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# Noise Feasibility Study Proposed Residential Development Green Ginger Phase 2 Town of Oakville, Ontario

Prepared for:

Green Ginger Developments Inc. 3751 Victoria Park Ave. Toronto, Ontario, M1W 3Z4

Prepared by

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## 1 Introduction and Summary

HGC Engineering was retained by Green Ginger Developments Inc. to perform a noise feasibility study for a proposed residential development (Green Ginger Phase 2) located west of Trafalgar Road and north of Dundas Street East, north of Phase 1, in the Town of Oakville, Ontario. The proposed development will include townhouse blocks, urban cores, a secondary school, stormwater management facility, and associated roadways. The study is required by the Town of Oakville as part of the approvals process.

Road traffic data was obtained through correspondence with the Region of Halton and GHD personnel. The data was provided in the form of ultimate and projected road traffic data and was used to predict future traffic sound levels at the various dwellings. The predicted sound levels were compared to the guidelines of the Ministry of Environment and Climate Change (MOECC), the Region of Halton and the Town of Oakville.

The sound level predictions indicate that feasible means exist to reduce sound levels to ensure MOECC guidelines are satisfied inside the proposed dwellings. Forced air ventilation systems with ducts sized for the future installation of air conditioning by the occupant is required for dwellings with fronting exposure to Trafalgar Road or some exposure to Dundas Street East. Any exterior building façade constructions meeting the minimum requirements of the Ontario Building Code will provide sufficient acoustical insulation for all the dwelling units in the development. Warning clauses are also recommended to inform future occupants of the traffic noise impacts.







## 2 Site Description and Sources of Sound

Figure 1 shows a key plan which identifies the location of the proposed development. The residential development is located west of Trafalgar Road and north of Dundas Street East, north of Phase 1, in the Town of Oakville, Ontario. The proposed draft plan prepared by Malone Given Parsons Ltd. dated July 5, 2016 is included as Figure 2 and shows the prediction locations. The proposed development will include townhouse blocks, urban cores, a secondary school, village square, stormwater management facility, and associated roadways.

HGC Engineering personnel visited the site in the month of February 2016. Lands to the north are currently vacant, however are designated for future residential. Lands to the west are designated as a natural heritage system. To the west is Green Ginger Phase 1, which is currently under construction. Further to the west of the site is the Halton Regional Police (District 2). To the south of the site, on the southern side of Dundas Street East, is an existing commercial plaza. Lands east of Trafalgar Road are currently vacant. Sounds from these uses were not audible at the subject site over road traffic sounds, nevertheless, a noise warning clause is recommended in Section 5.4 to inform the future occupants of the presence of the existing commercial plaza to the south of Dundas Street East.

The primary sources of noise are road traffic noise from Dundas Street East and Trafalgar Road. Dundas Street East and Trafalgar Road are proposed to be widened to 6 lane roadways (3 lanes in each direction) in this area. There are no significant sources of stationary noise within 500 m of the subject site.

## 3 Criteria for Acceptable Sound Levels

## 3.1 Road Traffic Noise Criteria

Guidelines for acceptable levels of road traffic noise impacting residential developments are given in the MOECC publication NPC-300, "Environmental Noise Guideline Stationary and Transportation Sources – Approval and Planning", Part C release date October 21, 2013 and are listed in Table 1 below. The values in Table 1 are energy equivalent (average) sound levels [L<sub>EQ</sub>] in units of A weighted decibels [dBA].







	Daytime L <sub>EQ(16 hour)</sub>	Nighttime L <sub>EQ(8 hour)</sub>
Outside Bedroom Windows	55 dBA	50 dBA
Outdoor Living Areas	50 dBA	
Inside Living/Dining Rooms	45 dBA	45 dBA
Inside Bedrooms	45 dBA	40 dBA

Table 1: Road Traffic Noise Criteria

Daytime refers to the period between 07:00 and 23:00. Nighttime refers to the time period between 23:00 and 07:00. The term "Outdoor Living Area" (OLA) is used in reference to an outdoor patio, backyard, terrace, children's playground or other area where passive recreation is expected to occur.

