

**East Durham Wind Farm Noise
Assessment**

January 2013

Prepared for:
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January 22, 2013

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**Re: East Durham Wind Energy Centre
Noise Study Report**

Dear Mr. Bird:

Please find, attached, a copy of Noise Study Report carried out for the East Durham Wind Energy Centre to be located in the area of Municipality of West Grey, Grey County, Ontario.

If you have any question, please, feel free to call me at 905-475-7270 ext. 18384 or email me at bhuwan.prasad@genivar.com.

Yours truly,
GENIVAR Inc.

A handwritten signature in blue ink that reads "Bhuwan M. Prasad".

Bhuwan M. Prasad, P. Eng.
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/bp
Enclosure

cc: Pat Becker, Project Manager – Energy, GENIVAR

Executive Summary

East Durham Wind, Inc., a wholly owned subsidiary of NextEra Energy Canada, ULC (NextEra), is proposing to construct a Class 4 wind energy project in the Municipality of West Grey, Grey County, Ontario. The Project will be referred to as the East Durham Wind Energy Centre (the “Project”) and will be located on private lands east of the Community of Durham and west of the Village of Priceville.

The Project will be owned and operated by East Durham Wind, Inc., a subsidiary of NextEra. NextEra’s parent company is NextEra Energy Resources, LLC, a global leader in wind energy generation with a current operating portfolio of over 90 wind energy projects in North America.

Although NextEra has identified sixteen (16) locations for wind turbine siting, up to a total of fourteen (14) GE turbines are proposed to be constructed comprising of twelve (12) GE 1.6-100 LNTE turbines, one (1) GE 1.39-100 LNTE turbine and one (1) GE 1.34-100 LNTE turbine for a maximum nameplate capacity of up to 23 MW and will also include one (1) substation transformer. The upwind, 3-bladed, horizontal-axis wind turbines will each have a hub height of 80 m and rotor diameter of 100 m. The overall height of each turbine, including the blade length will be approximately 129 metres. The Facility will convert wind energy into electricity to be fed into the Hydro One distribution system. Although NextEra has identified 16 locations for wind turbine siting, up to a total of 14 turbines are proposed to be constructed for the Project together with one (1) substation transformer.

Sound generation and propagation from the proposed 23 MW East Durham Wind Energy Centre has been modelled for the worst case scenario in accordance with Ontario Ministry of the Environment (MOE) publication entitled, “*Noise Guidelines for Wind Farms: Interpretation for Applying MOE NPC Publications to Wind Power Generation Facilities*”, October 2008. The noise assessment results show that the worst case sound exposures at all non-participating points of reception (including dwellings and vacant lots) in the project area will comply with the applicable MOE wind noise guideline criteria.

The noise modelling has been performed for the worst-case scenario which assumes the highest sound power level from each wind turbine and concurrent propagation of noise from each wind turbine to each point of reception compared with the lowest MOE Class 3 sound level criterion of 40.0 dBA. This assumption means that the calculated noise impact on receptors located between two groups of turbines is higher than what would be observed under real operating conditions. Receptors located between two groups of turbines would never be downwind of all turbines concurrently, therefore, the actual noise impact on these receptors would be less than indicated for the worst case scenario.

The environmental noise produced by the proposed East Durham Wind Centre turbines and transformer substation will be compliant with the applicable MOE environmental noise guidelines at all Points of Reception.

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- Attachment A Project Layout Drawing
- Attachment B Equipment Specifications & 1/1 Octave Band Spectra Calculations
- Attachment C Land Use Information
- Attachment D Noise Contour Drawings
- Attachment E Sample Calculations

1. Introduction and Facility Description

East Durham Wind, Inc., a wholly owned subsidiary of NextEra Energy Canada, ULC (NextEra), is proposing to construct a Class 4 wind energy project in the Municipality of West Grey, Grey County, Ontario. The Project will be referred to as the East Durham Wind Energy Centre and will be located on private lands east of the Community of Durham and west of the Village of Priceville.

The purpose of this report is to assess and document the potential environmental noise impact of the proposed Class 4 East Durham Wind Energy Centre (Facility) in the area of Municipality of West Grey, Grey County, Ontario on neighbouring land uses that are considered noise sensitive

The Project will be owned and operated by East Durham Wind, Inc., a subsidiary of NextEra. NextEra's parent company is NextEra Energy Resources, LLC, a global leader in wind energy generation with a current operating portfolio of over 90 wind energy projects in North America. Wind farms currently owned and operated by NextEra Energy Canada include: Mount Copper (54 MW) and Mount Miller (54 MW) located in Murdochville, Quebec; Pubnico Point, (30.6 MW) located near Yarmouth, Nova Scotia; and Ghost Pine (82 MW) located in Kneehill County, Alberta.

This facility will convert wind energy into electricity to be fed into the Hydro One grid. The wind turbine technology proposed for the Project is the GE model wind turbine. The Project has a total nameplate capacity of upto 23 megawatts (MW) and is categorized as a Class 4 facility. Although NextEra has identified 16 locations for wind turbine siting, up to a total of 14 turbines are proposed to be constructed for the Project together with one (1) substation transformer.

This study is part of the Renewable Energy Approvals (REA) process and ultimately is included in the formal REA application. This report has been prepared in accordance with the MOE document entitled "Noise Guidelines for Wind Farms – Interpretation for Applying MOE NPC Publications to Wind Power Generation Facilities" (October 2008, PIBS 4709e). The noise analysis has been conducted for the combined impact of both the wind turbines and the substation transformer.

2. Project Layout

The Project is located in Grey County, east of Durham and west of Priceville in south-western Ontario on private lands with lease arrangements. The Study Area for the Project is located in the Municipality of West Grey, Grey County. Figure 1 as provided in Attachment A shows the general Study Area of the Project. The Study Area is generally bounded by:

- Concession Road 6 to the north
- Sideroad 40, Townline Artemesia-Glenelg and Sideroad 50 to the east
- The West Grey – Southgate municipal boundary to the south
- Baseline to the west

The following coordinates (in UTM NAD 83, Zone 17N coordinate system) define the extremities of the Study Area for the Project:

Study Area Corner	Easting	Northing
North-west	517446.0	4898788.0
North-east	528740.2	4899612.1
South-east	529409.0	4890833.0
South-west	519266.3	4889235.1

The defined Study Area, presented as Figure 1, covers approximately 10,050 hectares east of Durham. The typical "footprint" of land used is approximately 0.6 hectares per turbine. The actual area occupied by turbines, roads, construction, laydown area and transformer station for the Project is approximately 20

hectares in total. Most of the land in this area is rural farmland with some wooded areas and aggregate extraction areas.

The turbines, associated infrastructure and substation will be located on privately owned farmland. The legal descriptions of the parcels of land that will host the Project will be provided in the final REA application. The property owners have signed lease option agreements with NextEra to host infrastructure on their properties for the Project. In addition, some overhead electrical lines may be located in municipal road right of ways which will require a separate agreement with the host municipality.

The proposed Project schedule sets the commercial operation date in January 2014.

The zoning of the relevant land within the project area is agricultural. The lands are mainly rural and used for agricultural purposes. The land use map for the project area is shown on Figure C1 in Attachment C. For the purpose of the noise analysis, the project has been defined as a Class 3 area (rural).

To the best of our knowledge, there are no other operating or approved wind farms or wind farms pending review by the MOE within 5 km of any wind turbine generator of the proposed wind farm.

3. Project Information

3.1 Facility Components

Wind turbines produce electricity by converting the kinetic energy in the wind into a mechanical rotation of a generator. The major components of the Project are as follows:

- Up to 16 GE model wind turbines with 14 turbines that are 1.6-100 (1.62 MW), Turbine 6 is 1.34-100 (1.34 MW) and Turbine 2 is 1.39-100 (1.39 MW) wind turbine generator locations and pad mounted step-up transformers are proposed for permitting (a maximum of 14 turbines will ultimately be constructed);
- Turbine laydown and storage areas (including temporary staging areas, crane pads and turnaround areas surrounding each wind turbine);
- Construction laydown area (including staging areas for construction materials, construction trailers and associated facilities and a temporary electrical service line to provide power to the construction trailers);
- Approximately 28.3 km of 34.5 kV underground electrical collection lines and ancillary equipment (e.g., above ground electrical junction boxes) to connect the turbines to the proposed transformer substation;
- Pad mounted 690 V/ 34.5 kV step up transformers located at or near the base of each turbine;
- A transformer substation to connect to the Hydro One distribution system;
- Overhead 44 kV line to connect the transformer substation to the Hydro One electrical grid;
- Approximately 13.8 km of turbine access roads;
- An operations and maintenance building (located outside the project location – utilize Conestogo Wind Energy Centre building); and
- 1 to 2 meteorological towers

3.1.1 Turbine Specifications

The wind turbine technology proposed for this Project is the GE 1.6-100 LNTE, GE 1.39-100 LNTE and GE 1.34-100 LNTE model wind turbines for a total maximum nameplate capacity of up to 23 MW.

The GE model wind turbines are 3-bladed, upwind, horizontal-axis wind turbines that are state of the art technology. The turbines have a 100 m rotor diameter with a swept area of 7,854 m²; each blade is connected to the main shaft via the hub. The nacelle houses the main components of the wind turbine such as the rotor shaft, gear box, couplings, control panel, bearing brackets and the generator. The nacelle is equipped with sound-proofing, is ventilated and the interior is illuminated with electric lights. Some of the wind turbines will have external lighting in accordance with the requirements of Transport Canada.

The turbine is mounted on an 80 m tubular steel tower which contains an internal ladder provided for maintenance access. The turbine will be constructed on a foundation that is approximately 400 m². The foundation consists of a wooden frame, poured concrete and steel rebar to provide added strength.

