GRAND RENEWABLE ENERGY PARK

NOISE ASSESSMENT REPORT

Revision 2

For

Stantec

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1 INTRODUCTION

1.1 Purpose

This Noise Assessment Report (NAR) describes the results of a noise impact study for Samsung Renewable Energy Inc.'s proposed Grand Renewable Energy Park (GREP) — a combination Wind Farm and Solar Farm.

1.2 Revision 0

Revision 0 is the original Noise Assessment Report.

1.3 Revision 1

Revision 1 documented a change in the number of Wind Farm project turbines from 69 to 67. Turbines T31 and T32 were removed. It also included changes to the locations of turbines T9, T16, T19, T20, T21, T56, T57, and T59. No turbine re-numbering occurred, but there were a number of status changes to receptors, VLSRs, and participants due to removal of the two turbines and relocation of the other turbines. The turbine type (Siemens SWT-2.3-101, nominal) remained the same as described in Revision 0.

Figure 1-1 Project location map.

Updated turbine acoustic emissions from the turbine manufacturer, Siemens Wind Power A/S, were applied to the analysis.

There was a minor change in the specification of the octave-band source sound power levels for the project main (Wind and Solar) sub-station transformers.

Revision 1 also included noise sources from the Solar Farm portion of the GREP. These consisted of 100 pairs of inverters in enclosures with associated transformers. (The Solar Farm

project sub-station power transformer had already been included in the previous revision.)

1.4 Revision 2

This Revision (2) has been generated in response to MoE requests contained in the 2012/01/10 Memorandum referenced as 8913-8MCQLL. Changes in this revision are as follows.

Two "Concordance Tables" have been included in Section 3.5 — one cross-referencing the Grand Renewable Energy Project GREP) and Summerhaven Wind Energy Centre (SWEC) receptors and vacant lot surrogate receptors (VLSRs); one cross-referencing the GREP and Byng Wind Project (BWP) receptors and VLSRs.

All turbine source sound power levels (broadband and octave) have been updated as required to reflect the highest (*i.e.*, "worst case") vertical wind shear power law exponent used in the assessment, namely 0.45 (Section 5.2).

In Section 5.4.1 the Solar and Wind Farm sub-station power transformer acoustic specifications have been updated to reflect the potential full (unmitigated) broadband source sound power levels (85 dBA plus 5 dBA) tonal penalty for transformers of the project capacity (166 and 108 MVA). References to acoustic barriers have been removed as additional analysis has determined that they are not required to achieve project noise compliance.

A confirmation of compliant treatment (MoE, 2008, Sections 6.3.1, 6.3.2) of one-storey receptors has been included in Section 3.4

MoE (2008) atmospheric absorption coefficients have been used for the ISO-9613-2 calculation in Section 6.2 .

SWEC transformer coordinates have been provided in Section 2.5.2

Numbers of receptors, VLSRs, participants, and vacant lots have been specified in Section 3.1 .

Note that it has not been possible to supply some requested transformer data as the choice of models is pending further progress in the approval process. Samsung Renewable Energy Inc. will supply this information as soon as it becomes available.

Updated Wind Farm and Solar Farm transformer octave band source sound power levels have been supplied in Section 5.4.1 .

A "Noise Source Summary Table", specified as Table A1 of the *MoE Basic Comprehensive Certificates of Approval User Guide*, has been provided in Section 4.4 .

The sample calculation in Section 9.2 has been changed to use receptor R393 and nearby turbine T56. This particular receptor/turbine pair has been chosen as requested by MoE since R393 will be affected both by the nearby turbine(s) and by the Solar Farm inverters and transformers.

Figures have been updated to enhance their clarity. A series of detailed maps has been included in Section 14 .

All calculations are based on and are compliant with the ISO 9613-1 and ISO 9613-2 Standards.

SWEC turbines and their numbering have been updated to reflect updated information provided in Golder (2011).

Updated SWEC receptor, VLSR, and participant location data have been supplied directly by NextEra, and have been used in the present Revision.

A variety of typographical error corrections and small amendments have been included.

1.5 Brief Project Description

As shown in Figure 1-1, the GREP is located in Haldimand County on the north shore of Lake Erie roughly between the towns of Fisherville to the west and Dunnville to the east.

The project features one cluster of 67 wind turbines (the Wind Farm) with a nominal capacity of 148.6 MW, and one solar array (the Solar Farm) with a nominal capacity of 100 MW. The GREP will also include one sub-station (serving both the Wind and Solar Farm portions of the project) and a 20 km transmission line that will connect the project sub-station to the provincial electrical grid.

Figure 1-2 shows the GREP details, while Figure 1-3 shows further details of the Solar Farm portion of the project.

1.6 Reporting Details

This report has been prepared to meet all reporting requirements related to renewable energy project noise for a *Renewable Energy Approval* (REA) under the *Green Energy and Economy Act* (Ontario).

A noise impact assessment was carried out for this project under Section 55.(3) of O. Reg 359/09 (Government of Ontario, 2009b) and amendments (Government of Ontario, 2010). The assessment methodology and calculations conform to the ISO 9613-2 Standard (ISO, 1996). Where appropriate, results of the analysis have been interpreted using the Ontario Ministry of Environment's Noise Guidelines for Wind Farms (MoE, 2008). This latter document generally provides guidelines and clarifications for the application of MoE regulations document NPC-232 (MoE, 1995b) and NPC-104 (MoE) to wind farm projects.

It is important to note that both the Wind Farm and Solar Farm portions of the project have been designed to be compliant with the MoE Noise Guidelines (MoE, 2008). This is a more stringent specification for the Solar Farm, as it stipulates a *de facto* maximum receptor sound pressure level of 40.0 dBA at receptors for both daytime and nighttime periods.

The MoE (2008) document prescribes receptor noise level limits based on an analysis of typical wind-induced background noise levels, and tabulates these limits as functions of the ambient 6, 7, 8, 9, and 10 ms^{-1} wind speeds measured at 10 m above ground level (a.g.l.). Note that the receptor noise level limits must be met for noise produced by other project hardware such as sub-station transformers in addition to noise produced by the wind turbines. Obviously, these wind-speed-dependent noise level limits do not apply to the Solar Farm portion of the project. For the purposes of this report, they are fixed at 40.0 dBA.

This report will show that the estimated noise levels generated by the project turbines, inverters, transformers, and other hardware meet the MoE (2008) prescribed limits at all qualified receptors.

1.7 Sound Level Limits for Wind Farms

MoE (2008) lists the sound level limits for wind farms (based on the NPC-205 (MoE, 1995a) and NPC-232 (MoE, 1995b) publications and a consideration of the background ambient wind-induced sound level) as follows. Note that noise contributions from other project hardware, such as switching stations, transformer sub-stations, *etc*., must be included in the cumulative noise assessment.

Summary of Sound Level Limits for Wind Turbines							
Wind speed (ms^{-1}) at 10 m height	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Wind turbine sound level limits Class 3 Area, dBA	40.0	40.0	40.0	43.0	45.0	49.0	51.0
Wind turbine sound level limits Class 1 Area, dBA	45.0	45.0	45.0	45.0	45.0	49.0	51.0
Reference wind induced background sound level L_{90}, dBA	30.0	31.0	33.0	36.0	38.0	42.0	44.0

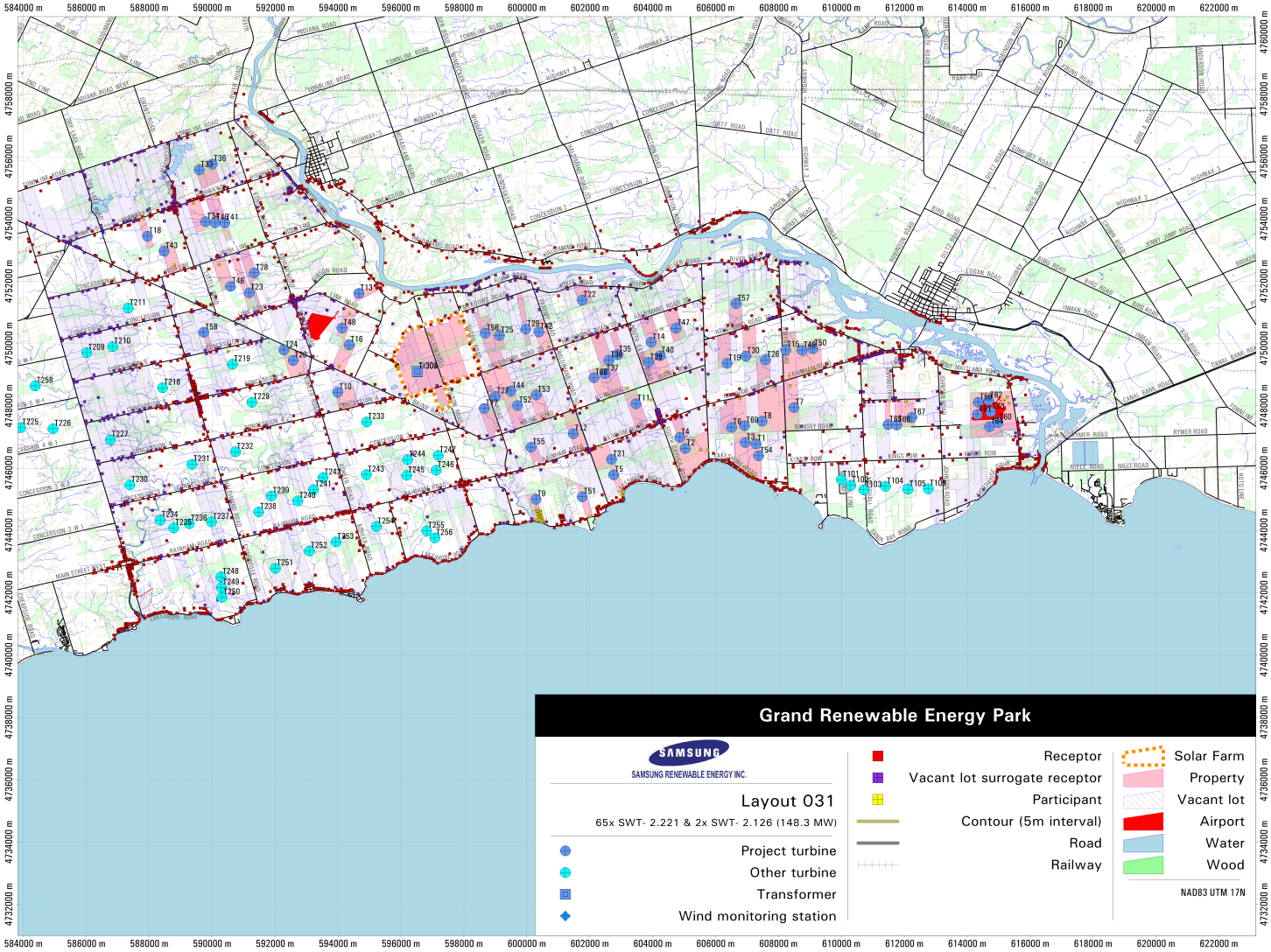

Figure 1-2 Wind Farm details map.

Figure 1-3 Solar Farm details map.

2 PROJECT LAYOUT

2.1 Project Site

The Grand Renewable Energy Park is located in Haldimand County, Ontario as shown in Figure 1-1. GREP details, along with typical topographic map features, are shown in Figure 1-2, and in Figure 1-3 which expands the view of the Solar Farm portion of the project. Note also that detailed tiled maps of the project area can be found in Section 14 for closer examination of specific areas.

Within the project domain, the topography can be characterized as very gently rolling to the point of being almost flat. On the land portion of Figure 1-2, the contour lines (5 m contour interval) confirm this. Note that the general terrain elevation in the land portion of the project area is about 200 m above sea level (a.s.l). To the south of the project domain lies (the obviously very flat) Lake Erie with its surface located at 175 m a.s.l.

The surface roughness of the project domain is typical of Ontario rural terrain with a heterogeneous mixture of agricultural fields, woodlots, farm buildings, dwellings, rural settlements, and small villages and towns.

The GREP site features a population density typical of southern Ontario rural communities — a relatively sparse population in the countryside except for a small number of settlement clusters (villages and towns).

The primary activity in this area is agriculture.

2.2 Project Details

Figure 1-2 shows the properties that have been optioned for lease to the project proponent (Samsung Renewable Energy Inc.) along with prospective turbine, point of reception (receptor), vacant lot, vacant lot surrogate receptor (VLSR), and participating point of reception (participant) locations. Turbine numbers are designated with the prefix 'T', receptors are designated with 'R', VLSRs with 'V', and participants with 'P'. Transformers (*i.e.*, sub-station transformers) are designated with 'Tr'.

Figure 1-3 also shows the prospective locations of solar array clusters, their associated inverter enclosures, and their associated transformers. Inverter enclosures and associated transformers are also designated with 'Tr'. Note that

these latter (smaller, 1 MVA) transformers are associated only with the Solar Farm portion of the project, and should not be confused with the GREP main sub-station (166 and 108 MVA) transformers.

As specified by O.Reg 359/09, the wind Farm portion of the Grand Renewable Energy Park is a Class 4 Wind Facility, and the Solar Farm portion is a Class 3 Solar Facility.

The Wind Farm portion of the GREP will consist of 67 power-de-rated Siemens Wind Power A/S turbines. There will be 65 SWT-2.221-101 and two SWT-2.126-101 turbines resulting in a project nameplate capacity of 148.6 MW. (Note, for clarity, that these turbines are often referred to as model SWT-2.3-101 — their nominal designation.) In Figure 1-2, project turbines are numbered T1 to T69. Turbines T31 and T32 are no longer included in the layout.

A generator step-up transformer (GSU) will be located next to each of the turbines.

The Solar Farm portion of the project is made up of approximately 425,000 fixed-orientation solar panels mounted on racks above the ground covering 325 ha. The panels will be oriented facing south at angles between 28 and 35º from the horizontal. They are organized into one hundred 1-MW clusters (or units), each consisting of two 500 kW SMA SC500HE-US inverters housed in a single SMA MV-PP inverter enclosure, and one 1-MVA 34.5 kV free-standing transformer. The inverter enclosure and transformer pair will be collocated on a single concrete pad. The transformer model has not been determined at this time. In Figure 1-3, inverter enclosures are numbered Tr702 to Tr902 (note – only even numbers) while inverter transformers are numbered from Tr601 to Tr701.

Where appropriate, a 2 m berm will be constructed on the exterior of the Solar Farm to provide a landscaping barrier for landowners of proximate adjacent residences.

The Wind Farm project stretches for a distance of about 14 km roughly parallel to the shoreline of Lake Erie. Turbines are located from approximately 0.8 km to 14.3 km from the shoreline. A listing of all GREP turbine locations can be found in Section 12 of this report.

The Solar Farm project is located approximately in the area bounded by Mount Olive Road to the west-southwest, Meadows Road to the northwest and north-northwest, Sutor Road to the east-northeast, and Haldimand Road 20 to the south-southeast. Note that a small portion of the farm lies to the south-southeast of Haldimand Road 20 as well. There are Wind Farm project turbines to the east and west of the Solar Farm. There are also turbines from the adjacent Summerhaven Wind Energy Centre to the south and southwest. A listing of all GREP inverter enclosures and associated transformers is available in Section 12 of this report.

The Ontario NPC designation for the project properties would generally be Class 3 — Rural. Typical background noise for these areas would be generated by residential, agricultural, and small commercial activities, ambient wind, vehicles on the regional roads, and waves at the shoreline of Lake Erie. For the purposes of this report, all areas have been considered to be NPC Class 3.

All project turbines, inverter enclosures, inverter transformers, and sub-station transformers have been included in the present noise assessment. The turbine GSU transformers have not been included because their output operating voltage is below 50 kV. To be conservative, the solar inverter transformers have been included because of their large number (100) and concentration.

2.3 Municipal Zoning

Typically, the project area is zoned as Agricultural.

2.4 Adjacent Projects

2.4.1 Summerhaven Wind Energy Centre

Figure 1-2 shows tentative locations of turbines in the NextEra Energy Canada ULC Summerhaven Wind Energy Centre (SWEC). These turbines are located roughly to the south and west of the GREP. In Figure 1-2, Summerhaven project turbines are numbered T201 to T261. (Note that T202, T219, and T260 do not exist.)

The Golder (2011) Noise Study Report states that the SWEC will be comprised of 58 power derated Siemens SWT-2.221-101 turbines for a project capacity of approximately 128.8 MW.

Further details of these turbines are provided further below. All turbines in the SWEC within 5 km of any receptor of the GREP have been included in the present noise assessment.

2.4.2 Byng Wind Project

Figure 1-2 shows tentative locations of turbines in the International Power Canada (IPC; now International Power GDF Suez) Byng Wind Project (BWP). These turbines are located roughly to the south and east of the GREP turbines. In Figure 1-2, Byng project turbines are numbered T101 to T106.

IPC has informed Samsung Renewable Energy Inc. that the BWP will be comprised of six GE Energy 1.5sle turbines.

Further details of these turbines are provided below. All turbines in the BWP within 5 km of any receptor of the GREP have been included in the noise assessment for the latter project.

2.5 Sub-Stations

2.5.1 Grand Renewable Energy Park

Within the confines of the Solar Farm, the GREP will include a 274 MW sub-station for both the Wind and Solar Farms. This sub-station will consist of a 166 MVA power transformer that will service the Wind Farm portion of the project, a 108 MVA transformer for the Solar Farm, and ancillary equipment. The

transformers are shown as Tr300 and Tr301 in Figure 1-2 and in Figure 1-3. The nearest GREP turbine (T56) is located about 2.4 km to the east of the sub-station.

Noise from the two transformers has been included in all the reported noise calculations.

2.5.2 Summerhaven Wind Energy Centre

Golder (2011) states that the SWEC transformer station will be located at 582,616E, 4,747,537N (NAD83 UTM17N). This is approximately 7.7 km west of the nearest GREP turbine (T58). There are several SWEC turbines significantly closer to this transformer station than T58.

Due to its remoteness from the GREP and the number of intervening SWEC turbines, noise from the SWEC transformer has not been included in any of the reported noise calculations.

2.5.3 Byng Wind Project

International Power Canada has reported to Samsung Renewable Energy Inc. that there will be a switching station used for the relatively small Byng Wind Project. Consistent with normal practice, noise from this station has not been included in the present analysis.

3 DESCRIPTION OF RECEPTORS

3.1 Definition

Receptors (non-participating points of reception), vacant lot surrogate receptors (VLSRs), and participants (participating points of reception) are defined in Ontario MoE NPC-232 (MoE, 1995b) and Noise Guidelines publication (MoE, 2008), and in Ontario O.Reg. 359-09 and proposed amendments (Government of Ontario; 2009b, 2010).

For information, 2,184 receptors, 672 VLSRs, and 80 participants (total 2,936) have been considered in this report; 779 vacant lots have been considered.

3.2 Determination of Receptors and Participants

Receptors and participants were identified through mapping, aerial photographs, and on-site surveys of the area. Typically, for this area, receptors are residential dwellings of individuals and families not associated with the project. Section 12 lists limited details for all known receptors and participants situated within the project area. Their locations are shown in Figure 1-2 and Figure 1-3. All receptors within 1.5 km of any GREP turbine or transformer (including inverter enclosures) have been included and reported in this noise impact analysis. All receptors have been considered to be designated as rural (NPC Class 3). Detailed tiled maps showing receptor, VLSR, and participant numbers can be viewed in Section 14 .

For the purposes of noise assessment, participants have been defined as dwellings occupied by landowners who receive financial compensation for the placement of project hardware (turbines, solar panels, inverters, cables, roads, transformers, *etc.*) on their properties.

3.3 Vacant Lots

The MoE (2008) Guidelines also requires prediction of the noise levels on "...vacant lots that have been zoned by the local municipality to permit residential or similar noise-sensitive uses...". Therefore, all vacant lots within 1.5 km of the GREP were identified as those lots defined by the complete set of cadastral map parcel fabric which did not contain a receptor nor a participant dwelling (and were obviously not

road rights-of-way, *etc*.). A one-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" was also identified for each of the vacant lots by determining a location within the vacant lot where the predicted noise level would be below the allowed maxima. A 'vacant lot surrogate receptor' (VLSR) centred in the one-hectare building envelope and designated with a height of 4.5 m was created for the purpose of noise estimation. The VLSRs are listed in Section 12 .

3.4 Methodology

ISO 9613-2 modelling was carried out for all receptors, VLSRs, and participants.

A calculated receptor sound pressure level for each receptor was determined as stipulated in Section 6.3.1 of MoE (2008) where there was no nearby transformer (including inverters), and as stipulated in Section 6.3.2 where a proximate transformer was found. The heights of dwellings designated as 1-, 2-, and 3-storeys were set to be 1.5, 4.5, and 7.5 m respectively.

For areas where there is such a high density of receptors that it would be impractical (and tedious for the reader) to include them all, 'surrogate' receptors were designated. These receptors were chosen to represent the cluster of actual receptors in such a way that the surrogate receptors would be subject to the maximum SPrLs from the surrounding turbines and/or transformers. Typically, receptors at all corners and along all boundaries of the cluster of actual receptors were chosen with (generally) a maximum separation of 200 m between surrogate receptors where possible. All surrogate receptors were assigned a height of 4.5 m to ensure that any 2-storey residences within the cluster were represented.

As noted above, participating receptors (referred to herein as participants) have also been surveyed and are shown in Figure 1-2 and Figure 1-3, and listed in Section 12 . Estimates of SPrLs were made for the participant locations.

It should be noted that the receptors, VLSRs, and participants listed in Section 12 include only those that are closer than or equal to 1,500 m from any project turbine, inverter enclosure, inverter transformer, or sub-station transformer noise source.

3.5 Concordance Table

As requested by MoE, "Concordance Tables" that rationalize the identification of receptors and VLSRs between the Grand Renewable Energy Park and any adjacent projects have been created. Table 3-1 lists receptors and VLSRs which are located within 1.5 km of any wind turbine in the GREP and within 1.5 km of any turbine in the Summerhaven Wind Energy Centre. Table 3-2 is identical in form to Table 3-1 but lists receptors and VLSRs which are located within 1.5 km of any wind turbine in the GREP and within 1.5 km of any turbine in the Byng Wind Project.

The next paragraphs describe the tables' columns using the GREP—SWEC table (Table 3-1) as an example. The GREP—Byng table is completely analogous. Note

that because of the disposition of the SWEC and BWP, there are no receptors nor VLSRs that are common to all three projects.

The first pair of columns in the tables list the UTM coordinates (NAD83 UTM17N) of the receptor or VLSR as determined for the GREP. The second pair of columns list the coordinates as provided in a spreadsheet via a private communication (Bird, 2012) for the SWEC. Note that for receptors these pairs of columns are generally slightly different. This difference can be attributed to the choice of the exact location of the dwelling in questions and the precision of the GIS data including base mapping and air or satellite photography. However, in the case of VLSRs, the locations can be significantly different since the VLSR need only be located on the vacant property in question, although it must be surrounded by at least 1 ha of available land, zoned to permit residential or similar uses, conform with local building codes, and be consistent with the typical building pattern in the area. In some instances, it is possible for the two project designers to reasonably choose two VLSRs on the same vacant lot property which are hundreds of metres apart. Note that there are some receptors and VLSRs in each of the projects that do not appear to have matches in the other project. These have been indicated by "n/a".

The fifth column in the tables lists the distance between the two locations (GREP-designated or SWEC-designated) determined for the receptor or VLSR.

The next pair of columns list the receptor or VLSR identifier — first as used for the GREP, and second as used for the SWEC. Naturally, these would not be expected to be the same. As noted above, there are some receptors/VLSRs that are found in one project and not in the other. This is indicated by "n/a".

