Alternative
RESOURCE ENERGY AUTHORITY

ELLERSHOUSE WIND FARM EXPANSION

Environmental Assessment Registration - Addendum

January 2017

Prepared By:

Strum Consulting
Railside, 1355 Bedford Hwy.
Bedford, NS B4A 1C5
t. 902.835.5560
f. 902.835.5574
www.strum.com

ELLERSHOUSE WIND FARM EXPANSION
Environmental Assessment Registration Document - Addendum

Prepared For:

Alternative Resource Energy Authority
c/o Town of Antigonish
274 Main Street
Antigonish, NS B2G 2C4
t. 902.870-6205
f. 902.863-0460
www.areans.ca

January 2017

TABLE OF CONTENTS

1.0 INTRODUCTION 1
2.0 SOUND ASSESSMENT 1
2.1 Sound Modelling 2
2.1.1 Assessment Methodology 2
2.1.2 Sound Modelling Results 2
2.2 Infrasound and Low Frequency Noise 3
3.0 ARCHAELOGICAL INFORMATION 3
4.0 SUMMARY 4
5.0 REFERENCES 5

APPENDICES

Appendix A: Sound Modelling Inputs and Assumptions
Appendix B: Archeological Map

1.0 INTRODUCTION

Minas Energy, on behalf of the Alternative Resource Energy Authority (AREA), has proposed to construct and operate a 16.4 megawatt (MW) expansion of the existing 16.4 MW wind project in the community of Ellershouse, Nova Scotia. The expansion will consist of seven (7) 2.35 MW turbines, access roads, interconnecting cables and a connection to the Nova Scotia Power Inc. grid. The owner of the Project, the AREA, is a partnership between the municipal authorities of the towns of Berwick, Mahone Bay and Antigonish. The proposed Project site is located on vacant lands south of the existing Ellershouse Wind Farm which is situated approximately 11 km southeast of Windsor, Nova Scotia in the Municipality of the District of West Hants (44°55'16.28"N, 64° 1'7.25"W).

The Ellershouse Wind Farm Expansion Environmental Assessment (EA) document was registered on November 17, 2016. On January 13, 2017 the Minister of Environment determined that the information provided was insufficient to make a decision. Specifically, additional information was required to evaluate potential environmental effects that may be caused by the undertaking. The information requested is outlined below:

- The Proponent must demonstrate that sound levels are within recommended guidelines at all receptors; and
- Archaeological information is required for the entire proposed project site.

To address the items raised in the Minister's decision, and in consultation with the EA reviewers, the following tasks were completed:

- Sound modelling including the provision of all modelling data inputs and discussion of methodology.
- Discussion of infrasound and low frequency sound generated by wind turbines.
- Consultation with Nova Scotia Department of Communities, Culture and Heritage - Special Places Program regarding additional archaeological screening requirements.

The sections that follow present the methodology and findings of the respective assessments for the Project.

2.0 SOUND ASSESSMENT

An acoustic assessment of predicted sound pressure levels associated with the proposed turbines was completed for the Project and included in the EA document. In discussion with Allison Denning, Regional Environmental Assessment Coordinator, Health Canada, on January 17, 2017, some additional details were requested regarding the inputs and assumptions for the sound modelling for the Project. In addition, a request for a comment on Low Frequency Noise and the commitments from the Project to monitor any noise related complaints. These issues are provided in the following sections.

2.1 Sound Modelling

2.1.1 Assessment Methodology

An acoustic assessment was conducted for the Project to predict sound pressure levels at identified receptors within a 2 km radius of the proposed turbine locations. The assessment was completed using the WindPro v. 3.1 software package. For the purposes of this model, receptors included all structures identified in the provincial topographic mapping, as well as any additional identifiable structures based on aerial imagery. No attempt to distinguish sheds and outbuildings from dwellings or cottages was made. The closest structures (R19 927 m, R70 912 m) are a house and outbuilding located near the dam facilities on Panuke Lake. Both the house and the land are owned by Minas Pulp and Power, with an employee residing there for the purposes of operating the dam facilities.

The model followed ISO 9613-2 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method and calculations, and was based on the following input information:

- UTM coordinates for the wind turbines;
- 1/1 Octave band sound power level data, either provided by the manufacturer or calculated by WindPro, for the wind turbines;
- UTM coordinates for receptors (all structures within a 2 km radius of the Project site were evaluated – 5 receptors in total);
- A wind speed of 10 m/s, the speed at which the highest sound power level output is achieved (based on test data from the manufacturer); and
- Topographic data for the surrounding area.

The ISO 9613-2 calculation method assumes meteorological conditions that are ideal for noise propagation, including a ground temperature of 10°C and 70% relative atmospheric humidity. A ground factor of 0.7 was applied to the model, representing predominantly porous ground (*i.e.*, capable of vegetative growth) interspersed with hard surfaces (*e.g.,* water).

Habitat mapping reveals that the vast majority of the Project site is forested, with mixed wood and softwood stands being the dominant habitat features. Intact forest stands at the Project site are varied in their composition and successional stage. Balsam fir, red maple, red spruce, black spruce, and yellow birch characterize the canopy in most stands.

2.1.2 Sound Modelling Results

A total of 5 structures were identified within a 2 km radius of the proposed turbine locations. Modeling results indicated that no existing structure has predicted sound levels exceeding 40 dBA. To assess the cumulative impact resulting from the addition of seven turbines to the existing wind farm, a second assessment was conducted to predict sound pressure levels at identified receptors within a 2 km radius of the entire Ellershouse Wind Farm (14 turbines in total). A total of 194 structures were identified within a 2 km radius of the wind farm.

Modelling results, including the following information, are provided in Appendix A:

- WindPro v. 3.1 modeling Calculation Assumptions Sheet
- WindPro v. 3.1 modeling Main Results Sheet
- WindPro v.3.1 modeling Detailed Results Sheet
- Drawing indicating predicted sound pressure levels (Drawing 1)

Modeling results indicated that no existing structure has predicted sound levels exceeding 40 dBA. Mapping illustrating the predicted sound levels relative to structures is provided in Drawing 1. Excessive noise resulting from turbine operation is not expected to be an issue at any existing dwellings/residences.

2.2 Infrasound and Low Frequency Noise

Infrasound is very low-frequency sound, that is typically defined as being between 1-20 Hz, which is below what human ears can normally hear. A detailed literature review on the health effects associated with infrasound generated by wind turbines is provided in Appendix C of the Ellershouse Wind Farm Expansion EA (2016).

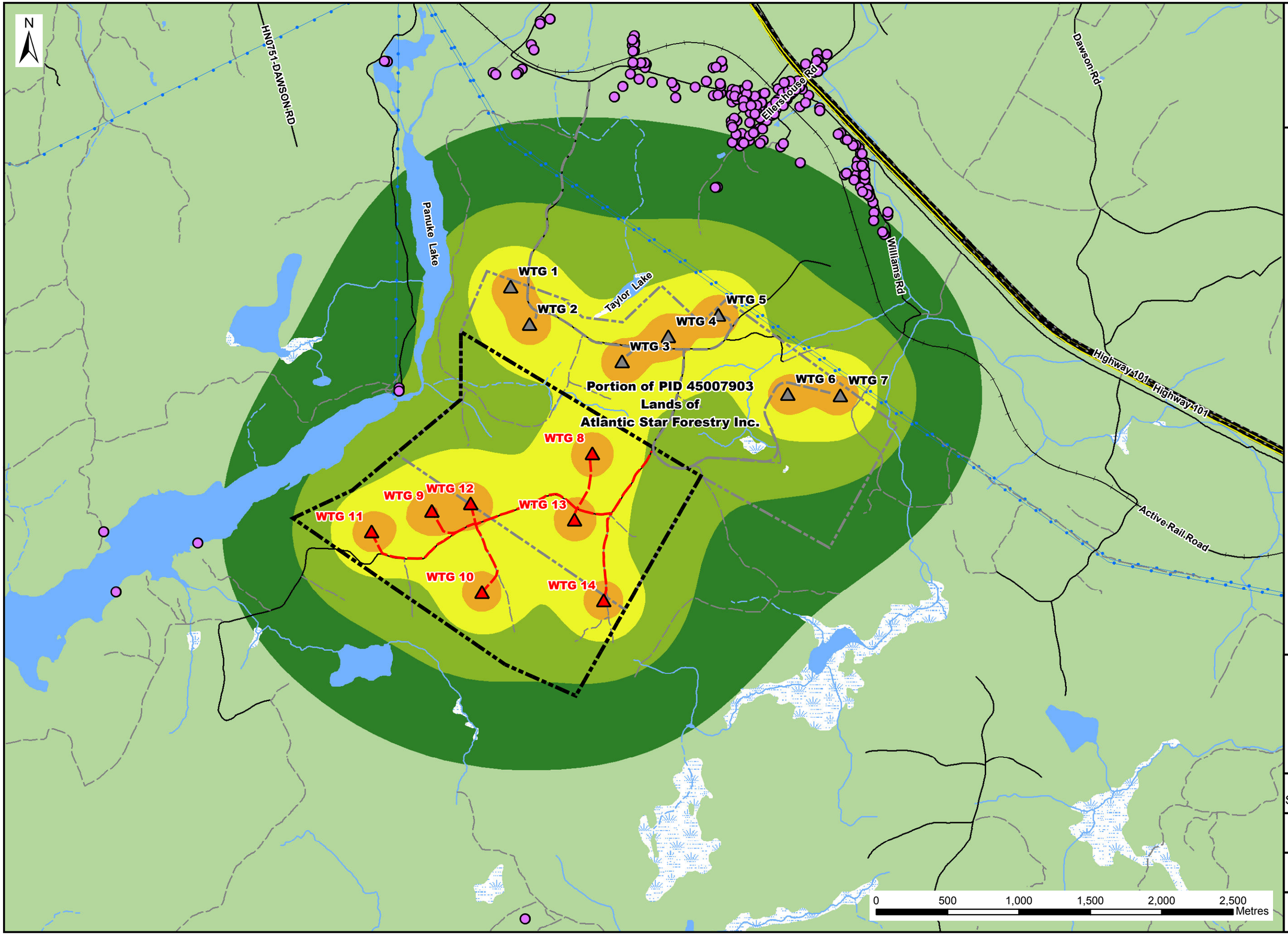
Low frequency noise (LFN) has been used to describe frequencies between 20Hz and about 200Hz. The dominant source of wind turbine LFN is incoming turbulence interaction with the blade. Beyond the auditory threshold, low frequency sound is more annoying than that at higher frequencies. It also travels further than higher frequency sound, and can penetrate structures such as homes without much reduction in energy . LFN can create indoor noise problems such as perceptible vibration and rattle (Michaud et al. 2012).