The guidelines in the MOECC publication allow the sound level limit in an Outdoor Living Area to be exceeded by up to 5 dBA, without mitigation, if warning clauses are placed in the property agreements, offers of purchase and sale and rental agreements to the properties. Where future OLA sound levels exceed 60 dBA, physical mitigation is required to reduce the OLA sound level to below 60 dBA and as close to 55 dBA as technically, economically and administratively feasible. The Region of Halton's minimum noise barrier height is 2.4 m.

A central air conditioning system as an alternative means of ventilation to open windows is required for dwellings where future nighttime sound levels outside bedroom windows will exceed 60 dBA or future daytime sound levels outside living room windows will exceed 65 dBA. Forced-air ventilation with ducts sized to accommodate the future installation of air conditioning is required when nighttime sound levels at bedroom windows will be in the range of 51 to 60 dBA or when daytime sound levels at living room windows will be in the range of 56 to 65 dBA.

Building components such as walls, windows and doors must be designed to achieve indoor sound level criteria when the nighttime plane of window sound level will be greater than 60 dBA or the daytime plane of window sound level will be greater than 65 dBA. The use of warning clauses to notify future residents of possible excesses is also required.







## 4 Traffic Sound Level Assessment

## 4.1 Road Traffic Data

Ultimate road traffic information for Dundas Street East was obtained from the Region of Halton personnel and is provided in Appendix A. A speed limit of 60 km/h was used for Dundas Street East. A commercial vehicle percentage of 13% was used for Dundas Street East, split into 8% medium trucks and 5% heavy trucks, along with a day-night split of 90%/10%.

Ultimate road traffic information for Trafalgar Road was obtained from the Region of Halton personnel and is provided in Appendix A. A speed limit of 60 km/h was used for Trafalgar Road. A commercial vehicle percentage of 10% was used for Trafalgar Road, split into 5% medium trucks and 5% heavy trucks, along with a day-night split of 90%/10%. Table 2 summarizes the traffic volumes used in the analysis.

Projected road traffic information was provided for the interior roads in Green Ginger Phase 2 by GHD personnel. The projected volumes for these roads were less than 40 vehicles per hour (the minimum required by STAMSON) during nighttime hours and as such were not considered further in the analysis.

Road Name		Cars	Medium Trucks	Heavy Trucks	Total
Dundag	Daytime	43 065	3 960	2 475	49 500
Dundas Street East	Nighttime	4 785	440	275	5 500
Street East	Total	47 850	4 400	2 750	55 000
Tuefelger	Daytime	44 550	2 475	2 475	49 500
I rataigar Dood	Nighttime	4 950	275	275	5 500
Koau	Total	49 500	2 750	2 750	55 000

Table 2: Ultimate Road Traffic Data







## 4.2 Road Traffic Noise Predictions

Future traffic sound levels were predicted using STAMSON version 5.04, a computer algorithm developed by the MOECC. Sample STAMSON output is included in Appendix B.

Sound levels were predicted at the plane of the living/dining room windows during the daytime and at the plane of the bedroom windows during nighttime hours to investigate ventilation requirements. The results of these predictions, without mitigation, are summarized in Table 3.

Prediction Location	Description	Daytime – in the OLA L <sub>EQ-16 hr</sub>	Daytime – at the Façade L <sub>EQ-16 hr</sub>	Night- time – at the Facade L <sub>EQ-8 hr</sub>
[A]	Back-to-back townhouses, fronting exposure to Trafalgar Rd, some exposure to Dundas		62	57
[B]	Back-to-back townhouses, fronting exposure to Trafalgar Rd		59	55
[C]	Townhouses fronting onto Sixteen Mile Dr., some exposure to Trafalgar and Dundas	<55	56	50
[D]	Second row of dwellings from Trafalgar Rd	<55	<55	<50

 Table 3: Predicted Sound Levels, Without Mitigation, [dBA]

## 5 Traffic Noise Recommendations

The predictions indicate that the future traffic sound levels will exceed MOECC guidelines at the facades with exposure to Dundas Street East and Trafalgar Road. Recommendations to address these excesses are discussed below.

## 5.1 Outdoor Living Areas

The predicted sound level in the rear yards of the dwelling units will be 55 dBA or less and physical mitigation is not required.