The next pair of columns lists the distances from the receptor or VLSR to the nearest noise source (turbine or transformer) — first for the GREP, and second for the SWEC. While it might seem logical that these distances should be identical for receptors, again the precision of the receptor location as discussed above can lead to different results where the receptor is almost equidistant from two different noise sources. In the case of VLSRs, the differences can be significant since, as noted above, VLSRs for each of the projects can be located in quite different places on the same vacant lot.

The next pair of columns identifies the nearest noise source as determined in the previous columns — first as specified for the GREP, and second as specified for the SWEC. However, it is important to point out here that the Golder (2011) Noise Study Report does not include the GREP. Therefore, where a receptor/VLSR is closest to a GREP noise source, the GREP designation has been listed since there is no SWEC designation. Again, it would seem logical that these identities should be the same, but due to the finite precision in the GIS systems of the two project designers, and, further, due to the fact that VLSRs can have significantly different locations on the same vacant lot as determined by the two project designers, the nearest noise sources can be different.

The next three columns list the receptor/VLSR sound pressure levels — the first for the case where only GREP noise sources are considered, the second where only

SWEC noise noise sources are included, and the third where noise sources from both projects are included. Note that the SPrLs are listed for the GREP receptor/VLSRs locations. They have not been determined for the SWEC receptor/VLSR locations. In most cases, these should be quite similar but there could be significant differences where there is a substantial separation between GREP/SWEC receptor/VLSR pairs. This would more likely occur in the case of the VLSRs. Note that the "Total Level" has been determined from a full analysis including both the GREP and the SWEC noise sources at GREP receptors/VLSRs. Note further that the sum of the GREP and SWEC "Level of Farm" sound pressure levels in most cases matches the "Total" sound pressure level. However, there are instances where it does not match. This can generally be attributed to situations where the two calculations (GREP and SWEC) are determined by different rules. For example, for receptors near the Solar Farm in the GREP calculation, the receptor SPrL will be determined by the rules of Section 6.3.2 of MoE (2008). However, in the SWEC calculation, because there are no transformers listed in the project, the same receptor would be calculated using the (different) rules of Section 6.3.1.

Table 3-1 GREP—SWEC concordance table.

UTM coordinates GREP		UTM coordinates SWEC			Noise receptor ID		Distance to nearest source (m)		Nearest source ID		Level of farm (dBA)		Level (dBA)
Easting (m)	Northing (m)	Easting (m)	Northing (m)	Differ-ence (m)	GREP	SWEC	GREP	SWEC	GREP	SWEC	GREP	SWEC	Total
587,594	4,752,243	587,587	4,752,242	7	R112	POR1395	1134	1132	T211	WTG-011	32.2	29.8	34.0
587,567	4,752,136	587,616	4,752,114	54	R113	POR0858	1024	1015	T211	WTG-011	32.8	32.1	35.5
587,461	4,751,976	587,464	4,751,977	3	R127	POR2043	846	847	T211	WTG-011	30.0	32.9	34.6
587,790	4,752,120	587,790	4,752,120	0	R111	POR0369	1083	1083	T211	WTG-011	32.3	30.3	34.2
587,885	4,751,951	587,885	4,751,950	1	R128	POR0592	984	983	T211	WTG-011	31.5	31.3	34.2
587,968	4,752,026	587,967	4,752,024	2	R110	POR1393	1067	1070	T43	GREP T43	33.7	31.5	35.8
588,109	4,752,082	588,108	4,752,083	1	R109	POR1252	957	957	T43	GREP T43	34.6	30.4	36.0
588,304	4,752,171	588,302	4,752,170	2	R135	POR1823	815	817	T43	GREP T43	34.6	27.6	35.3
588,015	4,751,893	588,013	4,751,900	7	R129	POR0374	1020	1024	T211	WTG-011	33.0	32.3	35.7
588,177	4,752,026	588,176	4,752,025	1	R131	POR1633	987	988	T43	GREP T43	33.0	29.1	34.3
588,258	4,752,049	588,259	4,752,052	3	R132	POR1405	944	941	T43	GREP T43	33.4	28.5	34.5
588,518	4,751,589	588,517	4,751,594	5	R130	POR0791	1273	1274	T211	WTG-011	32.6	30.5	34.6
588,694	4,751,201	588,691	4,751,201	3	R253	POR1626	1335	1338	T58	GREP T58	32.2	30.3	34.3
588,611	4,751,157	588,616	4,751,158	5	R250	POR1098	1285	1290	T211	WTG-011	31.8	30.9	34.4
588,997	4,749,890	588,996	4,749,892	2	R239	POR1595	874	874	T58	GREP T58	31.9	30.4	34.1
588,682	4,749,437	588,679	4,749,436	3	R2137	POR1288	887	885	T218	WTG-018	27.5	33.4	34.3
588,903	4,749,463	588,898	4,749,466	6	R2148	POR1189	998	998	T218	WTG-018	30.1	33.9	35.4
589,043	4,749,522	589,042	4,749,524	2	R2152	POR0933	1087	1086	T58	GREP T58	31.1	33.2	35.3
589,092	4,749,617	589,094	4,749,623	6	R2153	POR1024	983	977	T58	GREP T58	32.0	32.8	35.4
589,226	4,749,361	589,226	4,749,371	10	R2164	POR0478	1115	1113	T218	GREP T58	30.9	33.5	35.4
589,274	4,749,259	589,275	4,749,262	3	R2170	POR0410	1084	1087	T218	WTG-018	29.0	32.4	33.9
589,246	4,749,008	589,242	4,749,010	4	R2165	POR1361	924	922	T218	WTG-018	28.8	34.8	35.8

UTM coordinates GREP		UTM coordinates SWEC			Noise receptor ID		Distance to nearest source (m)		Nearest source ID		Level of farm (dBA)		Level (dBA)
Easting (m)	Northing (m)	Easting (m)	Northing (m)	Differ-ence (m)	GREP	SWEC	GREP	SWEC	GREP	SWEC	GREP	SWEC	Total
589,339	4,748,971	589,339	4,748,971	0	R2179	POR1011	993	993	T218	WTG-018	28.8	34.5	35.6
589,275	4,748,942	589,270	4,748,948	8	R2171	POR0691	923	921	T218	WTG-018	27.0	33.5	34.3
589,943	4,749,728	589,943	4,749,728	0	R254	POR1256	668	668	T58	GREP T58	35.8	35.1	38.4
590,130	4,749,836	590,129	4,749,838	2	R255	POR1198	659	657	T58	GREP T58	36.1	35.9	39.0
590,549	4,749,963	590,550	4,749,963	1	R256	POR1542	628	628	T219	WTG-019	34.6	36.9	38.9
590,824	4,750,807	590,823	4,750,809	2	R1377	POR1715	900	898	T23	GREP T23	37.1	28.9	37.7
590,797	4,750,092	590,796	4,750,094	2	R257	POR1847	765	767	T219	WTG-019	34.4	35.1	37.8
590,819	4,749,930	590,820	4,749,929	1	R259	POR1916	613	613	T219	WTG-019	34.0	37.2	38.9
591,137	4,749,991	591,137	4,749,991	0	R260	POR1401	815	815	T219	WTG-019	33.2	33.4	36.2
591,243	4,750,010	591,241	4,750,010	2	R261	POR1237	897	896	T219	WTG-019	33.6	32.5	36.0
591,530	4,748,760	591,527	4,748,766	7	R184	POR2309	692	697	T228	WTG-028	33.1	37.2	38.6
591,579	4,748,669	591,582	4,748,668	3	R185	POR0706	633	634	T228	WTG-028	32.8	37.7	38.9
591,946	4,748,752	591,946	4,748,754	2	R182	POR1904	931	933	T228	WTG-028	35.2	34.4	37.8
592,005	4,748,835	592,005	4,748,838	3	R179	POR0773	847	845	T20	GREP T20	35.0	32.2	36.7
592,062	4,748,776	592,063	4,748,777	1	R181	POR0537	856	855	T20	GREP T20	34.8	32.1	36.5
592,107	4,748,777	592,106	4,748,779	2	R180	POR2273	829	828	T20	GREP T20	35.1	31.8	36.6
592,332	4,748,917	592,332	4,748,920	3	R178	POR0215	597	594	T20	GREP T20	38.8	31.5	39.6
593,488	4,747,888	593,484	4,747,886	4	R410	POR0944	750	754	T10	GREP T10	33.8	30.4	35.4
593,537	4,747,695	593,531	4,747,695	6	R413	POR1682	876	879	T10	GREP T10	33.4	32.6	36.1
593,579	4,747,295	593,580	4,747,300	5	R415	POR2088	1220	1215	T10	GREP T10	30.5	33.8	35.4
593,627	4,747,096	593,629	4,747,095	2	R416	POR0734	1338	1336	T233	WTG-033	29.1	34.5	35.6
594,083	4,747,899	594,080	4,747,902	4	R562	POR0553	550	547	T10	GREP T10	36.5	33.1	38.0
594,172	4,748,051	594,173	4,748,052	1	P563	POR1914	430	429	T10	GREP T10	39.5	34.2	40.6
594,306	4,747,888	594,304	4,747,893	5	R564	POR2298	636	630	T10	GREP T10	36.1	36.2	39.2
594,675	4,748,041	594,671	4,748,041	4	R565	POR1854	598	600	T233	WTG-033	33.4	36.8	38.2
594,821	4,748,722	594,820	4,748,725	3	R305	POR0150	873	873	T10	GREP T10	33.8	29.8	35.2
590,506	4,749,759	590,502	4,749,759	4	P258	PR0049	439	441	T218	WTG-019	33.8	40.3	41.2
594,782	4,747,998	594,780	4,747,997	2	R566	PR0007	524	523	T233	WTG-033	33.4	38.9	40.0
595,426	4,748,513	595,426	4,748,517	4	R306	POR0143	958	957	Tr788	GREP Tr788	32.2	32.1	35.2
595,177	4,748,691	595,169	4,748,694	9	R304	POR0151	1154	1161	Tr776	GREP Tr776	32.0	30.0	34.0
595,233	4,748,095	595,233	4,748,095	0	R567	POR0145	689	689	T233	WTG-033	31.6	36.5	37.7
595,348	4,748,097	595,349	4,748,099	2	R568	POR0147	752	754	T233	WTG-033	31.4	35.8	37.2
595,494	4,748,236	595,489	4,748,243	9	R569	POR0018	951	953	T233	WTG-033	31.5	33.9	35.9
595,663	4,748,268	595,665	4,748,269	2	R571	POR0019	865	863	Tr788	GREP Tr788	31.5	31.6	35.3
595,750	4,748,218	595,749	4,748,220	2	R572	POR2330	807	807	Tr658	GREP Tr818	31.3	32.9	35.2
595,790	4,748,278	595,788	4,748,282	4	R573	POR0129	751	752	Tr818	GREP Tr818	31.5	32.4	35.0
596,099	4,748,107	596,103	4,748,104	5	R461	POR0146	555	554	Tr658	GREP Tr658	31.4	30.8	34.9
596,203	4,748,080	596,201	4,748,082	3	R462	POR0144	502	502	Tr658	GREP Tr658	31.5	32.2	34.9
596,310	4,747,047	596,309	4,747,042	5	R668	POR2331	774	769	T244	WTG-044	28.8	38.0	38.5
596,459	4,747,052	596,461	4,747,052	2	R670	POR0017	812	813	T244	WTG-044	28.0	36.8	37.3
596,662	4,746,973	596,670	4,746,975	8	R672	POR0647	761	757	T247	WTG-047	28.1	37.6	38.0
596,720	4,747,093	596,715	4,747,093	5	R673	POR0142	819	822	T247	WTG-047	29.9	37.8	38.4
597,146	4,747,852	597,144	4,747,856	4	R465	POR2336	457	455	Tr830	Tr830	33.0	32.0	35.5
597,052	4,747,231	597,053	4,747,231	1	R674	POR0152	825	825	T247	WTG-047	31.1	36.7	37.7

UTM coordinates GREP		UTM coordinates SWEC			Noise receptor ID		Distance to nearest source (m)		Nearest source ID		Level of farm (dBA)		Level (dBA)
Easting (m)	Northing (m)	Easting (m)	Northing (m)	Differ-ence (m)	GREP	SWEC	GREP	SWEC	GREP	SWEC	GREP	SWEC	Total
597,056	4,747,096	597,060	4,747,093	5	R675	PR0086	691	688	T247	WTG-047	30.7	38.0	38.8
597,329	4,747,592	597,329	4,747,592	0	R466	POR0141	637	637	Tr830	GREP Tr830	33.1	33.3	36.2
597,505	4,747,260	597,506	4,747,263	3	R467	POR0140	904	907	T247	WTG-047	32.9	34.0	37.3
597,832	4,747,384	597,833	4,747,386	2	R383	POR0137	938	936	Tr830	GREP Tr830	35.2	33.0	37.2
597,960	4,747,051	597,962	4,747,054	4	R468	POR2328	1005	1008	T247	WTG-047	34.3	34.3	37.3
598,084	4,747,146	598,084	4,747,153	7	R469	POR0134	959	954	T17	GREP T17	34.1	31.6	35.9
598,478	4,747,034	598,476	4,747,035	2	R470	POR0135	904	904	T17	GREP T17	36.3	31.1	37.4
595,505	4,748,148	595,501	4,748,148	4	R570	POR0133	891	888	T233	WTG-033	31.2	34.5	36.2
588,430	4,751,844	588,316	4,752,018	208	V3230	VPO0016	1127	964	T43	GREP T43	33.6	30.0	35.2
588,546	4,751,492	588,384	4,750,972	545	V3231	VPOR0108	1269	1071	T211	WTG-011	32.3	30.6	34.5
589,262	4,749,665	589,500	4,749,677	238	V3312	VPOR0062	841	724	T58	GREP T58	33.4	32.5	36.0
589,201	4,749,155	589,131	4,749,087	98	V3336	VPOR0104	963	866	T218	WTG-018	29.5	31.4	35.7
589,781	4,749,791	589,847	4,749,765	71	V3311	VPOR0080	573	608	T58	GREP T58	37.0	33.6	38.6
590,218	4,749,870	590,279	4,749,853	63	V3309	VPOR0048	678	628	T219	WTG-019	35.8	36.3	39.1
590,994	4,750,030	590,968	4,750,003	37	V3281	VPOR0091	772	736	T219	WTG-019	34.4	35.0	37.7
591,214	4,750,093	591,371	4,750,101	157	V3282	VPOR0098	943	958	T219	GREP T24	35.0	33.2	37.2
591,409	4,750,027	591,415	4,749,957	70	V3285	VPOR0006	900	879	T24	GREP T24	36.0	32.5	37.6
591,563	4,750,071	591,656	4,750,010	111	V3284	VPOR0008	767	659	T24	GREP T24	37.0	31.3	38.1
591,807	4,748,711	591,795	4,748,623	89	V3355	VPOR0019	804	733	T228	WTG-028	34.2	35.6	38.0
593,699	4,747,815	593,890	4,747,835	192	V3352	VPOR0030	693	616	T10	GREP T10	35.4	32.8	37.3
594,752	4,748,070	594,613	4,748,717	662	V3350	VPOR0051	601	677	T233	GREP T10	34.0	37.6	39.2
597,181	4,747,262	597,227	4,747,175	98	V3409	VPOR0123	846	760	T247	WTG-047	31.5	36.2	37.5
597,642	4,747,443	597,699	4,747,402	70	V4002	VPOR0005	813	869	Tr830	GREP Tr830	34.2	33.4	36.8
597,964	4,747,296	598,074	4,747,214	137	V4003	VPOR0001	927	911	T17	GREP T17	35.5	32.8	37.4
589,173	4,749,645	n/a	n/a	n/a	R2159	n/a	910	n/a	T58	n/a	32.7	n/a	n/a
591,967	4,748,965	n/a	n/a	n/a	R1374	n/a	784	n/a	T20	n/a	37.1	n/a	n/a
596,136	4,748,195	n/a	n/a	n/a	R460	n/a	471	n/a	Tr658	n/a	31.8	n/a	n/a
596,041	4,748,115	n/a	n/a	n/a	R1362	n/a	595	n/a	Tr658	n/a	31.4	n/a	n/a
587,356	4,752,313	n/a	n/a	n/a	V3174	n/a	1172	n/a	T211	n/a	32.7	n/a	n/a
587,528	4,751,998	n/a	n/a	n/a	V3219	n/a	880	n/a	T211	n/a	31.9	n/a	n/a
588,322	4,750,772	n/a	n/a	n/a	V3305	n/a	1062	n/a	T211	n/a	30.2	n/a	n/a
589,817	4,749,680	n/a	n/a	n/a	V3341	n/a	687	n/a	T58	n/a	35.4	n/a	n/a
590,138	4,749,752	n/a	n/a	n/a	V3342	n/a	651	n/a	T219	n/a	35.2	n/a	n/a
590,762	4,750,637	n/a	n/a	n/a	V3280	n/a	1065	n/a	T58	n/a	36.2	n/a	n/a
591,585	4,750,172	n/a	n/a	n/a	V3283	n/a	789	n/a	T24	n/a	36.9	n/a	n/a
592,175	4,748,809	n/a	n/a	n/a	V3354	n/a	766	n/a	T20	n/a	36.9	n/a	n/a
594,881	4,748,711	n/a	n/a	n/a	V3349	n/a	927	n/a	T10	n/a	34.6	n/a	n/a
595,413	4,748,227	n/a	n/a	n/a	V3348	n/a	895	n/a	T233	n/a	31.6	n/a	n/a
595,482	4,748,523	n/a	n/a	n/a	V3347	n/a	902	n/a	Tr788	n/a	32.1	n/a	n/a
595,963	4,748,368	n/a	n/a	n/a	V3664	n/a	563	n/a	Tr658	n/a	32.1	n/a	n/a
597,451	4,747,536	n/a	n/a	n/a	V4001	n/a	688	n/a	Tr830	n/a	33.5	n/a	n/a
598,492	4,746,964	n/a	n/a	n/a	V3410	n/a	971	n/a	T17	n/a	35.9	n/a	n/a
n/a	n/a	587,349	4,752,313	n/a	n/a	POR1264	n/a	1172	n/a	WTG-011	n/a	n/a	n/a
n/a	n/a	589,212	4,749,617	n/a	n/a	POR1340	n/a	909	n/a	GREP T58	n/a	n/a	n/a

UTM coordinates GREP		UTM coordinates SWEC			Noise receptor ID		Distance to nearest source (m)		Nearest source ID		Level of farm (dBA)		Level (dBA)
Easting (m)	Northing (m)	Easting (m)	Northing (m)	Differ-ence (m)	GREP	SWEC	GREP	SWEC	GREP	SWEC	GREP	SWEC	Total
n/a	n/a	590,310	4,749,782	n/a	n/a	POR2220	n/a	552	n/a	WTG-019	n/a	n/a	n/a
n/a	n/a	594,573	4,747,928	n/a	n/a	POR1122	n/a	551	n/a	WTG-033	n/a	n/a	n/a
n/a	n/a	595,699	4,748,271	n/a	n/a	POR0128	n/a	835	n/a	GREP Tr788	n/a	n/a	n/a
n/a	n/a	596,204	4,748,164	n/a	n/a	POR0148	n/a	439	n/a	GREP Tr658	n/a	n/a	n/a
n/a	n/a	597,846	4,747,351	n/a	n/a	POR0136	n/a	974	n/a	GREP Tr830	n/a	n/a	n/a
n/a	n/a	589,991	4,749,793	n/a	n/a	VPOR0111	n/a	625	n/a	GREP T58	n/a	n/a	n/a
n/a	n/a	597,748	4,747,540	n/a	n/a	VPOR0125	n/a	761	n/a	GREP Tr830	n/a	n/a	n/a

Table 3-2 GREP—Byng Wind Project concordance table.

UTM coordinates GREP		UTM coordinates BWP			Noise receptor ID		Distance to nearest source (m)		Nearest source ID		Level of farm (dBA)		Level (dBA)
Easting (m)	Northing (m)	Easting (m)	Northing (m)	Differ-ence (m)	GREP	BWP	GREP	BWP	GREP	BWP	GREP	BWP	Total
612,134	4,746,446	612,192	4,746,484	69	R1034	R263	1013	1002	T66	GREP T66	35.8	34.6	38.3
610,774	4,746,293	610,771	4,746,252	41	R1041	R262	965	928	T102	T2	31.4	35.9	37.1
610,778	4,746,188	610,751	4,746,218	40	R1042	R352	877	888	T102	T2	32.4	38.2	39.2
608,707	4,746,214	n/a	n/a	n/a	R2958	n/a	1350	n/a	T54	n/a	32.9	n/a	n/a
610,706	4,746,267	n/a	n/a	n/a	R1043	n/a	910	n/a	T102	n/a	32.6	n/a	n/a
611,203	4,746,212	n/a	n/a	n/a	R1040	n/a	818	n/a	T104	n/a	32.3	n/a	n/a
611,370	4,746,205	n/a	n/a	n/a	R1039	n/a	788	n/a	T104	n/a	34.0	n/a	n/a
611,689	4,746,520	n/a	n/a	n/a	R1037	n/a	870	n/a	T66	n/a	35.9	n/a	n/a
611,789	4,746,055	n/a	n/a	n/a	R1036	n/a	746	n/a	T104	n/a	33.2	n/a	n/a
612,390	4,746,253	n/a	n/a	n/a	R1035	n/a	964	n/a	T105	n/a	33.8	n/a	n/a
612,591	4,746,399	n/a	n/a	n/a	R1032	n/a	1071	n/a	T106	n/a	34.3	n/a	n/a
613,121	4,746,541	n/a	n/a	n/a	R972	n/a	1251	n/a	T106	n/a	34.3	n/a	n/a
608,825	4,746,111	n/a	n/a	n/a	V3819	n/a	1267	n/a	T101	n/a	33.5	n/a	n/a
611,246	4,746,343	n/a	n/a	n/a	V3824	n/a	938	n/a	T104	n/a	34.8	n/a	n/a
612,088	4,746,226	n/a	n/a	n/a	V3842	n/a	897	n/a	T105	n/a	34.2	n/a	n/a
612,337	4,746,244	n/a	n/a	n/a	V3843	n/a	942	n/a	T105	n/a	33.9	n/a	n/a

4 DESCRIPTION OF SOURCES

4.1 Wind Turbines

4.1.1 Grand Renewable Energy Park

The turbines proposed for the GREP are manufactured by Siemens Wind Power A/S (www.siemens.com/wind) of Germany. Siemens is a relative new-comer to the ranks of wind turbine manufacturers. However, it entered the market by purchasing the long-standing and experienced Bonus turbine manufacturing company. The proposed models are the SWT-2.221-101 and the SWT-2.126-101.

4.1.1.1 Siemens SWT-2.221-101 Turbine

The following table summarizes this turbine's general characteristics.

	Siemens SWT-2.221-101
Type, number of blades, rotor orientation	horizontal-axis, 3-bladed, upwind wind turbine
Rated power	2,221 kW
Rotor diameter; swept area	101.0 m; 8,000 m^2
Operational rotation rate	6.0 to 16.0 rpm; variable speed
Hub height; tower type	99.5 m; steel tubular tower
Power regulation	pitch regulation with variable speed
Cut-in wind speed	4 ms^{-1}
Cut-out wind speed	25 ms^{-1}
Rated wind speed	12-13 ms^{-1}
Gearbox	yes; 3 stage planetary/helical
Generator; speed	asynchronous with squirrel-cage rotor, without slip rings; variable speed
Turbine step-up transformer	external to tower; 690 VAC to 34.5 kVAC
Braking system	aerodynamic primary brake by full-span feathering of individual blades; mechanical disk brake on high-speed shaft which has two hydraulic calipers
Yaw system	active electric externally geared slewring; passive friction brake

4.1.1.2 Siemens SWT-2.126-101 Turbine

The following table summarizes this turbine's general characteristics.

