### St. David Street North:

The projected peak hour traffic volumes for St. David Street North were provided in the Transportation Impact Study (TIS) completed by Paradigm Transportation Solutions Limited on June 30, 2022. The total northbound and southbound projected 2033 P.M. Peak Hour traffic volumes on St. David Street North at the site entrance were multiplied by 10 to get the projected 2033 AADT. The traffic volumes are included in **Appendix B** and are summarized below.

2033 AADT	- 13,440vpd
Medium Truck Volume	- 2.3%
Heavy Truck Volume	- 1.9%
Posted Speed Limit	- 60km/h

The percentage of articulated (heavy) trucks and single (medium) trucks was calculated by averaging the northbound (northbound from Side Road 19) and southbound (southbound from Side Road 18) P.M. Peak values that were given in Appendix B of the TIS.

#### 3.2 Traffic Calculation Methods

Resulting noise levels were calculated using the Stamson v5.03 computer program approved by the MECP. Daytime and nighttime road noise levels were calculated based on 24-hour volume breakdown. The daytime volume (over 16 hours) is obtained by multiplying the AADT by the fraction of daily traffic expected during the daytime period (90%). The nighttime volumes are obtained in a similar manner, except using 10% for expected nighttime traffic (over 8 hours).

Table 3.1 - Pro	jected 2033 Road	<b>Traffic Volumes</b>	for St. David	<b>Street North</b>
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St. David Street North	Projected 2033 AADT – 13,440vpd Speed Limit = 60km/h			
	Cars	Medium Trucks (2.3%)	Heavy Trucks (1.9%)	
DAYTIME VOLUME	11,588	278	230	
NIGHTTIME VOLUME	1,287	31	26	

## 4.0 Results and Analysis

#### 4.1 Noise Level Calculations

This noise report has been completed to determine noise levels for the proposed 961 St. David Street North development and to recommend noise mitigation measures, if required. Daytime and nighttime living areas (bedroom or living/dining room) are most conservatively represented at the building envelope face. At this time, building plans are unknown. Therefore, a conservative estimate of indoor living areas has been assumed to be located at 7.5m above ground level. Furthermore, it is assumed that outdoor living areas in the form of backyards will be present for each unit; represented at 1.5m above ground level.

#### 4.1.1 Setback Lines (SBL)

Noise calculations were completed to determine the minimum source-receiver distance to achieve adequate noise attenuation:

- With central A/C, special building components, and a warning clause;
- With provisions for central A/C and a noise warning clause;
- With control measures for outdoor living areas and a noise warning clause; and,
- With a noise warning clause.

The following **Table 4.1** indicates the resulting unattenuated (free-field) noise levels at specific receiver locations within the development. As shown in **Table 4.1**, unattenuated acoustical impacts are such that MECP noise level limits are exceeded within the development. Mitigation measures in the form of provisions for central air conditioning and noise warning clauses will be required. The resulting setbacks lines are shown graphically in **MTE Drawing 48650-100-NA1.1**. Stamson calculations are included in **Appendix C**.

	Daytime Noise Levels			Nighttime Noise Levels			
Noise Source	Setback Line	Outdoor POW Noise Level Limit (dBA) <sup>1</sup>	Distance from Road Centreline to Achieve Limit (m)	Comments	Outdoor POW Noise Level Limit (dBA) <sup>1</sup>	Distance from Road Centreline to Achieve Limit (m)	Comments
	1	65	15.9	Minimum dwelling setback with no building components	60	< 15.0	Daytime Governs
	2	60	30.3	Minimum OLA setback where no noise barrier is required	-	-	-
St. David Street North	3	55	60.7	Minimum OLA setback where no noise warning clause is - required		-	-
	4	55	74.7	Minimum dwelling setback with no noise warning clause or provisions for air conditioning	50	59.2	Daytime Governs

Table 4.1 - Unattenuated Noise Levels (Setback Lines)

1-POW = Plane of Window

5

#### 4.1.2 Points of Assessment (POAs)

Points of assessment are typically placed in critical locations where the resulting noise levels are assumed to be high due to the close proximity to the noise source, or where the thresholds outlined in **Table 2.2** are achieved. They are typically used to assess building component requirements based on elevated noise levels. For this analysis, POAs were not used due to the location of Setback Line 1 not surpassing any proposed building faces.