The nacelle (located at the top of the tower) houses the main components of the wind turbine such as the rotor shaft, gear box, couplings, control panel, bearing brackets and the generator. The nacelle is equipped with sound-proofing, is ventilated and the interior is illuminated with electric lights.

A summary of the turbine specifications of the GE model wind turbine that will be used for the Project is as follows:

Table 3-1 Summary of Wind Turbine Technical Specifications

Specification	Turbine-A	Turbine-B	Turbine-C
Make	General Electric	General Electric	General Electric
Model	1.6-100 LNTE	1.39-100 LNTE	1.34-100 LNTE
Name Plate Capacity	1.62 MW	1.39 MW	1.34 MW
Hub Height	80 m	80 m	80 m
Rotor Diameter	100 m	100 m	100 m
Minimum Rotational Speed	9.75 rpm	9.75 rpm	9.75 rpm
Maximum Rotational Speed	15.33 rpm	13.2 rpm	12.8 rpm
Sound Power Level	103 dBA	101 dBA	100 dBA

No supplementary fuel sources will be used to generate electricity.

3.1.2 Electrical System

Electricity will be generated at approximately 690 V at the turbine and will step up to a local 34.5 kV collection system through a pad-mounted transformer located at each turbine and equipped with anti-vandalism protection. The approximate dimensions of these transformers are 2.5 metres in length and width, and 2 metres high. The transformers are totally self-contained with no need for exterior fencing.

Direct buried cables will connect the wind turbines to the electrical substation. The buried cables will consist of three single conductor cables, with cross-linked polyethylene insulation, suitable for direct burial. To the extent possible, the underground collection lines will be constructed on private property, adjacent to the access roads.

The Project will have an electrical substation which will consist of a 34.5 kV/44 kV transformer and associated ancillary equipment. If required, a 44 kV electrical line will connect the transformer to the Hydro One distribution system using standard poles within municipal road right-of-ways. In some cases, there will be joint use poles with wind Project electrical lines and Hydro One electrical lines. Typically, each pole is between 13 metres and 17 metres in height.

The interconnection plan for any wind farm is subject to study, design and engineering by the Integrated Electricity System Operator which manages the province's electricity grid, Hydro One which owns the electrical lines, the local distribution company and the Ontario Energy Board, which regulates the industry through the Transmission System Code and the Distribution System Code. Details regarding the transmission lines, their routes, and the electrical substation will be developed during the Pre-Construction Design Phase of the Project.

4. MOE Noise Guidelines

4.1 Overview

The applicable noise guideline for the proposed East Durham wind farm project are obtained from the MOE, October 2008 publication entitled, "*Noise Guidelines for Wind Farms: Interpretation for Applying MOE NPC Publications to Wind Power Generation Facilities*" (PIBS 4709e). This document establishes the sound level limits for land-based wind power generating facilities and describes the information required for noise assessments and submissions under the Environmental Assessment Act and the Environmental Protection Act.

The MOE guideline describes the various noise sources of a wind farm and provides limits for them. It defines a wind farm as a facility comprised of an array of wind turbines, located within the same area, used for the production of electric power. Large wind farms may also include a transformer substation that collects and increases the voltage produced by the turbines to the higher voltage for the grid transmission system. The MOE has set guidelines for sound level limits for three different scenarios of wind farms: (i) wind turbine generators, (ii) wind turbine generators and transformer substations, and (iii) transformer substations. Each is described in detail below.

4.2 Limits for Wind Turbine Generators

A wind turbine consists of a tower, a nacelle (hub or housing) containing the gearbox (drive-train) and generator mounted on top of the tower, and three blades that rotate around a horizontal hub protruding from the nacelle. There are two potential sources of noise: (i) aerodynamic noise due to the turbine blades passing through the air as the hub rotates, and (ii) mechanical noise emitted by the gearbox and generator in the nacelle. Around the areas nearby the turbine, the noise typically exhibits a swishing sound as the blades rotate. However, the effect reduces as the distance from turbine increases.

The noise limits for the wind turbine generators in the Guideline document are consistent with the MOE criteria set in the technical publications titled "*Sound Level Limits for Stationary Sources in Class 3 Areas (Rural) – Publication NPC-232*" and "*Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban) – Publication NPC-205*". The noise limits for wind turbines are based on the existing criteria for night time hours described in publications NPC-205 and NPC-232. The sound level limit for the residential receptors in a Class 3 area can be described as follows:

- For wind speeds at or below 6 m/s at a reference height of 10 m:
The sound level limit at a Point of Reception, expressed in terms of the hourly equivalent energy sound level (L_{eq}) is 40.0 dBA or the minimum hourly background sound level established in accordance with requirements NPC-232/NPC-233, whichever is higher.
- For wind speeds above 6 m/s at a reference height of 10 m:
The sound level limit at a Point of Reception in a Class 3 Area (rural), under conditions of average wind speed above 6 m/s respectively, expressed in terms of the hourly equivalent energy sound level (L_{eq}), is the wind induced background sound level, expressed in terms of ninetieth percentile sound level (L_{90}) plus 7 dB, or the minimum hourly background sound level established in accordance with requirements in Publications NPC-232/NPC-233, whichever is higher.

The applicable sound levels at the receptors at integer values of the wind speeds for Class 3 areas (Rural) are provided in Table 4-1 below.

Table 4-1 Summary of Sound Level Limits for Wind Turbines (One-hour Leq, dBA)

Wind Speed (m/s) at 10 m height	4	5	6	7	8	9	10
Wind Turbine Sound Level Limits Class 3 Area (dBA)	40	40	40	43	45	49	51

4.3 Limits for Wind Turbine Generators and Transformer Substations

For projects such as East Durham where the noise impact at a Point of Reception is composed of combined contributions due to the Transformer Substation as well as the wind turbine generators, the applicable limits are those shown in Table 1 above. The transformer substation noise is produced by vibration of the transformer core and its associated components, and due to operation of other equipment such as cooling fans. Transformer substation noise generally exhibits a pronounced hum, associated with the fundamental electrical frequency and its harmonics and hence such noise is perceived as tonal.

Unlike noise produced by the wind turbines which are wind speed dependent, the noise from a transformer substation is independent and unrelated to the wind speed. In determining the combined impact, MOE Guidelines state to add a 5 dB adjustment for the transformer substation noise, consistent with MOE Publication NPC-104: *Sound Level Adjustments*.

4.4 Limits for Transformer Substations

In a situation where the noise impact assessment is limited to the operation of the transformer substation alone, the applicable sound levels at the receptors are in accordance to the MOE publication NPC-205 for urban areas (Class 1 & 2) or publication NPC-232 for rural areas (Class 3). The limit is independent of wind speed, however, a 5 dB adjustment has to be made to the noise emission levels to account for the tonal characteristics of the transformer substation noise as described above. The sound level limits are based on nighttime values as summarized in Table 4-2 below.

Table 4-2 Summary of Sound Level Limits for Transformer Substations

Area	Applicable NPC	Noise Level, One-hour Leq, dBA
Class 1 & 2 Area	NPC-205	45 dBA
Class 3 Area	NPC-232	40 dBA

Class 1 & 2 noise levels are presented for reference purposes only since the East Durham study area is considered Class 3, but occasionally the substation transformer is located far away from the wind farm and may potentially be in an area with a different sound level classification.

5. Receptors

Section 6.3 of the MOE’s Noise Guidelines for Wind Farms states: “receptors mean Points of Reception and Participating Receptors, including vacant lots”. Participating receptors are associated with the wind farm by means of a legal agreement with the property owner for the installation and operation of wind turbines or related equipment located on the property and the sound level limits stated in the Section 4 (as per Section 6.4.6 of the MOE Guideline) do not apply to these receptors. Non-participating vacant lots that have been zoned by the local municipality to permit residential or similar noise-sensitive uses are included as receptors due to their potential for residential development in the future. A vacant lot receptor is based on a 1 hectare building envelope within the vacant lot property that would reasonably be expected to contain the use, and that conforms with the municipal zoning by-laws in effect.

For points of reception, participating receptors and vacant lots, the receptor height was conservatively assumed to be 4.5 m above grade. For points of reception and participating receptors, the height was set at the centre of the dwelling. For vacant lots, the receptor height was set at the centre of the 1 hectare building envelope.

According to Section 6.4.1b of the MOE's Noise Guidelines for Wind Farms: "a detailed noise impact assessment of the Wind Farm including a Transformer Substation is required if one or more Points of Reception or Participating Receptors are located within 1500 m of a wind turbine generator." For the proposed East Durham wind farm, there are 12 participating receptors and 161 non-participating receptors as well as 3 participating vacant lots and 62 non-participating vacant lots in the study area within 1500 m of a wind turbine.

6. Detailed Noise Impact Assessment

6.1 Wind Turbines

The sixteen (16) proposed GE wind turbines consist of fourteen (14) GE 1.6-100 with LNTE turbines, one (1) GE 1.39-100 with LNTE turbine and one (1) GE 1.34-100 with LNTE turbine. The turbines are 3-bladed, upwind, horizontal-axis wind turbines with a hub height of 80 meters and a 101 meter rotor diameter. The overall height of the turbine, including the blade length will be approximately 129 meters.

The maximum rated electric capacity per turbine is 1.62 MW for GE 1.6-100 with LNTE, 1.39 MW for GE 1.39-100 with LNTE and 1.34 MW for GE 1.34-100 with LNTE when the operating mode of the turbine is "Normal Operation". The turbine manufacturer's noise data as per IEC is included in Attachment B. The noise levels are provided in terms of 1/3rd octave band spectra which have been converted into 1/1 octave band spectra (provided in) and summarized in Table 9-1, Table 9-2 and Table 9-3 in Section 9.1 that lists the make and model, electrical rating, hub height, and the acoustic emission sound power levels.