	Siemens SWT-2.126-101
Type, number of blades, rotor orientation	horizontal-axis, 3-bladed, upwind wind turbine
Rated power	2,126 kW
Rotor diameter; swept area	101.0 m; 8,000 m^2
Operational rotation rate	6.0 to 16.0 rpm; variable speed
Hub height; tower type	99.5 m; steel tubular tower
Power regulation	pitch regulation with variable speed
Cut-in wind speed	4 ms^{-1}
Cut-out wind speed	25 ms^{-1}
Rated wind speed	12-13 ms^{-1}
Gearbox	yes; 3 stage planetary/helical
Generator; speed	asynchronous with squirrel-cage rotor, without slip rings; variable speed
Turbine step-up transformer	external to tower; 690 VAC to 34.5 kVAC
Braking system	aerodynamic primary brake by full-span feathering of individual blades; mechanical disk brake on high-speed shaft which has two hydraulic calipers
Yaw system	active electric externally geared slewring; passive friction brake

4.1.2 SWEC Wind Turbines

In addition to the GREP turbines, there are 58 Siemens SWT-2.221-101 turbines in the Summerhaven Wind Energy Centre.

4.1.2.1 Siemens SWT-2.221-101 Turbine

A description of the SWT-2.221-101turbine has been provided above. NextEra has not provided any information to Samsung Renewable Energy Inc. nor to Zephyr North to suggest that the SWT-2.221-101 turbines used in the Summerhaven project will be any different from the description in the table above. Note, though, that the proposed hub height for the turbines of the Summerhaven project is 80 m.

Turbine locations and any additionally required information have been taken from the Golder (2011) noise assessment report.

All of these SWT-2.221-101 turbines have been included in the present assessment.

4.1.3 BWP Wind Turbines

4.1.3.1 GE Energy 1.5sle Turbine

In addition to the GREP and neighbouring SWEC turbines, there are six GE Energy 1.5sle turbines proposed for the International Power Canada Byng Wind Project.

Turbine location data have been provided by IPC.

All of the proposed 1.5sle turbines have been included in the present assessment.

The following table describes this turbine model's general characteristics.

	GE Energy 1.5sle
Type, number of blades, rotor orientation	horizontal-axis, 3-bladed, upwind wind turbine
Rated power	1,500 kW
Rotor diameter; swept area	77.0 m; 4,657 m^2
Operational rotation rate	variable speed
Hub height; tower type	80 m; steel tubular tower
Power regulation	active blade pitch controlled with variable speed
Cut-in wind speed	3.5 ms^{-1}
Cut-out wind speed	25 ms^{-1}
Rated wind speed	14 ms^{-1}
Gearbox	yes; 3 stage planetary/helical design
Generator; speed	doubly fed induction-generator with wound rotor and slip rings; 870 rpm-1600 rpm
Turbine transformer	unknown
Braking system	electrical individual blade pitch system with a mechanical brake as well
Yaw system	roller bearing, 4 automatic planetary yaw drives

4.2 Solar Inverters and Transformers

4.2.1 Grand Renewable Energy Park

As described previously, there will be 100 1-MW solar units in the Solar Farm portion of the GREP. Each unit will consist of one megawatt of solar panels, two 500-kW inverters, one 1-MW transformer, and ancillary equipment consisting of racking, cabling, site buildings, *etc*. For each of the solar units, the two inverters will be housed in a single enclosure ('inverter enclosure') which will also contain vents and cooling fans. Each inverter enclosure and associated transformer will be collocated (with approximately 2 m separation) on a separate concrete pad. The 100 1-MW transformers will feed power to the 108 MVA Solar Farm sub-station power transformer located on the (Solar Farm) site. (The other sub-station transformer

provides for the Wind Farm portion of the GREP.) These latter transformers are described below in Section 4.3 .

For purposes of analysis, the inverter enclosures and associated inverter transformers (100 of each) have been treated as 200 noise point sources. All 200 of these have been included in the present noise assessment.

4.2.1.1 Inverter

The inverter model to be used for this project is the SMA 500-kW SC500HE-US. It is briefly described in the following table.

	SMA SC500HE-US
Type	DC to 60 Hz AC power inverter
Inverters per enclosure	2
Operating voltages	380 VDC input (rated); 200 VAC output (rated)
Rating	500 kW (each inverter)
Height	2.3 m
Core tank size	n/a
Source location	within enclosure (see below)
Sound characteristics	steady, tonal
Noise control measures	enclosure

4.2.1.2 Inverter Enclosure

Each inverter enclosure contains two of the SC500HE-US inverters, intake and outlet vents, and cooling fans.

A source noise specification for the inverter enclosure has been provided by SMA via Samsung Renewable Energy Inc. and is included in Section 13 for reference. It is briefly described in the following table.

	Inverter Enclosure
Type	steel or concrete enclosure (details to be finalized)
Inverters per enclosure	2
Operating voltages	n/a (as for inverters)
Rating	n/a (as for inverters)
Height	2.5 m
Core tank size	not applicable
Source location	outside
Sound characteristics	steady, tonal
Noise control measures	this enclosure is environmental protection and noise control for the two contained inverters

4.2.1.3 Inverter Transformer

Each 1-MW solar unit will contain a 1-MVA free-standing transformer to step up the 200 VAC voltage from the inverters to the 34.5 kV voltage of the site collection system.

The specific transformer model has not been determined at this time. However, as soon as the transformer model is finalized, details will be supplied to the MoE.

Noise from these transformers (see Section 5 for specification) has been included in the present analysis.

	Inverter Transformer
Type	AC power transformer; details to be finalized
Operating voltages	200 VAC input; 34.5 kVAC output
Rating	1 MVA
Height	to be determined
Core tank size	to be determined
Source location	outside
Sound characteristics	steady, tonal
Noise control measures	uncontrolled

4.3 Sub-Stations

4.3.1 Grand Renewable Energy Project

There will be a shared sub-station located as shown in Figure 1-2 and Figure 1-3. This sub-station will be comprised of two collocated project power transformers to step up the power from the 148.6 MW Wind Farm and the 100 MW Solar Farm.

The sub-station will be surrounded by a fire-retardant wall. While it is likely that this wall will act to some extent as a sound barrier, it has not been included in any of the noise calculations in this report. The full sound power levels for each of the transformers in the sub-station have been used without attenuation.

4.3.1.1 Wind Farm Transformer

The Wind Farm transformer will be rated at 166 MVA. It should be noted that a final choice of this transformer is pending further progress in obtaining approval for this project. However, as soon as the transformer model is finalized, details will be supplied to the Ministry.

Noise from this transformer (see Section 5 for specification) has been included in the present analysis.

The following table describes the Wind Farm sub-station transformer.

	Sub-Station Wind Farm Transformer
Type	AC power transformer; details to be finalized
Operating voltages	34.5 kVAC input; 230 kVAC output
Rating	166 MVA
Height	to be determined
Core tank size	to be determined
Source location	outside
Sound characteristics	steady, tonal
Noise control measures	uncontrolled

4.3.1.2 Solar Farm Transformer

The Solar Farm transformer will be rated at 108 MVA. It should be noted that a final choice of this transformer is pending further progress of this project. However, as soon as the transformer model is finalized, details will be supplied to the MoE.

Noise from this transformer (see Section 5 for specification) has been included in the present analysis.

The following table describes the Solar Farm sub-station transformer.

	Sub-Station Solar Farm Transformer
Type	AC power transformer; details to be finalized
Operating voltages	34.5 kVAC input; 230 kVAC output
Rating	108 MVA
Height	to be determined
Core tank size	to be determined
Source location	outside
Sound characteristics	steady, tonal
Noise control measures	uncontrolled

4.3.2 Summerhaven Wind Energy Centre

The SWEC sub-station and transformer is located about 7.7 km west of the nearest GREP turbine (T58). There are several SWEC turbines significantly closer to this transformer station than T58.

Due to its remoteness from the GREP, noise from the SWEC transformer has not been included in any of the reported noise calculations.

4.3.3 Byng Wind Project

International Power Canada has reported to Samsung Renewable Energy Inc. that there will be a switching station used for the relatively small Byng Wind Project. Consistent with normal practice, noise from this station has not been included in the present analysis.

4.4 Summary

Table 4-1 is modelled on Table A1, Noise Source Summary Table, taken from the *Basic Comprehensive Certificates of Approval (Air) User Guide* (MoE, 2011). An additional column has been added that enumerates the quantity of each type of noise source.

Table 4-1 summarizes the number and type of each noise source as described above and in Section 5 . Additional information is also available in Section 12 .

Table 4-1 Noise source summary table.

Source ID	Quantity	Source Description	Broadband Source Sound Power Level (dBA)	Source Location	Sound Characteristics	Noise Control Measures
T1 to T9	9	Turbine: Siemens SWT2.221-101 RD=101m RP=2,221kW HH=99.5m Noise=(NRO,-1)105dBA(Mxmm) – GREP	105.0	Outside	Steady	Uncontrolled
T10	1	Turbine: Siemens SWT2.126-101 RD=101m RP=2,126kW HH=99.5m Noise=(NRO -2)104dBA(Mxmm) – GREP	104.0	Outside	Steady	Uncontrolled
T11 to T30	20	Turbine: Siemens SWT2.221-101 RD=101m RP=2,221kW HH=99.5m Noise=(NRO,-1)105dBA(Mxmm) – GREP	105.0	Outside	Steady	Uncontrolled
T33 to T57	25	Turbine: Siemens SWT2.221-101 RD=101m RP=2,221kW HH=99.5m Noise=(NRO,-1)105dBA(Mxmm) – GREP	105.0	Outside	Steady	Uncontrolled
T58	1	Turbine: Siemens SWT2.126-101 RD=101m RP=2,126kW HH=99.5m Noise=(NRO -2)104dBA(Mxmm) – GREP	104.0	Outside	Steady	Uncontrolled
T59 to T69	11	Turbine: Siemens SWT2.221-101 RD=101m RP=2,221kW HH=99.5m Noise=(NRO,-1)105dBA(Mxmm) – GREP	105.0	Outside	Steady	Uncontrolled
T101 to T106	6	Turbine: GE Wind 1.5sle 77 m RD 80 m HH 1,500 kW RP – Byng	104.0	Outside	Steady	Uncontrolled
T201	1	Turbine: Siemens SWT 2221-101 RD=101m RP=2,221kW HH=80.0m Noise=(NRO,-1)105dBA(Mxmm) – SWEC	105.0	Outside	Steady	Uncontrolled
T203 to T228	26	Turbine: Siemens SWT 2221-101 RD=101m RP=2,221kW HH=80.0m Noise=(NRO,-1)105dBA(Mxmm) – SWEC	105.0	Outside	Steady	Uncontrolled
T230 to T259	30	Turbine: Siemens SWT 2221-101 RD=101m RP=2,221kW HH=80.0m Noise=(NRO,-1)105dBA(Mxmm) – SWEC	105.0	Outside	Steady	Uncontrolled
T261	1	Turbine: Siemens SWT 2221-101 RD=101m RP=2,221kW HH=80.0m Noise=(NRO,-1)105dBA(Mxmm) – SWEC	105.0	Outside	Steady	Uncontrolled
Tr300	1	Transformer: Wind Farm: 85dBA + 5dB tonal penalty (all octaves) 4.0 m a.g.l. – GREP	90.0	Outside	Steady, Tonal	Uncontrolled
Tr301	1	Transformer: Solar Farm: 85dBA + 5dB tonal penalty (all octaves) 4.0 m a.g.l. – GREP	90.0	Outside	Steady, Tonal	Uncontrolled
Tr601 to Tr701	100	Inverter transformer: Solar Farm: 58 dBA + 5dB tonal penalty – GREP	63.0	Outside	Steady, Tonal	Uncontrolled
Tr702 to Tr902 (even only)	100	Transformer: Solar Farm: SMA MVPP enclosure with 2x SC500HE-US inverters SMA 2011/12/02 Spec. - 71.7 dBA + 5dB tonal penalty – GREP	76.7	Inside	Steady, Tonal	Acoustic enclosure

5 NOISE EMISSION RATINGS

5.1 Wind Turbines

5.1.1 Grand Renewable Energy Park

5.1.1.1 Siemens SWT-2.221-101

Siemens SWT-2.221-101 turbine source sound power level octave band and broadband data for hub-height wind speeds of 4 to 12 ms^{-1} were provided in Siemens Wind Power A/S documentation (Siemens, 2010) supplied by Samsung Renewable Energy Inc. For reference, the noise specification document is provided in Section 13 . For clarity, note that this turbine is a power derated Siemens SWT-2.3-101 turbine. (For information, this latter turbine's full broadband source SPoL is cited as 106 dBA while its rated power is 2.3 MW.)

The broadband and octave band noise information was used with the site-specific power law wind shear exponent of 0.45 (see below for derivation) to synthesize/interpolate/extrapolate source octave sound power levels for 10 m a.g.l. wind speeds of 6, 7, 8, 9, and 10 ms^{-1} for use in the ISO 9613-2 estimates of receptor noise levels.

In the Windtest (2005) report on the Siemens 2.3 MW Mk II turbine, the following statement is made in a section titled, "3.4 Tonal and frequency analysis". "In accordance with the technical guideline [IEC61400-11] a tonal analysis has to be carried out. The frequency spectrum of the noise, which is measured on the acoustically hard board, is determined on the basis of a narrow band analysis by means of the FFT-analyser B&K 2144. This analysis was performed after the measurement using the audio signal recorded on a DAT-recorder. The results of the tonal analysis of the Siemens 2.3 MW MkII according to [IEC 61400-11] are given in table 4." The relevant portion of Windtest (2005) "table 4" is repeated below.

Windtest (2005) Table 4: Summary of results [portion]					
wind speed in 10 m height [m/s]	***6***	***7***	***8***	***9***	***10***
tonality, ΔL_k [dB]	*-5,58*	*-4,68*	*-6,36*	*-5,43*	*-5,91*
tonal audibility, $\Delta L_{a,k}$ [dB]	*-2,58*	*-1,69*	*-3,36*	*-2,43*	*-3,58*
frequency of the most prevalent tone [Hz]	*1200*	*1200*	*1200*	*1200*	*530*

Siemens also states in an email (Youmans, 2011), "The enclosed noise test report [Windtest, 2005] for the SWT 2.3-93 has been used on other applications to demonstrate the lack of any tonal characteristics. A similar report will be issued for the SWT 2.3-101 in the near future, but in the meantime this report has been accepted for proof of tonality since both units share common gearbox, generator, and converter systems."

Uncertainty in the tonal analysis is mentioned in section 3.6.3 ("Tonality") of the Windtest (2005) report.

No tonal penalty has been applied to this turbine.

The 10 m broadband and octave band source sound power levels for the Siemens SWT-2.221-101 turbine under its power-reduced operation protocol for a hub height of 99.5 m are shown in Table 5-1. Note that the 'Manufacturer's emission levels' were only provided for 6 and 8 ms^{-1}. For 7-ms^{-1}, octave band SPoLs have been interpolated; the 9 and 10-ms^{-1} SPoLs have been set equal to the 8-ms^{-1} SPoLs.

Table 5-1 Siemens SWT-2.221-101 — Wind turbine acoustic emissions summary.

Make and Model: Siemens SWT-2.221-101										
Rating: 2,221 kW										
Hub height (m): 99.5										
Wind profile adjustment: summer night-time power-law wind shear coefficient = 0.45										
	Octave band sound power level (dBLin)									
	Manufacturer's emission levels (10 m a.g.l)					**Adjusted emission levels (10 m a.g.l.)**				
Wind speed (ms^{-1})	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**
Frequency (Hz)										
63	108.3	n/a	108.6	n/a	n/a	108.6	108.6	108.6	108.6	108.6
125	109.4	n/a	109.1	n/a	n/a	109.1	109.1	109.1	109.1	109.1
250	105.1	n/a	104.6	n/a	n/a	104.6	104.6	104.6	104.6	104.6
500	102.2	n/a	103.0	n/a	n/a	103.0	103.0	103.0	103.0	103.0
1000	99.1	n/a	100.1	n/a	n/a	100.1	100.1	100.1	100.1	100.1
2000	95.4	n/a	95.3	n/a	n/a	95.3	95.3	95.3	95.3	95.3
4000	87.8	n/a	88.6	n/a	n/a	88.6	88.6	88.6	88.6	88.6
8000	85.5	n/a	86.8	n/a	n/a	86.8	86.8	86.8	86.8	86.8
Broadband (dBA)	**104.5**	**105.0**	**105.0**	**105.0**	**105.0**	**105.0**	**105.0**	**105.0**	**105.0**	**105.0**

5.1.1.2 Siemens SWT-2.126-101

Siemens SWT-2.126-101 turbine broadband source sound power level data for 10-m a.g.l. wind speeds of 4 to 12 ms^{-1} and octave band source sound power level data for 10-m a.g.l. wind speeds of 6 and 8 ms^{-1} are listed in Siemens Wind Power A/S documents (Siemens, 2010) supplied by Samsung Renewable Energy Inc. For reference, the noise specification document is provided in Section 13 . For clarity, note that this turbine is a power derated version of the Siemens SWT-2.3-101 turbine.

The broadband and octave band noise information was used with the site-specific power law wind shear exponent of 0.45 (see below for derivation) to synthesize/interpolate/extrapolate source octave sound power levels for 10 m a.g.l. wind speeds of 6, 7, 8, 9, and 10 ms^{-1} for use in the ISO 9613-2 estimates of receptor noise levels.

In Windtest (2005), the following statement is made in a section titled, "3.4 Tonal and frequency analysis". "In accordance with the technical guideline [IEC61400-11] a tonal analysis has to be carried out. The frequency spectrum of the noise, which is measured on the acoustically hard board, is determined on the basis of a narrow band analysis by means of the FFT-analyser B&K 2144. This analysis was performed after the measurement using the audio signal recorded on a DAT-recorder. The results of the tonal analysis of the Siemens 2.3 MW MkII according to [IEC 61400-11] are given in table 4." The relevant portion of Windtest (2005) "table 4" is repeated below.

Windtest (2005) Table 4: Summary of results [portion]					
wind speed in 10 m height [m/s]	***6***	***7***	***8***	***9***	***10***
tonality, ΔL_k [dB]	*-5,58*	*-4,68*	*-6,36*	*-5,43*	*-5,91*
tonal audibility, $\Delta L_{a,k}$ [dB]	*-2,58*	*-1,69*	*-3,36*	*-2,43*	*-3,58*
frequency of the most prevalent tone [Hz]	*1200*	*1200*	*1200*	*1200*	*530*

Siemens states in an email (Youmans, 2011), "The enclosed noise test report [Windtest, 2005] for the SWT 2.3-93 has been used on other applications to demonstrate the lack of any tonal characteristics. A similar report will be issued for the SWT 2.3-101 in the near future, but in the meantime this report has been accepted for proof of tonality since both units share common gearbox, generator, and converter systems."

Uncertainty in the tonal analysis is mentioned in section 3.6.3 ("Tonality") of the Windtest (2005) report.

No tonal penalty has been applied to this turbine.

The 10 m broadband and octave band source sound power levels for the Siemens SWT-2.126-101 turbine (under its power-reduced operation protocol for a hub height of 99.5 m) are shown in Table 5-2. Note that the 'Manufacturer's emission

levels' were only provided for 6 and 8 ms^{-1}. For 7-ms^{-1}, octave band SPoLs have been interpolated; the 9 and 10-ms^{-1} SPoLs have been set equal to the 8-ms^{-1} SPoLs.

Table 5-2 Siemens SWT-2.126-101 — Wind turbine acoustic emissions summary.

Make and Model: Siemens SWT-2.126-101										
Rating: 2,126 kW										
Hub height (m): 99.5										
Wind profile adjustment: summer night-time power-law wind shear coefficient = 0.45										
	Octave band sound power level (dBLin)									
	Manufacturer's emission levels (10 m a.g.l.)					**Adjusted emission levels (10 m a.g.l.)**				
Wind speed (ms^{-1})	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**
Frequency (Hz)										
63	108.8	n/a	108.4	n/a	n/a	108.4	108.4	108.4	108.4	108.4
125	109.7	n/a	108.6	n/a	n/a	108.6	108.6	108.6	108.6	108.6
250	104.7	n/a	103.4	n/a	n/a	103.4	103.4	103.4	103.4	103.4
500	100.5	n/a	101.7	n/a	n/a	101.7	101.7	101.7	101.7	101.7
1000	97.4	n/a	99.1	n/a	n/a	99.1	99.1	99.1	99.1	99.1
2000	94.8	n/a	94.3	n/a	n/a	94.3	94.3	94.3	94.3	94.3
4000	86.9	n/a	88.0	n/a	n/a	88.0	88.0	88.0	88.0	88.0
8000	84.6	n/a	86.2	n/a	n/a	86.2	86.2	86.2	86.2	86.2
Broadband (dBA)	**103.5**	**104.0**	**104.0**	**104.0**	**104.0**	**104.0**	**104.0**	**104.0**	**104.0**	**104.0**

5.1.2 Summerhaven Wind Energy Centre

5.1.2.1 Siemens SWT-2.221-101

The 10 m broadband and octave band source sound power levels for the Siemens SWT-2.221-101 turbine with a hub height of 80 m are shown in Table 5-3. These values have been taken directly from the Summerhaven project Noise Study Report (Golder, 2011). It should be noted that Zephyr North has modified the ' Adjusted' octave band source sound power level values for 6 and 7 ms^{-1} to match the remaining values at 8, 9 and 10 ms^{-1}. It is believed that this will more accurately represent the turbine noise characteristics at the relatively higher hub-height wind speeds corresponding to the 10-m wind speeds which would be driven by the high (0.45) summer night-time wind shear.

Golder (2011) makes no mention of tonality with regard to this turbine. Since this turbine is the same power- derated version of the SWT2.221-101 described for the GREP, it has been assumed for the purposes of this noise assessment report that there is no tonal noise associated with the Summerhaven turbines. No tonal penalty has been applied.

Golder (2011) reports that a summer night-time vertical wind shear of 0.42 was used for hub-height wind speed adjustments. However, as requested by MoE a wind shear coefficient of 0.45 (the highest value determined) has been used for adjustment of the Summerhaven SWT-2.221-101 turbines. This is reflected in Table 5-3.

Table 5-3 Summerhaven SWT-2.221-101 — Wind turbine acoustic emissions summary.

Make and Model: Siemens SWT-2.221-101										
Rating: 2,221 kW										
Hub height (m): 80.0										
Wind profile adjustment: summer night-time power-law wind shear coefficient: 0.45										
	Octave band sound power level (dBLin)									
	Manufacturer's emission levels (10 m a.g.l.)					**Adjusted emission levels (10 m a.g.l.)**				
Wind speed (ms^{-1})	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**
Frequency (Hz)										
63	108.8	n/a	108.6	n/a	n/a	108.6	108.6	108.6	108.6	108.6
125	109.9	n/a	109.1	n/a	n/a	109.1	109.1	109.1	109.1	109.1
250	105.6	n/a	104.6	n/a	n/a	104.6	104.6	104.6	104.6	104.6
500	102.7	n/a	103.0	n/a	n/a	103.0	103.0	103.0	103.0	103.0
1000	99.6	n/a	100.1	n/a	n/a	100.1	100.1	100.1	100.1	100.1
2000	95.9	n/a	95.3	n/a	n/a	95.3	95.3	95.3	95.3	95.3
4000	88.3	n/a	88.6	n/a	n/a	88.6	88.6	88.6	88.6	88.6
8000	86.0	n/a	86.8	n/a	n/a	86.8	86.8	86.8	86.8	86.8
Broadband (dBA)	**105.0**	**n/a**	**105.0**	**n/a**	**n/a**	**105.0**	**105.0**	**105.0**	**105.0**	**105.0**

5.1.3 Byng Wind Project

5.1.3.1 GE Energy 1.5sle

The 10 m broadband and octave band source sound power levels for the GE Energy 1.5sle turbine with a hub height of 80 m are shown in Table 5-4. There are no published details (EA or REA assessments, for example) for this project, so Zephyr North has taken noise information from generally available documents found in a search of the Internet.