Stamson calculations are included in Appendix C.

#### 4.1.3 Outdoor Living Areas (OLAs)

Similarly, outdoor living area points of assessment are typically placed in critical locations where the resulting noise levels are expected to be high due to the close proximity to the noise sources, or where the thresholds outlined in **Table 2.1** are achieved. They are typically used to assess noise barrier requirements based on elevated noise levels. However, there are no proposed outdoor living areas (backyards) inside of Setback Line 2. Therefore, no OLAs were used in this analysis.

Stamson calculations for Setback Lines 2 & 3 correspond to thresholds outlined in **Table 2.1** are summarized in **Appendix C**.

#### 4.2 Mitigation Measures

#### 4.2.1 Setback Lines

As previously mentioned, noise calculations were completed to determine the minimum sourcereceiver distances to achieve adequate noise attenuation. **Table 4.1** above presents a summary of Stamson modelling results for determining minimum setback lines. The results are identified in **MTE Drawing 48650-100-NA1.1**.

The following setback lines describe the required noise control measures at specific distances from the road centreline:

#### **Outdoor Living Areas**

#### Setback Line 2 (60dBA)

• Noise attenuation barrier and a Type B Noise Warning Clause.

#### Setback Line 3 (55dBA)

• Type A Noise Warning Clause.

#### Indoor Plane of Window (POW)

#### Setback Line 1 (65dBA) (Daytime Governs)

• Special building components, central air conditioning installed prior to building occupancy, and a Type D Noise Warning Clause.

#### Setback Line 4 (55dBA) (Daytime Governs)

• Forced air heating with provisions for the installation of central air conditioning and a Type C Noise Warning Clause.

#### 4.2.2 Building Components

There are no proposed dwellings between St. David Street North and Setback Line 1. Therefore, a building component analysis is not required for this development.

#### 4.2.3 Noise Attenuation Barriers

There are no proposed outdoor living areas between St. David Street North and Setback Line 2. Therefore, the development does not require a barrier for noise attenuation.

#### 4.2.4 Noise Warning Clauses and Ventilation Requirements

Dwellings proposed between Setback Line 1 and Setback Line 4 exceed the allowable indoor daytime noise level of 45dBA (corresponding to plane of window limits of 55dBA). As such, these units shall be fitted with a forced air heating system to permit for the future installation of central air conditioning and a Type C Noise Warning Clause shall be registered on title.

Proposed outdoor living areas located between Setback Line 2 and Setback Line 3 will have unattenuated noise levels between 55dBA and 60dBA. As such, a Type A Noise Warning Clause will be required for all proposed units between Setback Lines 2 and 3.

## **5.0 Conclusions and Recommendations**

Based on the foregoing analysis, the following conclusions can be made:

- 1. No special building components will be required for any proposed units.
- Provisions for the future installation of central air conditioning by the owner are required for all proposed units situated between Setback Line 1 and Setback Line 4. Furthermore, a Type C Noise Warning Clause shall be registered on title and included in all rental agreements.
- 3. No noise attenuation barriers are required for the development. However, outdoor noise limits are exceeded within the development. As such, a Type A Noise Warning Clause shall be registered on title and included in all rental agreements for units located between Setback Line 2 and Setback Line 3.
- 4. The following noise warning clauses shall be registered on title and included in all rental agreements for all applicable dwellings within the development. The clauses shall be worded as follows:

#### Units 1, 2, 3, 49, and 50

**TYPE A + C:** "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, Conservation and Parks. 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, Conservation and Parks."