As shown in Attachment B, the wind turbine overall sound power levels increase with the increase in wind speed but starts tapering off at the higher wind speeds and becomes constant from the wind speed 8 m/s onwards even though there may be slight variation in their individual octave bands.

All calculations were performed in terms of octave band sound levels (63 to 8000 Hz) using the worst case wind speed of 10 m/s described above and as such, repeated analysis at different wind speeds are not necessary because the worst case conditions are independent of the actual value of wind shear. For reference, the range of 10 m height wind speeds between 6 to 10 m/s corresponds to 80 m hub height wind speeds of 8.4 to 14 m/s. The approach used will, therefore, provide the highest noise value regardless of wind speed with reference to the lowest sound level criterion.

The wind turbine sound power levels were adjusted to a 'predictable worst case scenario' at each wind speed so that the maximum sound power level was used in each case. This adjustment is included due to the potential for wind shear and therefore each wind speed is modelled at the maximum predictable worst case scenario.

The locations of the wind turbines are provided in Table 9-5 in Section 9.3 that lists the wind turbine ID and UTM co-ordinates (the Z coordinate represents the hub height above sea level, which is 80 m above ground elevation). Each proposed wind turbine has an individual adjacent pad-mount transformer and there is one large transformer substation for the overall wind farm as described below.

As stated earlier, there is no other wind farms nearby and certainly not such a way that the turbines from any other project are located at lesser than seven (7) km from the proposed East Durham Wind Energy Centre and therefore have not been included as this distance is greater than those specified in sections 6.4.1 and 6.4.9 of the Noise Guidelines for Wind Farms, October 2008 and Section 55(1) of O. Reg. 359/09, as amended. Therefore, none of the Point of Reception or the Participating Receptor of the proposed East Durham Wind Energy Centre is being affected by any other wind farm.

6.2 Substation Transformer

Transformer substation noise data is provided in Attachment B. The noise data calculation with a 5 decibel (dB) tonal penalty is summarized in Table 9-4 in Section 9.2. Based on the MOE Guideline of Section 6.2.4, while the large transformer substation needs to be taken into account for noise assessment purposes, the small pad-mount transformers are insignificant sources and therefore do not need to be

included in the noise assessment. The transformer substation is also included in Table 6 as TR, with UTM co-ordinates shown and a height of 3.0 m above ground elevation (the Z coordinate represents the height above sea level).

As specified in Sections 4 and 6.4.8 of the MOE's Noise Guidelines for Wind Farms, any tonal characteristics associated with wind turbine noise is generally associated with maintenance issues and therefore the prediction assumed that the wind turbine noise required no adjustment for special quality of sound described in Publication NPC-104. However, transformer substations generally exhibit a pronounced hum and the noise perceived at receptors is typically tonal. Since transformer acoustic emissions are tonal, an adjustment of 5 dB was added to the specified acoustic emissions in accordance with NPC-104 as shown in the Table 9-4.

6.3 Receptors

The receptors were configured such that they considered the impact of the whole wind farm with a maximum calculation distance of 5 km being applied, as per Section 6.4.9 of the MOE's Noise Guidelines for wind farms. The receptors were considered to be two storey dwellings at a height of 4.5 m above grade at the centre of the dwelling, consistent with Section 6.3.1 of the MOE Guideline. For vacant lots, a similar approach was used based on zoning considerations regarding where a dwelling could be located (see Section 4). Table 9-6 in Section 9.3 provides the locations of Points of Reception, including non-participating receptors and vacant lots along with UTM co-ordinates (the Z coordinate represents the receptor height above sea level (Ht ASL), which is 4.5 m above the ground elevation). Table 9-7 in Section 9.3 provides the location of the participating receptors for the East Durham project along with UTM coordinates (the Z coordinate represents the receptor Ht ASL, which is 4.5 m above the ground elevation).

6.4 Modelling

The noise analysis was conducted using the CadnaA (computer aided noise abatement) 3-D acoustical modelling software V4.2 to predict the noise levels at the points of reception. CadnaA is based on ISO Standard 9613-2 "*Acoustics - Attenuation of Sound During Propagation Outdoors – Part 2: General Method of Calculation*". The software incorporates digital terrain modelling inputs, which takes topography into account and the 80 m hub height of each turbine and 4.5 m dwelling height for each receptor was added to the ground elevation.

The model assumes that all receptors simultaneously experience conditions favourable to sound propagation from all wind turbine sources (operating at the maximum sound power level) to each receptor. This represents the worst case for noise impact because subject to local wind conditions, only some of the receptors will be downwind at any one time.

The attenuation due to atmospheric absorption was based on the atmospheric coefficients for 10°C temperature and 70% relative humidity. The term for Ground Attenuation was calculated using the "General" method in standard ISO 9613-2 (included in the CadnaA software), with a global value ground factor of $G = 0.7$ being used.

7. Infrasond

The public occasionally expresses concern about infrasound generation from wind turbines. Technically, infrasound is defined as acoustical energy at frequencies below that which are generally audible to humans, typically 20 Hz or lower. Modern wind turbines using upwind rotor technology such as the GE 1.6-100 with LNTE and its sister units proposed for the East Durham Wind Farm do not generate infrasound energy of any significance. This has been acknowledged by the MOE and other regulatory approval agencies. Published literature is available confirming that infrasound is not a concern for modern wind farms. The Ontario Chief Medical Officer of Health issued a report entitled "The Potential Health Impact of Wind Turbines" on May 20, 2010 which indicated 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.

8. Results and Conclusions

The environmental noise produced by the proposed East Durham wind turbines and transformer substation was determined to be within the acceptable limits at all Points of Reception for wind speeds of 6 to 10 m/s at a reference height of 10 m when modelled according to the ISO 9613-2 standard and the conditions specified in the MOE Noise Guideline for Wind Farms. The summary tables are provided in Section 9.4 and summarize the results of the noise modelling performed for the proposed East Durham Wind Farm, and demonstrate compliance with the applicable MOE environmental noise guidelines.

Table 9-8 and Table 9-9 in Section 9.4, show the combined sound pressure level at the receptors of the wind turbines and the transformer substation from East Durham wind farm and the distance from the closest turbine to each receptor, the calculated sound pressure level at that receptor for wind speeds 6 m/s to 10 m/s (based on the worst case wind turbine sound power level of 8 m/s at a 80 m hub height), and the sound level limit for each wind speed according to MOE noise guidelines.

Figure D1 in Attachment D shows the sound level contours for 15.0 dBA and above in 5 dBA increments, with all sources and receptors shown in the vicinity of the wind turbines exported from the CadnaA software. Figure D2 in Attachment D shows the sound level contours for 15.0 dBA and above in 5 dBA increments, with all sources and receptors shown in the vicinity of the wind turbines exported from the Geographic Information System (GIS). The sources and receptors are labelled, in conjunction with road locations and other land features.

9. Summary Tables

9.1 Wind Turbine Acoustical Emissions Summary Table

Table 9-1 Wind Turbine Acoustic Emissions Summary (GE 1.6-100 LNTE)

Make and model: 1.6-100 LNTE – A-weighted Octave Spectra (dB)										
Rating: 1.62 MW										
Hub Height (m): 80 m										
Wind shear coefficient, as per Subsection 6.2.3: not applicable, select maximum sound power level										
	Octave Band Sound Power ¹ Level (dBA)									
	Manufacturer's Emission Levels					Adjusted Emission Levels				
Wind Speed ² (m/s)	6	7	8	9	10	6	7	8	9	10
Frequency (Hz)										
32	76	79.6	80.1	80.2	80.1	80.1	80.1	80.1	80.1	80.1
63	85.5	89.2	89.6	89.7	89.6	89.6	89.6	89.6	89.6	89.6
125	90.8	93.9	94.3	94.4	94.3	94.3	94.3	94.3	94.3	94.3
250	94.4	95.0	95.1	95.2	95.2	95.2	95.2	95.2	95.2	95.2
500	95.0	96.3	96.1	96.2	96.5	96.5	96.5	96.5	96.5	96.5
1000	91.2	96.4	96.9	97.0	97.2	97.2	97.2	97.2	97.2	97.2
2000	91.9	95.0	95.2	94.9	94.3	94.3	94.3	94.3	94.3	94.3
4000	88.4	89.0	88.6	87.9	87.1	87.2	87.2	87.2	87.2	87.1
8000	69.7	69.7	70.0	68.8	68.7	68.7	68.7	68.7	68.7	68.7
Overall	100.5	102.8	103.0	103.0	103.0	103.0	103.0	103.0	103.0	103.0

Note: ¹ At 10 m/s wind speed at 80 m hub height. ² At 10 m reference height.