The generally available documentation states that, "At the reference measuring point R_0, a ground distance from the turbine base equal to hub height plus half the rotor diameter, the GE 1.5sl/sle turbine has a value for tonality of $(\Delta L_a) \leq 4$ dB, irrespective of wind speed, turbine type, hub height, and grid frequency. R_0 and ΔL_a are defined here according to IEC 61400-11: 2002." No tonal penalty has been applied to this turbine.

A value of 0.34 for the summer night-time vertical wind shear at this location has been determined from four years of wind profile data from IPC's on-site Grant Point 50 m WM wind monitoring station. However, as requested by MoE, a project-high value of 0.45 has been used for adjustments to hub height and is reflected in Table 5-4.

Table 5-4 GE Energy 1.5sle — Wind turbine acoustic emissions summary.

Make and Model: GE Energy 1.5sle										
Rating: 1,500 kW										
Hub height (m): 80.0										
Wind profile adjustment: summer night-time power-law wind shear coefficient: 0.45										
	Octave band sound power level (dBLin)									
	Manufacturer's emission levels (hub-height)					**Adjusted emission levels (10 m a.g.l.)**				
Wind speed (ms^{-1})	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**	**6.0**	**7.0**	**8.0**	**9.0**	**10.0**
Frequency (Hz)										
63	103.9	107.1	110.0	111.3	111.3	111.3	111.3	111.3	111.3	111.3
125	102.7	105.9	108.8	110.1	110.1	110.1	110.1	110.1	110.1	110.1
250	98.4	101.6	104.5	105.8	105.8	105.8	105.8	105.8	105.8	105.8
500	94.4	97.6	100.5	101.8	101.8	101.8	101.8	101.8	101.8	101.8
1000	90.5	93.7	96.6	97.9	97.9	97.9	97.9	97.9	97.9	97.9
2000	85.9	89.1	92.0	93.3	93.3	93.3	93.3	93.3	93.3	93.3
4000	78.9	82.1	85.0	86.3	86.3	86.3	86.3	86.3	86.3	86.3
8000	71.8	75.0	77.9	79.2	79.2	79.2	79.2	79.2	79.2	79.2
Broadband (dBA)	**96.6**	**99.8**	**102.7**	**104.0**	**104.0**	**104.0**	**104.0**	**104.0**	**104.0**	**104.0**

5.2 Site-Specific Vertical Wind Shear Exponent

The site-specific vertical wind shear exponent was calculated from two project *in situ* wind monitoring stations – Mast1 60 m WM and Mast2 60 m WM (shown in Figure 1-2) – installed on the GREP site. Both these wind monitoring stations have wind measurements at nominal levels of 30, 45 and 60 m. There is a third wind monitoring mast on the site with a height of approximately 100 m. Unfortunately, there are, as of yet, insufficient data available to Zephyr North for calculation of summer night-time vertical wind shear.

The vertical wind shear exponent was calculated by Zephyr North from a least-squares fit of a power law profile to period-averaged data at the three available levels of wind speed. The averaged data were filtered to include only the summer months of April through September inclusive, and the diurnal hours between 23:00 and 07:00 the following day. That is, the power law wind shear exponent for the 'average summer night time wind speed profile' is reported here — specifically,

0.44 for the Mast1 60 m WM station, and 0.45 for the Mast2 60 m WM station. One full summer of data was used for each station.

To be conservative, a value of 0.45 was used for the vertical wind shear exponent for all turbines (GREP, Summerhaven, and Byng) for the purposes of this report.

5.3 Solar Inverters, Enclosures, Transformers

5.3.1 Grand Renewable Energy Park

As noted above, there are 100 1-MW 'solar units' in the Solar Farm portion of the Grand Renewable Energy Park. Each unit consists of about 4,500 solar panels, two inverters within an 'inverter enclosure' that also contains ventilation openings and cooling fans, and an 'inverter transformer'.

5.3.1.1 Inverter

Since the inverters only occur in pairs within the 'inverter enclosures', noise emission data for the inverter itself will not be shown here. Rather, noise emission data for the enclosure will be presented in the next section.

For reference, though, a summary inverter data sheet is provided in Section 13 .

5.3.1.2 Inverter Enclosure

SMA has provided broadband and octave band noise emission data for the SMA MVPP 'inverter enclosure'. For reference, the specification document has been included in Section 13 .

As this device houses two inverters, its noise has been designated as tonal and, as required by MoE (2008), a 5 dB penalty has been supplied as per MoE NPC-104.

The broadband and octave band source sound power levels for the inverter enclosure are shown in Table 5-5. Note that the penalized source sound power levels (76.7 dBA broadband equivalent) have been used in the present noise assessment.

Table 5-5 Inverter enclosure acoustic emissions summary.

Make and Model: SMA			
Inverters per cluster/enclosure: 2			
Operating voltage: DC / 200 V (each inverter)			
Rating: 2 x 500 kVA inverters			
Core tank size: n/a			
Source height (m): 2.0 m			
Source location: outside			
Sound characteristics: steady, tonal			
Noise control measures: enclosure			
Frequency (Hz)	**Source sound power level (dBLin)**	**Tonal penalty (dB)**	**Net source sound power level (dBLin)**
63	97.0	5.0	102.0
125	79.0	5.0	84.0
250	67.0	5.0	72.0
500	51.0	5.0	56.0
1000	42.0	5.0	47.0
2000	34.0	5.0	39.0
4000	25.0	5.0	30.0
8000	32.0	5.0	37.0
Broadband (dBA)	71.7		76.7

5.3.1.3 Inverter Transformer

The model of the power transformer for conversion of the low voltage inverter output (200 VAC) to the higher voltage (34.5 kV) used for power collection within the Solar Farm itself has not been specified at this time. As soon as these details become available, they will be supplied to the MoE.

However, according to the CAN/CSA-C227.4-06 Standard (CAN/CSA, 2011), the maximum broadband source sound power level allowable for a transformer in the 750 to 1000 kVA range is 58 dBA. Therefore, Zephyr North has taken the octave-band specification for a typical transformer operating in this range and adjusted it to sum to a broadband SPoL of 58.0 dBA.

As this device is a transformer, its noise has been designated as tonal and, as required by MoE (2008), a 5 dB penalty has been supplied as per MoE NPC-104.

Table 5-6 summarizes the broadband and octave band sound emission levels for this transformer including a 5 dB tonal penalty. The penalized values (63.0 dBA broadband equivalent) have been used in the cumulative noise calculations.

Note that for the purposes of this report, a transformer noise source height of 2.0 m has been assumed. This will be updated as soon as further information becomes available.

Table 5-6 Inverter transformer acoustic emissions summary.

Make and Model: to be determined			
Operating voltage: 34.5 kV			
Rating: 1 MVA			
Core tank size: to be determined			
Source height (m): 2.0 m (to be finalized)			
Source location: outside			
Sound characteristics: steady, tonal			
Noise control measures: uncontrolled			
Frequency (Hz)	**Source sound power level (dBLin)**	**Tonal penalty (dB)**	**Net source sound power level (dBLin)**
63	73.9	5.0	78.9
125	66.9	5.0	71.9
250	59.9	5.0	64.9
500	55.9	5.0	60.9
1000	48.9	5.0	53.9
2000	43.9	5.0	48.9
4000	39.9	5.0	44.9
8000	35.9	5.0	40.9
Broadband (dBA)	58.0		63.0

5.4 Sub-Stations

5.4.1 Grand Renewable Energy Park

As noted previously, there will a 166 MVA transformer for the Wind Farm portion of the project and a 108 MVA transformer for the Solar Farm portion of the project. These will be collocated within the confines of a single sub-station located on the property of the Solar Farm as shown in Figure 1-2 and Figure 1-3.

5.4.1.1 Wind Farm Transformer Noise Emission Rating

The specific model for the Wind Farm transformer has not yet been determined. Transformer details will be provided to MoE as soon as they become available.

However, it is understood from Samsung Renewable Energy Inc. that the broadband source sound power level for each of the Wind and Solar Farm transformers will be less than or equal to 85 dBA, a value slightly greater than that stipulated in the CAN/CSA-C88-M90 (2004) Standard for a transformer of this size. For the purposes of this noise assessment, octave band source sound power levels characteristic of a typical power transformer were adjusted to reflect the conservative maximum 85 dBA broadband SPoL. These adjusted levels were used as input to the present analysis.

As this device is a transformer, its noise has been designated as tonal and, as required by MoE (2008), a 5 dB penalty has been supplied as per MoE NPC-104.

Note that there will be a fence surrounding at least portions of the transformer sub-station. However, this fence has been designed for fire containment purposes only, and has not been considered in this report to provide any noise attenuation.

Broadband and octave band source sound power levels are listed in Table 5-7 along with the 5 dB tone penalty assessed to every octave band and the net levels. The penalized source SPoLs have been used for noise assessment for this project.

Note that for the purposes of this report, a transformer noise source height of 4.0 m has been assumed. This will be updated as soon as further information becomes available.

Note, for information, that the nearest receptor to either of the collocated (wind or solar) project transformers is some 610 m away.

Table 5-7 Wind Farm transformer acoustic emissions summary.

Make and Model: to be determined			
Operating voltage: 34.5 kVAC / 230 kVAC			
Rating: 166 MVA			
Core tank size: to be determined			
Source height (m): 4.0 m (to be finalized)			
Source location: outside			
Sound characteristics: steady, tonal			
Noise control measures: uncontrolled			
Frequency (Hz)	**Source sound power level (dBLin)**	**Tonal penalty (dB)**	**Net source sound power level (dBLin)**
63	63.5	5.0	68.5
125	75.6	5.0	80.6
250	78.1	5.0	83.1
500	83.5	5.0	88.5
1000	80.7	5.0	85.7
2000	76.9	5.0	81.9
4000	71.7	5.0	76.7
8000	62.6	5.0	67.6
Broadband (dBA)	85.0		90.0

Table 5-8 Solar Farm transformer acoustic emissions summary.

Make and Model: to be determined			
Operating voltage: 34.5 kVAC / 230 kVAC			
Rating: 108 MVA			
Core tank size: to be determined			
Source height (m): 4.0 m (to be finalized)			
Source location: outside			
Sound characteristics: steady, tonal			
Noise control measures: uncontrolled			
Frequency (Hz)	**Source sound power level (dBLin)**	**Tonal penalty (dB)**	**Net source sound power level (dBLin)**
63	63.5	5.0	68.5
125	75.6	5.0	80.6
250	78.1	5.0	83.1
500	83.5	5.0	88.5
1000	80.7	5.0	85.7
2000	76.9	5.0	81.9
4000	71.7	5.0	76.7
8000	62.6	5.0	67.6
Broadband (dBA)	85.0		90.0

5.4.1.2 Solar Farm Transformer Noise Emission Rating

The specific model for the Solar Farm transformer has also not yet been determined. As soon as this information is available, it will be provided to the MoE.

However, it is understood from Samsung Renewable Energy Inc. that the broadband source sound power level for each of the Wind and Solar Farm transformers will be less than or equal to 85 dBA, a value slightly greater than that stipulated in the CAN/CSA-C88-M90 (2004) Standard for a transformer of this

size. For the purposes of this noise assessment, octave band source sound power levels characteristic of a typical power transformer were adjusted to reflect the conservative maximum 85 dBA broadband SPoL. These adjusted levels were used as input to the present analysis.

As this device is a transformer, its noise has been designated as tonal and, as required by MoE (2008), a 5 dB penalty has been supplied as per MoE NPC-104.

Note that there will be a fence surrounding at least portions of the transformer sub-station. However, this fence has been designed for fire containment purposes only, and has not been considered in this report to provide any noise attenuation.

Broadband and octave band source sound power levels are listed in Table 5-8 along with the 5 dB tone penalty assessed to every octave band and the net levels. The penalized source SPoLs have been used for noise assessment for this project.

Note that for the purposes of this report, a transformer noise source height of 4.0 m has been assumed. This will be updated as soon as further information becomes available.

Note, for information, that the nearest receptor to either of the collocated (wind or solar) project transformers is some 610 m away.

6 IMPACT ASSESSMENT

6.1 Methodology

Cumulative turbine and transformer sound levels were estimated at each of the receptors using the ISO 9613-2 Standard model. Wind turbine and transformer octave band and A-weighted sound power values, standardized meteorological conditions, turbine/transformer locations, receptor/ VLSR/ participant locations, and characteristics were used to determine the A-weighted sound pressure levels at all receptors.

6.2 Specific Parameters

a)

Analysis was carried out for turbine and transformer source sound power levels in eight octave bands (63 to 8,000 Hz) corresponding to 10 m (a.g.l.) ambient wind speeds of 6, 7, 8, 9, and 10 ms^{-1}.

b)

ISO 9613-2 parameters, as prescribed in the MoE (2008) Noise Guidelines were set as follows:

Ambient air temperature: 10 C
Ambient barometric pressure: 101.325 kPa
Ambient humidity: 70 %

Note that barometric pressure (standard, sea-level) is included here as it is required for the ISO 9613-1 Standard calculation of atmospheric sound absorption as described in the following paragraph.

The attenuation due to atmospheric absorption was based on atmospheric attenuation coefficients for 10 C, 70 % relative humidity, and 101.325 kPa barometric pressure. Note that since the numerical model used for the present calculations also includes the ISO 9613-1 Standard (ISO, 1993), the absorption coefficients for 4 and 8 kHz differ slightly from those prescribed in the MoE (2008) document. These are shown in the following table.

Atmospheric Absorption Coefficients								
Centre Octave Band Frequency (Hz)	63	125	250	500	1000	2000	4000	8000
Atmospheric Absorption Coefficient (dB/km) from MoE Oct 2008 document	0.1	0.4	1.0	1.9	3.7	9.7	32.8	117.0
Atmospheric Absorption Coefficient (dB/km) from ISO 9613-1 calculation	0.1	0.4	1.0	1.9	3.7	9.7	33.1	118.4

As required by MoE (2008), the absorption coefficients prescribed by MoE were used in the present calculations. Note that sensitivity tests have shown that for these high frequencies and the distances typically under consideration in wind farms there is no practical difference in the resultant receptor sound pressure levels for either set of coefficients.

c)

The ISO 9613-2 term for Ground Attenuation was calculated using the "General" Method (Section 7.3.1 of the Standard). Ground factors were assigned the following values as requested in the MoE (2008) publication.

Source ground factor: 1.0 (soft ground)
Middle ground factor: 0.8 (soft ground)
Receptor ground factor: 0.5 (hard/soft ground)

6.3 Additional parameters and conditions

Sound pressure levels were not calculated for any receptor for which there was no GREP noise source (turbines, transformers, inverters, *etc.*) closer than 1,500 m.

For any receptor, noise sources further than 5,000 m away were not included in the calculations.

No additional adjustments were made for wind speed or direction since ISO 9613-2 assumes worst-case conditions for these parameters with respect to noise impact.

6.4 Results

Results are reported in Tables 7-1, 7-2 and 7-3 found in Section 7 and the noise level isopleth map of Section 8 .

Table 6-1 briefly summarizes the results of the noise assessment. It is a sorted list of the highest sound pressure levels determined in the analysis for receptors and VLSRs.

Table 6-1 Highest noise levels at receptors.

Receptor ID	SPrL (dBA)	Height (m)	Nearest Turbine/ Transformer	Project or Other	Distance (m)
R1265	40.0	4.5	T3	P	757
R566	40.0	4.5	T233	O	524
V3276	39.9	4.5	T20	P	584
R2885	39.9	4.5	T60	P	640
R67	39.9	4.5	T34	P	724
V3264	39.9	4.5	T48	P	619
V3707	39.9	4.5	T26	P	759
V3716	39.9	4.5	T60	P	801
R732	39.8	4.5	T21	P	668
V4006	39.8	4.5	T68	P	736
V4007	39.8	4.5	T26	P	774
R2956	39.8	4.5	T54	P	783
R676	39.8	4.5	T55	P	743
V3816	39.8	4.5	T8	P	866
R694	39.8	4.5	T40	P	683
R3010	39.8	4.5	T61	P	741
R871	39.8	4.5	T26	P	848
R679	39.7	4.5	T53	P	807
R730	39.7	4.5	T21	P	688
R733	39.7	4.5	T12	P	632
V3772	39.7	4.5	T55	P	768
V3827	39.7	4.5	T67	P	684
R869	39.7	4.5	T15	P	678
V3776	39.7	4.5	T12	P	658
R990	39.7	4.5	T8	P	934
V3836	39.7	4.5	T60	P	657
WindFarm layout file: GRE10-WFL031.WFL					

7 NOISE LEVEL SUMMARY TABLES

Table 7-1 Receptor noise level summary table.

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R33	Residence	4.5	1164	T18	32.3	32.3	32.3	32.3	32.3	40.0	43.0	45.0	49.0	51.0
R34	Residence	1.5	1049	T18	31.9	31.9	31.9	31.9	31.9	40.0	43.0	45.0	49.0	51.0
R35	Residence	4.5	891	T18	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R36	Residence	4.5	1017	T18	33.4	33.4	33.4	33.4	33.4	40.0	43.0	45.0	49.0	51.0
R37	Residence	1.5	664	T18	36.0	36.0	36.0	36.0	36.0	40.0	43.0	45.0	49.0	51.0
R38	Residence	1.5	706	T18	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
R39	Residence	4.5	612	T18	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R40	Residence	4.5	653	T18	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
R43	Residence	1.5	727	T18	35.8	35.8	35.8	35.8	35.8	40.0	43.0	45.0	49.0	51.0
R44	Residence	1.5	629	T18	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R45	Residence	4.5	688	T18	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
R46	Residence	1.5	895	T18	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
R47	Residence	4.5	883	T18	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
R48	Residence	4.5	1056	T18	36.3	36.3	36.3	36.3	36.3	40.0	43.0	45.0	49.0	51.0
R49	Residence	1.5	1082	T18	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R50	Residence	1.5	1181	T18	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
R51	Residence	1.5	1067	T34	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R52	Residence	1.5	1023	T34	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R53	Residence	4.5	917	T34	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
R54	Residence	1.5	964	T34	35.8	35.8	35.8	35.8	35.8	40.0	43.0	45.0	49.0	51.0
R55	Residence	1.5	992	T34	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R56	Residence	1.5	1024	T34	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R57	Residence	4.5	1041	T34	36.7	36.7	36.7	36.7	36.7	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R58	Residence	1.5	1107	T34	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R59	Residence	1.5	1088	T34	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R60	Residence	4.5	958	T34	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0
R61	Residence	4.5	851	T34	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
R63	Residence	1.5	815	T34	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
R64	Residence	1.5	802	T34	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R65	Residence	1.5	835	T33	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0
R66	Residence	1.5	708	T34	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
R67	Residence	4.5	724	T34	39.9	39.9	39.9	39.9	39.9	40.0	43.0	45.0	49.0	51.0
R69	Residence	1.5	921	T45	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R70	Residence	4.5	957	T36	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
R72	Residence	4.5	820	T36	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
R73	Residence	1.5	896	T36	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R74	Residence	4.5	1011	T41	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R75	Residence	1.5	1212	T41	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R76	Residence	1.5	1208	T36	33.0	33.0	33.0	33.0	33.0	40.0	43.0	45.0	49.0	51.0
R77	Residence	4.5	1271	T36	34.0	34.0	34.0	34.0	34.0	40.0	43.0	45.0	49.0	51.0
R78	Residence	1.5	1317	T36	32.0	32.0	32.0	32.0	32.0	40.0	43.0	45.0	49.0	51.0
R90	Residence	4.5	1385	T41	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R91	Residence	1.5	1310	T41	32.0	32.0	32.0	32.0	32.0	40.0	43.0	45.0	49.0	51.0
R92	Residence	1.5	1305	T41	32.0	32.0	32.0	32.0	32.0	40.0	43.0	45.0	49.0	51.0
R93	Residence	1.5	1296	T41	32.1	32.1	32.1	32.1	32.1	40.0	43.0	45.0	49.0	51.0
R95	Residence	1.5	1131	T41	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
R96	Residence	4.5	1234	T41	34.1	34.1	34.1	34.1	34.1	40.0	43.0	45.0	49.0	51.0
R98	Residence	1.5	1316	T28	33.0	33.0	33.0	33.0	33.0	40.0	43.0	45.0	49.0	51.0
R99	Residence	1.5	1259	T28	33.0	33.0	33.0	33.0	33.0	40.0	43.0	45.0	49.0	51.0
R100	Residence	1.5	993	T28	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
R101	Residence	1.5	956	T28	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R102	Residence	4.5	1055	T28	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
R103	Residence	1.5	901	T28	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
R104	Residence	1.5	861	T28	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R105	Residence	1.5	1059	T46	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
R106	Residence	4.5	848	T43	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R108	Residence	4.5	697	T43	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
R109	Residence	4.5	957	T43	36.0	36.0	36.0	36.0	36.0	40.0	43.0	45.0	49.0	51.0
R110	Residence	4.5	1067	T43	35.8	35.8	35.8	35.8	35.8	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R111	Residence	1.5	1083	T211	34.2	34.2	34.2	34.2	34.2	40.0	43.0	45.0	49.0	51.0
R112	Residence	1.5	1134	T211	34.0	34.0	34.0	34.0	34.0	40.0	43.0	45.0	49.0	51.0
R113	Residence	4.5	1024	T211	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
R115	Residence	1.5	1367	T18	31.4	31.4	31.4	31.4	31.4	40.0	43.0	45.0	49.0	51.0
R119	Residence	1.5	826	T43	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
R120	Residence	1.5	805	T34	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R121	Residence	1.5	710	T43	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
R122	Residence	1.5	672	T43	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
R127	Residence	1.5	846	T211	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R128	Residence	1.5	984	T211	34.2	34.2	34.2	34.2	34.2	40.0	43.0	45.0	49.0	51.0
R129	Residence	4.5	1020	T211	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R130	Residence	4.5	1273	T211	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R131	Residence	1.5	987	T43	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R132	Residence	1.5	944	T43	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
R133	Residence	1.5	818	T43	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R134	Residence	4.5	793	T43	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
R135	Residence	1.5	815	T43	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R136	Residence	4.5	926	T43	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R137	Residence	4.5	1053	T43	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R138	Residence	4.5	1135	T43	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R139	Residence	4.5	884	T46	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
R141	Residence	4.5	809	T46	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
R142	Residence	4.5	669	T28	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
R143	Residence	4.5	643	T28	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
R144	Residence	4.5	899	T28	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R145	Residence	4.5	1001	T28	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R146	Residence	4.5	1150	T28	34.2	34.2	34.2	34.2	34.2	40.0	43.0	45.0	49.0	51.0
R147	Residence	4.5	816	T28	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R148	Residence	4.5	842	T28	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R149	Residence	4.5	1151	T28	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R150	Residence	4.5	999	T28	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R152	Residence	1.5	999	T28	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R153	Residence	4.5	1261	T28	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R155	Residence	1.5	1114	T28	34.1	34.1	34.1	34.1	34.1	40.0	43.0	45.0	49.0	51.0
R158	Residence	4.5	1433	T23	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R159	Residence	4.5	1408	T23	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R160	Residence	1.5	1386	T23	33.1	33.1	33.1	33.1	33.1	40.0	43.0	45.0	49.0	51.0
R161	Residence	1.5	1314	T23	33.4	33.4	33.4	33.4	33.4	40.0	43.0	45.0	49.0	51.0
R162	Residence	1.5	1330	T23	33.3	33.3	33.3	33.3	33.3	40.0	43.0	45.0	49.0	51.0
R163	Residence	1.5	1344	T23	33.4	33.4	33.4	33.4	33.4	40.0	43.0	45.0	49.0	51.0
R164	Residence	1.5	1301	T23	33.5	33.5	33.5	33.5	33.5	40.0	43.0	45.0	49.0	51.0
R165	Residence	4.5	1422	T23	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
R166	Residence	1.5	1499	T24	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
R167	Residence	1.5	1461	T24	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
R170	Residence	1.5	1276	T24	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R171	Residence	1.5	1126	T24	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
R172	Residence	1.5	1012	T24	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0
R173	Residence	4.5	871	T24	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
R174	Residence	4.5	878	T24	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R175	Residence	4.5	647	T20	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
R176	Residence	1.5	665	T20	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
R178	Residence	4.5	597	T20	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
R179	Residence	1.5	847	T20	36.7	36.7	36.7	36.7	36.7	40.0	43.0	45.0	49.0	51.0
R180	Residence	1.5	829	T20	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
R181	Residence	1.5	856	T20	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
R182	Residence	4.5	931	T228	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R184	Residence	4.5	692	T228	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
R185	Residence	4.5	633	T228	38.9	38.9	38.9	38.9	38.9	40.0	43.0	45.0	49.0	51.0
R239	Residence	1.5	874	T58	34.1	34.1	34.1	34.1	34.1	40.0	43.0	45.0	49.0	51.0
R243	Residence	1.5	855	T58	34.1	34.1	34.1	34.1	34.1	40.0	43.0	45.0	49.0	51.0
R244	Residence	4.5	802	T58	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R245	Residence	1.5	832	T58	34.2	34.2	34.2	34.2	34.2	40.0	43.0	45.0	49.0	51.0
R246	Residence	4.5	950	T58	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R250	Residence	4.5	1285	T211	34.4	34.4	34.4	34.4	34.4	40.0	43.0	45.0	49.0	51.0
R253	Residence	4.5	1335	T58	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R254	Residence	4.5	668	T58	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
R255	Residence	4.5	659	T58	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
R256	Residence	4.5	628	T219	38.9	38.9	38.9	38.9	38.9	40.0	43.0	45.0	49.0	51.0
R257	Residence	4.5	765	T219	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R259	Residence	4.5	613	T219	38.9	38.9	38.9	38.9	38.9	40.0	43.0	45.0	49.0	51.0
R260	Residence	1.5	815	T219	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R261	Residence	1.5	897	T219	36.0	36.0	36.0	36.0	36.0	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R262	Residence	4.5	769	T58	36.3	36.3	36.3	36.3	36.3	40.0	43.0	45.0	49.0	51.0
R263	Residence	1.5	821	T58	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
R265	Residence	1.5	946	T58	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R266	Residence	4.5	918	T58	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R267	Residence	1.5	864	T58	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R268	Residence	4.5	838	T58	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0
R269	Residence	4.5	860	T46	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
R270	Residence	4.5	673	T58	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0
R271	Residence	4.5	572	T46	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
R272	Residence	1.5	663	T46	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R273	Residence	1.5	798	T23	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
R275	Residence	1.5	795	T23	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
R276	Residence	4.5	731	T23	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
R277	Residence	4.5	754	T23	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R278	Residence	1.5	648	T23	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
R279	Residence	4.5	689	T23	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
R280	Residence	1.5	856	T23	35.8	35.8	35.8	35.8	35.8	40.0	43.0	45.0	49.0	51.0
R281	Residence	4.5	909	T23	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R282	Residence	4.5	901	T23	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R283	Residence	1.5	1083	T23	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
R284	Residence	4.5	930	T16	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0
R285	Residence	1.5	837	T10	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R288	Residence	4.5	836	T13	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R289	Residence	4.5	691	T13	36.3	36.3	36.3	36.3	36.3	40.0	43.0	45.0	49.0	51.0
R290	Residence	4.5	569	T13	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R291	Residence	4.5	664	T13	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
R292	Residence	1.5	681	T13	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
R293	Residence	4.5	575	T13	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R294	Residence	1.5	760	T13	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
R295	Residence	4.5	593	T13	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R296	Residence	1.5	674	T13	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R297	Residence	4.5	799	T13	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0
R300	Residence	4.5	729	T13	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R302	Residence	1.5	705	T10	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R303	Residence	4.5	717	T10	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R304	Residence	1.5	1154	Tr776	34.0	34.0	34.0	34.0	34.0	40.0	43.0	45.0	49.0	51.0