The Chief Medical Officer of Health in Ontario conducted a review of papers and reports (from 1970 to 2010) on wind turbines and health from scientific bibliographic databases, grey literature, and from a structured Internet search. The report concluded that “low frequency sound and infrasound from current generation upwind model turbines are well below the pressure sound levels at which known health effects occur. Further, there is no scientific evidence to date that vibration from low frequency wind turbine noise causes adverse health effects” (CMOH 2010).

In the event that a noise complaint (including low frequency and/or infrasound) is received from residents within the vicinity of the Ellershouse Wind Farm, the Proponent will initiate a complaint resolution protocol that will involve monitoring noise levels at the affected house and employing appropriate mitigation measures.

3.0 ARCHAELOGICAL INFORMATION

Davis MacIntyre and Associates Limited conducted an Archaeological Resource Impact Assessment (ARIA) for the initial Project footprint. The assessment included a historic background study and reconnaissance of the Project site to determine the potential for archaeological resources within the site. Archaeological reconnaissance was conducted in November 2013. The assessment indicated that the overall Project area was not likely settled by First Nations peoples or by Euro-Canadians. Historic maps and documents indicate that there was a settlement to the north of the site in the late



Notes:

1. Reference: Digital Topographic Mapping by Nova Scotia Geomatics Centre.
2. Projection: NAD83(CSRS), UTM Zone 20 North.
3. Sound Modelling Shown is Approximate and was Established using WindPro 3.1. Turbine Specifications Used in Modelling Processes was Provided by Client.

Legend:

- Existing Noise Receptors
- Proposed Phase 3 Turbines
- Existing Turbines
- Proposed Access Road
- Existing Access Road
- Expansion Project Site
- Former Project Site Boundary
- Active Railroad
- Major Roads and Highways
- Public Roads
- Access Roads / Trails
- Existing Transmission Lines
- Mapped Stream
- Mapped Indefinite Stream
- Water Bodies
- Mapped Wet Area

Sound Modelling Results
Predicted Sound Level (dBA)

- 35 - 40
- 40 - 45
- 45 - 50
- 50 - 55
- 55 +

Ellershouse Wind Project - Sound Modelling Results

Strum CONSULTING 20 YEARS Taking Charge

*Engineering * Surveying * Environmental*
*Bedford * Antigonish * Moncton * Deer Lake*

Date: September 2016	Project #: 16-5807
Scale: 1:25,000	Drawing #: 1
Drawn By: H. Serhan	
Checked By: S. Duncan	

19th century, and that logging camps existed, particularly to the west of the site. Logging roads, some of which are still in existence, pass through the site; however the reconnaissance did not reveal any past cultural activity aside from 20th and very early 21st century logging. The overall Project footprint was determined to be of low archaeological potential and, therefore, no further mitigation was recommended. It was further recommended that in the event that development plans change so that areas not investigated during this assessment were to be impacted, that those areas be assessed by a qualified archaeologist (Davis MacIntyre and Associates Ltd. 2013). These recommendations were accepted by the Department of Communities, Culture and Heritage in December 2013.

Given the subsequent expansion of the proposed development footprint, Minas Energy, on behalf of the AREA, understands that an additional archaeological field screening within the expanded footprint must take place prior to the commencement of any development activities. Sean Weseloh McKeane at the Nova Scotia Department of Communities, Culture and Heritage - Special Places Program, was contacted January 17, 2017 by Sara Beanlands (Boreas Heritage Consulting Inc.) on behalf of the Proponent, to discuss additional site screening commitments within the revised Project footprint. It was determined that in order to provide the most comprehensive information possible so that appropriate resource management strategies can be devised in light of the proposed expansion and implementation, Minas Energy will undertake the archaeological field screening of the revised footprint according to the terms of Heritage Research Permit guidelines, issued by the Nova Scotia Department of Communities, Culture and Heritage - Special Places Program. This field screening will take place as soon as weather permits in Spring 2017 and before the start of construction activities. A report including the results from this survey will be forwarded to Nova Scotia Department of Communities, Culture, and Heritage including any further recommendations.

As requested, a drawing showing the expanded Project footprint in relation to the original archaeological screening study area is provided in Appendix B.

4.0 SUMMARY

Through completion of the 2016 EA, in addition to findings associated with this Addendum document, it has been determined that there are no significant environmental concerns or effects that may result from the Project that cannot be effectively mitigated or monitored.

The proposed capacity of the seven turbines (16.4 MW) will produce enough energy to power approximately 4,500 households with local, clean, renewable energy and will contribute to reaching Nova Scotia's renewable energy commitments.

5.0 REFERENCES

CMOH (Chief Medical Officer of Health). 2010. The Potential Health Impact of Wind Turbines. Ontario Ministry of Health and Long Term Care.

Davis MacIntyre and Associates Ltd. 2013. *St. Croix Wind Project; Archaeological Resource Impact Assessment*. *Report # A2013NS111.*

Michaud, David S., Keith, Stephen E., Feder, Katya, and Tara Bower. 2012. Health Impacts and Exposure to Wind Turbine Noise: Research Design and Noise Exposure Assessment. Retrieved from: http://www.hc-sc.gc.ca/ewh-semt/consult/_2012/wind_turbine-eoliennes/research_recherche-eng.php#f1

APPENDIX A
SOUND MODELLING INPUTS AND ASSUMPTIONS

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

Noise calculation model:
ISO 9613-2 General
Wind speed:
10.0 m/s
Ground attenuation:
General, fixed, Ground factor: 0.7
Meteorological coefficient, C0:
0.0 dB
Type of demand in calculation:
1: WTG noise is compared to demand (DK, DE, SE, NL etc.)
Noise values in calculation:
All noise values are mean values (Lwa) (Normal)
Pure tones:
Pure tone penalty is subtracted from demand: 0.0 dB(A)
Height above ground level, when no value in NSA object:
4.5 m Allow override of model height with height from NSA object
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0.0 dB(A)
Octave data required
Air absorption

63	125	250	500	1,000	2,000	4,000	8,000
[db/km]	[db/km]	[db/km]	[db/km]	[db/km]	[db/km]	[db/km]	[db/km]
0.1	0.4	1.0	1.9	3.7	9.7	32.8	117.0

WTG: ENERCON E-92 2,3 MW 2350 92.0 !-!
Noise: Level 0 - official - OM 0s - 2350kW - 01/2015

Source	Source/Date	Creator	Edited
Enercon	1/2/2015	USER	10/7/2015 8:50 AM

According to manufacturer specification document D0369629-1_#_ger_#_DIC-SP-APV_-_SPL_E-92_2350_kW_-_BM_0s_Rev1.0

						Octave data							
Status	Hub height [m]	Wind speed [m/s]	LwA,ref [dB(A)]	Pure tones		63 [dB]	125 [dB]	250 [dB]	500 [dB]	1000 [dB]	2000 [dB]	4000 [dB]	8000 [dB]
From Windcat	98.4	10.0	105.0	No	Generic data	86.6	93.6	97.0	99.6	99.4	96.5	91.7	82.2