Table 9-2 Wind Turbine Acoustic Emissions Summary (GE 1.39-100 LNTE)

Make and model: 1.39-100 LNTE– A-weighted Octave Spectra (dBA)										
Rating: 1.39 MW										
Hub Height (m): 80 m										
Wind shear coefficient, as per Subsection 6.2.3: not applicable, select maximum sound power level										
	Octave Band Sound Power ¹ Level (dB)									
	Manufacturer's Emission Levels					Adjusted Emission Levels				
Wind Speed ² (m/s)	6	7	8	9	10	6	7	8	9	10
Frequency (Hz)										
32	76.1	78.1	78.4	78.5	78.4	78.4	78.4	78.4	78.4	78.4
63	85.6	87.5	87.8	87.9	87.7	87.7	87.7	87.7	87.7	87.7
125	90.9	92.2	92.4	92.5	92.3	92.3	92.3	92.3	92.3	92.3
250	94.6	93.5	93.3	93.4	93.4	93.4	93.4	93.4	93.4	93.4
500	95.1	94.8	94.5	94.7	95.1	95.1	95.1	95.1	95.1	95.1
1000	91.3	94.3	94.8	94.9	95.0	95.0	95.0	95.0	95.0	95.0
2000	92.1	92.8	92.4	92.0	91.3	91.3	91.3	91.3	91.3	91.3
4000	88.5	86.5	86.6	85.5	84.6	84.6	84.6	84.6	84.6	84.6
8000	70.0	67.7	67.9	65.7	66.0	66.0	66.0	66.0	66.0	66.0
Overall	98.2	101.0	101.0	101.0	101.0	101.0	101.0	101.0	101.0	101.0

Note: ¹ At 10 m/s wind speed at 80 m hub height. ² At 10 m reference height.

Table 9-3 Wind Turbine Acoustic Emissions Summary (GE 1.34-100 LNTE)

Make and model: 1.34-100 LNTE– A-weighted Octave Spectra (dBA)										
Rating: 1.34 MW										
Hub Height (m): 80 m										
Wind shear coefficient, as per Subsection 6.2.3: not applicable, select maximum sound power level										
	Octave Band Sound Power ¹ Level (dB)									
	Manufacturer's Emission Levels					Adjusted Emission Levels				
Wind Speed ² (m/s)	6	7	8	9	10	6	7	8	9	10
Frequency (Hz)										
32	75.5	77.1	77.5	77.6	77.5	77.5	77.5	77.5	77.5	77.5
63	85	86.5	86.8	86.9	86.8	86.8	86.8	86.8	86.8	86.8
125	90.4	91.2	91.4	91.5	91.3	91.3	91.3	91.3	91.3	91.3
250	94.0	92.7	92.3	92.4	92.5	92.5	92.5	92.5	92.5	92.5
500	94.3	93.9	93.6	93.8	94.3	94.3	94.3	94.3	94.3	94.3
1000	90.5	93	93.7	93.8	93.8	93.8	93.8	93.8	93.8	93.8
2000	91.4	91.6	91.3	90.8	90.0	90.0	90.0	90.0	90.0	90.0
4000	87.9	85.8	85.6	84.3	83.6	83.6	83.6	83.6	83.6	83.6
8000	69.1	67.6	66.8	64.4	64.9	64.9	64.9	64.9	64.9	64.9
Overall	99.9	100	100	100	100	100.0	100.0	100.0	100.0	100.0

Note: ¹ At 10 m/s wind speed at 80 m hub height. ² At 10 m reference height.

9.2 Transformer Substation Acoustical Emissions Summary Table

Table 9-4 Octave Band Centre Frequency for Transformer Substation

	Octave Band Centre Frequency (Hz)								Overall
	63	125	250	500	1000	2000	4000	8000	
TR PWL (dB)	38.1	81.0	64.0	59.9	57.5	48.6	42.9	29.2	81.1
Tonal Penalty (dB)	5	5	5	5	5	5	5	5	
TR with TP PWL (dB)	43.1	86.0	69.0	64.9	62.5	53.6	47.9	34.2	86.1

9.3 Locations of Wind Turbine Generators, Transformer Substations and Receptors

Table 9-5 Noise Source Locations

Turbine ID	Equipment Make & Model	UTM Coordinates		Ht ASL
		X	Y	Z
T1	GE 1.6-100 LNTE	522697	4894753	520
T2	GE 1.39-100 LNTE	523810	4895004	525
T3	GE 1.6-100 LNTE	523031	4894158	533
T4	GE 1.6-100 LNTE	523425	4894086	540
T5	GE 1.6-100 LNTE	523815	4894179	525
T6	GE 1.34-100 LNTE	524812	4894414	529
T7	GE 1.6-100 LNTE	525170	4894597	534
T8	GE 1.6-100 LNTE	525783	4894560	545
T10	GE 1.6-100 LNTE	522761	4892274	526
T11	GE 1.6-100 LNTE	525698	4893320	544
T12	GE 1.6-100 LNTE	527137	4897555	542
T13	GE 1.6-100 LNTE	528474	4893041	560
T14	GE 1.6-100 LNTE	527940	4897664	540
T15	GE 1.6-100 LNTE	527547	4897779	545
T16	GE 1.6-100 LNTE	527680	4893745	555
T17	GE 1.6-100 LNTE	527506	4893375	556
TR	Transformer Substation	524146	4893780	459

Table 9-6 Point of Reception Locations

Project Name: East Durham Wind Farm				
Point of Reception ID	Description	UTM Coordinates		Ht ASL
		X	Y	Z
3	Dwelling	525844	4898278	447.3
4	Dwelling	526083	4898200	455.5
5	Dwelling	526254	4898361	457.5
6	Dwelling	526444	4898387	456.5
8	Dwelling	526836	4898500	465.7
10	Dwelling	527277	4898436	470.8
11	Dwelling	526363	4898528	458.5

Project Name: East Durham Wind Farm				
Point of Reception ID	Description	UTM Coordinates		Ht ASL
		X	Y	Z
12	Dwelling	527688	4898512	473.7
14	Dwelling	528160	4898522	468.1
43	Dwelling	528794	4898708	471.9
45	Dwelling	528527	4898598	468.5
47	Dwelling	528575	4898628	472.6
212	Dwelling	529038	4898222	474.5
333	Dwelling	529131	4897583	464.6
334	Dwelling	529151	4897508	464.6
377	Dwelling	528130	4894151	482.5
378	Dwelling	527980	4894214	484.5
379	Dwelling	528037	4894317	480.6
380	Dwelling	527653	4894461	479.7
381	Dwelling	526773	4894164	478.5
383	Dwelling	526807	4893527	476.4
384	Dwelling	526823	4893442	478.6
385	Dwelling	526950	4893351	480.1
386	Dwelling	526890	4893178	474.5
387	Dwelling	527005	4892570	473.4
388	Dwelling	527377	4892289	480.5
389	Dwelling	527593	4892439	480.3
390	Dwelling	527264	4892079	476.7
391	Dwelling	527106	4892071	474.5
392	Dwelling	526824	4892108	478.5
394	Dwelling	526385	4892023	478.5
395	Dwelling	525808	4892276	471.6
396	Dwelling	525524	4892013	471.5
406	Dwelling	523125	4891403	448.5
407	Dwelling	522844	4891658	464.5
408	Dwelling	522306	4891495	438.5
409	Dwelling	522110	4891421	441.2
410	Dwelling	522049	4891100	444.8
411	Dwelling	521835	4891211	431.0
412	Dwelling	521870	4891333	429.6
413	Dwelling	521670	4891275	422.3
441	Dwelling	521696	4893053	414.5
442	Dwelling	521779	4893075	414.5
443	Dwelling	522061	4893474	418.4
444	Dwelling	522101	4893246	419.1
445	Dwelling	522340	4893540	428.0
447	Dwelling	522597	4893312	450.1

Project Name: East Durham Wind Farm				
Point of Reception ID	Description	UTM Coordinates		Ht ASL
		X	Y	Z
448	Dwelling	522604	4893236	452.1
449	Dwelling	522471	4893785	424.7
450	Dwelling	522554	4893853	423.6
451	Dwelling	522883	4892977	440.1
452	Dwelling	523164	4893079	434.2
453	Dwelling	524100	4893320	439.0
454	Dwelling	523104	4893402	465.5
456	Dwelling	524059	4893675	452.9
457	Dwelling	524528	4893844	446.5
459	Dwelling	525034	4893615	474.5
462	Dwelling	526195	4893711	463.2
463	Dwelling	526397	4894074	466.0
464	Dwelling	526485	4894077	468.7
465	Dwelling	527162	4896101	459.4
466	Dwelling	527118	4896302	459.1
467	Dwelling	526993	4896325	450.4
468	Dwelling	526746	4896248	453.0
469	Dwelling	526691	4896148	450.5
472	Dwelling	526065	4895645	463.6
473	Dwelling	526660	4895585	470.5
474	Dwelling	525384	4895817	454.2
475	Dwelling	525218	4895872	449.7
476	Dwelling	525095	4895950	448.0
477	Dwelling	524860	4895810	434.5
478	Dwelling	524438	4895626	432.5
479	Dwelling	524198	4895679	447.6
480	Dwelling	523951	4895693	442.6
482	Dwelling	524570	4895301	436.2
483	Dwelling	524375	4894836	451.2
484	Dwelling	524374	4894786	451.5
485	Dwelling	524283	4895830	436.4
486	Dwelling	524266	4896113	434.5
487	Dwelling	524292	4896237	430.7
488	Dwelling	524174	4896310	430.4
496	Dwelling	522984	4895610	440.5
497	Dwelling	522791	4895486	433.1
498	Dwelling	522707	4895471	430.5
499	Dwelling	522477	4895308	432.7
500	Dwelling	522171	4895388	434.5
501	Dwelling	522229	4895111	434.5