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					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R305	Residence	1.5	873	T10	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0
R306	Residence	4.5	958	Tr788	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0
R307	Residence	1.5	288	Tr788	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0
R308	Residence	1.5	1178	T13	31.7	31.7	31.7	31.7	31.7	40.0	43.0	45.0	49.0	51.0
R309	Residence	4.5	1325	Tr702	31.5	31.5	31.5	31.5	31.5	40.0	43.0	45.0	49.0	51.0
R310	Residence	4.5	1321	Tr702	31.0	31.0	31.0	31.0	31.0	40.0	43.0	45.0	49.0	51.0
R311	Residence	4.5	1263	Tr702	30.8	30.8	30.8	30.8	30.8	40.0	43.0	45.0	49.0	51.0
R312	Residence	1.5	694	Tr702	32.2	32.2	32.2	32.2	32.2	40.0	43.0	45.0	49.0	51.0
R313	Residence	4.5	584	Tr702	32.7	32.7	32.7	32.7	32.7	40.0	43.0	45.0	49.0	51.0
R314	Residence	4.5	1115	Tr702	31.0	31.0	31.0	31.0	31.0	40.0	43.0	45.0	49.0	51.0
R316	Residence	4.5	1229	Tr673	30.6	30.6	30.6	30.6	30.6	40.0	43.0	45.0	49.0	51.0
R317	Residence	1.5	1174	Tr832	29.7	29.7	29.7	29.7	29.7	40.0	43.0	45.0	49.0	51.0
R318	Residence	1.5	1157	Tr673	29.8	29.8	29.8	29.8	29.8	40.0	43.0	45.0	49.0	51.0
R319	Residence	1.5	1348	Tr832	29.2	29.2	29.2	29.2	29.2	40.0	43.0	45.0	49.0	51.0
R320	Residence	4.5	1330	Tr836	30.6	30.6	30.6	30.6	30.6	40.0	43.0	45.0	49.0	51.0
R321	Residence	1.5	1415	Tr838	29.5	29.5	29.5	29.5	29.5	40.0	43.0	45.0	49.0	51.0
R322	Residence	4.5	1293	Tr842	31.5	31.5	31.5	31.5	31.5	40.0	43.0	45.0	49.0	51.0
R323	Residence	4.5	1268	Tr838	31.0	31.0	31.0	31.0	31.0	40.0	43.0	45.0	49.0	51.0
R324	Residence	1.5	1447	Tr844	30.0	30.0	30.0	30.0	30.0	40.0	43.0	45.0	49.0	51.0
R325	Residence	1.5	1374	Tr844	31.4	31.4	31.4	31.4	31.4	40.0	43.0	45.0	49.0	51.0
R327	Residence	4.5	1222	Tr844	33.0	33.0	33.0	33.0	33.0	40.0	43.0	45.0	49.0	51.0
R336	Residence	1.5	759	T22	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R337	Residence	4.5	640	T22	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
R338	Residence	4.5	715	T22	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R339	Residence	4.5	774	T22	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R340	Residence	1.5	754	T22	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R341	Residence	4.5	913	T22	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R342	Residence	1.5	855	T22	34.0	34.0	34.0	34.0	34.0	40.0	43.0	45.0	49.0	51.0
R343	Residence	7.5	1260	T22	33.5	33.5	33.5	33.5	33.5	40.0	43.0	45.0	49.0	51.0
R349	Residence	4.5	1176	T14	36.7	36.7	36.7	36.7	36.7	40.0	43.0	45.0	49.0	51.0
R350	Residence	1.5	1080	T13	33.6	33.6	33.6	33.6	33.6	40.0	43.0	45.0	49.0	51.0
R353	Residence	1.5	592	T13	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R354	Residence	4.5	725	T13	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0
R355	Residence	4.5	1019	Tr602	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R356	Residence	1.5	875	T13	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
R357	Residence	1.5	1023	T13	33.7	33.7	33.7	33.7	33.7	40.0	43.0	45.0	49.0	51.0

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					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R358	Residence	4.5	912	Tr620	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R359	Residence	1.5	740	T16	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
R360	Residence	1.5	747	Tr740	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R361	Residence	1.5	461	Tr740	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R362	Residence	1.5	319	Tr756	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R363	Church	1.5	355	Tr756	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R364	Residence	7.5	168	Tr740	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R365	Residence	1.5	183	Tr602	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R367	Residence	4.5	351	Tr702	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R368	Residence	4.5	243	Tr673	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
R369	Residence	4.5	343	Tr834	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
R371	Residence	4.5	423	Tr838	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R372	Residence	1.5	665	Tr844	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
R373	Residence	1.5	889	Tr844	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
R374	Residence	4.5	787	Tr844	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R378	Residence	1.5	153	Tr664	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R380	Residence	1.5	281	Tr664	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
R381	Residence	1.5	165	Tr665	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
R383	Residence	4.5	938	Tr830	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R386	Residence	4.5	849	T17	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
R387	Residence	1.5	598	Tr698	38.9	38.9	38.9	38.9	38.9	40.0	43.0	45.0	49.0	51.0
R388	Residence	1.5	560	Tr698	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R389	Residence	4.5	501	Tr698	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
R390	Residence	4.5	574	Tr698	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
R391	Residence	4.5	518	Tr698	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
R392	Residence	1.5	642	T56	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
R393	Residence	4.5	433	Tr858	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
R395	Residence	4.5	353	Tr844	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R396	Residence	1.5	792	Tr842	34.1	34.1	34.1	34.1	34.1	40.0	43.0	45.0	49.0	51.0
R399	Residence	4.5	686	T55	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
R401	Residence	1.5	1053	T55	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R402	Residence	4.5	897	T9	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R403	Residence	1.5	778	T9	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
R404	Residence	1.5	636	T9	36.3	36.3	36.3	36.3	36.3	40.0	43.0	45.0	49.0	51.0
R405	Residence	4.5	1025	T9	33.5	33.5	33.5	33.5	33.5	40.0	43.0	45.0	49.0	51.0
R406	Residence	4.5	877	T10	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0

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					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R407	Residence	1.5	871	T10	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R408	Residence	1.5	674	T10	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R409	Residence	1.5	671	T10	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R410	Residence	1.5	750	T10	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R411	Residence	4.5	873	T10	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
R412	Residence	1.5	904	T10	34.4	34.4	34.4	34.4	34.4	40.0	43.0	45.0	49.0	51.0
R413	Residence	4.5	876	T10	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R414	Residence	1.5	968	T10	34.1	34.1	34.1	34.1	34.1	40.0	43.0	45.0	49.0	51.0
R415	Residence	4.5	1220	T10	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R416	Residence	4.5	1338	T233	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R455	Residence	4.5	234	Tr774	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R457	Residence	4.5	298	Tr774	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R460	Residence	4.5	471	Tr658	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
R461	Residence	1.5	555	Tr658	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R462	Residence	4.5	502	Tr658	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R464	Residence	1.5	620	Tr658	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R465	Residence	4.5	457	Tr830	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
R466	Residence	4.5	637	Tr830	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R467	Residence	1.5	904	T247	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R468	Residence	4.5	1005	T247	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R469	Residence	1.5	959	T17	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
R470	Residence	4.5	904	T17	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
R471	Residence	4.5	1012	T17	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
R501	Residence	1.5	951	T42	36.7	36.7	36.7	36.7	36.7	40.0	43.0	45.0	49.0	51.0
R502	Residence	4.5	1036	T68	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
R503	Residence	4.5	856	T68	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R504	Residence	4.5	947	T68	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
R505	Residence	4.5	881	T12	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
R507	Residence	4.5	762	T12	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R508	Residence	4.5	745	T12	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R509	Residence	4.5	773	T12	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
R510	Residence	4.5	846	T12	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
R512	Residence	4.5	707	T12	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
R513	Residence	1.5	718	T21	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
R515	Residence	1.5	761	T21	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R516	Residence	1.5	636	T51	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0

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					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R517	Residence	1.5	879	T51	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R518	Residence	1.5	881	T51	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R519	Residence	1.5	836	T51	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
R520	Residence	1.5	1116	T2	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
R521	Residence	1.5	1144	T2	33.0	33.0	33.0	33.0	33.0	40.0	43.0	45.0	49.0	51.0
R523	Residence	1.5	571	T2	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
R524	Residence	4.5	630	T4	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
R525	Residence	4.5	623	T4	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
R527	Residence	1.5	735	T4	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
R528	Residence	4.5	821	T11	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
R529	Residence	4.5	856	T4	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
R530	Residence	1.5	851	T11	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R531	Residence	1.5	734	T11	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
R532	Residence	1.5	664	T11	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R533	Residence	1.5	754	T11	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R534	Residence	1.5	811	T11	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R535	Residence	4.5	867	T11	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
R536	Residence	1.5	877	T4	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R537	Residence	1.5	881	T4	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R540	Residence	4.5	775	T14	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
R541	Residence	1.5	956	T14	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0
R559	Residence	1.5	1435	T10	32.9	32.9	32.9	32.9	32.9	40.0	43.0	45.0	49.0	51.0
R561	Residence	4.5	1050	T10	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R562	Residence	1.5	550	T10	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R564	Residence	4.5	636	T10	39.2	39.2	39.2	39.2	39.2	40.0	43.0	45.0	49.0	51.0
R565	Residence	1.5	598	T233	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
R566	Residence	4.5	524	T233	40.0	40.0	40.0	40.0	40.0	40.0	43.0	45.0	49.0	51.0
R567	Residence	4.5	689	T233	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
R568	Residence	4.5	752	T233	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R569	Residence	4.5	951	T233	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
R570	Residence	4.5	891	T233	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R571	Residence	1.5	865	Tr788	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R572	Residence	4.5	807	Tr658	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0
R573	Residence	4.5	751	Tr818	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R574	Residence	4.5	161	Tr658	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R575	Residence	4.5	132	Tr659	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0

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					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R576	Residence	4.5	171	Tr822	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R577	Residence	4.5	97	Tr661	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
R578	Residence	1.5	169	Tr902	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R579	Residence	1.5	177	Tr701	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R581	Residence	1.5	189	Tr700	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R582	Residence	1.5	196	Tr700	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0
R584	Residence	4.5	363	Tr698	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
R585	Residence	4.5	362	Tr698	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R588	Residence	4.5	889	T44	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
R590	Residence	4.5	899	T25	39.7	39.7	39.7	39.7	39.7	40.0	43.0	45.0	49.0	51.0
R591	Residence	4.5	1008	T44	39.5	39.5	39.5	39.5	39.5	40.0	43.0	45.0	49.0	51.0
R592	Residence	4.5	946	T53	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
R593	Residence	4.5	705	T42	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
R595	Residence	4.5	718	T42	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R596	Residence	4.5	1134	T42	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R597	Residence	4.5	1100	T68	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
R598	Residence	4.5	1111	T38	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R599	Cemetery	1.5	1005	T38	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R601	Residence	4.5	820	T38	39.5	39.5	39.5	39.5	39.5	40.0	43.0	45.0	49.0	51.0
R602	Residence	4.5	934	T35	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
R603	Residence	4.5	894	T35	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R604	Residence	4.5	913	T35	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
R605	Residence	4.5	814	T35	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
R606	Residence	4.5	796	T35	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
R607	Residence	4.5	809	T35	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
R608	Residence	1.5	965	T35	36.7	36.7	36.7	36.7	36.7	40.0	43.0	45.0	49.0	51.0
R609	Residence	4.5	778	T14	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
R611	Residence	4.5	603	T47	38.9	38.9	38.9	38.9	38.9	40.0	43.0	45.0	49.0	51.0
R612	Residence	1.5	617	T47	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
R613	Residence	4.5	600	T47	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
R614	Residence	4.5	754	T47	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0
R615	Residence	4.5	995	T47	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R616	Residence	4.5	1005	T47	36.3	36.3	36.3	36.3	36.3	40.0	43.0	45.0	49.0	51.0
R617	Residence	4.5	1028	T57	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R619	Residence	1.5	1025	T57	33.7	33.7	33.7	33.7	33.7	40.0	43.0	45.0	49.0	51.0
R621	Residence	4.5	1470	T57	30.0	30.0	30.0	30.0	30.0	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R622	Residence	1.5	1384	T57	28.9	28.9	28.9	28.9	28.9	40.0	43.0	45.0	49.0	51.0
R623	Residence	4.5	1285	T57	31.0	31.0	31.0	31.0	31.0	40.0	43.0	45.0	49.0	51.0
R624	Residence	4.5	1281	T57	31.0	31.0	31.0	31.0	31.0	40.0	43.0	45.0	49.0	51.0
R625	Residence	1.5	1279	T57	29.5	29.5	29.5	29.5	29.5	40.0	43.0	45.0	49.0	51.0
R626	Residence	1.5	1403	T57	28.7	28.7	28.7	28.7	28.7	40.0	43.0	45.0	49.0	51.0
R627	Residence	1.5	1364	T57	28.9	28.9	28.9	28.9	28.9	40.0	43.0	45.0	49.0	51.0
R628	Residence	4.5	1430	T57	30.1	30.1	30.1	30.1	30.1	40.0	43.0	45.0	49.0	51.0
R668	Residence	4.5	774	T244	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
R670	Residence	1.5	812	T244	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R672	Residence	1.5	761	T247	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R673	Residence	4.5	819	T247	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
R674	Residence	4.5	825	T247	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
R675	Residence	4.5	691	T247	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R676	Residence	4.5	743	T55	39.8	39.8	39.8	39.8	39.8	40.0	43.0	45.0	49.0	51.0
R679	Residence	4.5	807	T53	39.8	39.8	39.8	39.8	39.8	40.0	43.0	45.0	49.0	51.0
R681	Residence	4.5	807	T12	39.2	39.2	39.2	39.2	39.2	40.0	43.0	45.0	49.0	51.0
R682	Residence	1.5	688	T12	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R683	Residence	1.5	749	T12	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R686	Residence	4.5	932	T12	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
R687	Residence	1.5	861	T68	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R693	Residence	4.5	729	T40	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
R694	Residence	4.5	683	T40	39.8	39.8	39.8	39.8	39.8	40.0	43.0	45.0	49.0	51.0
R695	Residence	4.5	1261	T4	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R696	Residence	1.5	1098	T4	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R697	Residence	4.5	748	T4	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
R698	Residence	4.5	691	T4	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
R699	Residence	4.5	838	T4	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0
R700	Residence	1.5	740	T4	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R701	Residence	1.5	671	T4	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R702	Residence	1.5	742	T4	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R703	Residence	4.5	717	T4	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R704	Residence	4.5	632	T4	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
R705	Residence	4.5	713	T4	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R706	Residence	4.5	714	T4	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R707	Residence	4.5	667	T4	39.2	39.2	39.2	39.2	39.2	40.0	43.0	45.0	49.0	51.0
R708	Residence	1.5	656	T4	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R709	Residence	4.5	810	T4	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
R710	Residence	1.5	693	T4	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R711	Residence	4.5	791	T4	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
R712	Residence	1.5	844	T4	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R713	Residence	1.5	902	T4	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
R714	Residence	4.5	908	T11	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
R715	Residence	1.5	810	T11	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R716	Residence	1.5	802	T11	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R717	Residence	4.5	899	T11	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0
R718	Residence	4.5	735	T11	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
R719	Residence	1.5	913	T11	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R720	Residence	1.5	968	T11	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R721	Residence	1.5	1020	T11	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R722	Residence	4.5	910	T11	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R723	Residence	1.5	856	T21	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
R724	Residence	4.5	650	T21	39.2	39.2	39.2	39.2	39.2	40.0	43.0	45.0	49.0	51.0
R725	Residence	4.5	621	T21	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
R726	Residence	7.5	795	T21	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
R727	Residence	1.5	550	T21	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
R728	Residence	4.5	672	T21	39.3	39.3	39.3	39.3	39.3	40.0	43.0	45.0	49.0	51.0
R730	Residence	4.5	688	T21	39.7	39.7	39.7	39.7	39.7	40.0	43.0	45.0	49.0	51.0
R731	Residence	1.5	631	T21	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
R732	Residence	4.5	668	T21	39.8	39.8	39.8	39.8	39.8	40.0	43.0	45.0	49.0	51.0
R733	Residence	4.5	632	T12	39.7	39.7	39.7	39.7	39.7	40.0	43.0	45.0	49.0	51.0
R734	Residence	4.5	677	T12	39.5	39.5	39.5	39.5	39.5	40.0	43.0	45.0	49.0	51.0
R737	Residence	4.5	693	T12	38.9	38.9	38.9	38.9	38.9	40.0	43.0	45.0	49.0	51.0
R738	Residence	4.5	604	T12	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
R739	Residence	1.5	760	T12	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R740	Residence	1.5	913	T55	36.3	36.3	36.3	36.3	36.3	40.0	43.0	45.0	49.0	51.0
R741	Residence	1.5	846	T55	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R742	Residence	4.5	673	T55	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
R743	Residence	4.5	684	T55	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
R744	Residence	4.5	608	T55	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
R745	Residence	4.5	793	T55	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
R746	Residence	4.5	1070	T55	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
R747	Residence	1.5	1210	T55	33.8	33.8	33.8	33.8	33.8	40.0	43.0	45.0	49.0	51.0

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					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R748	Residence	4.5	1271	T55	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R749	Residence	4.5	1277	T55	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R750	Residence	4.5	1408	T55	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
R833	Residence	1.5	656	T47	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R834	Residence	1.5	835	T47	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R835	Residence	4.5	982	T47	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R836	Residence	1.5	915	T19	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
R837	Residence	1.5	737	T19	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R838	Residence	1.5	709	T19	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
R839	Residence	4.5	1292	T19	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R840	Residence	1.5	1097	T6	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R841	Residence	1.5	1027	T6	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R842	Church/Cmtry	1.5	872	T4	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R843	Residence	1.5	813	T6	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
R846	Residence	4.5	914	T2	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
R847	Residence	4.5	844	T2	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
R850	Residence	1.5	1417	T57	30.5	30.5	30.5	30.5	30.5	40.0	43.0	45.0	49.0	51.0
R851	Residence	1.5	1427	T57	30.6	30.6	30.6	30.6	30.6	40.0	43.0	45.0	49.0	51.0
R852	Residence	1.5	1406	T57	31.2	31.2	31.2	31.2	31.2	40.0	43.0	45.0	49.0	51.0
R853	Residence	4.5	1137	T57	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R854	Residence	1.5	1345	T57	31.7	31.7	31.7	31.7	31.7	40.0	43.0	45.0	49.0	51.0
R855	Residence	1.5	1196	T57	32.6	32.6	32.6	32.6	32.6	40.0	43.0	45.0	49.0	51.0
R856	Residence	4.5	1302	T57	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R857	Residence	1.5	1340	T57	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
R858	Residence	1.5	1348	T57	33.3	33.3	33.3	33.3	33.3	40.0	43.0	45.0	49.0	51.0
R859	Residence	1.5	1327	T15	33.6	33.6	33.6	33.6	33.6	40.0	43.0	45.0	49.0	51.0
R860	Residence	1.5	1287	T15	33.8	33.8	33.8	33.8	33.8	40.0	43.0	45.0	49.0	51.0
R861	Residence	1.5	1237	T15	34.1	34.1	34.1	34.1	34.1	40.0	43.0	45.0	49.0	51.0
R862	Residence	1.5	1182	T15	34.4	34.4	34.4	34.4	34.4	40.0	43.0	45.0	49.0	51.0
R863	Residence	1.5	1269	T15	33.8	33.8	33.8	33.8	33.8	40.0	43.0	45.0	49.0	51.0
R864	Residence	1.5	1115	T15	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R865	Residence	4.5	1133	T15	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
R868	Residence	4.5	679	T15	39.5	39.5	39.5	39.5	39.5	40.0	43.0	45.0	49.0	51.0
R869	Residence	4.5	678	T15	39.7	39.7	39.7	39.7	39.7	40.0	43.0	45.0	49.0	51.0
R870	Residence	1.5	762	T26	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R871	Residence	4.5	848	T26	39.8	39.8	39.8	39.8	39.8	40.0	43.0	45.0	49.0	51.0