Back-to-back units with exposure to Trafalgar Road (prediction locations [A] and [B]) do not include rear yards and physical mitigation is not required.

### 5.2 Indoor Living Areas

#### **Provision for the Future Installation of Air Conditioning**

The predicted sound levels at the plane of the bedroom windows of the future dwellings with fronting exposure to Trafalgar Road (prediction locations [A] and [B]) and/or some exposure to Dundas Street East (prediction location [C]) will be between 51 and 60 dBA during the nighttime hours and between 56 to 65 dBA during the daytime hours. To address these excesses, the MOECC guidelines recommend that these dwelling units be equipped with a forced air ventilation systems with ducts sized to accommodate the future installation of air conditioning by the occupant. The guidelines also recommend warning clauses for these lots. Window or through-the-wall air conditioning units are not recommended for any residential units because of the noise they produce and because the units penetrate through the exterior wall which degrades the overall noise insulating properties of the envelope. The location, installation and sound ratings of the outdoor air conditioning devices should minimize noise impacts and comply with criteria of MOECC publication NPC-300, as applicable. These units are shown in Figure 3.

For the remaining dwelling units there are no specific ventilation requirements.

## 5.3 Building Façade Constructions

For all of the dwellings in the proposed development, any exterior wall, and double glazed window construction meeting the minimum requirements of the Ontario Building Code (OBC) will provide adequate sound insulation for the dwelling units. For any ancillary spaces (other than bedrooms, living and dining rooms), any window meeting the minimum requirements of the OBC will be sufficient.

## 5.4 Warning Clauses

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







Suggested wording for dwellings with sound level excesses is given below:

#### Type A:

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

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

#### Type B:

This dwelling unit has been fitted with a forced air heating system and the ducting etc., was sized to accommodate central air conditioning. Installation of central air conditioning will allow windows and exterior doors to remain closed, thereby ensuring that the indoor sound levels are within the noise criteria of the Municipality and the Ministry of the Environment and Climate Change. (Note: The location and installation of the outdoor air conditioning device should be done so as to minimize the noise impacts and comply with criteria of MOECC publication NPC-300, as applicable.)

The suggested wording for future dwellings adjacent to commercial facilities is given below.

Type C:

Purchasers are advised that due to the proximity of the adjacent commercial facilities, sound levels from the facilities may at times be audible.

This sample clause is provided by the MOECC as examples and can be modified by the Municipality as required.







## 6 Summary and Recommendations

In summary, HGC Engineering has reviewed the draft plan and performed calculations to determine the potential road traffic noise impact on the proposed residential buildings with respect to MOECC guidelines. The sound level predictions indicate that feasible means exist to reduce sound levels to ensure MOECC guidelines are satisfied inside the proposed residential buildings. The following are the recommendations.

- When the siting information for the secondary school and for the Urban Cores (Blocks 101, 102 and 103) becomes available, a noise study should be performed to determine the acoustic requirements for the sites to determine the impact of road traffic noise on the proposed buildings and to determine the impact of any stationary sources of noise on the adjacent residential dwellings in accordance with NPC-300.
- Forced air ventilation systems with ductwork sized for the future installation of central air conditioning by the occupant is required for the dwellings with fronting exposure to Trafalgar Road and with some exposure to Dundas Street East.
- 3. Building constructions meeting the minimum requirements of the Ontario Building Code will provide sufficient acoustical insulation for the indoor spaces for all of the dwellings.
- 4. Warning clauses should be used to inform future residents of the traffic noise issues.

The following table summarizes the noise control recommendations and noise warning clauses for the lots in the proposed subdivision. Please see Figures 2 and 3, for reference.