Project Name: East Durham Wind Farm				
Point of Reception ID	Description	UTM Coordinates		Ht ASL
		X	Y	Z
502	Dwelling	522149	4895465	433.2
503	Dwelling	522083	4895722	424.3
504	Dwelling	522071	4895801	418.9
505	Dwelling	522256	4895915	426.4
506	Dwelling	522187	4895986	420.5
507	Dwelling	522126	4896095	419.5
523	Dwelling	521632	4895380	416.7
534	Dwelling	527500	4894277	478.1
535	Dwelling	526579	4893767	470.5
536	Dwelling	526740	4893411	475.4
539	Dwelling	522489	4893825	423.1
541	Dwelling	523943	4895760	442.4
542	Dwelling	523839	4895680	438.6
543	Dwelling	523859	4895735	436.8
544	Dwelling	523812	4895640	438.9
545	Dwelling	523669	4895625	432.0
547	Dwelling	524386	4895437	435.8
548	Dwelling	524283	4895687	434.5
549	Dwelling	523415	4895513	434.5
550	Dwelling	525629	4895922	459.0
552	Dwelling	526828	4896160	448.8
553	Dwelling	527517	4896225	452.9
554	Dwelling	527666	4896422	454.2
555	Dwelling	527894	4896306	457.6
556	Dwelling	527271	4896615	456.8
557	Dwelling	528164	4896478	459.6
558	Dwelling	528581	4894432	484.5
559	Dwelling	527928	4892600	484.5
560	Dwelling	528315	4892353	484.5
563	Dwelling	529029	4896764	470.9
565	Dwelling	529139	4896745	474.3
570	Dwelling	529768	4892313	484.4
575	Dwelling	529119	4891773	486.1
581	Dwelling	525930	4897291	448.5
583	Dwelling	529625	4892465	475.4
597	Dwelling	522903	4892933	435.1
599	Dwelling	521839	4895005	424.5
604	Dwelling	526798	4897997	461.6
610	Dwelling	523476	4895945	430.9
611	Dwelling	523045	4895543	435.4

Project Name: East Durham Wind Farm				
Point of Reception ID	Description	UTM Coordinates		Ht ASL
		X	Y	Z
613	Dwelling	522451	4893958	419.4
614	Dwelling	526971	4896262	451.9
615	Dwelling	523389	4893180	434.7
626	Dwelling	526007	4898060	456.0
629	Dwelling	527932	4898382	469.1
630	Dwelling	528117	4898411	469.1
631	Dwelling	528873	4898388	465.8
632	Dwelling	528744	4897643	462.5
633	Dwelling	529011	4897380	464.5
634	Dwelling	529020	4897056	467.3
635	Dwelling	529106	4896976	467.8
637	Dwelling	528736	4896554	460.4
638	Dwelling	528826	4896600	465.4
639	Dwelling	528596	4896537	458.8
640	Dwelling	528399	4896392	456.5
641	Dwelling	527716	4896653	454.5
649	Dwelling	525978	4896725	447.7
651	Dwelling	524041	4896300	429.2
653	Dwelling	528919	4894524	478.6
665	Dwelling	529570	4894003	486.6
666	Dwelling	529565	4893916	483.5
667	Dwelling	529568	4893825	480.6
668	Dwelling	529503	4893526	475.4
669	Dwelling	529700	4892801	474.5
670	Dwelling	529784	4892594	471.9
671	Dwelling	529158	4892543	479.3
672	Dwelling	529155	4892311	478.9
673	Dwelling	529012	4892144	481.9
674	Dwelling	528710	4892278	484.5
675	Dwelling	528334	4892216	484.5
676	Dwelling	528206	4892475	484.5
678	Dwelling	528054	4891651	483.1
685	Dwelling	529255	4892143	480.2
686	Dwelling	523934	4895546	448.6
690	Vacant Lot	521951	4895346	436.3
692	Vacant Lot	523283	4895808	428.5
693	Vacant Lot	524270	4896018	434.5
694	Vacant Lot	527286	4896350	458.5
695	Vacant Lot	527358	4894245	476.7
696	Vacant Lot	526975	4894042	480.5

Project Name: East Durham Wind Farm				
Point of Reception ID	Description	UTM Coordinates		Ht ASL
		X	Y	Z
697	Vacant Lot	526837	4894052	479.2
698	Vacant Lot	526775	4893811	472.5
699	Vacant Lot	525955	4893878	464.9
700	Vacant Lot	524756	4893501	457.8
701	Vacant Lot	524807	4893310	460.9
702	Vacant Lot	524933	4892682	470.3
703	Vacant Lot	522930	4895496	438.8
705	Vacant Lot	521927	4893190	413.9
706	Vacant Lot	522353	4893263	430.6
707	Vacant Lot	522473	4891472	449.8
708	Vacant Lot	522672	4891509	461.0
709	Vacant Lot	523352	4893432	457.6
710	Vacant Lot	523803	4893508	443.8
711	Vacant Lot	524253	4893753	457.8
712	Vacant Lot	523430	4893039	438.5
713	Vacant Lot	523237	4892961	437.3
729	Vacant Lot	522513	4895569	429.4
731	Vacant Lot	525187	4895976	446.5
732	Vacant Lot	527199	4896337	458.2
735	Vacant Lot	525530	4893960	463.4
736	Vacant Lot	525726	4893991	472.1
749	Vacant Lot	526119	4896969	454.1
750	Vacant Lot	526167	4896716	456.3
751	Vacant Lot	527395	4896360	453.7
754	Vacant Lot	525127	4895863	451.6
755	Vacant Lot	523540	4895592	433.9
756	Vacant Lot	527874	4894277	481.2
759	Vacant Lot	524855	4893037	464.7
765	Vacant Lot	521842	4895332	431.6
766	Vacant Lot	525186	4893727	468.5
768	Vacant Lot	528528	4894284	480.8
769	Vacant Lot	529031	4892466	480.0
770	Vacant Lot	528177	4896330	457.6
771	Vacant Lot	528911	4896613	468.8
776	Vacant Lot	529726	4892472	474.5
777	Vacant Lot	529425	4892421	474.5
781	Vacant Lot	528698	4894697	475.4
782	Vacant Lot	528516	4894647	479.2
784	Vacant Lot	528875	4894318	479.7
790	Vacant Lot	526468	4898118	460.4

Project Name: East Durham Wind Farm				
Point of Reception ID	Description	UTM Coordinates		Ht ASL
		X	Y	Z
791	Vacant Lot	526796	4898177	459.1
793	Vacant Lot	528423	4894418	480.4
796	Vacant Lot	522870	4891292	449.9
802	Vacant Lot	522573	4895321	430.5
803	Vacant Lot	524110	4895797	444.1
812	Vacant Lot	525775	4898139	442.8
817	Vacant Lot	528696	4898602	471.0
826	Vacant Lot	527642	4896247	451.1
848	Vacant Lot	527070	4898366	466.7
859	Vacant Lot	529618	4893756	477.2
862	Dwelling	529704	4893737	476.5
863	Dwelling	529733	4893651	473.3
864	Dwelling	529805	4893483	470.2
865	Dwelling	529837	4893244	470.5
879	Vacant Lot	526866	4892752	474.1
880	Vacant Lot	528581	4898491	466.5

Table 9-7 Point of Participating Receptor Locations

Project Name: East Durham Wind Farm				
Point of Reception ID	Description	UTM Coordinates		Ht ASL
		X	Y	Z
382	Dwelling	527338.1	4894048	474.88
446	Dwelling	522456	4893305	434.24
455	Dwelling	523211.6	4893664	464.5
458	Dwelling	524719.7	4893994	459.54
460	Dwelling	525449.9	4893293	462.33
461	Dwelling	525854	4893967	469.59
481	Dwelling	524262.2	4895467	436.5
561	Dwelling	528761.5	4892651	480.24
627	Dwelling	527390.5	4898197	470.53
628	Dwelling	527691.9	4898342	472.01
687	Dwelling	525176.5	4893897	460.5
734	Vacant Lot	525325.1	4893918	459.44
825	Vacant Lot	522266.2	4895398	433.2
827	Vacant Lot	525560.3	4893821	467.99
869	Dwelling	525325	4894173	460.29