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					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R872	Residence	1.5	784	T8	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R873	Church/Cmtry	1.5	926	T19	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R874	Residence	4.5	938	T57	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R875	Residence	1.5	867	T30	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R876	Residence	1.5	741	T57	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R877	Residence	4.5	704	T57	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
R878	Residence	1.5	845	T30	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
R879	Residence	4.5	705	T30	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
R880	Residence	4.5	781	T57	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
R882	Residence	4.5	780	T57	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
R883	Residence	1.5	860	T57	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R886	Residence	4.5	632	T57	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
R887	Residence	4.5	848	T57	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
R888	Residence	4.5	1305	T49	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R889	Residence	1.5	1159	T49	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
R890	Residence	4.5	1202	T50	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R891	Residence	1.5	1229	T50	33.8	33.8	33.8	33.8	33.8	40.0	43.0	45.0	49.0	51.0
R892	Residence	4.5	1022	T50	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R893	Residence	1.5	954	T50	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
R894	Residence	1.5	906	T50	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R895	Residence	1.5	833	T50	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R896	Residence	1.5	673	T50	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
R897	Residence	1.5	709	T50	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R898	Residence	1.5	716	T50	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
R899	Residence	1.5	815	T50	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
R900	Residence	1.5	819	T50	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
R902	Residence	1.5	849	T50	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R903	Residence	1.5	861	T50	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R904	Residence	1.5	753	T50	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R905	Residence	1.5	783	T50	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R906	Residence	1.5	874	T50	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
R907	Residence	1.5	890	T50	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R908	Residence	4.5	914	T50	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R910	Residence	1.5	830	T50	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R911	Residence	1.5	860	T50	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
R912	Residence	1.5	1036	T50	33.1	33.1	33.1	33.1	33.1	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R913	Residence	4.5	1091	T50	34.1	34.1	34.1	34.1	34.1	40.0	43.0	45.0	49.0	51.0
R914	Residence	4.5	997	T50	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
R916	Residence	1.5	1467	T50	30.1	30.1	30.1	30.1	30.1	40.0	43.0	45.0	49.0	51.0
R917	Residence	1.5	1365	T50	30.8	30.8	30.8	30.8	30.8	40.0	43.0	45.0	49.0	51.0
R918	Residence	1.5	1297	T50	31.2	31.2	31.2	31.2	31.2	40.0	43.0	45.0	49.0	51.0
R919	Residence	1.5	1270	T50	31.3	31.3	31.3	31.3	31.3	40.0	43.0	45.0	49.0	51.0
R920	Residence	1.5	1366	T50	30.6	30.6	30.6	30.6	30.6	40.0	43.0	45.0	49.0	51.0
R921	Residence	1.5	1417	T50	30.3	30.3	30.3	30.3	30.3	40.0	43.0	45.0	49.0	51.0
R922	Residence	1.5	1359	T50	31.1	31.1	31.1	31.1	31.1	40.0	43.0	45.0	49.0	51.0
R923	Residence	1.5	1401	T50	30.9	30.9	30.9	30.9	30.9	40.0	43.0	45.0	49.0	51.0
R924	Residence	4.5	1464	T50	32.3	32.3	32.3	32.3	32.3	40.0	43.0	45.0	49.0	51.0
R925	Residence	1.5	1459	T50	30.9	30.9	30.9	30.9	30.9	40.0	43.0	45.0	49.0	51.0
R926	Residence	1.5	1462	T50	30.9	30.9	30.9	30.9	30.9	40.0	43.0	45.0	49.0	51.0
R927	Residence	4.5	1460	T50	32.7	32.7	32.7	32.7	32.7	40.0	43.0	45.0	49.0	51.0
R928	Residence	4.5	1466	T50	32.7	32.7	32.7	32.7	32.7	40.0	43.0	45.0	49.0	51.0
R929	Residence	4.5	1474	T50	32.8	32.8	32.8	32.8	32.8	40.0	43.0	45.0	49.0	51.0
R930	Residence	1.5	1401	T50	31.6	31.6	31.6	31.6	31.6	40.0	43.0	45.0	49.0	51.0
R931	Residence	1.5	1297	T50	32.2	32.2	32.2	32.2	32.2	40.0	43.0	45.0	49.0	51.0
R932	Residence	1.5	1237	T50	32.5	32.5	32.5	32.5	32.5	40.0	43.0	45.0	49.0	51.0
R969	Residence	1.5	1211	T59	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R970	Residence	4.5	972	T67	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R971	Residence	4.5	1106	T67	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R972	Residence	4.5	1251	T106	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R978	Residence	1.5	1047	T61	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R979	Residence	4.5	910	T6	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
R980	Residence	1.5	954	T6	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R981	Residence	4.5	819	T6	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
R982	Residence	4.5	1014	T19	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R983	Residence	1.5	1008	T19	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
R984	Residence	4.5	1013	T19	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
R985	Residence	4.5	1029	T19	39.2	39.2	39.2	39.2	39.2	40.0	43.0	45.0	49.0	51.0
R986	Residence	1.5	967	T69	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R987	Residence	1.5	990	T69	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R989	Residence	4.5	905	T19	39.3	39.3	39.3	39.3	39.3	40.0	43.0	45.0	49.0	51.0
R990	Residence	4.5	934	T8	39.7	39.7	39.7	39.7	39.7	40.0	43.0	45.0	49.0	51.0
R991	Residence	4.5	937	T8	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R992	Residence	4.5	973	T26	39.5	39.5	39.5	39.5	39.5	40.0	43.0	45.0	49.0	51.0
R993	Residence	1.5	711	T26	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
R998	Residence	1.5	844	T49	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R1001	Residence	1.5	796	T50	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
R1003	Residence	1.5	764	T50	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
R1004	Residence	1.5	716	T50	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
R1005	Residence	1.5	721	T50	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R1006	Residence	4.5	925	T50	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0
R1007	Residence	4.5	657	T50	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
R1008	Residence	4.5	904	T50	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
R1009	Residence	1.5	869	T50	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R1010	Residence	1.5	938	T50	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
R1011	Residence	1.5	1004	T50	34.1	34.1	34.1	34.1	34.1	40.0	43.0	45.0	49.0	51.0
R1012	Residence	4.5	1083	T50	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0
R1013	Residence	1.5	1222	T50	32.6	32.6	32.6	32.6	32.6	40.0	43.0	45.0	49.0	51.0
R1014	Residence	1.5	1371	T50	31.9	31.9	31.9	31.9	31.9	40.0	43.0	45.0	49.0	51.0
R1015	Residence	1.5	1455	T50	31.5	31.5	31.5	31.5	31.5	40.0	43.0	45.0	49.0	51.0
R1030	Residence	1.5	739	T67	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R1031	Residence	4.5	711	T67	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
R1032	Residence	4.5	1071	T106	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R1034	Residence	4.5	1013	T66	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
R1035	Residence	4.5	964	T105	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R1036	Residence	4.5	746	T104	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
R1037	Residence	1.5	870	T66	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
R1039	Residence	4.5	788	T104	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
R1040	Residence	1.5	818	T104	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
R1041	Residence	1.5	965	T102	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0
R1042	Residence	4.5	877	T102	39.2	39.2	39.2	39.2	39.2	40.0	43.0	45.0	49.0	51.0
R1043	Residence	4.5	910	T102	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
R1054	Residence	4.5	771	T67	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
R1055	Residence	4.5	790	T65	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
R1057	Residence	1.5	760	T65	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
R1058	Residence	4.5	798	T65	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R1059	Residence	4.5	999	T65	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R1060	Residence	1.5	948	T65	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R1061	Residence	1.5	1127	T65	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R1062	Residence	1.5	972	T65	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R1064	Residence	4.5	1456	T67	33.6	33.6	33.6	33.6	33.6	40.0	43.0	45.0	49.0	51.0
R1065	Residence	4.5	1020	T67	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
R1068	Residence	1.5	1440	T65	32.5	32.5	32.5	32.5	32.5	40.0	43.0	45.0	49.0	51.0
R1069	Residence	1.5	1382	T65	32.8	32.8	32.8	32.8	32.8	40.0	43.0	45.0	49.0	51.0
R1070	Residence	4.5	1082	T65	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R1071	Residence	1.5	1015	T65	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R1072	Residence	1.5	995	T65	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
R1073	Residence	4.5	991	T65	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R1074	Residence	1.5	1078	T65	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R1075	Residence	4.5	915	T65	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R1076	Residence	4.5	819	T65	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R1078	Residence	4.5	1254	T65	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R1079	Residence	4.5	1295	T65	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R1080	Residence	1.5	1204	T7	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R1175	Residence	1.5	1143	T9	31.5	31.5	31.5	31.5	31.5	40.0	43.0	45.0	49.0	51.0
R1176	Residence	1.5	982	T9	32.4	32.4	32.4	32.4	32.4	40.0	43.0	45.0	49.0	51.0
R1177	Residence	4.5	852	T9	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
R1178	Residence	1.5	789	T9	34.2	34.2	34.2	34.2	34.2	40.0	43.0	45.0	49.0	51.0
R1179	Residence	4.5	729	T9	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R1197	Residence	7.5	1080	T9	34.2	34.2	34.2	34.2	34.2	40.0	43.0	45.0	49.0	51.0
R1198	Residence	1.5	1048	T9	33.1	33.1	33.1	33.1	33.1	40.0	43.0	45.0	49.0	51.0
R1199	Residence	1.5	1146	T51	32.8	32.8	32.8	32.8	32.8	40.0	43.0	45.0	49.0	51.0
R1200	Residence	1.5	1020	T51	33.8	33.8	33.8	33.8	33.8	40.0	43.0	45.0	49.0	51.0
R1201	Residence	1.5	972	T51	34.4	34.4	34.4	34.4	34.4	40.0	43.0	45.0	49.0	51.0
R1202	Residence	1.5	914	T9	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R1203	Residence	1.5	878	T51	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R1204	Residence	1.5	899	T51	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
R1205	Residence	1.5	913	T51	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R1206	Residence	1.5	940	T51	34.1	34.1	34.1	34.1	34.1	40.0	43.0	45.0	49.0	51.0
R1207	Residence	4.5	1043	T51	34.4	34.4	34.4	34.4	34.4	40.0	43.0	45.0	49.0	51.0
R1208	Residence	4.5	986	T51	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R1209	Residence	1.5	908	T51	33.6	33.6	33.6	33.6	33.6	40.0	43.0	45.0	49.0	51.0
R1210	Residence	1.5	704	T51	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R1211	Residence	1.5	801	T51	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
R1213	Residence	1.5	731	T51	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0

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					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R1214	Residence	1.5	772	T51	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R1215	Residence	1.5	717	T51	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R1216	Residence	1.5	788	T51	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R1217	Residence	1.5	740	T51	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R1218	Residence	1.5	680	T51	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R1219	Residence	1.5	637	T51	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
R1220	Residence	1.5	584	T51	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
R1221	Residence	1.5	602	T51	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
R1222	Residence	1.5	607	T51	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
R1223	Residence	1.5	754	T51	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
R1224	Residence	1.5	782	T51	35.8	35.8	35.8	35.8	35.8	40.0	43.0	45.0	49.0	51.0
R1225	Residence	1.5	803	T51	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R1226	Residence	1.5	932	T5	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R1227	Residence	1.5	831	T5	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
R1228	Residence	1.5	895	T5	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0
R1229	Residence	1.5	879	T5	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R1230	Residence	4.5	740	T5	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
R1231	Residence	4.5	841	T5	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
R1232	Residence	1.5	804	T5	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R1235	Residence	4.5	557	T5	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
R1236	Residence	4.5	561	T5	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
R1237	Residence	4.5	583	T5	39.2	39.2	39.2	39.2	39.2	40.0	43.0	45.0	49.0	51.0
R1238	Residence	1.5	626	T5	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
R1239	Residence	4.5	673	T5	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
R1240	Residence	4.5	719	T5	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R1241	Residence	1.5	839	T5	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
R1242	Residence	1.5	901	T5	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R1243	Residence	4.5	1075	T5	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R1244	Residence	1.5	1273	T5	33.4	33.4	33.4	33.4	33.4	40.0	43.0	45.0	49.0	51.0
R1245	Residence	4.5	1364	T5	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R1246	Residence	1.5	1363	T2	32.9	32.9	32.9	32.9	32.9	40.0	43.0	45.0	49.0	51.0
R1247	Residence	4.5	1297	T2	34.1	34.1	34.1	34.1	34.1	40.0	43.0	45.0	49.0	51.0
R1248	Residence	1.5	1370	T2	31.9	31.9	31.9	31.9	31.9	40.0	43.0	45.0	49.0	51.0
R1249	Residence	1.5	1212	T2	32.6	32.6	32.6	32.6	32.6	40.0	43.0	45.0	49.0	51.0
R1250	Residence	4.5	1191	T2	34.2	34.2	34.2	34.2	34.2	40.0	43.0	45.0	49.0	51.0
R1251	Residence	1.5	1072	T2	33.5	33.5	33.5	33.5	33.5	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R1252	Residence	1.5	922	T2	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R1254	Residence	4.5	781	T2	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R1255	Residence	1.5	759	T2	36.3	36.3	36.3	36.3	36.3	40.0	43.0	45.0	49.0	51.0
R1256	Residence	1.5	761	T2	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
R1257	Residence	1.5	779	T2	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
R1258	Residence	1.5	780	T2	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
R1259	Residence	1.5	793	T2	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R1260	Residence	1.5	919	T2	36.7	36.7	36.7	36.7	36.7	40.0	43.0	45.0	49.0	51.0
R1261	Residence	1.5	1051	T2	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
R1262	Residence	1.5	915	T3	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
R1263	Residence	1.5	865	T3	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R1264	Residence	4.5	829	T3	39.3	39.3	39.3	39.3	39.3	40.0	43.0	45.0	49.0	51.0
R1265	Residence	4.5	757	T3	40.0	40.0	40.0	40.0	40.0	40.0	43.0	45.0	49.0	51.0
R1266	Residence	1.5	803	T3	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
R1268	Residence	1.5	1364	T9	30.6	30.6	30.6	30.6	30.6	40.0	43.0	45.0	49.0	51.0
R1270	Residence	7.5	795	T9	36.0	36.0	36.0	36.0	36.0	40.0	43.0	45.0	49.0	51.0
R1271	Residence	1.5	1060	T51	33.3	33.3	33.3	33.3	33.3	40.0	43.0	45.0	49.0	51.0
R1272	Residence	1.5	877	T51	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
R1273	Residence	1.5	860	T51	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R1274	Residence	4.5	702	T51	36.7	36.7	36.7	36.7	36.7	40.0	43.0	45.0	49.0	51.0
R1275	Residence	1.5	733	T51	36.0	36.0	36.0	36.0	36.0	40.0	43.0	45.0	49.0	51.0
R1276	Residence	1.5	705	T51	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R1277	Residence	1.5	869	T51	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R1278	Residence	1.5	886	T5	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
R1280	Residence	1.5	1389	T2	32.4	32.4	32.4	32.4	32.4	40.0	43.0	45.0	49.0	51.0
R1281	Residence	1.5	1471	T50	30.6	30.6	30.6	30.6	30.6	40.0	43.0	45.0	49.0	51.0
R1284	Residence	4.5	580	T67	39.5	39.5	39.5	39.5	39.5	40.0	43.0	45.0	49.0	51.0
R1287	Residence	4.5	1336	T50	33.5	33.5	33.5	33.5	33.5	40.0	43.0	45.0	49.0	51.0
R1288	Residence	4.5	1265	T50	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R1289	Residence	1.5	942	T8	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R1290	Residence	4.5	984	T26	39.5	39.5	39.5	39.5	39.5	40.0	43.0	45.0	49.0	51.0
R1291	Residence	4.5	790	T4	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
R1292	Church	1.5	869	T4	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R1293	Residence	1.5	915	T4	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
R1294	Residence	1.5	805	T11	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R1295	Cemetery	1.5	756	T21	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R1296	Residence	1.5	651	T21	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
R1297	Residence	1.5	692	T21	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
R1298	Residence	1.5	781	T12	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
R1299	Residence	4.5	749	T55	39.3	39.3	39.3	39.3	39.3	40.0	43.0	45.0	49.0	51.0
R1300	Residence	1.5	817	T55	36.0	36.0	36.0	36.0	36.0	40.0	43.0	45.0	49.0	51.0
R1301	Residence	4.5	1034	T55	36.0	36.0	36.0	36.0	36.0	40.0	43.0	45.0	49.0	51.0
R1317	Residence	4.5	233	Tr822	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R1318	Residence	1.5	703	T42	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
R1319	Cemetery	1.5	788	T42	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R1320	Residence	1.5	995	T42	36.3	36.3	36.3	36.3	36.3	40.0	43.0	45.0	49.0	51.0
R1321	Residence	1.5	866	T38	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R1322	Residence	4.5	923	T26	38.9	38.9	38.9	38.9	38.9	40.0	43.0	45.0	49.0	51.0
R1323	Residence	4.5	1023	T15	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R1324	Residence	1.5	1433	T50	30.8	30.8	30.8	30.8	30.8	40.0	43.0	45.0	49.0	51.0
R1339	Residence	4.5	1423	Tr838	30.8	30.8	30.8	30.8	30.8	40.0	43.0	45.0	49.0	51.0
R1340	Residence	4.5	1265	Tr673	30.5	30.5	30.5	30.5	30.5	40.0	43.0	45.0	49.0	51.0
R1341	Residence	4.5	1015	Tr702	32.5	32.5	32.5	32.5	32.5	40.0	43.0	45.0	49.0	51.0
R1342	Cemetery	1.5	719	T13	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R1345	Residence	1.5	1286	T36	32.4	32.4	32.4	32.4	32.4	40.0	43.0	45.0	49.0	51.0
R1346	Residence	4.5	714	T33	39.5	39.5	39.5	39.5	39.5	40.0	43.0	45.0	49.0	51.0
R1347	Residence	4.5	816	T34	39.3	39.3	39.3	39.3	39.3	40.0	43.0	45.0	49.0	51.0
R1348	Residence	1.5	809	T34	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0
R1349	Residence	1.5	805	T34	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
R1350	Residence	1.5	857	T34	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
R1351	Residence	1.5	1162	T34	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
R1352	Residence	4.5	1153	T18	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R1353	Residence	1.5	588	T18	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R1355	Residence	1.5	1042	T45	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
R1356	Residence	4.5	1426	T41	33.5	33.5	33.5	33.5	33.5	40.0	43.0	45.0	49.0	51.0
R1357	Residence	1.5	1363	T23	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
R1358	Church	1.5	1484	T23	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
R1359	Residence	4.5	1460	T24	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R1360	Cemetery	1.5	1260	T24	33.8	33.8	33.8	33.8	33.8	40.0	43.0	45.0	49.0	51.0
R1361	Residence	4.5	1168	T24	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R1362	Residence	1.5	595	Tr658	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R1363	Residence	4.5	980	T19	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R1365	Residence	4.5	597	T2	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
R1366	Residence	1.5	822	T11	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R1367	Residence	4.5	789	T11	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
R1368	Residence	4.5	612	T9	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
R1369	Residence	4.5	144	Tr665	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
R1373	Cemetery	1.5	785	T20	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
R1374	Residence	4.5	784	T20	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
R1375	Residence	1.5	877	Tr620	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R1377	Residence	4.5	900	T23	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
R1378	Residence	1.5	1045	T34	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R2137	Residence	1.5	887	T218	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R2148	Residence	4.5	998	T218	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R2152	Residence	4.5	1087	T58	35.3	35.3	35.3	35.3	35.3	40.0	43.0	45.0	49.0	51.0
R2153	Residence	4.5	983	T58	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R2159	Residence	4.5	910	T58	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R2164	Residence	4.5	1115	T218	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R2165	Residence	4.5	924	T218	35.8	35.8	35.8	35.8	35.8	40.0	43.0	45.0	49.0	51.0
R2170	Residence	1.5	1084	T218	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R2171	Residence	1.5	923	T218	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R2179	Residence	4.5	993	T218	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R2552	Residence	1.5	762	T18	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R2565	Residence	1.5	1252	T33	30.9	30.9	30.9	30.9	30.9	40.0	43.0	45.0	49.0	51.0
R2566	Residence	1.5	1213	T33	31.5	31.5	31.5	31.5	31.5	40.0	43.0	45.0	49.0	51.0
R2567	Residence	4.5	1097	T33	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R2568	Residence	4.5	1096	T36	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R2569	Residence	1.5	1033	T36	32.2	32.2	32.2	32.2	32.2	40.0	43.0	45.0	49.0	51.0
R2575	Residence	1.5	1327	T36	29.6	29.6	29.6	29.6	29.6	40.0	43.0	45.0	49.0	51.0
R2593	Residence	1.5	1128	T34	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
R2594	Residence	4.5	1153	T34	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R2595	Residence	4.5	1170	T34	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R2596	Residence	4.5	1206	T33	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
R2597	Residence	1.5	1217	T33	34.1	34.1	34.1	34.1	34.1	40.0	43.0	45.0	49.0	51.0
R2598	Residence	1.5	1174	T33	34.4	34.4	34.4	34.4	34.4	40.0	43.0	45.0	49.0	51.0
R2599	Residence	4.5	1159	T33	35.8	35.8	35.8	35.8	35.8	40.0	43.0	45.0	49.0	51.0
R2600	Residence	1.5	1186	T33	34.0	34.0	34.0	34.0	34.0	40.0	43.0	45.0	49.0	51.0
R2601	Residence	1.5	1118	T33	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R2602	Residence	1.5	1079	T33	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R2603	Residence	1.5	1051	T33	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R2604	Residence	1.5	1022	T33	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R2605	Residence	1.5	993	T33	34.4	34.4	34.4	34.4	34.4	40.0	43.0	45.0	49.0	51.0
R2606	Residence	1.5	1041	T33	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R2607	Residence	4.5	1032	T33	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R2608	Residence	1.5	1011	T33	34.0	34.0	34.0	34.0	34.0	40.0	43.0	45.0	49.0	51.0
R2609	Residence	4.5	661	T33	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
R2610	Residence	4.5	928	T33	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
R2611	Residence	1.5	1030	T33	32.8	32.8	32.8	32.8	32.8	40.0	43.0	45.0	49.0	51.0
R2612	Residence	1.5	852	T36	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R2613	Residence	1.5	1132	T36	32.3	32.3	32.3	32.3	32.3	40.0	43.0	45.0	49.0	51.0
R2614	Residence	1.5	790	T36	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R2615	Residence	1.5	808	T36	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R2616	Residence	1.5	1104	T36	31.7	31.7	31.7	31.7	31.7	40.0	43.0	45.0	49.0	51.0
R2617	Residence	4.5	858	T36	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R2618	Residence	1.5	1033	T36	32.1	32.1	32.1	32.1	32.1	40.0	43.0	45.0	49.0	51.0
R2684	Residence	1.5	1291	T13	29.5	29.5	29.5	29.5	29.5	40.0	43.0	45.0	49.0	51.0
R2769	Residence	1.5	1477	T22	30.0	30.0	30.0	30.0	30.0	40.0	43.0	45.0	49.0	51.0
R2770	Residence	1.5	1445	T22	30.1	30.1	30.1	30.1	30.1	40.0	43.0	45.0	49.0	51.0
R2853	Residence	4.5	1268	T59	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
R2854	Residence	4.5	1220	T59	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R2855	Residence	1.5	1190	T59	33.8	33.8	33.8	33.8	33.8	40.0	43.0	45.0	49.0	51.0
R2856	Residence	4.5	1164	T59	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
R2857	Residence	4.5	898	T59	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
R2858	Residence	4.5	934	T59	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R2859	Residence	1.5	1349	T59	32.5	32.5	32.5	32.5	32.5	40.0	43.0	45.0	49.0	51.0
R2860	Residence	1.5	1049	T59	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R2861	Residence	4.5	922	T59	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
R2862	Residence	1.5	849	T59	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0
R2863	Residence	4.5	686	T62	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
R2864	Residence	4.5	884	T62	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
R2865	Residence	1.5	918	T62	35.8	35.8	35.8	35.8	35.8	40.0	43.0	45.0	49.0	51.0
R2866	Residence	1.5	996	T62	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
R2867	Residence	4.5	1060	T62	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
R2868	Residence	1.5	1015	T62	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R2869	Residence	1.5	1102	T62	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R2870	Residence	1.5	1158	T62	33.8	33.8	33.8	33.8	33.8	40.0	43.0	45.0	49.0	51.0
R2871	Residence	1.5	1193	T62	33.6	33.6	33.6	33.6	33.6	40.0	43.0	45.0	49.0	51.0
R2872	Residence	1.5	1226	T62	33.3	33.3	33.3	33.3	33.3	40.0	43.0	45.0	49.0	51.0
R2873	Residence	1.5	1245	T62	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
R2874	Residence	1.5	1253	T62	33.1	33.1	33.1	33.1	33.1	40.0	43.0	45.0	49.0	51.0
R2875	Residence	4.5	1260	T62	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
R2876	Residence	4.5	1385	T62	33.7	33.7	33.7	33.7	33.7	40.0	43.0	45.0	49.0	51.0
R2877	Residence	1.5	829	T62	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R2878	Residence	4.5	832	T62	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0
R2879	Residence	1.5	888	T62	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
R2880	Residence	1.5	745	T62	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R2881	Residence	1.5	1190	T62	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R2884	Residence	1.5	632	T60	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
R2885	Residence	4.5	640	T60	39.9	39.9	39.9	39.9	39.9	40.0	43.0	45.0	49.0	51.0
R2886	Residence	4.5	670	T60	39.5	39.5	39.5	39.5	39.5	40.0	43.0	45.0	49.0	51.0
R2887	Residence	4.5	708	T60	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
R2888	Residence	1.5	892	T60	35.8	35.8	35.8	35.8	35.8	40.0	43.0	45.0	49.0	51.0
R2889	Residence	4.5	781	T60	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
R2890	Residence	4.5	715	T60	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
R2891	Residence	4.5	886	T60	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R2892	Residence	4.5	739	T60	38.9	38.9	38.9	38.9	38.9	40.0	43.0	45.0	49.0	51.0
R2893	Residence	4.5	870	T60	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
R2894	Residence	1.5	887	T60	36.0	36.0	36.0	36.0	36.0	40.0	43.0	45.0	49.0	51.0
R2895	Residence	4.5	903	T60	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0
R2896	Residence	1.5	919	T60	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R2897	Residence	1.5	1101	T60	34.0	34.0	34.0	34.0	34.0	40.0	43.0	45.0	49.0	51.0
R2898	Residence	1.5	1126	T60	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R2899	Residence	4.5	1165	T60	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R2900	Residence	1.5	1244	T60	33.0	33.0	33.0	33.0	33.0	40.0	43.0	45.0	49.0	51.0
R2901	Residence	1.5	1283	T60	32.6	32.6	32.6	32.6	32.6	40.0	43.0	45.0	49.0	51.0
R2902	Residence	4.5	1355	T60	33.5	33.5	33.5	33.5	33.5	40.0	43.0	45.0	49.0	51.0
R2903	Residence	1.5	1373	T60	31.9	31.9	31.9	31.9	31.9	40.0	43.0	45.0	49.0	51.0
R2904	Residence	1.5	1388	T60	31.8	31.8	31.8	31.8	31.8	40.0	43.0	45.0	49.0	51.0
R2905	Residence	4.5	1451	T60	32.8	32.8	32.8	32.8	32.8	40.0	43.0	45.0	49.0	51.0
R2906	Residence	1.5	1408	T60	31.7	31.7	31.7	31.7	31.7	40.0	43.0	45.0	49.0	51.0