Prediction Location	Block No.	Description	Acoustic Barrier	Ventilation Requirements	Type of Warning Clause	Building Façade Constructions
А	95, 96, 97, 98, 99	Back-to-back townhouses, fronting exposure to Trafalgar Rd, some exposure to Dundas		Forced Air	A, B	OBC
В	82, 83, 84, 87, 88, 89	Back-to-back townhouses, fronting exposure to Trafalgar Rd		Forced Air	A, B	OBC
С	43, 44, 45	Townhouses fronting onto Sixteen Mile Dr., some exposure to Trafalgar and Dundas		Forced Air	A, B, C	OBC
		Remaining Dwellings				

#### Table 4: Summary of Noise Control Requirements and Noise Warning Clauses

Notes:

-- no specific requirement

OBC - meeting the minimum requirements of the Ontario Building Code













Figure 2 - Proposed Draft Plan Showing Prediction Locations



Figure 3 - Proposed Draft Plan Showing Ventilation Requirements

## **APPENDIX A**

Road Traffic Data







#### **Victor Garcia**

From: Sent: To: Subject: Krusto, Matt <Matt.Krusto@halton.ca> August-22-14 2:01 PM Mandy Chan RE: Traffic Data Request

Hi Mandy,

Please use the following:

<u>Dundas Street:</u> -6 lanes -60 km/h existing/future -2031 AADT 55,000 -Truck % medium 8%, Heavy 5%

<u>Trafalgar Road:</u> -6 lanes -60 km/h existing/future -2031 AADT 55,000 -Truck % medium 5%, Heavy 5%

Let me know if you need anything else.

Matt

From: Mandy Chan [mailto:machan@hgcengineering.com] Sent: Friday, August 22, 2014 1:42 PM To: Krusto, Matt Subject: Traffic Data Request

Good afternoon Matt,

We've been asked to do the noise study for the development at 257 and 271 Dundas Street East and would like to request traffic data for Dundas and Trafalgar.

#### http://goo.gl/maps/2GyTq

Thanks!

Regards,

Mandy Chan, PEng Project Engineer

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#### **UNIT YIELD - GREEN GINGER**

	PHASE 1 (unit)	PHASE 2 (unit)	TOTAL (unit)
6.1mX25.5m/27.5m (20ftX83.6ft/90ft) Street Townhouses	204	145	349
4.95mX25.5m/27.5m(16ftX83.6ft/90ft) Street Townhouses	124	404	528
6.1mX17m (20ftX56ft) Rear Lane Townhouses	123		123
6.4mX13.5m (21ftX44ft) Back to Back Townhouses		208	208
Freehold Townhouses Sub-Total	451	757	1208
Mid-Rise Apartments	221	880 (estimated)	1101
Total	672	1637	2309

Note: The unit yield for Block 32 in Phase 1 (Sales Office site) is not included

#### **DENSITY - GREEN GINGER**

	PHASE 1	PHASE 2
Freehold Townhouses	451 units	757 units
Net Residential Area	7.15ha.	12.06ha.
Net Residential Density (Freehold Townhouses)	63.1 uph (25.5 upa)	62.8 uph (25.4 upa)
Mid- Rise Apartments	221 units	880 units
Net Residential Area	1.42ha.	4.87ha.
Net Residential Density (Mid- Rise Apartments)	155.6 uph (63 upa)	180.7uph (73.1upa)

Note: The unit yield for Block 32 in Phase 1 (Sales Office site) is not included

#### LAND AREA - GREEN GINGER

	PHASE 1	PHASE 2	TOTAL
Gross Land Area	27.3ha.	44.7ha.	72ha.
	(67.4ac.)	(110.5ac.)	(177.9ac.)
Nature Haritage	8.6ha.*	12.4ha.*	21ha.*
System (NHS)	(21.3ac.)	(30.7ac.)	(52ac.)
Net Developable	18.7ha.	32.3ha.	51ha.
Land Area	(46.2ac.)	(79.8ac.)	(126ac.)

Note: The ponds within the NHS are excluded.

#### Note:

The lot depth for 16ft and 20ft townhouses in Phase 2 has been increased to 90ft. It was 83.6ft in Phase 1