9.4 Noise Impact Assessment Summary Table

Table 9-8 Combined Noise Impact Summary – Points of Reception

Point of Reception ID	Description	Height Above Grade (m)	Distance to Nearest Noise Source (m)	Nearest Noise Source ID	Calculated Sound Level (dBA) at Selected Wind Speeds (m/s)					Sound Level Limit (dBA)				
					6	7	8	9	10	6	7	8	9	10
3	Dwelling	4.5	1481.0	T12	30.1	30.1	30.1	30.1	30.1	40	43	45	49	51
4	Dwelling	4.5	1235.3	T12	31.5	31.5	31.5	31.5	31.5	40	43	45	49	51
5	Dwelling	4.5	1195.8	T12	31.8	31.8	31.8	31.8	31.8	40	43	45	49	51
6	Dwelling	4.5	1083.0	T12	32.7	32.7	32.7	32.7	32.7	40	43	45	49	51
8	Dwelling	4.5	992.0	T12	34.3	34.3	34.3	34.3	34.3	40	43	45	49	51
10	Dwelling	4.5	710.5	T15	36.8	36.8	36.8	36.8	36.8	40	43	45	49	51
11	Dwelling	4.5	1243.3	T12	31.7	31.7	31.7	31.7	31.7	40	43	45	49	51
12	Dwelling	4.5	746.3	T15	36.4	36.4	36.4	36.4	36.4	40	43	45	49	51
14	Dwelling	4.5	885.7	T14	34.9	34.9	34.9	34.9	34.9	40	43	45	49	51
43	Dwelling	4.5	1348.5	T14	30.5	30.5	30.5	30.5	30.5	40	43	45	49	51
45	Dwelling	4.5	1103.3	T14	32.4	32.4	32.4	32.4	32.4	40	43	45	49	51
47	Dwelling	4.5	1154.5	T14	32.0	32.0	32.0	32.0	32.0	40	43	45	49	51
212	Dwelling	4.5	1231.1	T14	31.0	31.0	31.0	31.0	31.0	40	43	45	49	51
333	Dwelling	4.5	1193.8	T14	31.3	31.3	31.3	31.3	31.3	40	43	45	49	51
334	Dwelling	4.5	1221.3	T14	31.1	31.1	31.1	31.1	31.1	40	43	45	49	51
377	Dwelling	4.5	606.0	T16	37.4	37.4	37.4	37.4	37.4	40	43	45	49	51
378	Dwelling	4.5	557.1	T16	38.0	38.0	38.0	38.0	38.0	40	43	45	49	51
379	Dwelling	4.5	673.9	T16	36.5	36.5	36.5	36.5	36.5	40	43	45	49	51
380	Dwelling	4.5	716.2	T16	36.1	36.1	36.1	36.1	36.1	40	43	45	49	51
381	Dwelling	4.5	998.7	T16	36.1	36.1	36.1	36.1	36.1	40	43	45	49	51
383	Dwelling	4.5	714.9	T17	37.4	37.4	37.4	37.4	37.4	40	43	45	49	51
384	Dwelling	4.5	686.2	T17	37.5	37.5	37.5	37.5	37.5	40	43	45	49	51
385	Dwelling	4.5	556.7	T17	38.6	38.6	38.6	38.6	38.6	40	43	45	49	51
386	Dwelling	4.5	647.1	T17	37.5	37.5	37.5	37.5	37.5	40	43	45	49	51
387	Dwelling	4.5	948.2	T17	34.5	34.5	34.5	34.5	34.5	40	43	45	49	51
388	Dwelling	4.5	1093.2	T17	33.4	33.4	33.4	33.4	33.4	40	43	45	49	51
389	Dwelling	4.5	940.3	T17	34.8	34.8	34.8	34.8	34.8	40	43	45	49	51
390	Dwelling	4.5	1317.9	T17	32.1	32.1	32.1	32.1	32.1	40	43	45	49	51
391	Dwelling	4.5	1363.5	T17	31.9	31.9	31.9	31.9	31.9	40	43	45	49	51
392	Dwelling	4.5	1438.5	T17	31.8	31.8	31.8	31.8	31.8	40	43	45	49	51
394	Dwelling	4.5	1467.4	T11	31.3	31.3	31.3	31.3	31.3	40	43	45	49	51
395	Dwelling	4.5	1049.5	T11	32.8	32.8	32.8	32.8	32.8	40	43	45	49	51
396	Dwelling	4.5	1319.0	T11	31.3	31.3	31.3	31.3	31.3	40	43	45	49	51
406	Dwelling	4.5	944.3	T10	32.2	32.2	32.2	32.2	32.2	40	43	45	49	51
407	Dwelling	4.5	621.6	T10	35.7	35.7	35.7	35.7	35.7	40	43	45	49	51
408	Dwelling	4.5	902.0	T10	32.2	32.2	32.2	32.2	32.2	40	43	45	49	51
409	Dwelling	4.5	1073.2	T10	30.9	30.9	30.9	30.9	30.9	40	43	45	49	51
410	Dwelling	4.5	1373.3	T10	28.9	28.9	28.9	28.9	28.9	40	43	45	49	51
411	Dwelling	4.5	1409.8	T10	28.6	28.6	28.6	28.6	28.6	40	43	45	49	51
412	Dwelling	4.5	1296.0	T10	29.3	29.3	29.3	29.3	29.3	40	43	45	49	51
413	Dwelling	4.5	1479.3	T10	28.2	28.2	28.2	28.2	28.2	40	43	45	49	51
441	Dwelling	4.5	1318.9	T10	31.3	31.3	31.3	31.3	31.3	40	43	45	49	51
442	Dwelling	4.5	1267.5	T10	31.7	31.7	31.7	31.7	31.7	40	43	45	49	51
443	Dwelling	4.5	1186.8	T3	33.5	33.5	33.5	33.5	33.5	40	43	45	49	51
444	Dwelling	4.5	1174.8	T10	33.4	33.4	33.4	33.4	33.4	40	43	45	49	51
445	Dwelling	4.5	927.1	T3	35.3	35.3	35.3	35.3	35.3	40	43	45	49	51
447	Dwelling	4.5	950.7	T3	35.8	35.8	35.8	35.8	35.8	40	43	45	49	51
448	Dwelling	4.5	974.6	T10	35.6	35.6	35.6	35.6	35.6	40	43	45	49	51
449	Dwelling	4.5	672.9	T3	37.5	37.5	37.5	37.5	37.5	40	43	45	49	51

Point of Reception ID	Description	Height Above Grade (m)	Distance to Nearest Noise Source (m)	Nearest Noise Source ID	Calculated Sound Level (dBA) at Selected Wind Speeds (m/s)					Sound Level Limit (dBA)				
					6	7	8	9	10	6	7	8	9	10
450	Dwelling	4.5	565.9	T3	38.7	38.7	38.7	38.7	38.7	40	43	45	49	51
451	Dwelling	4.5	713.9	T10	35.4	35.4	35.4	35.4	35.4	40	43	45	49	51
452	Dwelling	4.5	900.3	T10	36.1	36.1	36.1	36.1	36.1	40	43	45	49	51
453	Dwelling	4.5	462.7	ST	36.5	36.5	36.5	36.5	36.5	40	43	45	49	51
454	Dwelling	4.5	755.2	T4	38.2	38.2	38.2	38.2	38.2	40	43	45	49	51
456	Dwelling	4.5	136.6	ST	39.5	39.5	39.5	39.5	39.5	40	43	45	49	51
457	Dwelling	4.5	387.2	ST	38.5	38.5	38.5	38.5	38.5	40	43	45	49	51
459	Dwelling	4.5	726.9	T11	37.9	37.9	37.9	37.9	37.9	40	43	45	49	51
462	Dwelling	4.5	632.0	T11	37.9	37.9	37.9	37.9	37.9	40	43	45	49	51
463	Dwelling	4.5	783.3	T8	37.0	37.0	37.0	37.0	37.0	40	43	45	49	51
464	Dwelling	4.5	852.0	T8	36.6	36.6	36.6	36.6	36.6	40	43	45	49	51
465	Dwelling	4.5	1454.0	T12	32.2	32.2	32.2	32.2	32.2	40	43	45	49	51
466	Dwelling	4.5	1252.7	T12	32.8	32.8	32.8	32.8	32.8	40	43	45	49	51
467	Dwelling	4.5	1238.2	T12	32.8	32.8	32.8	32.8	32.8	40	43	45	49	51
468	Dwelling	4.5	1364.1	T12	32.4	32.4	32.4	32.4	32.4	40	43	45	49	51
469	Dwelling	4.5	1476.2	T12	32.1	32.1	32.1	32.1	32.1	40	43	45	49	51
472	Dwelling	4.5	1120.8	T8	33.7	33.7	33.7	33.7	33.7	40	43	45	49	51
473	Dwelling	4.5	1349.4	T8	32.6	32.6	32.6	32.6	32.6	40	43	45	49	51
474	Dwelling	4.5	1238.8	T7	33.6	33.6	33.6	33.6	33.6	40	43	45	49	51
475	Dwelling	4.5	1275.8	T7	33.4	33.4	33.4	33.4	33.4	40	43	45	49	51
476	Dwelling	4.5	1354.6	T7	32.9	32.9	32.9	32.9	32.9	40	43	45	49	51
477	Dwelling	4.5	1252.2	T7	33.1	33.1	33.1	33.1	33.1	40	43	45	49	51
478	Dwelling	4.5	884.4	T2	34.9	34.9	34.9	34.9	34.9	40	43	45	49	51
479	Dwelling	4.5	778.9	T2	35.2	35.2	35.2	35.2	35.2	40	43	45	49	51
480	Dwelling	4.5	703.4	T2	35.6	35.6	35.6	35.6	35.6	40	43	45	49	51
482	Dwelling	4.5	816.0	T2	36.9	36.9	36.9	36.9	36.9	40	43	45	49	51
483	Dwelling	4.5	589.6	T2	39.6	39.6	39.6	39.6	39.6	40	43	45	49	51
484	Dwelling	4.5	574.9	T6	39.8	39.8	39.8	39.8	39.8	40	43	45	49	51
485	Dwelling	4.5	951.5	T2	34.1	34.1	34.1	34.1	34.1	40	43	45	49	51
486	Dwelling	4.5	1199.0	T2	32.5	32.5	32.5	32.5	32.5	40	43	45	49	51
487	Dwelling	4.5	1323.7	T2	31.9	31.9	31.9	31.9	31.9	40	43	45	49	51
488	Dwelling	4.5	1355.2	T2	31.7	31.7	31.7	31.7	31.7	40	43	45	49	51
496	Dwelling	4.5	904.0	T1	35.3	35.3	35.3	35.3	35.3	40	43	45	49	51
497	Dwelling	4.5	738.5	T1	36.1	36.1	36.1	36.1	36.1	40	43	45	49	51
498	Dwelling	4.5	718.1	T1	36.1	36.1	36.1	36.1	36.1	40	43	45	49	51
499	Dwelling	4.5	597.0	T1	37.2	37.2	37.2	37.2	37.2	40	43	45	49	51
500	Dwelling	4.5	825.2	T1	34.5	34.5	34.5	34.5	34.5	40	43	45	49	51
501	Dwelling	4.5	589.6	T1	37.1	37.1	37.1	37.1	37.1	40	43	45	49	51
502	Dwelling	4.5	898.1	T1	33.9	33.9	33.9	33.9	33.9	40	43	45	49	51
503	Dwelling	4.5	1146.8	T1	32.1	32.1	32.1	32.1	32.1	40	43	45	49	51
504	Dwelling	4.5	1220.4	T1	31.5	31.5	31.5	31.5	31.5	40	43	45	49	51
505	Dwelling	4.5	1243.4	T1	31.6	31.6	31.6	31.6	31.6	40	43	45	49	51
506	Dwelling	4.5	1334.3	T1	30.8	30.8	30.8	30.8	30.8	40	43	45	49	51
507	Dwelling	4.5	1458.8	T1	30.3	30.3	30.3	30.3	30.3	40	43	45	49	51
523	Dwelling	4.5	1236.0	T1	30.8	30.8	30.8	30.8	30.8	40	43	45	49	51
534	Dwelling	4.5	561.7	T16	38.1	38.1	38.1	38.1	38.1	40	43	45	49	51
535	Dwelling	4.5	987.8	T11	36.6	36.6	36.6	36.6	36.6	40	43	45	49	51
536	Dwelling	4.5	766.8	T17	37.0	37.0	37.0	37.0	37.0	40	43	45	49	51
539	Dwelling	4.5	636.5	T3	37.9	37.9	37.9	37.9	37.9	40	43	45	49	51
541	Dwelling	4.5	767.6	T2	35.0	35.0	35.0	35.0	35.0	40	43	45	49	51
542	Dwelling	4.5	676.4	T2	35.7	35.7	35.7	35.7	35.7	40	43	45	49	51
543	Dwelling	4.5	733.1	T2	35.2	35.2	35.2	35.2	35.2	40	43	45	49	51
544	Dwelling	4.5	635.8	T2	36.0	36.0	36.0	36.0	36.0	40	43	45	49	51