NSA: R1-A
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R2-B
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R3-C
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R4-D
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R5-E
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R6-F
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R7-G
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R8-H
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R9-I
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R10-J
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R11-K
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R12-L
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R13-M
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R14-N
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R15-O
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R16-P
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R17-Q
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R18-R
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R19-S
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R20-T
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R21-U
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R22-V
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R23-W
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R24-X
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R25-Y
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R26-Z
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R27-AA
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R28-AB
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R29-AC
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R30-AD
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R31-AE
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R32-AF
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R33-AG
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R34-AH
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R35-AI
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R36-AJ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R37-AK
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R38-AL
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R39-AM
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R40-AN
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R41-AO
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R42-AP
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R43-AQ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R44-AR
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R45-AS
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R46-AT
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R47-AU
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R48-AV
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R49-AW
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R50-AX
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R51-AY
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R52-AZ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R53-BA
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R54-BB
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R55-BC
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R56-BD
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R57-BE
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R58-BF
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R59-BG
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R60-BH
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R61-BI
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R62-BJ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R63-BK
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R64-BL
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R65-BM
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R66-BN
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R67-BO
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R68-BP
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R69-BQ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R70-BR
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R71-BS
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R72-BT
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R73-BU
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R74-BV
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R75-BW
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R76-BX
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R77-BY
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R78-BZ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R79-CA
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R80-CB
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R81-CC
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R82-CD
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R83-CE
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R84-CF
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R85-CG
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R86-CH
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R87-CI
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R88-CJ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R89-CK
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R90-CL
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R91-CM
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R92-CN
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R93-CO
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R94-CP
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R95-CQ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R96-CR
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R97-CS
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R98-CT
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R99-CU
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R100-CV
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R101-CW
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R102-CX
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R103-CY
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R104-CZ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R105-DA
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R106-DB
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R107-DC
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R108-DD
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R109-DE
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R110-DF
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R111-DG
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R112-DH
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R113-DI
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R114-DJ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R115-DK
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R116-DL
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R117-DM
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R118-DN
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R119-DO
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R120-DP
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R121-DQ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R122-DR
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R123-DS
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R124-DT
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R125-DU
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R126-DV
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R127-DW
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R128-DX
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R129-DY
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R130-DZ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R131-EA
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R132-EB
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R133-EC
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R134-ED
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R135-EE
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R136-EF
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R137-EG
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R138-EH
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R139-EI
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R140-EJ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R141-EK
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R142-EL
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R143-EM
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R144-EN
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R145-EO
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R146-EP
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R147-EQ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R148-ER
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R149-ES
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R150-ET
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R151-EU
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R152-EV
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R153-EW
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R154-EX
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R155-EY
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R156-EZ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R157-FA
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R158-FB
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R159-FC
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R160-FD
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R161-FE
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R162-FF
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R163-FG
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R164-FH
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R165-FI
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R166-FJ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R167-FK
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R168-FL
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R169-FM
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R170-FN
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R171-FO
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R172-FP
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R173-FQ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R174-FR
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R175-FS
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R176-FT
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R177-FU
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R178-FV
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R179-FW
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R180-FX
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R181-FY
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R182-FZ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R183-GA
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R184-GB
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Assumptions for noise calculation

NSA: R185-GC
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R186-GD
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R187-GE
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R188-GF
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R189-GG
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R190-GH
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R191-GI
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R192-GJ
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R193-GK
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

NSA: R194-GL
Predefined calculation standard:
Imission height(a.g.l.): Use standard value from calculation model

Noise demand: 40.0 dB(A)
No distance demand

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com
Calculated:
1/18/2017 2:55 PM/3.1.579

DECIBEL - Main Result

Noise calculation model:
ISO 9613-2 General
Wind speed:
10.0 m/s
Ground attenuation:
General, fixed, Ground factor: 0.7
Meteorological coefficient, C0:
0.0 dB
Type of demand in calculation:
1: WTG noise is compared to demand (DK, DE, SE, NL etc.)
Noise values in calculation:
All noise values are mean values (Lwa) (Normal)
Pure tones:
Pure tone penalty is subtracted from demand: 0.0 dB(A)
Height above ground level, when no value in NSA object:
4.5 m Allow override of model height with height from NSA object
Deviation from "official" noise demands. Negative is more restrictive, positive is less restrictive.:
0.0 dB(A)

WTGs

					WTG type							Noise data					
	Easting	Northing	Z	Row data/Description	Valid	Manufact.	Type-generator	Power, rated	Rotor diameter	Hub height	Creator	Name	Wind speed	LwA,ref	Pure tones	
			[m]					[kW]	[m]	[m]			[m/s]	[dB(A)]		
WTG 01	418,773	4,976,116	140.0	WTG 01	Yes	ENERCON	E-92 2,3 MW-2,350	2,350	92.0	98.4	USER	Level 0 - official - OM 0s - 2350kW - 01/2015	10.0	105.0	No	h
WTG 02	418,906	4,975,854	150.0	WTG 02	Yes	ENERCON	E-92 2,3 MW-2,350	2,350	92.0	98.4	USER	Level 0 - official - OM 0s - 2350kW - 01/2015	10.0	105.0	No	h
WTG 03	419,554	4,975,592	175.0	WTG 03	Yes	ENERCON	E-92 2,3 MW-2,350	2,350	92.0	98.4	USER	Level 0 - official - OM 0s - 2350kW - 01/2015	10.0	105.0	No	h
WTG 04	419,878	4,975,768	175.0	WTG 04	Yes	ENERCON	E-92 2,3 MW-2,350	2,350	92.0	98.4	USER	Level 0 - official - OM 0s - 2350kW - 01/2015	10.0	105.0	No	h
WTG 05	420,229	4,975,918	175.0	WTG 05	Yes	ENERCON	E-92 2,3 MW-2,350	2,350	92.0	98.4	USER	Level 0 - official - OM 0s - 2350kW - 01/2015	10.0	105.0	No	h
WTG 06	420,715	4,975,364	168.5	WTG 06	Yes	ENERCON	E-92 2,3 MW-2,350	2,350	92.0	98.4	USER	Level 0 - official - OM 0s - 2350kW - 01/2015	10.0	105.0	No	h
WTG 07	421,084	4,975,355	173.0	WTG 07	Yes	ENERCON	E-92 2,3 MW-2,350	2,350	92.0	98.4	USER	Level 0 - official - OM 0s - 2350kW - 01/2015	10.0	105.0	No	h
WTG 08	419,346	4,974,948	175.0	WTG 08	Yes	ENERCON	E-92 2,3 MW-2,350	2,350	92.0	98.4	USER	Level 0 - official - OM 0s - 2350kW - 01/2015	10.0	105.0	No	h
WTG 09	418,226	4,974,525	158.5	WTG 09	Yes	ENERCON	E-92 2,3 MW-2,350	2,350	92.0	98.4	USER	Level 0 - official - OM 0s - 2350kW - 01/2015	10.0	105.0	No	h
WTG 10	418,572	4,973,976	180.0	WTG 10	Yes	ENERCON	E-92 2,3 MW-2,350	2,350	92.0	98.4	USER	Level 0 - official - OM 0s - 2350kW - 01/2015	10.0	105.0	No	h
WTG 11	417,798	4,974,401	143.5	WTG 11	Yes	ENERCON	E-92 2,3 MW-2,350	2,350	92.0	98.4	USER	Level 0 - official - OM 0s - 2350kW - 01/2015	10.0	105.0	No	h
WTG 12	418,498	4,974,577	162.3	WTG 12	Yes	ENERCON	E-92 2,3 MW-2,350	2,350	92.0	98.4	USER	Level 0 - official - OM 0s - 2350kW - 01/2015	10.0	105.0	No	h
WTG 13	419,221	4,974,483	179.5	WTG 13	Yes	ENERCON	E-92 2,3 MW-2,350	2,350	92.0	98.4	USER	Level 0 - official - OM 0s - 2350kW - 01/2015	10.0	105.0	No	h
WTG 14	419,425	4,973,918	180.0	WTG 14	Yes	ENERCON	E-92 2,3 MW-2,350	2,350	92.0	98.4	USER	Level 0 - official - OM 0s - 2350kW - 01/2015	10.0	105.0	No	h

h) Generic octave distribution used

Calculation Results

Sound level

Noise sensitive area						Demands	Sound level		Demands fulfilled ?
No.	Name	Easting	Northing	Z	Imission height	Noise	From WTGs	Distance to noise demand	Noise
				[m]	[m]	[dB(A)]	[dB(A)]	[m]	
A	R1	420,545	4,977,343	84.6	4.5	40.0	33.6	821	Yes
B	R2	420,326	4,977,411	86.6	4.5	40.0	33.6	841	Yes
C	R3	420,939	4,977,369	55.0	4.5	40.0	32.6	985	Yes
D	R4	417,897	4,977,695	60.0	4.5	40.0	30.9	1,238	Yes
E	R5	420,380	4,977,102	100.0	4.5	40.0	35.4	547	Yes
F	R6	418,854	4,977,641	61.5	4.5	40.0	32.8	932	Yes
G	R7	421,241	4,976,854	64.6	4.5	40.0	34.3	719	Yes
H	R8	420,728	4,977,511	75.0	4.5	40.0	32.4	1,036	Yes
I	R9	420,067	4,977,514	85.0	4.5	40.0	33.4	919	Yes
J	R10	420,327	4,977,127	103.3	4.5	40.0	35.3	561	Yes
K	R11	420,359	4,977,427	85.2	4.5	40.0	33.5	862	Yes
L	R12	420,523	4,977,364	85.0	4.5	40.0	33.6	835	Yes
M	R13	420,460	4,977,354	88.9	4.5	40.0	33.7	810	Yes
N	R14	420,807	4,977,526	69.2	4.5	40.0	32.2	1,077	Yes
O	R15	419,724	4,977,674	74.1	4.5	40.0	32.8	1,084	Yes
P	R16	420,867	4,977,655	61.0	4.5	40.0	31.5	1,219	Yes
Q	R17	419,626	4,977,807	70.0	4.5	40.0	32.1	1,211	Yes
R	R18	421,118	4,977,148	65.6	4.5	40.0	33.2	881	Yes
S	R19	417,986	4,975,420	82.2	4.5	40.0	39.9	12	Yes
T	R20	421,204	4,976,998	64.6	4.5	40.0	33.7	809	Yes
U	R21	421,312	4,976,707	62.7	4.5	40.0	34.8	650	Yes
V	R22	420,861	4,977,457	58.8	4.5	40.0	32.4	1,033	Yes
W	R23	420,580	4,977,347	81.4	4.5	40.0	33.6	834	Yes
X	R24	420,392	4,977,189	98.3	4.5	40.0	34.8	634	Yes
Y	R25	420,648	4,977,503	75.6	4.5	40.0	32.6	1,003	Yes

To be continued on next page...