# **DEVELOPMENT PLAN** GREEN GINGER DEVELOPMENTS INC.

## **APPENDIX B**

Sample STAMSON 5.04 Output







A. TXT STAMSON 5.0 NORMAL REPORT Date: 11-07-2016 12:38:36 MINISTRY OF ENVIRONMENT AND ENERGY / NOISE ASSESSMENT Time Period: Day/Night 16/8 hours Filename: a.te Description: Back-to-back townhouses, fronting exposure to Trafalgar Rd, some exposure to Dundas Road data, segment # 1: Trafalgar S (day/night) Car traffic volume : 22275/2475 veh/TimePeriod \* Medium truck volume : 1238/138 veh/TimePeriod 1238/138 veh/TimePeriod \* Heavy truck volume : 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): Percentage of Annual Growth : 27500 0.00 Number of Years of Growth 0.00 Medium Truck % of Total Volume Heavy Truck % of Total Volume 5.00 5.00 Day (16 hrs) % of Total Volume 90.00 Data for Segment # 1: Trafalgar S (day/night) Angl e2 Angl e1 -90.00 deg 90.00 deg Wood depth 0 (No woods.) No of house rows 0 / 0 Surface 1 (Absorptive ground surface) 127.00 / 91.00 m Receiver source distance : Receiver height 4.50 / 4.50 : m (Flat/gentle slope; no barrier) Topography 1 0.00 Reference angle Road data, segment # 2: Trafalgar N (day/night) \_ \_ \_ \_ \_ \_ \_ \_ Car traffic volume : 22275/2475 veh/TimePeriod Medium truck volume : 1238/138 veh/TimePeriod \* \* 1238/138 veh/TimePeriod Heavy truck volume : Posted speed limit : 60 km/h 0 % Road gradient Road pavement 1 (Typical asphalt or concrete) \* Refers to calculated road volumes based on the following input: 24 hr Traffic Volume (AADT or SADT): 27500 Percentage of Annual Growth 0.00 Number of Years of Growth 0.00 Medium Truck % of Total Volume 5.00 Heavy Truck % of Total Volume 5.00 Day (16 hrs) % of Total Volume 90.00 Data for Segment # 2: Trafalgar N (day/night) -90.00 deg Angl e1 90.00 deg Angl e2 Wood depth (No woods.) 0 No of house rows 0 / 0 (Absorptive ground surface) Surface 1 Receiver source distance : 133.00 / 90.00 m Receiver height 4.50 / 4.50 : m Page 1 *"*S"

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A. TXT Topography 1 (Flat/gentle slope; no barrier) : Reference angle 0.00 Road data, segment # 3: Dundas W (day/night) \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ Car traffic volume : 21533/2393 veh/TimePeriod \* Medium truck volume : 1980/220 veh/TimePeriod \* Heavy truck volume : 1238/138 veh/TimePeriod Posted speed limit : 60 km/h 0 % Road gradient : 1 (Typical asphalt or concrete) Road pavement : \* Refers to calculated road volumes based on the following input: 24 hr Traffic Volume (AADT or SADT): 27500 Percentage of Annual Growth 0.00 Number of Years of Growth 0.00 Medium Truck % of Total Volume Heavy Truck % of Total Volume Day (16 hrs) % of Total Volume 8.00 5.00 90.00 Data for Segment # 3: Dundas W (day/night) -----: -90.00 deg Angle1 Angle2 0.00 deg Wood depth 0 (No woods.) 0 / 0 No of house rows Surface 2 (Reflective ground surface) Receiver source distance : 447.00 / 447.00 m Receiver height : 4.50 / 4.50 m Topography (Flat/gentle slope; no barrier) 1 0.00 Reference angle Road data, segment # 4: Dundas E (day/night) Car traffic volume : 21533/2393 veh/TimePeriod Medium truck volume : 1980/220 \* veh/TimePeriod Heavy truck volume : 1238/138 veh/TimePeriod \* Posted speed limit 60 km/h : 0 % Road gradient : 1 (Typical asphalt or concrete) Road pavement : \* Refers to calculated road volumes based on the following input: 24 hr Traffic Volume (AADT or SADT): Percentage of Annual Growth : 27500 0.00 Number of Years of Growth 0.00 Medium Truck % of Total Volume Heavy Truck % of Total Volume Day (16 hrs) % of Total Volume 8.00 1 5.00 90.00 Data for Segment # 4: Dundas E (day/night) \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ Angle1 Angle2 : -90.00 deg 0.00 deg Wood depth : 0 (No woods.) No of house rows 0 / 0 : Surface 2 (Reflective ground surface) Receiver source distance : 457.00 / 457.00 m Receiver height 4.50 / 4.50 m Topography (Flat/gentle slope; no barrier) 1 0.00 Reference angle Results segment # 1: Trafalgar S (day) Page 2