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					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R2907	Residence	4.5	1371	T60	33.4	33.4	33.4	33.4	33.4	40.0	43.0	45.0	49.0	51.0
R2908	Residence	4.5	1354	T60	33.6	33.6	33.6	33.6	33.6	40.0	43.0	45.0	49.0	51.0
R2909	Residence	1.5	1344	T60	32.3	32.3	32.3	32.3	32.3	40.0	43.0	45.0	49.0	51.0
R2910	Residence	1.5	1330	T60	32.4	32.4	32.4	32.4	32.4	40.0	43.0	45.0	49.0	51.0
R2935	Residence	4.5	1457	T60	33.0	33.0	33.0	33.0	33.0	40.0	43.0	45.0	49.0	51.0
R2936	Residence	1.5	1454	T60	31.7	31.7	31.7	31.7	31.7	40.0	43.0	45.0	49.0	51.0
R2940	Residence	4.5	1269	T64	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R2941	Residence	4.5	1275	T64	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R2942	Residence	1.5	1391	T64	32.3	32.3	32.3	32.3	32.3	40.0	43.0	45.0	49.0	51.0
R2943	Residence	4.5	1492	T64	33.0	33.0	33.0	33.0	33.0	40.0	43.0	45.0	49.0	51.0
R2944	Residence	4.5	1472	T64	33.1	33.1	33.1	33.1	33.1	40.0	43.0	45.0	49.0	51.0
R2945	Residence	4.5	1462	T64	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
R2946	Residence	4.5	1444	T64	33.4	33.4	33.4	33.4	33.4	40.0	43.0	45.0	49.0	51.0
R2947	Residence	4.5	1438	T64	33.4	33.4	33.4	33.4	33.4	40.0	43.0	45.0	49.0	51.0
R2948	Residence	1.5	1404	T64	32.1	32.1	32.1	32.1	32.1	40.0	43.0	45.0	49.0	51.0
R2949	Residence	4.5	1399	T64	33.7	33.7	33.7	33.7	33.7	40.0	43.0	45.0	49.0	51.0
R2950	Residence	1.5	1424	T64	32.0	32.0	32.0	32.0	32.0	40.0	43.0	45.0	49.0	51.0
R2951	Residence	4.5	1465	T64	33.4	33.4	33.4	33.4	33.4	40.0	43.0	45.0	49.0	51.0
R2956	Residence	4.5	783	T54	39.8	39.8	39.8	39.8	39.8	40.0	43.0	45.0	49.0	51.0
R2957	Residence	1.5	987	T54	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
R2958	Residence	1.5	1350	T54	34.2	34.2	34.2	34.2	34.2	40.0	43.0	45.0	49.0	51.0
R2962	Residence	1.5	1129	T54	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
R2963	Residence	1.5	1157	T54	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R2967	Residence	1.5	1482	T54	32.4	32.4	32.4	32.4	32.4	40.0	43.0	45.0	49.0	51.0
R2968	Residence	1.5	1451	T54	32.5	32.5	32.5	32.5	32.5	40.0	43.0	45.0	49.0	51.0
R2969	Residence	1.5	1333	T54	32.8	32.8	32.8	32.8	32.8	40.0	43.0	45.0	49.0	51.0
R2970	Residence	1.5	1321	T54	32.8	32.8	32.8	32.8	32.8	40.0	43.0	45.0	49.0	51.0
R2971	Residence	4.5	1301	T54	34.4	34.4	34.4	34.4	34.4	40.0	43.0	45.0	49.0	51.0
R2972	Residence	1.5	1294	T54	32.9	32.9	32.9	32.9	32.9	40.0	43.0	45.0	49.0	51.0
R2973	Residence	1.5	1333	T54	32.6	32.6	32.6	32.6	32.6	40.0	43.0	45.0	49.0	51.0
R2974	Residence	1.5	1301	T54	32.6	32.6	32.6	32.6	32.6	40.0	43.0	45.0	49.0	51.0
R2975	Residence	1.5	1224	T54	33.0	33.0	33.0	33.0	33.0	40.0	43.0	45.0	49.0	51.0
R2976	Residence	1.5	1203	T54	33.1	33.1	33.1	33.1	33.1	40.0	43.0	45.0	49.0	51.0
R2977	Residence	1.5	1174	T54	33.3	33.3	33.3	33.3	33.3	40.0	43.0	45.0	49.0	51.0
R2978	Residence	1.5	1136	T54	33.5	33.5	33.5	33.5	33.5	40.0	43.0	45.0	49.0	51.0
R2979	Residence	1.5	1101	T54	33.7	33.7	33.7	33.7	33.7	40.0	43.0	45.0	49.0	51.0

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					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R2980	Residence	1.5	1070	T54	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
R2981	Residence	4.5	1048	T54	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
R2982	Residence	1.5	978	T54	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
R2983	Residence	1.5	926	T54	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R2984	Residence	1.5	943	T54	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
R2985	Residence	1.5	1008	T54	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
R2986	Residence	4.5	1109	T54	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
R2987	Residence	1.5	940	T54	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
R2988	Residence	1.5	746	T54	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
R2989	Residence	4.5	930	T54	36.3	36.3	36.3	36.3	36.3	40.0	43.0	45.0	49.0	51.0
R2990	Residence	4.5	860	T54	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
R2991	Residence	4.5	825	T54	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R2992	Residence	1.5	794	T54	36.3	36.3	36.3	36.3	36.3	40.0	43.0	45.0	49.0	51.0
R2993	Residence	4.5	768	T54	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R2994	Residence	4.5	758	T54	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
R2996	Residence	1.5	732	T54	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
R2999	Residence	1.5	724	T54	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
R3000	Residence	4.5	704	T54	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
R3001	Residence	1.5	724	T54	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
R3003	Residence	1.5	725	T54	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
R3004	Residence	4.5	747	T54	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
R3005	Residence	4.5	797	T54	39.5	39.5	39.5	39.5	39.5	40.0	43.0	45.0	49.0	51.0
R3006	Residence	1.5	832	T54	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
R3007	Residence	1.5	796	T3	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
R3008	Residence	1.5	796	T3	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
R3009	Residence	1.5	805	T3	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
R3010	Residence	4.5	741	T61	39.8	39.8	39.8	39.8	39.8	40.0	43.0	45.0	49.0	51.0
R3011	Residence	1.5	780	T68	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
R3013	Residence	4.5	1162	T62	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0
R3014	Residence	1.5	1281	T62	32.9	32.9	32.9	32.9	32.9	40.0	43.0	45.0	49.0	51.0
R3015	Residence	4.5	1293	T62	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
R3016	Residence	1.5	1296	T62	32.9	32.9	32.9	32.9	32.9	40.0	43.0	45.0	49.0	51.0
R3018	Residence	1.5	800	T60	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
R3019	Residence	1.5	804	T60	37.0	37.0	37.0	37.0	37.0	40.0	43.0	45.0	49.0	51.0
R3020	Residence	1.5	880	T60	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
R3021	Residence	1.5	1363	T60	32.2	32.2	32.2	32.2	32.2	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
R3022	Residence	1.5	1408	T60	31.8	31.8	31.8	31.8	31.8	40.0	43.0	45.0	49.0	51.0
R3023	Residence	1.5	1481	T60	31.4	31.4	31.4	31.4	31.4	40.0	43.0	45.0	49.0	51.0
R3025	Residence	4.5	1341	T60	33.7	33.7	33.7	33.7	33.7	40.0	43.0	45.0	49.0	51.0
R3026	Residence	1.5	1319	T60	32.4	32.4	32.4	32.4	32.4	40.0	43.0	45.0	49.0	51.0
R3027	Residence	4.5	1424	T60	33.0	33.0	33.0	33.0	33.0	40.0	43.0	45.0	49.0	51.0
R3028	Residence	4.5	1397	T60	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
R3029	Residence	1.5	1302	T60	32.5	32.5	32.5	32.5	32.5	40.0	43.0	45.0	49.0	51.0
R3030	Residence	4.5	1340	T60	33.7	33.7	33.7	33.7	33.7	40.0	43.0	45.0	49.0	51.0
R3033	Residence	1.5	1296	T54	32.9	32.9	32.9	32.9	32.9	40.0	43.0	45.0	49.0	51.0
R3034	Residence	1.5	1241	T54	32.9	32.9	32.9	32.9	32.9	40.0	43.0	45.0	49.0	51.0
R3035	Residence	1.5	1260	T54	33.3	33.3	33.3	33.3	33.3	40.0	43.0	45.0	49.0	51.0
R3036	Residence	1.5	1209	T54	33.4	33.4	33.4	33.4	33.4	40.0	43.0	45.0	49.0	51.0
R3037	Residence	1.5	1166	T54	33.6	33.6	33.6	33.6	33.6	40.0	43.0	45.0	49.0	51.0
R3038	Residence	1.5	731	T54	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
R3039	Residence	4.5	727	T54	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
R3052	Residence	1.5	1391	T59	32.2	32.2	32.2	32.2	32.2	40.0	43.0	45.0	49.0	51.0

Table 7-2 Vacant lot surrogate receptor noise level summary table.