#### Units 4, 46, 47, and 48

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

All of which is respectfully submitted, **MTE Consultants Inc.** 

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# **Concept Plan**





# **Concept Plan**

961 St. David St N Town of Fergus Township of Centre Wellington

### LEGEND



Subject Lands

Buildable Envelope based on Zoning

R1C Zone Provisions (Single-detached) (Lot with both Municipal Sewer and Services) Township of Centre Wellington By-Law No. 2009-045

Ui	nits 1 to 12 and 50	)
	Required (min)	Provided
Lot Area	341 m²	336 m²
Lot Frontage	11.0 m	11.1 m
Lot Depth	26.0 m	30.2 m

Number of Units - 13

R3 Zone Provisions (Townhouses) (Lot with both Municipal Sewer and Services) Township of Centre Wellington By-Law No. 2009-045

-		
	Lots 13 to 49	
	Required (min)	Provided
Lot Area (per unit)	190 m²	143 m²
Lot Frontage	6.0 m	5.5 m
Lot Depth	26.0 m	23.8 m
Nur	nber of Units -	37

Total Number of Units: 50

#### FOR DISCUSSION PURPOSES ONLY.

Notes

Unit 50 uses the Buildable Envelope from Unit 2 and rotated.

Sources:

Aerial - Centre Wellington (2015) Parcel Fabric - Centre Wellington Subject Lands Boundary - MTE

#### Date: May 6, 2022

Scale: 1:900

File: 18407B

Drawn: CAC/GC/CCF

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# **Traffic Data**







# **STAMSON Noise Calculations**



STAMSON 5.0 NORMAL REPORT Date: 26-07-2022 09:26:45 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT Filename: 60out.te Time Period: 16 hours Description: Fergus Noise Road data, segment # 1: -----Car traffic volume : 11588 veh/TimePeriod Medium truck volume : 278 veh/TimePeriod Heavy truck volume : 230 veh/TimePeriod Posted speed limit : 60 km/h Road gradient : 1 % : 1 (Typical asphalt or concrete) Road pavement Data for Segment # 1: -----Angle1Angle2: -90.00 deg90.00 degWood depth: 0(No woods.No of house rows: 0Surface: 1(Absorptiv) (No woods.) (Absorptive ground surface) Receiver source distance : 30.33 m Receiver height : 1.50 m Topography : 1 (Flat/gentle slope; no barrier) : 0.00 Reference angle Results segment # 1: -----Source height = 1.17 mROAD (0.00 + 60.00 + 0.00) = 60.00 dBAAngle1 Angle2 Alpha RefLeq P. Adj D. Adj F. Adj W. Adj H. Adj B. Adj SubLeq -90 90 0.66 66.54 0.00 -5.08 -1.46 0.00 0.00 0.00 60.00 \_\_\_\_\_ Segment Leq : 60.00 dBA Total Leg All Segments: 60.00 dBA TOTAL Leq FROM ALL SOURCES: 60.00

STAMSON 5.0 NORMAL REPORT Date: 26-07-2022 09:28:36 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT Filename: 55out.te Time Period: 16 hours Description: Fergus Noise Road data, segment # 1: -----Car traffic volume : 11588 veh/TimePeriod Medium truck volume : 278 veh/TimePeriod Heavy truck volume : 230 veh/TimePeriod Posted speed limit : 60 km/h Road gradient : 1 % : 1 (Typical asphalt or concrete) Road pavement Data for Segment # 1: -----Angle1Angle2: -90.00 degWood depth: 0No of house rows: 0Surface: 1 90.00 deg (No woods.) (Absorptive ground surface) Receiver source distance : 60.71 m Receiver height : 1.50 m Topography : 1 (Flat/gentle slope; no barrier) : 0.00 Reference angle Results segment # 1: -----Source height = 1.17 m $ROAD (0.00 + 55.00 + 0.00) = 55.00 \, dBA$ Angle1 Angle2 Alpha RefLeq P. Adj D. Adj F. Adj W. Adj H. Adj B. Adj SubLeq -90 90 0.66 66.54 0.00 -10.08 -1.46 0.00 0.00 0.00 55.00 \_\_\_\_\_ Segment Leq : 55.00 dBA Total Leg All Segments: 55.00 dBA TOTAL Leq FROM ALL SOURCES: 55.00

MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: 5550in.te Time Period: Day/Night 16/8 hours Description: Fergus Noise
Road data, segment # 1: (day/night)
Car traffic volume : 11588/1287 veh/TimePeriod Medium truck volume : 278/31 veh/TimePeriod Heavy truck volume : 230/26 veh/TimePeriod Posted speed limit : 60 km/h Road gradient : 1 % Road pavement : 1 (Typical asphalt or concrete)
Data for Segment # 1: (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 : 15.92 / 15.00 m Receiver height : 7.50 / 7.50 m
Topography : 1 (Flat/gentle slope; no barrier) Reference angle : 0.00
Results segment # 1: (day)  Source height = 1.17 m
Results segment # 1: (day)  Source height = 1.17 m ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA Angle1 Angle2 Alpha RefLeq P. Adj D. Adj F. Adj W. Adj H. Adj B. Adj SubLeq
Results segment # 1: (day)  Source height = 1.17 m ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq 
Results segment # 1: (day)         Source height = 1.17 m         ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA         Angle1 Angle2 Alpha RefLeq P. Adj D. Adj F. Adj W. Adj H. Adj B. Adj SubLeq
Results segment # 1: (day)         Source height = 1.17 m         ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA         Angle1 Angle2 Alpha RefLeq P. Adj D. Adj F. Adj W. Adj H. Adj B. Adj SubLeq         -90       90       0.49       66.54       0.00       -0.39       -1.16       0.00       0.00       65.00         Segment Leq : 65.00 dBA         Total Leq All Segments: 65.00 dBA
Results segment # 1: (day)         Source height = 1.17 m         ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA         Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq         -90       90       0.49       66.54       0.00       -0.39       -1.16       0.00       0.00       65.00         Segment Leq : 65.00 dBA         Total Leq All Segments: 65.00 dBA         Results segment # 1: (night)
Results segment # 1: (day)         Source height = 1.17 m         ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA         Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
Results segment # 1: (day)         Source height = 1.17 m         ROAD (0.00 + 65.00 + 0.00) = 65.00 dBA         Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq         -90       90       0.49         -90       90       0.49         66.54       0.00       -0.39         Segment Leq : 65.00 dBA         Total Leq All Segments: 65.00 dBA         Results segment # 1: (night)

Segment L	_eq	:	58.88	dBA
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Total Leq All Segments: 58.88 dBA

#### TOTAL Leq FROM ALL SOURCES (DAY): 65.00 (NIGHT): 58.88

STAMSON 5.0 NORMAL REPORT Date: 26-07-2022 10:08:13 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT
Filename: 4540in.te Time Period: Day/Night 16/8 hours Description: Fergus Noise
Road data, segment # 1: (day/night)
Car traffic volume : 11588/1287 veh/TimePeriod Medium truck volume : 278/31 veh/TimePeriod Heavy truck volume : 230/26 veh/TimePeriod Posted speed limit : 60 km/h Road gradient : 1 % Road pavement : 1 (Typical asphalt or concrete)
Data for Segment # 1: (day/night)
Angle1Angle2: -90.00 deg90.00 degWood depth:0(No woods.)No of house rows:0 / 0Surface:1(Absorptive ground surface)Receiver source distance:74.68 / 59.23 mReceiver height:7.50 / 7.50 mTopography:1Reference angle:0.00
Results segment # 1: (day)
Source height = 1.17 m
ROAD (0.00 + 55.00 + 0.00) = 55.00 dBA Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq
-90 90 0.49 66.54 0.00 -10.39 -1.16 0.00 0.00 0.00 55.00
Segment Leq : 55.00 dBA
Total Leq AII Segments: 55.00 dBA
Results segment # 1: (night)
Source height = 1.18 m
Source height = 1.18 m ROAD (0.00 + 50.00 + 0.00) = 50.00 dBA Angle1 Angle2 Alpha RefLeq P.Adj D.Adj F.Adj W.Adj H.Adj B.Adj SubLeq

Segment Leq : 50.00 dBA

Total Leq AII Segments: 50.00 dBA

TOTAL Leq FROM ALL SOURCES (DAY): 55.00 (NIGHT): 50.00