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com
Calculated:
1/18/2017 2:55 PM/3.1.579

DECIBEL - Main Result

...continued from previous page

Noise sensitive area					Demands	Sound level		Demands fulfilled ?
No.	Name	Easting	Northing	Z [m]	Imission height [m]	Noise [dB(A)]	From WTGs [dB(A)]	Distance to noise demand [m]	Noise
Z	R26	419,640	4,977,768	70.0	4.5	40.0	32.3	1,176	Yes
AA	R27	420,386	4,977,443	83.7	4.5	40.0	33.4	882	Yes
AB	R28	421,284	4,976,783	60.6	4.5	40.0	34.5	692	Yes
AC	R29	420,568	4,977,279	81.0	4.5	40.0	34.0	766	Yes
AD	R30	417,908	4,977,694	60.0	4.5	40.0	30.9	1,232	Yes
AE	R31	418,650	4,977,616	66.7	4.5	40.0	32.7	920	Yes
AF	R32	420,935	4,977,648	60.0	4.5	40.0	31.4	1,238	Yes
AG	R33	418,827	4,977,616	64.3	4.5	40.0	32.9	908	Yes
AH	R34	420,405	4,977,432	84.8	4.5	40.0	33.4	875	Yes
AI	R35	420,195	4,977,455	87.5	4.5	40.0	33.6	869	Yes
AJ	R36	420,479	4,977,407	84.5	4.5	40.0	33.4	866	Yes
AK	R37	421,225	4,977,045	61.3	4.5	40.0	33.4	859	Yes
AL	R38	420,516	4,977,224	84.7	4.5	40.0	34.4	698	Yes
AM	R39	419,930	4,977,441	85.8	4.5	40.0	33.9	846	Yes
AN	R40	420,246	4,977,472	80.0	4.5	40.0	33.4	891	Yes
AO	R41	420,438	4,977,443	83.3	4.5	40.0	33.3	892	Yes
AP	R42	419,635	4,977,671	74.8	4.5	40.0	32.8	1,079	Yes
AQ	R43	420,817	4,977,499	66.4	4.5	40.0	32.3	1,056	Yes
AR	R44	421,200	4,976,903	66.4	4.5	40.0	34.2	731	Yes
AS	R45	418,918	4,977,812	60.4	4.5	40.0	32.0	1,104	Yes
AT	R46	420,812	4,977,541	69.1	4.5	40.0	32.1	1,093	Yes
AU	R47	420,450	4,977,266	92.3	4.5	40.0	34.3	722	Yes
AV	R48	421,087	4,977,193	65.3	4.5	40.0	33.1	903	Yes
AW	R49	420,922	4,977,752	61.5	4.5	40.0	30.9	1,330	Yes
AX	R50	420,710	4,977,428	75.0	4.5	40.0	32.9	952	Yes
AY	R51	420,245	4,977,521	80.0	4.5	40.0	33.1	939	Yes
AZ	R52	419,049	4,977,992	61.2	4.5	40.0	31.2	1,290	Yes
BA	R53	420,476	4,977,427	83.1	4.5	40.0	33.3	885	Yes
BB	R54	420,483	4,977,200	86.6	4.5	40.0	34.6	666	Yes
BC	R55	419,715	4,977,651	76.1	4.5	40.0	32.9	1,061	Yes
BD	R56	420,431	4,977,136	92.3	4.5	40.0	35.1	591	Yes
BE	R57	420,534	4,977,462	79.5	4.5	40.0	33.0	933	Yes
BF	R58	420,327	4,977,498	80.0	4.5	40.0	33.2	927	Yes
BG	R59	421,321	4,976,635	64.8	4.5	40.0	35.1	599	Yes
BH	R60	421,216	4,977,088	59.3	4.5	40.0	33.2	888	Yes
BI	R61	421,193	4,977,109	60.4	4.5	40.0	33.2	892	Yes
BJ	R62	420,458	4,977,427	83.7	4.5	40.0	33.3	881	Yes
BK	R63	420,543	4,977,141	86.8	4.5	40.0	34.8	626	Yes
BL	R64	420,522	4,977,121	89.4	4.5	40.0	35.0	601	Yes
BM	R65	421,180	4,976,864	72.1	4.5	40.0	34.5	688	Yes
BN	R66	420,486	4,977,451	81.1	4.5	40.0	33.2	910	Yes
BO	R67	420,600	4,977,380	79.5	4.5	40.0	33.3	871	Yes
BP	R68	420,145	4,977,555	82.3	4.5	40.0	33.1	964	Yes
BQ	R69	420,539	4,977,222	81.7	4.5	40.0	34.3	703	Yes
BR	R70	417,970	4,975,400	81.7	4.5	40.0	39.9	12	Yes
BS	R71	420,482	4,977,348	88.0	4.5	40.0	33.7	809	Yes
BT	R72	420,737	4,977,465	73.6	4.5	40.0	32.6	995	Yes
BU	R73	420,319	4,977,458	80.0	4.5	40.0	33.4	886	Yes
BV	R74	420,929	4,977,707	61.0	4.5	40.0	31.1	1,290	Yes
BW	R75	420,562	4,977,325	82.9	4.5	40.0	33.7	808	Yes
BX	R76	421,255	4,976,868	61.7	4.5	40.0	34.2	739	Yes
BY	R77	420,353	4,977,183	101.8	4.5	40.0	34.9	621	Yes
BZ	R78	420,665	4,977,095	89.8	4.5	40.0	34.8	624	Yes
CA	R79	420,434	4,977,408	86.4	4.5	40.0	33.5	857	Yes
CB	R80	421,113	4,976,899	74.2	4.5	40.0	34.5	675	Yes
CC	R81	420,319	4,977,276	99.9	4.5	40.0	34.4	706	Yes
CD	R82	420,397	4,977,129	96.2	4.5	40.0	35.2	577	Yes
CE	R83	421,163	4,977,125	62.7	4.5	40.0	33.2	888	Yes
CF	R84	420,392	4,977,493	80.0	4.5	40.0	33.1	933	Yes
CG	R85	420,554	4,977,472	78.7	4.5	40.0	32.9	947	Yes
CH	R86	421,174	4,977,105	63.3	4.5	40.0	33.3	877	Yes
CI	R87	421,391	4,976,481	70.0	4.5	40.0	35.6	512	Yes
CJ	R88	421,416	4,976,616	56.8	4.5	40.0	34.8	639	Yes
CK	R89	420,724	4,977,456	74.6	4.5	40.0	32.7	983	Yes
CL	R90	418,981	4,977,976	53.3	4.5	40.0	31.2	1,271	Yes

To be continued on next page...