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#### A. TXT

Source height = 1.50 m $ROAD (0.00 + 56.40 + 0.00) = 56.40 \, dBA$ Angle1 Angle2 Alpha RefLeq P. Adj D. Adj F. Adj W. Adj H. Adj B. Adj SubLeq \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ -90 90 0.57 72.27 0.00 -14.57 -1.30 0.00 0.00 0.00 56.40 \_\_\_\_\_ Segment Leq : 56.40 dBA Results segment # 2: Trafalgar N (day) Source height = 1.50 mROAD (0.00 + 56.09 + 0.00) = 56.09 dBAAngle1 Angle2 Alpha RefLeq P. Adj D. Adj F. Adj W. Adj H. Adj B. Adj SubLeq -90 90 0.57 72.27 0.00 -14.88 -1.30 0.00 0.00 0.00 56.09 \_\_\_\_\_ \_ \_ \_ \_ \_ \_ . . . . . . . . . . . . . Segment Leq : 56.09 dBA Results segment # 3: Dundas W (day) \_\_\_\_\_ Source height = 1.50 mROAD (0.00 + 54.91 + 0.00) = 54.91 dBAAnglel Angle2 Alpha RefLéq P. Adj D. Adj F. Adj W. Adj H. Adj B. Adj SubLeq \_ \_ \_ \_ \_ \_ \_ ------90 0 0.00 72.66 0.00 -14.74 -3.01 0.00 0.00 0.00 54.91 \_\_\_\_\_ Segment Leq : 54.91 dBA Results segment # 4: Dundas E (day) Source height = 1.50 mROAD (0.00 + 54.81 + 0.00) = 54.81 dBAAngle1 Angle2 Alpha RefLeq P. Adj D. Adj F. Adj W. Adj H. Adj B. Adj SubLeq -90 0 0.00 72.66 0.00 -14.84 -3.01 0.00 0.00 0.00 54.81 Segment Leq : 54.81 dBA Total Leq ALI Segments: 61.63 dBA Results segment # 1: Trafalgar S (night) \_\_\_\_\_ Source height = 1.50 mROAD (0.00 + 52.15 + 0.00) = 52.15 dBA Angle1 Angle2 Alpha RefLeq P. Adj D. Adj F. Adj W. Adj H. Adj B. Adj SubLeq -90 90 0.57 65.75 0.00 -12.29 -1.30 0.00 0.00 0.00 52.15 

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A. TXT Segment Leq : 52.15 dBA Results segment # 2: Trafalgar N (night) Source height = 1.50 mROAD (0.00 + 52.23 + 0.00) = 52.23 dBAAngle1 Angle2 Alpha RefLeq P. Adj D. Adj F. Adj W. Adj H. Adj B. Adj SubLeq -90 90 0.57 65.75 0.00 -12.22 -1.30 0.00 0.00 0.00 52.23 \_\_\_\_\_ - - -Segment Leq : 52.23 dBA Results segment # 3: Dundas W (night) Source height = 1.50 mROAD (0.00 + 48.38 + 0.00) = 48.38 dBAAngle1 Angle2 Alpha RefLeq P. Adj D. Adj F. Adj W. Adj H. Adj B. Adj SubLeq \_ \_ \_ \_ \_ \_ ------. . . . . . . . . . . . . . . . . . \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ \_ . \_ \_ \_ \_ \_ \_ . -----90 0 0.00 66.14 0.00 -14.74 -3.01 0.00 0.00 0.00 48.38 \_\_\_\_\_ Segment Leq: 48.38 dBA Results segment # 4: Dundas E (night) Source height = 1.50 m $ROAD (0.00 + 48.29 + 0.00) = 48.29 \, dBA$ Angle1 Angle2 Alpha RefLeq P. Adj D. Adj F. Adj W. Adj H. Adj B. Adj SubLeq -90 0 0.00 66.14 0.00 -14.84 -3.01 0.00 0.00 0.00 48.29 Segment Leq : 48.29 dBA Total Leq AII Segments: 56.70 dBA TOTAL Leq FROM ALL SOURCES (DAY): 61.63 dBA (NI`GHT): 56.70 dBA





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