Point of Reception ID	Description	Height Above Grade (m)	Distance to Nearest Noise Source (m)	Nearest Noise Source ID	Calculated Sound Level (dBA) at Selected Wind Speeds (m/s)					Sound Level Limit (dBA)				
					6	7	8	9	10	6	7	8	9	10
545	Dwelling	4.5	637.2	T2	36.0	36.0	36.0	36.0	36.0	40	43	45	49	51
547	Dwelling	4.5	720.5	T2	36.2	36.2	36.2	36.2	36.2	40	43	45	49	51
548	Dwelling	4.5	831.1	T2	34.6	34.6	34.6	34.6	34.6	40	43	45	49	51
549	Dwelling	4.5	644.1	T2	36.7	36.7	36.7	36.7	36.7	40	43	45	49	51
550	Dwelling	4.5	1370.5	T8	33.0	33.0	33.0	33.0	33.0	40	43	45	49	51
552	Dwelling	4.5	1428.4	T12	32.2	32.2	32.2	32.2	32.2	40	43	45	49	51
553	Dwelling	4.5	1383.0	T12	32.4	32.4	32.4	32.4	32.4	40	43	45	49	51
554	Dwelling	4.5	1250.0	T12	33.2	33.2	33.2	33.2	33.2	40	43	45	49	51
555	Dwelling	4.5	1359.0	T14	32.4	32.4	32.4	32.4	32.4	40	43	45	49	51
556	Dwelling	4.5	949.6	T12	34.6	34.6	34.6	34.6	34.6	40	43	45	49	51
557	Dwelling	4.5	1206.7	T14	32.6	32.6	32.6	32.6	32.6	40	43	45	49	51
558	Dwelling	4.5	1133.0	T16	33.0	33.0	33.0	33.0	33.0	40	43	45	49	51
559	Dwelling	4.5	701.3	T13	36.8	36.8	36.8	36.8	36.8	40	43	45	49	51
560	Dwelling	4.5	705.9	T13	35.4	35.4	35.4	35.4	35.4	40	43	45	49	51
563	Dwelling	4.5	1413.3	T14	30.4	30.4	30.4	30.4	30.4	40	43	45	49	51
565	Dwelling	4.5	1510.9	T14	29.9	29.9	29.9	29.9	29.9	40	43	45	49	51
570	Dwelling	4.5	1484.5	T13	28.6	28.6	28.6	28.6	28.6	40	43	45	49	51
575	Dwelling	4.5	1423.2	T13	29.2	29.2	29.2	29.2	29.2	40	43	45	49	51
581	Dwelling	4.5	1235.3	T12	31.8	31.8	31.8	31.8	31.8	40	43	45	49	51
583	Dwelling	4.5	1287.5	T13	29.8	29.8	29.8	29.8	29.8	40	43	45	49	51
597	Dwelling	4.5	673.8	T10	36.1	36.1	36.1	36.1	36.1	40	43	45	49	51
599	Dwelling	4.5	894.7	T1	33.9	33.9	33.9	33.9	33.9	40	43	45	49	51
604	Dwelling	4.5	556.8	T12	38.3	38.3	38.3	38.3	38.3	40	43	45	49	51
610	Dwelling	4.5	998.9	T2	33.6	33.6	33.6	33.6	33.6	40	43	45	49	51
611	Dwelling	4.5	863.1	T1	35.8	35.8	35.8	35.8	35.8	40	43	45	49	51
613	Dwelling	4.5	613.2	T3	38.3	38.3	38.3	38.3	38.3	40	43	45	49	51
614	Dwelling	4.5	1303.9	T12	32.6	32.6	32.6	32.6	32.6	40	43	45	49	51
615	Dwelling	4.5	907.0	T4	35.9	35.9	35.9	35.9	35.9	40	43	45	49	51
626	Dwelling	4.5	1238.2	T12	31.5	31.5	31.5	31.5	31.5	40	43	45	49	51
629	Dwelling	4.5	715.7	T15	37.3	37.3	37.3	37.3	37.3	40	43	45	49	51
630	Dwelling	4.5	768.1	T14	36.1	36.1	36.1	36.1	36.1	40	43	45	49	51
631	Dwelling	4.5	1181.2	T14	31.5	31.5	31.5	31.5	31.5	40	43	45	49	51
632	Dwelling	4.5	804.0	T14	34.6	34.6	34.6	34.6	34.6	40	43	45	49	51
633	Dwelling	4.5	1108.4	T14	31.9	31.9	31.9	31.9	31.9	40	43	45	49	51
634	Dwelling	4.5	1239.7	T14	31.2	31.2	31.2	31.2	31.2	40	43	45	49	51
635	Dwelling	4.5	1353.8	T14	30.5	30.5	30.5	30.5	30.5	40	43	45	49	51
637	Dwelling	4.5	1366.0	T14	31.0	31.0	31.0	31.0	31.0	40	43	45	49	51
638	Dwelling	4.5	1384.6	T14	30.8	30.8	30.8	30.8	30.8	40	43	45	49	51
639	Dwelling	4.5	1303.9	T14	31.5	31.5	31.5	31.5	31.5	40	43	45	49	51
640	Dwelling	4.5	1352.0	T14	31.6	31.6	31.6	31.6	31.6	40	43	45	49	51
641	Dwelling	4.5	1035.2	T14	34.7	34.7	34.7	34.7	34.7	40	43	45	49	51
649	Dwelling	4.5	1425.9	T12	31.1	31.1	31.1	31.1	31.1	40	43	45	49	51
651	Dwelling	4.5	1316.9	T2	31.7	31.7	31.7	31.7	31.7	40	43	45	49	51
653	Dwelling	4.5	1463.9	T16	31.2	31.2	31.2	31.2	31.2	40	43	45	49	51
665	Dwelling	4.5	1457.9	T13	29.9	29.9	29.9	29.9	29.9	40	43	45	49	51
666	Dwelling	4.5	1399.0	T13	30.1	30.1	30.1	30.1	30.1	40	43	45	49	51
667	Dwelling	4.5	1346.2	T13	30.3	30.3	30.3	30.3	30.3	40	43	45	49	51
668	Dwelling	4.5	1137.6	T13	31.3	31.3	31.3	31.3	31.3	40	43	45	49	51
669	Dwelling	4.5	1249.2	T13	30.1	30.1	30.1	30.1	30.1	40	43	45	49	51
670	Dwelling	4.5	1384.5	T13	29.2	29.2	29.2	29.2	29.2	40	43	45	49	51
671	Dwelling	4.5	846.1	T13	33.3	33.3	33.3	33.3	33.3	40	43	45	49	51
672	Dwelling	4.5	998.3	T13	31.9	31.9	31.9	31.9	31.9	40	43	45	49	51
673	Dwelling	4.5	1046.1	T13	31.6	31.6	31.6	31.6	31.6	40	43	45	49	51