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Main Result

...continued from previous page

Noise sensitive area						Demands	Sound level		Demands fulfilled ?
No.	Name	Easting	Northing	Z [m]	Imission height [m]	Noise [dB(A)]	From WTGs [dB(A)]	Distance to noise demand [m]	Noise
CM	R91	421,199	4,976,960	63.9	4.5	40.0	33.9	776	Yes
CN	R92	421,236	4,977,048	59.5	4.5	40.0	33.4	868	Yes
CO	R93	419,642	4,977,829	70.0	4.5	40.0	32.0	1,236	Yes
CP	R94	420,392	4,977,479	80.1	4.5	40.0	33.2	919	Yes
CQ	R95	418,936	4,977,775	65.0	4.5	40.0	32.2	1,068	Yes
CR	R96	420,800	4,977,377	64.0	4.5	40.0	32.9	936	Yes
CS	R97	420,799	4,977,515	69.2	4.5	40.0	32.3	1,064	Yes
CT	R98	420,840	4,977,676	61.8	4.5	40.0	31.4	1,229	Yes
CU	R99	421,247	4,976,980	58.7	4.5	40.0	33.7	821	Yes
CV	R100	420,685	4,977,118	88.2	4.5	40.0	34.6	653	Yes
CW	R101	421,225	4,976,812	69.9	4.5	40.0	34.6	676	Yes
CX	R102	420,446	4,977,142	90.3	4.5	40.0	35.0	601	Yes
CY	R103	420,447	4,977,173	89.6	4.5	40.0	34.8	631	Yes
CZ	R104	419,714	4,977,685	73.1	4.5	40.0	32.7	1,095	Yes
DA	R105	418,814	4,977,606	65.0	4.5	40.0	33.0	898	Yes
DB	R106	420,705	4,977,438	75.0	4.5	40.0	32.8	959	Yes
DC	R107	420,192	4,977,650	85.0	4.5	40.0	32.5	1,063	Yes
DD	R108	420,335	4,977,252	101.2	4.5	40.0	34.5	685	Yes
DE	R109	420,840	4,977,404	59.9	4.5	40.0	32.7	976	Yes
DF	R110	419,923	4,977,516	83.6	4.5	40.0	33.5	921	Yes
DG	R111	421,244	4,976,904	61.1	4.5	40.0	34.0	760	Yes
DH	R112	420,533	4,977,407	83.0	4.5	40.0	33.3	879	Yes
DI	R113	418,980	4,977,958	55.3	4.5	40.0	31.3	1,253	Yes
DJ	R114	419,641	4,977,817	70.0	4.5	40.0	32.1	1,224	Yes
DK	R115	420,352	4,977,491	80.0	4.5	40.0	33.2	924	Yes
DL	R116	421,290	4,976,748	63.9	4.5	40.0	34.7	668	Yes
DM	R117	420,415	4,977,498	80.0	4.5	40.0	33.0	942	Yes
DN	R118	421,069	4,977,184	69.0	4.5	40.0	33.2	886	Yes
DO	R119	420,957	4,977,655	57.8	4.5	40.0	31.3	1,253	Yes
DP	R120	420,495	4,977,344	87.5	4.5	40.0	33.7	809	Yes
DQ	R121	420,256	4,977,655	81.6	4.5	40.0	32.4	1,074	Yes
DR	R122	420,901	4,977,618	60.0	4.5	40.0	31.6	1,197	Yes
DS	R123	420,678	4,977,473	75.1	4.5	40.0	32.7	984	Yes
DT	R124	420,644	4,977,425	77.2	4.5	40.0	33.0	928	Yes
DU	R125	421,254	4,976,930	58.0	4.5	40.0	33.9	786	Yes
DV	R126	419,903	4,977,546	82.0	4.5	40.0	33.3	951	Yes
DW	R127	419,765	4,977,548	81.8	4.5	40.0	33.4	957	Yes
DX	R128	420,359	4,977,278	97.6	4.5	40.0	34.4	715	Yes
DY	R129	420,419	4,977,417	86.2	4.5	40.0	33.5	863	Yes
DZ	R130	420,226	4,977,460	84.4	4.5	40.0	33.5	877	Yes
EA	R131	420,420	4,977,388	88.8	4.5	40.0	33.6	835	Yes
EB	R132	419,687	4,977,685	73.2	4.5	40.0	32.7	1,095	Yes
EC	R133	420,522	4,977,298	85.7	4.5	40.0	33.9	771	Yes
ED	R134	420,344	4,977,451	81.5	4.5	40.0	33.4	883	Yes
EE	R135	420,754	4,977,480	72.4	4.5	40.0	32.5	1,015	Yes
EF	R136	419,630	4,977,687	73.0	4.5	40.0	32.7	1,094	Yes
EG	R137	420,990	4,977,744	60.0	4.5	40.0	30.8	1,348	Yes
EH	R138	420,634	4,977,359	77.3	4.5	40.0	33.4	862	Yes
EI	R139	420,498	4,977,386	85.0	4.5	40.0	33.5	850	Yes
EJ	R140	420,399	4,977,439	84.1	4.5	40.0	33.4	881	Yes
EK	R141	420,785	4,977,558	70.0	4.5	40.0	32.1	1,099	Yes
EL	R142	421,276	4,976,801	61.2	4.5	40.0	34.4	700	Yes
EM	R143	420,927	4,977,624	57.8	4.5	40.0	31.5	1,213	Yes
EN	R144	420,341	4,977,296	97.0	4.5	40.0	34.3	730	Yes
EO	R145	420,940	4,977,349	55.0	4.5	40.0	32.7	968	Yes
EP	R146	421,380	4,976,500	70.0	4.5	40.0	35.6	522	Yes
EQ	R147	421,317	4,976,579	69.3	4.5	40.0	35.4	552	Yes
ER	R148	420,453	4,977,336	90.1	4.5	40.0	33.9	791	Yes
ES	R149	420,720	4,977,492	75.0	4.5	40.0	32.5	1,015	Yes
ET	R150	421,132	4,977,146	64.1	4.5	40.0	33.2	887	Yes
EU	R151	421,127	4,976,911	71.5	4.5	40.0	34.4	693	Yes
EV	R152	417,888	4,977,696	60.0	4.5	40.0	30.8	1,243	Yes
EW	R153	420,427	4,977,468	81.2	4.5	40.0	33.2	915	Yes
EX	R154	420,406	4,977,419	86.1	4.5	40.0	33.5	862	Yes
EY	R155	420,406	4,977,375	90.0	4.5	40.0	33.7	819	Yes

To be continued on next page...

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Main Result

...continued from previous page

Noise sensitive area						Demands	Sound level		Demands fulfilled ?
No.	Name	Easting	Northing	Z	Imission height	Noise	From WTGs	Distance to noise demand	Noise
				[m]	[m]	[dB(A)]	[dB(A)]	[m]	
EZ	R156	420,458	4,977,385	87.2	4.5	40.0	33.6	840	Yes
FA	R157	420,407	4,977,122	95.8	4.5	40.0	35.2	572	Yes
FB	R158	420,605	4,977,317	78.4	4.5	40.0	33.7	813	Yes
FC	R159	420,684	4,977,385	76.0	4.5	40.0	33.1	902	Yes
FD	R160	420,747	4,977,519	72.9	4.5	40.0	32.3	1,050	Yes
FE	R161	421,255	4,976,899	60.0	4.5	40.0	34.0	763	Yes
FF	R162	420,771	4,977,496	71.3	4.5	40.0	32.4	1,036	Yes
FG	R163	420,242	4,977,539	80.0	4.5	40.0	33.1	957	Yes
FH	R164	420,631	4,977,411	77.7	4.5	40.0	33.1	910	Yes
FI	R165	420,621	4,977,326	77.5	4.5	40.0	33.6	826	Yes
FJ	R166	420,222	4,976,814	136.8	4.5	40.0	37.8	235	Yes
FK	R167	420,207	4,976,812	136.7	4.5	40.0	37.8	231	Yes
FL	R168	420,322	4,977,250	102.1	4.5	40.0	34.6	681	Yes
FM	R169	420,329	4,977,233	102.5	4.5	40.0	34.7	666	Yes
FN	R170	420,476	4,977,192	86.6	4.5	40.0	34.6	657	Yes
FO	R171	420,432	4,977,527	80.0	4.5	40.0	32.9	973	Yes
FP	R172	420,916	4,977,697	61.1	4.5	40.0	31.2	1,276	Yes
FQ	R173	420,252	4,977,695	82.9	4.5	40.0	32.2	1,113	Yes
FR	R174	420,214	4,977,655	85.0	4.5	40.0	32.5	1,070	Yes
FS	R175	421,235	4,976,963	60.0	4.5	40.0	33.8	800	Yes
FT	R176	421,274	4,976,763	64.8	4.5	40.0	34.6	670	Yes
FU	R177	421,239	4,976,781	69.3	4.5	40.0	34.7	661	Yes
FV	R178	421,417	4,976,639	55.0	4.5	40.0	34.7	658	Yes
FW	R179	418,668	4,977,603	67.4	4.5	40.0	32.8	905	Yes
FX	R180	419,640	4,977,874	67.9	4.5	40.0	31.8	1,280	Yes
FY	R181	419,626	4,977,846	70.0	4.5	40.0	31.9	1,249	Yes
FZ	R182	419,632	4,977,766	70.0	4.5	40.0	32.3	1,172	Yes
GA	R183	419,673	4,977,570	81.0	4.5	40.0	33.4	980	Yes
GB	R184	419,612	4,977,606	79.4	4.5	40.0	33.2	1,011	Yes
GC	R185	419,560	4,977,520	82.2	4.5	40.0	33.7	917	Yes
GD	R186	419,500	4,977,445	85.0	4.5	40.0	34.1	830	Yes
GE	R187	420,486	4,977,326	88.6	4.5	40.0	33.9	789	Yes
GF	R188	420,732	4,977,555	72.2	4.5	40.0	32.2	1,079	Yes
GG	R189	420,691	4,977,546	73.8	4.5	40.0	32.3	1,057	Yes
GH	R190	415,921	4,974,400	86.2	4.5	40.0	30.1	1,324	Yes
GI	R191	416,008	4,973,978	85.0	4.5	40.0	30.2	1,287	Yes
GJ	R192	416,580	4,974,321	85.0	4.5	40.0	33.8	668	Yes
GK	R193	418,875	4,971,688	155.0	4.5	40.0	29.5	1,659	Yes
GL	R194	420,803	4,976,984	114.7	4.5	40.0	35.1	580	Yes

Distances (m)

	WTG													
NSA	WTG 08	WTG 09	WTG 10	WTG 11	WTG 12	WTG 13	WTG 14	WTG 01	WTG 02	WTG 03	WTG 04	WTG 05	WTG 06	WTG 07
A	2678	3650	3902	4025	3441	3152	3603	2155	2214	2012	1710	1460	1986	2060
B	2651	3569	3857	3931	3372	3130	3607	2022	2107	1976	1703	1496	2084	2191
C	2898	3930	4137	4321	3709	3359	3769	2502	2535	2253	1921	1615	2017	2019
D	3106	3187	3780	3295	3175	3474	4074	1806	2099	2677	2764	2932	3657	3954
E	2389	3359	3611	3737	3149	2864	3324	1885	1931	1721	1425	1194	1770	1884
F	2738	3179	3676	3408	3085	3179	3767	1527	1788	2165	2135	2204	2941	3194
G	2688	3810	3925	4227	3565	3115	3452	2576	2540	2107	1743	1378	1580	1507
H	2912	3896	4141	4273	3685	3382	3822	2402	2463	2250	1939	1669	2147	2185
I	2665	3510	3841	3852	3330	3147	3653	1905	2026	1989	1756	1604	2246	2387
J	2390	3344	3607	3718	3138	2866	3333	1854	1908	1719	1431	1213	1805	1927
K	2678	3602	3886	3964	3404	3156	3631	2058	2141	2004	1727	1515	2093	2195
L	2687	3652	3910	4026	3445	3162	3617	2149	2212	2020	1721	1476	2009	2086
M	2651	3605	3870	3976	3400	3127	3588	2093	2160	1981	1689	1454	2006	2094
N	2963	3958	4195	4338	3745	3432	3864	2475	2532	2304	1988	1709	2164	2189
O	2752	3487	3873	3798	3331	3230	3768	1825	1995	2089	1912	1827	2514	2688
P	3105	4095	4336	4473	3884	3574	4006	2599	2663	2445	2130	1850	2296	2310
Q	2873	3568	3973	3866	3421	3349	3894	1894	2081	2216	2055	1983	2675	2853
R	2825	3904	4067	4309	3671	3271	3647	2562	2563	2206	1855	1518	1829	1793
S	1440	927	1558	1036	986	1550	2080	1051	1017	1577	1924	2298	2730	3099
T	2767	3871	4007	4283	3631	3203	3557	2586	2567	2168	1809	1455	1706	1647

To be continued on next page...

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Main Result

...continued from previous page

	WTG													
NSA	WTG 08	WTG 09	WTG 10	WTG 11	WTG 12	WTG 13	WTG 14	WTG 01	WTG 02	WTG 03	WTG 04	WTG 05	WTG 06	WTG 07
U	2638	3779	3869	4203	3529	3053	3367	2607	2553	2082	1714	1340	1470	1371
V	2931	3942	4166	4327	3725	3396	3819	2482	2528	2277	1954	1664	2098	2114
W	2698	3675	3924	4052	3465	3170	3618	2186	2243	2033	1728	1471	1988	2055
X	2473	3433	3693	3808	3226	2949	3411	1942	1998	1804	1511	1281	1853	1960
Y	2868	3839	4093	4212	3631	3340	3788	2332	2399	2202	1898	1639	2140	2192
Z	2835	3538	3940	3838	3389	3312	3856	1866	2050	2178	2014	1942	2633	2812
AA	2703	3630	3913	3994	3432	3181	3654	2089	2171	2029	1750	1533	2105	2202
AB	2669	3801	3903	4222	3554	3090	3415	2598	2553	2100	1734	1364	1529	1442
AC	2632	3615	3859	3994	3404	3104	3550	2139	2189	1968	1661	1403	1921	1992
AD	3100	3185	3777	3295	3172	3469	4069	1800	2093	2670	2755	2923	3648	3944
AE	2757	3120	3641	3326	3043	3185	3778	1505	1781	2217	2219	2319	3055	3322
AF	3133	4134	4367	4515	3920	3599	4024	2650	2708	2477	2157	1869	2295	2298
AG	2718	3149	3649	3376	3057	3158	3746	1501	1764	2151	2126	2202	2939	3195
AH	2700	3633	3912	3998	3433	3178	3648	2096	2176	2027	1745	1524	2091	2185
AI	2647	3530	3839	3882	3341	3128	3620	1953	2055	1970	1717	1537	2155	2280
AJ	2707	3658	3925	4028	3454	3183	3645	2139	2210	2037	1746	1510	2057	2139
AK	2816	3917	4057	4328	3678	3253	3608	2622	2607	2214	1856	1504	1757	1696
AL	2559	3540	3785	3919	3329	3032	3481	2065	2114	1894	1590	1337	1871	1953
AM	2560	3377	3722	3713	3202	3042	3559	1759	1889	1887	1674	1552	2220	2384
AN	2680	3573	3876	3927	3382	3160	3648	2002	2101	2003	1743	1554	2160	2277
AO	2724	3662	3937	4028	3461	3200	3668	2129	2207	2051	1766	1539	2097	2186
AP	2738	3447	3845	3751	3296	3215	3759	1778	1958	2081	1918	1851	2547	2732
AQ	2945	3944	4178	4326	3730	3412	3842	2468	2521	2287	1969	1687	2137	2161
AR	2694	3808	3934	4223	3565	3126	3473	2551	2522	2104	1742	1383	1614	1552
AS	2896	3359	3852	3590	3262	3343	3927	1702	1958	2309	2258	2303	3037	3275
AT	2979	3973	4210	4352	3760	3447	3879	2488	2545	2320	2004	1725	2179	2203
AU	2567	3530	3788	3904	3323	3042	3501	2033	2092	1899	1603	1366	1920	2013
AV	2841	3912	4083	4314	3681	3290	3673	2552	2559	2217	1869	1537	1866	1838
AW	3217	4205	4448	4581	3995	3685	4116	2701	2769	2557	2242	1961	2397	2402
AX	2830	3821	4060	4200	3608	3300	3738	2340	2394	2170	1857	1585	2064	2106
AY	2726	3613	3920	3965	3423	3206	3695	2035	2138	2049	1791	1603	2208	2323
AZ	3058	3563	4044	3803	3459	3513	4091	1896	2143	2453	2373	2386	3112	3331
BA	2724	3672	3941	4041	3469	3200	3663	2149	2222	2054	1763	1529	2077	2159
BB	2523	3500	3748	3879	3289	2996	3448	2025	2073	1857	1555	1307	1851	1940
BC	2728	3463	3849	3773	3306	3206	3744	1801	1971	2065	1890	1808	2496	2673
BD	2442	3418	3666	3796	3207	2916	3372	1947	1992	1776	1476	1235	1795	1897
BE	2781	3735	4000	4106	3531	3256	3713	2216	2288	2111	1817	1574	2106	2178
BF	2732	3640	3935	3998	3446	3211	3692	2080	2173	2057	1787	1583	2169	2273
BG	2597	3746	3825	4172	3494	3007	3313	2600	2538	2052	1683	1306	1408	1302
BH	2842	3938	4084	4348	3700	3281	3641	2629	2619	2236	1880	1531	1795	1738
BI	2843	3934	4085	4343	3698	3284	3648	2616	2609	2233	1878	1532	1809	1757
BJ	2717	3661	3933	4029	3459	3193	3658	2135	2210	2046	1757	1526	2079	2165
BK	2498	3495	3729	3878	3280	2969	3411	2045	2082	1838	1526	1263	1785	1866
BL	2471	3466	3700	3849	3251	2941	3386	2017	2053	1810	1498	1238	1768	1853
BM	2652	3768	3891	4184	3525	3083	3429	2521	2488	2064	1702	1341	1570	1512
BN	2750	3697	3967	4065	3495	3226	3689	2172	2247	2080	1789	1554	2100	2180
BO	2736	3713	3962	4090	3504	3208	3656	2222	2280	2071	1766	1508	2019	2082
BP	2727	3587	3909	3931	3403	3208	3708	1988	2104	2050	1807	1639	2264	2392
BQ	2568	3553	3795	3933	3341	3040	3487	2084	2130	1905	1597	1340	1866	1945
BR	1448	912	1546	1014	978	1551	2077	1076	1040	1596	1943	2318	2745	3114
BS	2655	3614	3875	3986	3408	3130	3589	2107	2172	1986	1692	1452	1998	2082
BT	2876	3866	4106	4246	3654	3345	3782	2383	2439	2215	1902	1628	2101	2138
BU	2692	3603	3896	3962	3408	3171	3651	2047	2138	2017	1747	1543	2131	2238
BV	3181	4175	4413	4553	3963	3648	4077	2679	2743	2523	2206	1921	2353	2357
BW	2670	3646	3896	4024	3437	3142	3592	2159	2215	2005	1701	1446	1967	2038
BX	2708	3829	3945	4247	3585	3135	3472	2593	2559	2126	1762	1398	1598	1523
BY	2451	3404	3668	3777	3199	2928	3394	1907	1965	1780	1493	1271	1855	1969
BZ	2520	3543	3756	3934	3322	2985	3410	2130	2153	1869	1543	1255	1732	1790
CA	2690	3631	3905	3999	3430	3167	3633	2104	2179	2018	1732	1504	2063	2153
CB	2632	3738	3873	4151	3497	3069	3426	2468	2442	2034	1675	1321	1586	1544
CC	2523	3457	3734	3824	3256	3001	3475	1933	2005	1850	1571	1361	1953	2068
CD	2421	3390	3643	3768	3181	2896	3355	1914	1962	1753	1457	1223	1793	1902
CE	2836	3922	4078	4329	3687	3279	3648	2594	2590	2222	1869	1526	1817	1772
CF	2752	3674	3960	4036	3477	3230	3703	2125	2212	2078	1800	1583	2153	2247
CG	2798	3756	4019	4126	3551	3273	3729	2238	2310	2129	1833	1588	2114	2182
CH	2827	3918	4070	4325	3681	3269	3635	2597	2590	2217	1862	1517	1800	1752

To be continued on next page...

Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Main Result

...continued from previous page

	WTG													
NSA	WTG 08	WTG 09	WTG 10	WTG 11	WTG 12	WTG 13	WTG 14	WTG 01	WTG 02	WTG 03	WTG 04	WTG 05	WTG 06	WTG 07
CI	2556	3721	3771	4152	3463	2950	3230	2643	2563	2041	1673	1291	1306	1167
CJ	2658	3814	3880	4242	3560	3061	3353	2690	2623	2125	1756	1377	1435	1304
CK	2862	3851	4092	4230	3639	3331	3769	2367	2423	2201	1888	1616	2092	2132
CL	3050	3533	4021	3766	3433	3501	4082	1872	2123	2452	2383	2407	3135	3360
CM	2735	3843	3976	4256	3602	3170	3521	2569	2546	2139	1779	1424	1668	1609
CN	2825	3928	4066	4339	3688	3262	3616	2633	2618	2225	1866	1514	1763	1700
CO	2896	3595	3999	3892	3447	3372	3917	1921	2108	2239	2074	1999	2688	2864
CP	2739	3663	3948	4025	3465	3217	3690	2116	2202	2065	1787	1569	2140	2234
CQ	2857	3327	3816	3561	3228	3304	3888	1667	1921	2269	2217	2263	2996	3236
CR	2831	3842	4066	4227	3625	3297	3722	2387	2430	2177	1854	1567	2015	2042
CS	2950	3945	4181	4325	3732	3418	3850	2462	2518	2291	1975	1696	2153	2179
CT	3110	4094	4340	4470	3884	3580	4016	2590	2657	2449	2137	1861	2315	2334
CU	2783	3893	4022	4307	3651	3216	3563	2621	2598	2189	1828	1471	1701	1633
CV	2550	3574	3786	3964	3353	3014	3439	2159	2182	1899	1573	1284	1754	1808
CW	2647	3772	3883	4190	3526	3073	3408	2549	2509	2069	1704	1338	1535	1464
CX	2454	3432	3679	3811	3221	2928	3382	1963	2008	1788	1487	1243	1798	1897
CY	2483	3456	3706	3834	3246	2956	3412	1980	2028	1816	1516	1274	1829	1926
CZ	2762	3493	3881	3802	3337	3240	3778	1830	2001	2099	1924	1841	2528	2703
DA	2711	3137	3638	3362	3045	3149	3738	1491	1754	2146	2124	2203	2939	3197
DB	2837	3825	4066	4204	3613	3307	3746	2341	2397	2175	1864	1593	2074	2117
DC	2831	3692	4015	4036	3509	3313	3810	2090	2209	2155	1908	1732	2345	2462
DD	2507	3447	3720	3816	3245	2985	3456	1931	1999	1835	1553	1338	1926	2040
DE	2875	3889	4110	4275	3671	3340	3762	2435	2478	2222	1898	1607	2044	2063
DF	2632	3439	3789	3771	3266	3113	3632	1812	1948	1959	1749	1627	2293	2453
DG	2725	3843	3964	4259	3599	3155	3496	2594	2563	2139	1777	1415	1628	1557
DH	2731	3692	3952	4064	3486	3205	3661	2183	2249	2062	1765	1520	2051	2125
DI	3032	3515	4003	3748	3415	3483	4064	1854	2105	2435	2367	2392	3121	3347
DJ	2884	3583	3987	3881	3436	3360	3905	1910	2096	2227	2063	1988	2678	2854
DK	2735	3649	3940	4009	3454	3214	3691	2094	2184	2060	1787	1578	2158	2258
DL	2649	3785	3882	4207	3537	3068	3389	2595	2546	2086	1719	1347	1499	1408
DM	2765	3692	3975	4055	3494	3243	3714	2146	2232	2091	1811	1591	2155	2245
DN	2823	3893	4065	4295	3661	3273	3656	2532	2539	2198	1850	1519	1854	1829
DO	3150	4154	4384	4535	3940	3616	4039	2672	2730	2495	2174	1883	2304	2304
DP	2657	3619	3878	3992	3412	3132	3589	2115	2178	1989	1692	1451	1992	2074
DQ	2856	3731	4046	4078	3545	3337	3828	2137	2251	2179	1924	1737	2337	2445
DR	3090	4089	4323	4470	3876	3557	3984	2605	2663	2433	2114	1828	2262	2270
DS	2855	3834	4082	4211	3625	3326	3769	2339	2400	2191	1883	1619	2109	2157
DT	2796	3776	4024	4153	3566	3268	3713	2283	2343	2133	1825	1563	2062	2116
DU	2751	3867	3990	4282	3624	3181	3524	2611	2583	2163	1801	1440	1656	1584
DV	2657	3455	3810	3784	3285	3138	3659	1823	1964	1985	1778	1660	2328	2489
DW	2634	3392	3766	3711	3230	3113	3646	1742	1899	1967	1784	1695	2382	2559
DX	2541	3483	3755	3852	3280	3018	3487	1966	2034	1868	1585	1366	1947	2055
DY	2692	3629	3905	3996	3429	3169	3637	2098	2175	2020	1735	1511	2074	2167
DZ	2662	3552	3857	3905	3361	3142	3631	1979	2079	1985	1727	1542	2152	2273
EA	2666	3607	3880	3975	3405	3143	3610	2081	2155	1994	1708	1482	2045	2139
EB	2758	3481	3873	3789	3328	3236	3776	1816	1991	2097	1926	1848	2538	2717
EC	2628	3600	3852	3977	3391	3101	3554	2111	2167	1961	1660	1411	1944	2023
ED	2695	3612	3901	3973	3416	3173	3651	2062	2149	2020	1746	1537	2120	2223
EE	2897	3889	4128	4268	3677	3366	3802	2405	2462	2237	1923	1648	2116	2150
EF	2754	3460	3859	3762	3310	3230	3775	1790	1971	2096	1935	1868	2564	2748
EG	3244	4243	4477	4622	4030	3710	4134	2751	2813	2587	2267	1978	2396	2391
EH	2733	3719	3962	4098	3507	3204	3647	2238	2292	2071	1761	1497	1997	2054
EI	2696	3653	3916	4025	3448	3171	3630	2142	2209	2027	1733	1492	2034	2114
EJ	2704	3635	3915	3999	3436	3182	3653	2096	2177	2031	1750	1530	2099	2194
EK	2980	3968	4210	4346	3757	3450	3886	2475	2537	2320	2007	1732	2195	2223
EL	2676	3806	3911	4226	3559	3098	3426	2595	2552	2104	1738	1370	1543	1459
EM	3108	4111	4342	4492	3897	3574	3999	2629	2687	2452	2132	1843	2270	2274
EN	2550	3486	3762	3853	3285	3028	3500	1962	2034	1877	1597	1383	1968	2078
EO	2882	3917	4121	4308	3694	3342	3751	2493	2524	2238	1905	1598	1998	1999
EP	2558	3721	3776	4152	3465	2955	3239	2635	2557	2039	1671	1290	1316	1183
EQ	2558	3711	3783	4138	3458	2964	3265	2586	2518	2020	1652	1273	1356	1246
ER	2632	3586	3851	3958	3381	3108	3569	2076	2142	1962	1670	1436	1989	2079
ES	2891	3876	4120	4254	3665	3362	3801	2384	2444	2229	1919	1649	2128	2168
ET	2832	3913	4075	4319	3679	3278	3652	2574	2574	2215	1863	1524	1830	1792
EU	2651	3756	3891	4169	3516	3087	3443	2485	2460	2053	1693	1339	1601	1557
EV	3111	3189	3782	3296	3178	3479	4079	1811	2105	2684	2771	2940	3665	3962

To be continued on next page...