Point of Reception ID	Description	Height Above Grade (m)	Distance to Nearest Noise Source (m)	Nearest Noise Source ID	Calculated Sound Level (dBA) at Selected Wind Speeds (m/s)					Sound Level Limit (dBA)				
					6	7	8	9	10	6	7	8	9	10
674	Dwelling	4.5	798.3	T13	34.0	34.0	34.0	34.0	34.0	40	43	45	49	51
675	Dwelling	4.5	836.4	T13	34.1	34.1	34.1	34.1	34.1	40	43	45	49	51
676	Dwelling	4.5	625.9	T13	36.6	36.6	36.6	36.6	36.6	40	43	45	49	51
678	Dwelling	4.5	1452.3	T13	30.2	30.2	30.2	30.2	30.2	40	43	45	49	51
685	Dwelling	4.5	1190.3	T13	30.5	30.5	30.5	30.5	30.5	40	43	45	49	51
686	Dwelling	4.5	556.2	T2	37.1	37.1	37.1	37.1	37.1	40	43	45	49	51
690	Vacant Lot	4.5	952.8	T1	33.4	33.4	33.4	33.4	33.4	40	43	45	49	51
692	Vacant Lot	4.5	961.3	T2	34.2	34.2	34.2	34.2	34.2	40	43	45	49	51
693	Vacant Lot	4.5	1113.9	T2	33.0	33.0	33.0	33.0	33.0	40	43	45	49	51
694	Vacant Lot	4.5	1214.5	T12	33.0	33.0	33.0	33.0	33.0	40	43	45	49	51
695	Vacant Lot	4.5	594.6	T16	37.9	37.9	37.9	37.9	37.9	40	43	45	49	51
696	Vacant Lot	4.5	765.3	T16	37.1	37.1	37.1	37.1	37.1	40	43	45	49	51
697	Vacant Lot	4.5	897.6	T16	36.5	36.5	36.5	36.5	36.5	40	43	45	49	51
698	Vacant Lot	4.5	851.2	T17	36.9	36.9	36.9	36.9	36.9	40	43	45	49	51
699	Vacant Lot	4.5	614.3	T11	38.9	38.9	38.9	38.9	38.9	40	43	45	49	51
700	Vacant Lot	4.5	670.5	ST	36.7	36.7	36.7	36.7	36.7	40	43	45	49	51
701	Vacant Lot	4.5	811.6	ST	36.2	36.2	36.2	36.2	36.2	40	43	45	49	51
702	Vacant Lot	4.5	995.8	T11	34.0	34.0	34.0	34.0	34.0	40	43	45	49	51
703	Vacant Lot	4.5	778.5	T1	36.1	36.1	36.1	36.1	36.1	40	43	45	49	51
705	Vacant Lot	4.5	1238.7	T10	32.5	32.5	32.5	32.5	32.5	40	43	45	49	51
706	Vacant Lot	4.5	1069.9	T10	34.6	34.6	34.6	34.6	34.6	40	43	45	49	51
707	Vacant Lot	4.5	852.1	T10	32.6	32.6	32.6	32.6	32.6	40	43	45	49	51
708	Vacant Lot	4.5	770.2	T10	33.8	33.8	33.8	33.8	33.8	40	43	45	49	51
709	Vacant Lot	4.5	658.4	T4	38.8	38.8	38.8	38.8	38.8	40	43	45	49	51
710	Vacant Lot	4.5	438.1	ST	38.4	38.4	38.4	38.4	38.4	40	43	45	49	51
711	Vacant Lot	4.5	110.3	ST	39.1	39.1	39.1	39.1	39.1	40	43	45	49	51
712	Vacant Lot	4.5	1016.0	T10	35.9	35.9	35.9	35.9	35.9	40	43	45	49	51
713	Vacant Lot	4.5	835.7	T10	36.0	36.0	36.0	36.0	36.0	40	43	45	49	51
729	Vacant Lot	4.5	836.6	T1	34.7	34.7	34.7	34.7	34.7	40	43	45	49	51
731	Vacant Lot	4.5	1379.2	T7	32.9	32.9	32.9	32.9	32.9	40	43	45	49	51
732	Vacant Lot	4.5	1219.6	T12	33.0	33.0	33.0	33.0	33.0	40	43	45	49	51
735	Vacant Lot	4.5	651.1	T8	39.8	39.8	39.8	39.8	39.8	40	43	45	49	51
736	Vacant Lot	4.5	571.6	T8	39.9	39.9	39.9	39.9	39.9	40	43	45	49	51
749	Vacant Lot	4.5	1174.2	T12	32.3	32.3	32.3	32.3	32.3	40	43	45	49	51
750	Vacant Lot	4.5	1282.1	T12	31.3	31.3	31.3	31.3	31.3	40	43	45	49	51
751	Vacant Lot	4.5	1222.8	T12	33.1	33.1	33.1	33.1	33.1	40	43	45	49	51
754	Vacant Lot	4.5	1266.5	T7	33.5	33.5	33.5	33.5	33.5	40	43	45	49	51
755	Vacant Lot	4.5	647.3	T2	36.3	36.3	36.3	36.3	36.3	40	43	45	49	51
756	Vacant Lot	4.5	566.3	T16	37.8	37.8	37.8	37.8	37.8	40	43	45	49	51
759	Vacant Lot	4.5	889.0	T11	35.3	35.3	35.3	35.3	35.3	40	43	45	49	51
765	Vacant Lot	4.5	1032.3	T1	32.7	32.7	32.7	32.7	32.7	40	43	45	49	51
766	Vacant Lot	4.5	654.0	T11	38.8	38.8	38.8	38.8	38.8	40	43	45	49	51
768	Vacant Lot	4.5	1004.8	T16	33.9	33.9	33.9	33.9	33.9	40	43	45	49	51
769	Vacant Lot	4.5	800.6	T13	33.8	33.8	33.8	33.8	33.8	40	43	45	49	51
770	Vacant Lot	4.5	1355.2	T14	31.9	31.9	31.9	31.9	31.9	40	43	45	49	51
771	Vacant Lot	4.5	1430.9	T14	30.5	30.5	30.5	30.5	30.5	40	43	45	49	51
776	Vacant Lot	4.5	1375.2	T13	29.3	29.3	29.3	29.3	29.3	40	43	45	49	51
777	Vacant Lot	4.5	1135.2	T13	30.8	30.8	30.8	30.8	30.8	40	43	45	49	51
781	Vacant Lot	4.5	1394.2	T16	31.4	31.4	31.4	31.4	31.4	40	43	45	49	51
782	Vacant Lot	4.5	1229.7	T16	32.2	32.2	32.2	32.2	32.2	40	43	45	49	51
784	Vacant Lot	4.5	1325.0	T16	32.1	32.1	32.1	32.1	32.1	40	43	45	49	51
790	Vacant Lot	4.5	874.3	T12	34.3	34.3	34.3	34.3	34.3	40	43	45	49	51
791	Vacant Lot	4.5	709.1	T12	36.6	36.6	36.6	36.6	36.6	40	43	45	49	51

Point of Reception ID	Description	Height Above Grade (m)	Distance to Nearest Noise Source (m)	Nearest Noise Source ID	Calculated Sound Level (dBA) at Selected Wind Speeds (m/s)					Sound Level Limit (dBA)				
					6	7	8	9	10	6	7	8	9	10
793	Vacant Lot	4.5	1002.2	T16	33.8	33.8	33.8	33.8	33.8	40	43	45	49	51
796	Vacant Lot	4.5	987.7	T10	31.2	31.2	31.2	31.2	31.2	40	43	45	49	51
802	Vacant Lot	4.5	580.9	T1	37.5	37.5	37.5	37.5	37.5	40	43	45	49	51
803	Vacant Lot	4.5	847.8	T2	34.6	34.6	34.6	34.6	34.6	40	43	45	49	51
812	Vacant Lot	4.5	1482.2	T12	29.7	29.7	29.7	29.7	29.7	40	43	45	49	51
817	Vacant Lot	4.5	1204.4	T14	31.5	31.5	31.5	31.5	31.5	40	43	45	49	51
826	Vacant Lot	4.5	776.0	T1	32.4	32.4	32.4	32.4	32.4	40	43	45	49	51
848	Vacant Lot	4.5	756.6	T15	36.6	36.6	36.6	36.6	36.6	40	43	45	49	51
859	Vacant Lot	4.5	1348.9	T13	30.1	30.1	30.1	30.1	30.1	40	43	45	49	51
862	Dwelling	4.5	1413.8	T13	29.5	29.5	29.5	29.5	29.5	40	43	45	49	51
863	Dwelling	4.5	1399.1	T13	29.3	29.3	29.3	29.3	29.3	40	43	45	49	51
864	Dwelling	4.5	1402.2	T13	29.2	29.2	29.2	29.2	29.2	40	43	45	49	51
865	Dwelling	4.5	1378.3	T13	29.4	29.4	29.4	29.4	29.4	40	43	45	49	51
879	Vacant Lot	4.5	893.4	T17	35.1	35.1	35.1	35.1	35.1	40	43	45	49	51
880	Vacant Lot	4.5	1046.7	T14	32.8	32.8	32.8	32.8	32.8	40	43	45	49	51

Table 9-9 Combined Wind Turbine Noise Impact Summary – Participating Receptors

Participating Receptor ID	Description	Height Above Grade (m)	Distance to Nearest Noise Source (m)	Nearest Noise Source ID	Calculated Sound Level (dBA) at Selected Wind Speeds (m/s)				
					6	7	8	9	10
382	Dwelling	4.5	457.0	T16	39.9	39.9	39.9	39.9	39.9
446	Dwelling	4.5	1028.6	T3	34.8	34.8	34.8	34.8	34.8
455	Dwelling	4.5	473.0	T4	41.4	41.4	41.4	41.4	41.4
458	Dwelling	4.5	430.1	T6	39.9	39.9	39.9	39.9	39.9
460	Dwelling	4.5	249.6	T11	43.8	43.8	43.8	43.8	43.8
461	Dwelling	4.5	596.8	T8	39.4	39.4	39.4	39.4	39.4
481	Dwelling	4.5	646.9	T2	36.1	36.1	36.1	36.1	36.1
561	Dwelling	4.5	484.5	T13	37.9	37.9	37.9	37.9	37.9
627	Dwelling	4.5	446.4	T15	40.4	40.4	40.4	40.4	40.4
628	Dwelling	4.5	581.3	T15	38.4	38.4	38.4	38.4	38.4
687	Dwelling	4.5	632.3	T6	39.3	39.3	39.3	39.3	39.3
734	Vacant Lot	4.5	696.9	T7	39.5	39.5	39.5	39.5	39.5
825	Vacant Lot	4.5	1401.9	T12	34.7	34.7	34.7	34.7	34.7
827	Vacant Lot	4.5	519.9	T11	39.8	39.8	39.8	39.8	39.8
869	Dwelling	4.5	451.4	T7	41.5	41.5	41.5	41.5	41.5