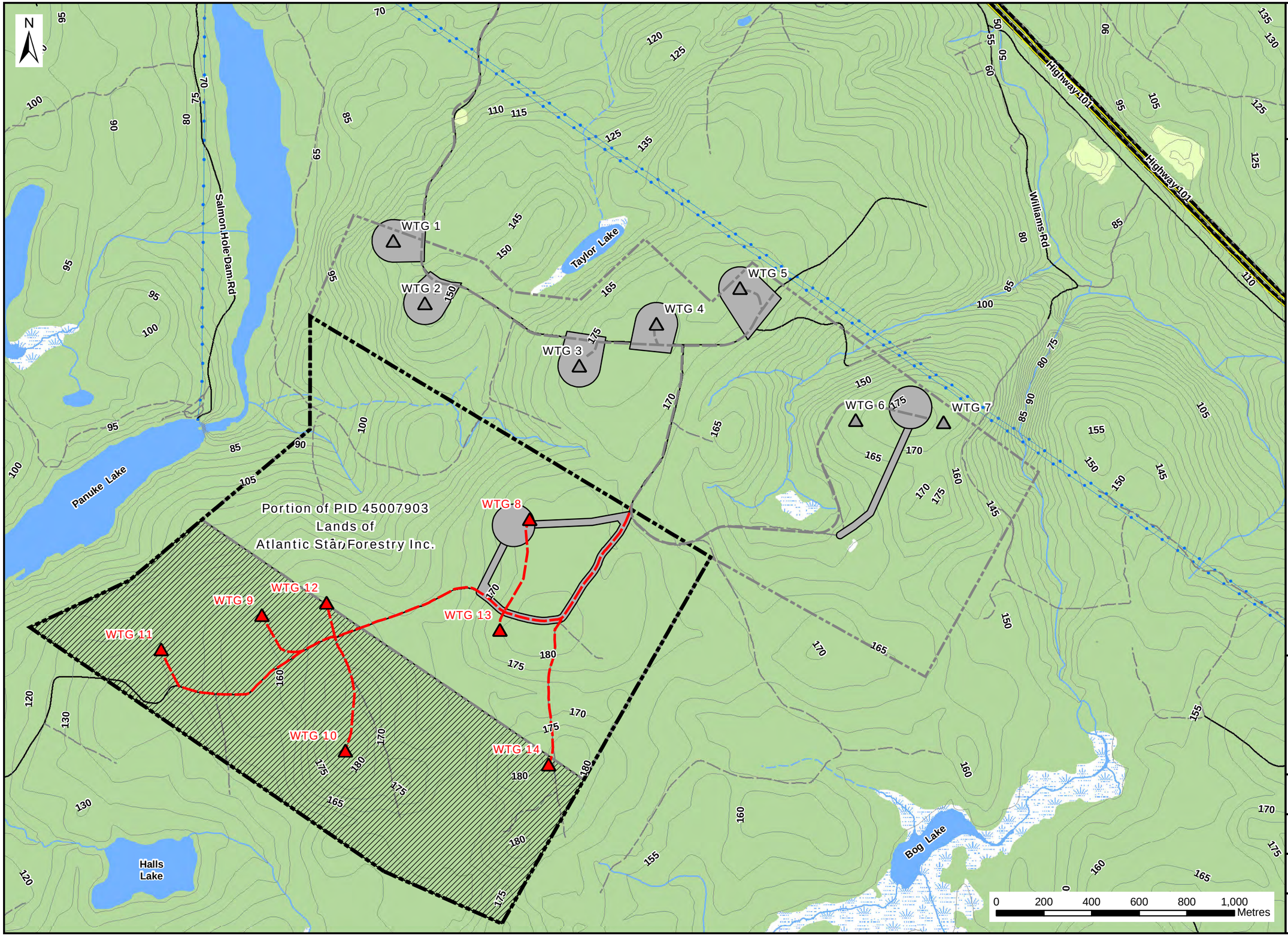
Licensed user:
Strum Environmental
Railside, 1355 Bedford Highway
CA-B4A 1C5 Bedford, NS
902.835.5560 (24/7)
Hani Serhan / hserhan@strum.com

DECIBEL - Main Result

...continued from previous page

	WTG													
NSA	WTG 08	WTG 09	WTG 10	WTG 11	WTG 12	WTG 13	WTG 14	WTG 01	WTG 02	WTG 03	WTG 04	WTG 05	WTG 06	WTG 07
EW	2742	3675	3954	4040	3475	3219	3689	2136	2218	2069	1786	1563	2124	2213
EX	2689	3623	3901	3989	3423	3166	3636	2089	2168	2016	1733	1511	2078	2173
EY	2648	3588	3862	3956	3387	3125	3593	2062	2136	1976	1692	1468	2035	2131
EZ	2679	3628	3896	3997	3424	3155	3618	2109	2180	2008	1718	1485	2037	2124
FA	2419	3391	3642	3770	3181	2893	3351	1919	1965	1752	1454	1217	1785	1892
FB	2683	3668	3911	4048	3456	3154	3598	2191	2242	2020	1711	1449	1956	2020
FC	2780	3771	4010	4151	3559	3250	3689	2294	2346	2119	1807	1536	2021	2069
FD	2928	3914	4157	4292	3703	3398	3836	2422	2482	2266	1955	1683	2155	2190
FE	2730	3848	3968	4265	3605	3158	3498	2603	2571	2145	1782	1420	1627	1553
FF	2919	3912	4150	4292	3700	3388	3823	2428	2485	2260	1945	1668	2133	2164
FG	2742	3626	3935	3977	3437	3222	3712	2045	2150	2065	1808	1621	2226	2341
FH	2778	3757	4005	4134	3547	3250	3695	2265	2324	2114	1807	1546	2049	2105
FI	2698	3685	3927	4065	3473	3169	3612	2209	2260	2036	1726	1462	1964	2025
FJ	2061	3037	3283	3420	2824	2537	3004	1608	1629	1393	1101	896	1532	1695
FK	2053	3026	3274	3408	2814	2529	2998	1594	1616	1384	1095	894	1535	1701
FL	2500	3438	3712	3806	3236	2978	3451	1920	1988	1827	1547	1335	1927	2042
FM	2487	3429	3701	3798	3226	2965	3436	1915	1982	1815	1533	1319	1908	2024
FN	2512	3489	3737	3868	3279	2986	3439	2014	2063	1847	1544	1298	1844	1935
FO	2798	3725	4009	4088	3527	3276	3747	2178	2264	2125	1844	1622	2181	2268
FP	3166	4159	4398	4537	3947	3634	4063	2663	2727	2507	2191	1907	2342	2348
FQ	2893	3762	4081	4108	3577	3373	3866	2163	2281	2216	1963	1777	2377	2484
FR	2843	3708	4029	4053	3524	3324	3819	2108	2226	2166	1917	1737	2345	2459
FS	2762	3873	4002	4287	3631	3195	3542	2604	2580	2169	1808	1451	1681	1615
FT	2648	3781	3882	4203	3533	3068	3393	2583	2536	2081	1714	1344	1507	1421
FU	2635	3764	3871	4184	3517	3058	3389	2554	2510	2062	1697	1328	1511	1434
FV	2674	3828	3897	4255	3574	3077	3372	2695	2631	2137	1768	1390	1455	1326
FW	2740	3110	3628	3318	3031	3169	3762	1491	1765	2198	2198	2297	3034	3300
FX	2941	3635	4042	3931	3489	3417	3962	1960	2149	2284	2119	2043	2731	2904
FY	2911	3604	4011	3900	3458	3387	3933	1929	2118	2255	2093	2020	2710	2886
FZ	2832	3533	3935	3832	3385	3309	3854	1860	2045	2175	2013	1942	2635	2814
GA	2642	3371	3759	3682	3215	3120	3660	1710	1880	1982	1814	1743	2440	2626
GB	2671	3378	3776	3683	3227	3147	3693	1710	1889	2015	1857	1797	2499	2690
GC	2581	3279	3679	3582	3129	3056	3605	1610	1790	1928	1781	1736	2446	2648
GD	2502	3186	3591	3488	3038	2975	3528	1515	1698	1854	1719	1692	2410	2622
GE	2637	3599	3858	3973	3393	3112	3569	2097	2159	1969	1672	1431	1975	2060
GF	2953	3932	4180	4308	3723	3423	3865	2431	2496	2289	1981	1713	2191	2228
GG	2926	3899	4152	4273	3691	3397	3843	2392	2459	2261	1955	1692	2182	2226
GH	3469	2308	2685	1877	2583	3301	3537	3328	3320	3824	4187	4568	4890	5251
GI	3476	2284	2564	1839	2561	3252	3418	3495	3452	3896	4264	4645	4907	5259
GJ	2836	1659	2022	1221	1935	2646	2873	2834	2786	3234	3601	3983	4265	4621
GK	3294	2910	2308	2919	2913	2816	2297	4429	4166	3963	4201	4441	4111	4281
GL	2504	3562	3745	3963	3333	2959	3361	2208	2208	1870	1528	1211	1622	1653

APPENDIX B
ARCHEOLOGICAL MAP



Notes:

1. Reference: Digital Topographic Mapping & Property Management Unit MU9940 by Nova Scotia Geomatics Centre.
2. Projection: NAD83(CSRS), UTM Zone 20 North.
3. Site Features & Project / Propety Boundaries are Approximate. This Plan is for Presentation only & Not Intended for Legal Use

Legend:

- Existing Turbines
- Proposed Turbines
- Existing Access Road
- Proposed Access Road
- Area to Undergo Field Screening
- 2013 Field Reconnaissance Area
- 2016 Expansion Project Site
- 2013 Archaeological Study Area
- Contours (m)
- Major Roads and Highways
- Public Roads
- Access Roads / Trails
- Existing Transmission Lines
- Mapped Stream
- Mapped Indefinite Stream
- Water Bodies
- Mapped Wet Area
- Cleared Area

Ellershouse Wind Farm Expansion - Archaeological Study Areas

Strum 20 YEARS Taking Charge CONSULTING

*Engineering * Surveying * Environmental*
*Bedford * Antigonish * Moncton * Deer Lake*

Date: December 2016	Project #: 16-5807
Scale: 1:15,000	Drawing #: 2
Drawn By: H. Serhan	
Checked By: S. Duncan	