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
V3107	VLSR	4.5	1418	T18	30.7	30.7	30.7	30.7	30.7	40.0	43.0	45.0	49.0	51.0
V3108	VLSR	4.5	1469	T18	30.3	30.3	30.3	30.3	30.3	40.0	43.0	45.0	49.0	51.0
V3109	VLSR	4.5	1095	T18	32.8	32.8	32.8	32.8	32.8	40.0	43.0	45.0	49.0	51.0
V3111	VLSR	4.5	1190	T18	32.1	32.1	32.1	32.1	32.1	40.0	43.0	45.0	49.0	51.0
V3112	VLSR	4.5	875	T18	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
V3113	VLSR	4.5	808	T18	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
V3114	VLSR	4.5	748	T18	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
V3115	VLSR	4.5	686	T18	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
V3126	VLSR	4.5	838	T18	35.8	35.8	35.8	35.8	35.8	40.0	43.0	45.0	49.0	51.0
V3127	VLSR	4.5	878	T18	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
V3133	VLSR	4.5	1489	T33	32.3	32.3	32.3	32.3	32.3	40.0	43.0	45.0	49.0	51.0
V3134	VLSR	4.5	1111	T18	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0
V3135	VLSR	4.5	1260	T18	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0
V3136	VLSR	4.5	981	T18	36.0	36.0	36.0	36.0	36.0	40.0	43.0	45.0	49.0	51.0
V3137	VLSR	4.5	1034	T18	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
V3138	VLSR	4.5	1137	T18	36.0	36.0	36.0	36.0	36.0	40.0	43.0	45.0	49.0	51.0
V3139	VLSR	4.5	1226	T34	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
V3140	VLSR	4.5	1149	T34	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
V3141	VLSR	4.5	1153	T34	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
V3142	VLSR	4.5	1201	T34	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
V3143	VLSR	4.5	1212	T33	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
V3145	VLSR	4.5	1307	T33	31.7	31.7	31.7	31.7	31.7	40.0	43.0	45.0	49.0	51.0
V3146	VLSR	4.5	1090	T33	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
V3147	VLSR	4.5	1137	T33	35.8	35.8	35.8	35.8	35.8	40.0	43.0	45.0	49.0	51.0
V3148	VLSR	4.5	1172	T34	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
V3149	VLSR	4.5	1013	T34	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
V3150	VLSR	4.5	866	T34	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
V3151	VLSR	4.5	986	T33	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
V3152	VLSR	4.5	988	T33	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
V3153	VLSR	4.5	1194	T33	32.7	32.7	32.7	32.7	32.7	40.0	43.0	45.0	49.0	51.0
V3154	VLSR	4.5	1151	T33	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
V3155	VLSR	4.5	657	T33	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
V3159	VLSR	4.5	663	T36	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
V3160	VLSR	4.5	729	T36	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
V3162	VLSR	4.5	862	T36	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
V3163	VLSR	4.5	1090	T36	33.3	33.3	33.3	33.3	33.3	40.0	43.0	45.0	49.0	51.0
V3164	VLSR	4.5	1010	T36	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
V3165	VLSR	4.5	1108	T36	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
V3170	VLSR	4.5	937	T36	34.4	34.4	34.4	34.4	34.4	40.0	43.0	45.0	49.0	51.0
V3174	VLSR	4.5	1172	T211	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
V3176	VLSR	4.5	630	T18	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
V3177	VLSR	4.5	722	T18	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
V3178	VLSR	4.5	922	T18	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
V3179	VLSR	4.5	1108	T34	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
V3180	VLSR	4.5	1051	T34	36.7	36.7	36.7	36.7	36.7	40.0	43.0	45.0	49.0	51.0
V3181	VLSR	4.5	931	T34	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
V3182	VLSR	4.5	827	T34	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0
V3183	VLSR	4.5	1052	T46	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
V3185	VLSR	4.5	1026	T46	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
V3186	VLSR	4.5	1006	T41	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
V3187	VLSR	4.5	1037	T41	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
V3188	VLSR	4.5	1161	T41	34.4	34.4	34.4	34.4	34.4	40.0	43.0	45.0	49.0	51.0
V3219	VLSR	4.5	880	T211	35.8	35.8	35.8	35.8	35.8	40.0	43.0	45.0	49.0	51.0
V3230	VLSR	4.5	1127	T43	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0
V3231	VLSR	4.5	1269	T211	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
V3232	VLSR	4.5	1002	T58	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
V3234	VLSR	4.5	815	T28	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
V3236	VLSR	4.5	650	T23	38.9	38.9	38.9	38.9	38.9	40.0	43.0	45.0	49.0	51.0
V3237	VLSR	4.5	738	T23	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
V3239	VLSR	4.5	776	T23	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
V3240	VLSR	4.5	1377	T23	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
V3241	VLSR	4.5	1391	T23	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
V3242	VLSR	4.5	1374	T23	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
V3243	VLSR	4.5	1485	T23	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
V3246	VLSR	4.5	1443	T13	33.1	33.1	33.1	33.1	33.1	40.0	43.0	45.0	49.0	51.0
V3250	VLSR	4.5	1234	T13	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
V3255	VLSR	4.5	1458	T23	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
V3257	VLSR	4.5	1391	T24	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
V3258	VLSR	4.5	1246	T24	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0
V3259	VLSR	4.5	1179	T24	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
V3260	VLSR	4.5	1243	T48	35.4	35.4	35.4	35.4	35.4	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
V3261	VLSR	4.5	1107	T24	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
V3262	VLSR	4.5	889	T13	36.7	36.7	36.7	36.7	36.7	40.0	43.0	45.0	49.0	51.0
V3263	VLSR	4.5	818	T13	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
V3264	VLSR	4.5	619	T48	39.9	39.9	39.9	39.9	39.9	40.0	43.0	45.0	49.0	51.0
V3267	VLSR	4.5	698	T20	39.3	39.3	39.3	39.3	39.3	40.0	43.0	45.0	49.0	51.0
V3268	VLSR	4.5	895	T24	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
V3269	VLSR	4.5	926	T24	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
V3270	VLSR	4.5	896	T24	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
V3271	VLSR	4.5	1428	T24	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
V3272	VLSR	4.5	1364	T23	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
V3273	VLSR	4.5	979	T23	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
V3274	VLSR	4.5	776	T24	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
V3275	VLSR	4.5	767	T24	38.9	38.9	38.9	38.9	38.9	40.0	43.0	45.0	49.0	51.0
V3276	VLSR	4.5	584	T20	39.9	39.9	39.9	39.9	39.9	40.0	43.0	45.0	49.0	51.0
V3277	VLSR	4.5	606	T20	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
V3278	VLSR	4.5	735	T23	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
V3279	VLSR	4.5	852	T23	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
V3280	VLSR	4.5	1065	T58	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0
V3281	VLSR	4.5	772	T219	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
V3282	VLSR	4.5	943	T219	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
V3283	VLSR	4.5	789	T24	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
V3284	VLSR	4.5	767	T24	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0
V3285	VLSR	4.5	900	T24	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
V3286	VLSR	4.5	872	T16	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0
V3287	VLSR	4.5	858	T16	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
V3288	VLSR	4.5	835	T10	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
V3305	VLSR	4.5	1062	T211	34.9	34.9	34.9	34.9	34.9	40.0	43.0	45.0	49.0	51.0
V3306	VLSR	4.5	1044	T58	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
V3307	VLSR	4.5	749	T58	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
V3308	VLSR	4.5	713	T58	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0
V3309	VLSR	4.5	678	T219	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
V3311	VLSR	4.5	573	T58	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
V3312	VLSR	4.5	841	T58	36.0	36.0	36.0	36.0	36.0	40.0	43.0	45.0	49.0	51.0
V3313	VLSR	4.5	829	T58	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
V3336	VLSR	4.5	963	T218	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
V3341	VLSR	4.5	687	T58	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
V3342	VLSR	4.5	651	T219	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
V3347	VLSR	4.5	902	Tr788	35.0	35.0	35.0	35.0	35.0	40.0	43.0	45.0	49.0	51.0
V3348	VLSR	4.5	895	T233	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
V3349	VLSR	4.5	927	T10	36.3	36.3	36.3	36.3	36.3	40.0	43.0	45.0	49.0	51.0
V3350	VLSR	4.5	601	T233	39.2	39.2	39.2	39.2	39.2	40.0	43.0	45.0	49.0	51.0
V3351	VLSR	4.5	753	T10	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
V3352	VLSR	4.5	693	T10	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
V3353	VLSR	4.5	965	T10	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
V3354	VLSR	4.5	766	T20	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
V3355	VLSR	4.5	804	T228	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
V3409	VLSR	4.5	846	T247	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
V3410	VLSR	4.5	971	T17	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
V3411	VLSR	4.5	1180	T55	36.7	36.7	36.7	36.7	36.7	40.0	43.0	45.0	49.0	51.0
V3477	VLSR	4.5	1377	T9	34.7	34.7	34.7	34.7	34.7	40.0	43.0	45.0	49.0	51.0
V3478	VLSR	4.5	1086	T9	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
V3479	VLSR	4.5	1183	T9	32.7	32.7	32.7	32.7	32.7	40.0	43.0	45.0	49.0	51.0
V3480	VLSR	4.5	1274	T9	32.4	32.4	32.4	32.4	32.4	40.0	43.0	45.0	49.0	51.0
V3481	VLSR	4.5	912	T55	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
V3482	VLSR	4.5	636	T9	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
V3484	VLSR	4.5	680	T55	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
V3485	VLSR	4.5	560	T55	39.3	39.3	39.3	39.3	39.3	40.0	43.0	45.0	49.0	51.0
V3486	VLSR	4.5	767	T55	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
V3487	VLSR	4.5	791	T55	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
V3488	VLSR	4.5	852	T51	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
V3489	VLSR	4.5	1371	Tr673	30.3	30.3	30.3	30.3	30.3	40.0	43.0	45.0	49.0	51.0
V3490	VLSR	4.5	1362	Tr673	30.3	30.3	30.3	30.3	30.3	40.0	43.0	45.0	49.0	51.0
V3491	VLSR	4.5	1339	Tr673	30.2	30.2	30.2	30.2	30.2	40.0	43.0	45.0	49.0	51.0
V3492	VLSR	4.5	1349	Tr673	30.2	30.2	30.2	30.2	30.2	40.0	43.0	45.0	49.0	51.0
V3493	VLSR	4.5	1345	Tr832	30.2	30.2	30.2	30.2	30.2	40.0	43.0	45.0	49.0	51.0
V3494	VLSR	4.5	1342	Tr832	30.2	30.2	30.2	30.2	30.2	40.0	43.0	45.0	49.0	51.0
V3495	VLSR	4.5	1349	Tr832	30.2	30.2	30.2	30.2	30.2	40.0	43.0	45.0	49.0	51.0
V3496	VLSR	4.5	1351	Tr832	30.2	30.2	30.2	30.2	30.2	40.0	43.0	45.0	49.0	51.0
V3497	VLSR	4.5	1360	Tr832	30.2	30.2	30.2	30.2	30.2	40.0	43.0	45.0	49.0	51.0
V3498	VLSR	4.5	1360	Tr832	30.2	30.2	30.2	30.2	30.2	40.0	43.0	45.0	49.0	51.0
V3499	VLSR	4.5	1381	Tr832	30.2	30.2	30.2	30.2	30.2	40.0	43.0	45.0	49.0	51.0
V3500	VLSR	4.5	1402	Tr836	30.4	30.4	30.4	30.4	30.4	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
V3501	VLSR	4.5	1433	Tr842	31.1	31.1	31.1	31.1	31.1	40.0	43.0	45.0	49.0	51.0
V3502	VLSR	4.5	1452	Tr844	31.1	31.1	31.1	31.1	31.1	40.0	43.0	45.0	49.0	51.0
V3503	VLSR	4.5	1452	Tr844	31.2	31.2	31.2	31.2	31.2	40.0	43.0	45.0	49.0	51.0
V3504	VLSR	4.5	1406	Tr844	31.4	31.4	31.4	31.4	31.4	40.0	43.0	45.0	49.0	51.0
V3505	VLSR	4.5	1454	Tr844	31.3	31.3	31.3	31.3	31.3	40.0	43.0	45.0	49.0	51.0
V3506	VLSR	4.5	1475	Tr844	31.3	31.3	31.3	31.3	31.3	40.0	43.0	45.0	49.0	51.0
V3507	VLSR	4.5	1490	Tr844	31.3	31.3	31.3	31.3	31.3	40.0	43.0	45.0	49.0	51.0
V3508	VLSR	4.5	1404	Tr844	32.6	32.6	32.6	32.6	32.6	40.0	43.0	45.0	49.0	51.0
V3510	VLSR	4.5	1452	T56	32.6	32.6	32.6	32.6	32.6	40.0	43.0	45.0	49.0	51.0
V3511	VLSR	4.5	1468	T56	32.5	32.5	32.5	32.5	32.5	40.0	43.0	45.0	49.0	51.0
V3522	VLSR	4.5	1362	T29	34.4	34.4	34.4	34.4	34.4	40.0	43.0	45.0	49.0	51.0
V3526	VLSR	4.5	579	T22	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
V3527	VLSR	4.5	559	T22	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
V3528	VLSR	4.5	591	T22	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
V3531	VLSR	4.5	1322	T22	31.9	31.9	31.9	31.9	31.9	40.0	43.0	45.0	49.0	51.0
V3545	VLSR	4.5	1356	T57	30.5	30.5	30.5	30.5	30.5	40.0	43.0	45.0	49.0	51.0
V3546	VLSR	4.5	1499	T57	29.6	29.6	29.6	29.6	29.6	40.0	43.0	45.0	49.0	51.0
V3559	VLSR	4.5	1377	T15	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
V3560	VLSR	4.5	1363	T49	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
V3561	VLSR	4.5	1334	T50	33.8	33.8	33.8	33.8	33.8	40.0	43.0	45.0	49.0	51.0
V3562	VLSR	4.5	1245	T49	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0
V3563	VLSR	4.5	1279	T49	35.2	35.2	35.2	35.2	35.2	40.0	43.0	45.0	49.0	51.0
V3566	VLSR	4.5	1440	T57	32.2	32.2	32.2	32.2	32.2	40.0	43.0	45.0	49.0	51.0
V3567	VLSR	4.5	1427	T57	32.5	32.5	32.5	32.5	32.5	40.0	43.0	45.0	49.0	51.0
V3568	VLSR	4.5	1385	T57	33.3	33.3	33.3	33.3	33.3	40.0	43.0	45.0	49.0	51.0
V3569	VLSR	4.5	1378	T57	34.3	34.3	34.3	34.3	34.3	40.0	43.0	45.0	49.0	51.0
V3570	VLSR	4.5	1108	T15	36.2	36.2	36.2	36.2	36.2	40.0	43.0	45.0	49.0	51.0
V3571	VLSR	4.5	1093	T15	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
V3572	VLSR	4.5	1104	T15	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
V3573	VLSR	4.5	1117	T15	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
V3574	VLSR	4.5	1121	T15	36.7	36.7	36.7	36.7	36.7	40.0	43.0	45.0	49.0	51.0
V3575	VLSR	4.5	1132	T15	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
V3576	VLSR	4.5	1136	T15	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0
V3577	VLSR	4.5	937	T50	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
V3578	VLSR	4.5	876	T50	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0
V3579	VLSR	4.5	800	T50	36.7	36.7	36.7	36.7	36.7	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
V3580	VLSR	4.5	820	T50	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
V3581	VLSR	4.5	874	T50	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
V3582	VLSR	4.5	1178	T50	33.6	33.6	33.6	33.6	33.6	40.0	43.0	45.0	49.0	51.0
V3583	VLSR	4.5	1417	T50	32.4	32.4	32.4	32.4	32.4	40.0	43.0	45.0	49.0	51.0
V3584	VLSR	4.5	1496	T50	32.1	32.1	32.1	32.1	32.1	40.0	43.0	45.0	49.0	51.0
V3585	VLSR	4.5	1458	T57	29.9	29.9	29.9	29.9	29.9	40.0	43.0	45.0	49.0	51.0
V3586	VLSR	4.5	1315	T57	30.7	30.7	30.7	30.7	30.7	40.0	43.0	45.0	49.0	51.0
V3587	VLSR	4.5	1240	T57	31.2	31.2	31.2	31.2	31.2	40.0	43.0	45.0	49.0	51.0
V3588	VLSR	4.5	1292	T57	30.9	30.9	30.9	30.9	30.9	40.0	43.0	45.0	49.0	51.0
V3589	VLSR	4.5	1275	T57	31.0	31.0	31.0	31.0	31.0	40.0	43.0	45.0	49.0	51.0
V3590	VLSR	4.5	1337	T57	30.8	30.8	30.8	30.8	30.8	40.0	43.0	45.0	49.0	51.0
V3591	VLSR	4.5	1323	T57	32.3	32.3	32.3	32.3	32.3	40.0	43.0	45.0	49.0	51.0
V3592	VLSR	4.5	1078	T57	32.7	32.7	32.7	32.7	32.7	40.0	43.0	45.0	49.0	51.0
V3595	VLSR	4.5	1205	T57	31.5	31.5	31.5	31.5	31.5	40.0	43.0	45.0	49.0	51.0
V3597	VLSR	4.5	876	T57	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
V3604	VLSR	4.5	1366	T22	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
V3605	VLSR	4.5	1208	T22	33.5	33.5	33.5	33.5	33.5	40.0	43.0	45.0	49.0	51.0
V3606	VLSR	4.5	1371	T14	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
V3607	VLSR	4.5	887	T14	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
V3608	VLSR	4.5	761	T14	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
V3610	VLSR	4.5	991	T22	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
V3611	VLSR	4.5	714	T22	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
V3614	VLSR	4.5	1089	T22	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0
V3615	VLSR	4.5	1217	T14	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
V3616	VLSR	4.5	994	T22	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
V3619	VLSR	4.5	986	T38	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
V3620	VLSR	4.5	1208	T42	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
V3621	VLSR	4.5	927	T42	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
V3622	VLSR	4.5	1265	T29	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
V3623	VLSR	4.5	718	T42	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
V3628	VLSR	4.5	1239	T29	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
V3634	VLSR	4.5	1209	Tr844	32.8	32.8	32.8	32.8	32.8	40.0	43.0	45.0	49.0	51.0
V3637	VLSR	4.5	1105	T29	35.7	35.7	35.7	35.7	35.7	40.0	43.0	45.0	49.0	51.0
V3638	VLSR	4.5	1117	T29	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
V3642	VLSR	4.5	912	T56	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
V3646	VLSR	4.5	720	Tr844	36.9	36.9	36.9	36.9	36.9	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
V3649	VLSR	4.5	609	Tr698	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
V3654	VLSR	4.5	622	Tr840	34.4	34.4	34.4	34.4	34.4	40.0	43.0	45.0	49.0	51.0
V3655	VLSR	4.5	503	Tr836	33.9	33.9	33.9	33.9	33.9	40.0	43.0	45.0	49.0	51.0
V3656	VLSR	4.5	625	Tr702	32.5	32.5	32.5	32.5	32.5	40.0	43.0	45.0	49.0	51.0
V3657	VLSR	4.5	206	Tr702	34.2	34.2	34.2	34.2	34.2	40.0	43.0	45.0	49.0	51.0
V3658	VLSR	4.5	630	Tr602	34.0	34.0	34.0	34.0	34.0	40.0	43.0	45.0	49.0	51.0
V3664	VLSR	4.5	563	Tr658	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
V3669	VLSR	4.5	878	T17	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
V3671	VLSR	4.5	862	T52	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
V3677	VLSR	4.5	860	T42	38.9	38.9	38.9	38.9	38.9	40.0	43.0	45.0	49.0	51.0
V3678	VLSR	4.5	783	T42	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
V3679	VLSR	4.5	723	T42	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
V3682	VLSR	4.5	1021	T53	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
V3686	VLSR	4.5	825	T35	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
V3689	VLSR	4.5	899	T35	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
V3693	VLSR	4.5	885	T14	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
V3697	VLSR	4.5	896	T40	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
V3698	VLSR	4.5	817	T19	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
V3699	VLSR	4.5	673	T47	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
V3703	VLSR	4.5	813	T30	38.9	38.9	38.9	38.9	38.9	40.0	43.0	45.0	49.0	51.0
V3704	VLSR	4.5	699	T19	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
V3705	VLSR	4.5	1027	T26	39.5	39.5	39.5	39.5	39.5	40.0	43.0	45.0	49.0	51.0
V3707	VLSR	4.5	759	T26	39.9	39.9	39.9	39.9	39.9	40.0	43.0	45.0	49.0	51.0
V3712	VLSR	4.5	1224	T62	34.8	34.8	34.8	34.8	34.8	40.0	43.0	45.0	49.0	51.0
V3713	VLSR	4.5	927	T59	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
V3714	VLSR	4.5	1142	T59	35.5	35.5	35.5	35.5	35.5	40.0	43.0	45.0	49.0	51.0
V3715	VLSR	4.5	815	T62	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
V3716	VLSR	4.5	801	T60	39.8	39.8	39.8	39.8	39.8	40.0	43.0	45.0	49.0	51.0
V3717	VLSR	4.5	1027	T67	37.5	37.5	37.5	37.5	37.5	40.0	43.0	45.0	49.0	51.0
V3718	VLSR	4.5	908	T67	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
V3719	VLSR	4.5	1163	T67	36.1	36.1	36.1	36.1	36.1	40.0	43.0	45.0	49.0	51.0
V3722	VLSR	4.5	813	T67	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
V3747	VLSR	4.5	1490	T50	33.0	33.0	33.0	33.0	33.0	40.0	43.0	45.0	49.0	51.0
V3749	VLSR	4.5	1427	T50	33.2	33.2	33.2	33.2	33.2	40.0	43.0	45.0	49.0	51.0
V3750	VLSR	4.5	1406	T50	33.3	33.3	33.3	33.3	33.3	40.0	43.0	45.0	49.0	51.0
V3751	VLSR	4.5	1311	T65	34.6	34.6	34.6	34.6	34.6	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
V3752	VLSR	4.5	1354	T65	34.5	34.5	34.5	34.5	34.5	40.0	43.0	45.0	49.0	51.0
V3753	VLSR	4.5	860	T65	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
V3754	VLSR	4.5	888	T50	36.5	36.5	36.5	36.5	36.5	40.0	43.0	45.0	49.0	51.0
V3755	VLSR	4.5	783	T50	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
V3756	VLSR	4.5	815	T49	39.2	39.2	39.2	39.2	39.2	40.0	43.0	45.0	49.0	51.0
V3757	VLSR	4.5	808	T19	38.1	38.1	38.1	38.1	38.1	40.0	43.0	45.0	49.0	51.0
V3758	VLSR	4.5	1087	T40	37.7	37.7	37.7	37.7	37.7	40.0	43.0	45.0	49.0	51.0
V3765	VLSR	4.5	685	T12	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
V3766	VLSR	4.5	693	T12	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
V3772	VLSR	4.5	768	T55	39.7	39.7	39.7	39.7	39.7	40.0	43.0	45.0	49.0	51.0
V3773	VLSR	4.5	812	T55	39.5	39.5	39.5	39.5	39.5	40.0	43.0	45.0	49.0	51.0
V3774	VLSR	4.5	972	T55	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
V3775	VLSR	4.5	1040	T17	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
V3776	VLSR	4.5	658	T12	39.7	39.7	39.7	39.7	39.7	40.0	43.0	45.0	49.0	51.0
V3777	VLSR	4.5	735	T12	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
V3778	VLSR	4.5	715	T12	39.1	39.1	39.1	39.1	39.1	40.0	43.0	45.0	49.0	51.0
V3783	VLSR	4.5	792	T21	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
V3790	VLSR	4.5	805	T11	38.3	38.3	38.3	38.3	38.3	40.0	43.0	45.0	49.0	51.0
V3791	VLSR	4.5	712	T4	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
V3792	VLSR	4.5	771	T4	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
V3793	VLSR	4.5	809	T4	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
V3794	VLSR	4.5	829	T4	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
V3795	VLSR	4.5	838	T4	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
V3796	VLSR	4.5	855	T4	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
V3797	VLSR	4.5	864	T4	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
V3798	VLSR	4.5	764	T4	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
V3799	VLSR	4.5	713	T4	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
V3800	VLSR	4.5	818	T11	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
V3801	VLSR	4.5	767	T11	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
V3802	VLSR	4.5	826	T11	38.5	38.5	38.5	38.5	38.5	40.0	43.0	45.0	49.0	51.0
V3803	VLSR	4.5	718	T11	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
V3804	VLSR	4.5	693	T11	39.0	39.0	39.0	39.0	39.0	40.0	43.0	45.0	49.0	51.0
V3805	VLSR	4.5	768	T11	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
V3806	VLSR	4.5	722	T11	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
V3808	VLSR	4.5	651	T4	39.3	39.3	39.3	39.3	39.3	40.0	43.0	45.0	49.0	51.0
V3809	VLSR	4.5	869	T4	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
V3813	VLSR	4.5	923	T8	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
V3814	VLSR	4.5	884	T26	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0
V3815	VLSR	4.5	715	T2	37.9	37.9	37.9	37.9	37.9	40.0	43.0	45.0	49.0	51.0
V3816	VLSR	4.5	866	T8	39.8	39.8	39.8	39.8	39.8	40.0	43.0	45.0	49.0	51.0
V3817	VLSR	4.5	645	T7	38.9	38.9	38.9	38.9	38.9	40.0	43.0	45.0	49.0	51.0
V3818	VLSR	4.5	1318	T7	35.1	35.1	35.1	35.1	35.1	40.0	43.0	45.0	49.0	51.0
V3819	VLSR	4.5	1267	T101	35.6	35.6	35.6	35.6	35.6	40.0	43.0	45.0	49.0	51.0
V3821	VLSR	4.5	873	T65	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
V3822	VLSR	4.5	1026	T65	35.9	35.9	35.9	35.9	35.9	40.0	43.0	45.0	49.0	51.0
V3823	VLSR	4.5	865	T65	37.2	37.2	37.2	37.2	37.2	40.0	43.0	45.0	49.0	51.0
V3824	VLSR	4.5	938	T104	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
V3825	VLSR	4.5	761	T65	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
V3826	VLSR	4.5	781	T67	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
V3827	VLSR	4.5	684	T67	39.7	39.7	39.7	39.7	39.7	40.0	43.0	45.0	49.0	51.0
V3828	VLSR	4.5	587	T67	39.4	39.4	39.4	39.4	39.4	40.0	43.0	45.0	49.0	51.0
V3829	VLSR	4.5	913	T67	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
V3831	VLSR	4.5	916	T61	38.6	38.6	38.6	38.6	38.6	40.0	43.0	45.0	49.0	51.0
V3834	VLSR	4.5	1103	T64	36.6	36.6	36.6	36.6	36.6	40.0	43.0	45.0	49.0	51.0
V3835	VLSR	4.5	948	T64	37.3	37.3	37.3	37.3	37.3	40.0	43.0	45.0	49.0	51.0
V3836	VLSR	4.5	657	T60	39.7	39.7	39.7	39.7	39.7	40.0	43.0	45.0	49.0	51.0
V3842	VLSR	4.5	897	T105	38.4	38.4	38.4	38.4	38.4	40.0	43.0	45.0	49.0	51.0
V3843	VLSR	4.5	942	T105	38.0	38.0	38.0	38.0	38.0	40.0	43.0	45.0	49.0	51.0
V3844	VLSR	4.5	939	T60	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0
V3845	VLSR	4.5	1329	T60	33.7	33.7	33.7	33.7	33.7	40.0	43.0	45.0	49.0	51.0
V3846	VLSR	4.5	1401	T60	33.1	33.1	33.1	33.1	33.1	40.0	43.0	45.0	49.0	51.0
V3847	VLSR	4.5	1437	T60	32.9	32.9	32.9	32.9	32.9	40.0	43.0	45.0	49.0	51.0
V3848	VLSR	4.5	787	T60	38.2	38.2	38.2	38.2	38.2	40.0	43.0	45.0	49.0	51.0
V3849	VLSR	4.5	733	T60	38.8	38.8	38.8	38.8	38.8	40.0	43.0	45.0	49.0	51.0
V3850	VLSR	4.5	743	T48	37.6	37.6	37.6	37.6	37.6	40.0	43.0	45.0	49.0	51.0
V3851	VLSR	4.5	1011	T24	37.1	37.1	37.1	37.1	37.1	40.0	43.0	45.0	49.0	51.0
V3856	VLSR	4.5	893	T55	37.8	37.8	37.8	37.8	37.8	40.0	43.0	45.0	49.0	51.0
V3857	VLSR	4.5	958	T65	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
V3858	VLSR	4.5	1087	T48	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
V4000	VLSR	4.5	951	T38	38.7	38.7	38.7	38.7	38.7	40.0	43.0	45.0	49.0	51.0
V4001	VLSR	4.5	688	Tr830	36.4	36.4	36.4	36.4	36.4	40.0	43.0	45.0	49.0	51.0
V4002	VLSR	4.5	813	Tr830	36.8	36.8	36.8	36.8	36.8	40.0	43.0	45.0	49.0	51.0

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)					Sound Level Limit (dBA)				
					6.0	7.0	8.0	9.0	10.0	6.0	7.0	8.0	9.0	10.0
V4003	VLSR	4.5	927	T17	37.4	37.4	37.4	37.4	37.4	40.0	43.0	45.0	49.0	51.0
V4004	VLSR	4.5	609	T36	39.3	39.3	39.3	39.3	39.3	40.0	43.0	45.0	49.0	51.0
V4006	VLSR	4.5	736	T68	39.8	39.8	39.8	39.8	39.8	40.0	43.0	45.0	49.0	51.0
V4007	VLSR	4.5	774	T26	39.8	39.8	39.8	39.8	39.8	40.0	43.0	45.0	49.0	51.0
V4008	VLSR	4.5	931	T8	39.6	39.6	39.6	39.6	39.6	40.0	43.0	45.0	49.0	51.0

Table 7-3 Participant noise level summary table.

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)				
					6.0	7.0	8.0	9.0	10.0
P41	Residence	4.5	581	T18	38.4	38.4	38.4	38.4	38.4
P62	Residence	4.5	705	T34	39.3	39.3	39.3	39.3	39.3
P68	Residence	4.5	895	T45	39.4	39.4	39.4	39.4	39.4
P71	Residence	4.5	812	T36	38.9	38.9	38.9	38.9	38.9
P107	Residence	4.5	559	T43	39.2	39.2	39.2	39.2	39.2
P140	Residence	4.5	795	T46	38.4	38.4	38.4	38.4	38.4
P177	Residence	4.5	486	T20	40.7	40.7	40.7	40.7	40.7
P258	Residence	4.5	439	T219	41.2	41.2	41.2	41.2	41.2
P301	Residence	4.5	755	T16	38.6	38.6	38.6	38.6	38.6
P351	Residence	4.5	481	T13	40.7	40.7	40.7	40.7	40.7
P352	Residence	4.5	519	T48	40.8	40.8	40.8	40.8	40.8
P366	Residence	1.5	252	Tr601	34.5	34.5	34.5	34.5	34.5
P370	Residence	4.5	271	Tr834	34.9	34.9	34.9	34.9	34.9
P376	Residence	4.5	168	Tr680	36.6	36.6	36.6	36.6	36.6
P377	Residence	4.5	128	Tr651	37.7	37.7	37.7	37.7	37.7
P394	Residence	4.5	322	Tr842	36.5	36.5	36.5	36.5	36.5
P459	Residence	1.5	246	Tr774	35.2	35.2	35.2	35.2	35.2
P522	Residence	4.5	672	T2	38.3	38.3	38.3	38.3	38.3
P538	Residence	1.5	497	T11	39.8	39.8	39.8	39.8	39.8
P563	Residence	4.5	430	T10	40.6	40.6	40.6	40.6	40.6
P580	Residence	4.5	106	Tr700	37.3	37.3	37.3	37.3	37.3
P587	Residence	4.5	797	Tr698	39.5	39.5	39.5	39.5	39.5
P589	Residence	4.5	826	T44	39.9	39.9	39.9	39.9	39.9
P594	Residence	1.5	583	T42	39.0	39.0	39.0	39.0	39.0
P610	Residence	4.5	448	T47	43.1	43.1	43.1	43.1	43.1
P677	Residence	4.5	551	T52	41.4	41.4	41.4	41.4	41.4
P678	Residence	4.5	701	T52	40.6	40.6	40.6	40.6	40.6
P680	Residence	1.5	689	T53	38.7	38.7	38.7	38.7	38.7
P688	Residence	4.5	824	T68	39.6	39.6	39.6	39.6	39.6
P689	Residence	4.5	658	T68	41.3	41.3	41.3	41.3	41.3
P690	Residence	4.5	736	T37	40.7	40.7	40.7	40.7	40.7
P691	Residence	4.5	563	T11	41.6	41.6	41.6	41.6	41.6
P692	Residence	1.5	563	T40	40.6	40.6	40.6	40.6	40.6
P729	Residence	4.5	551	T21	40.4	40.4	40.4	40.4	40.4

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)				
					6.0	7.0	8.0	9.0	10.0
P735	Residence	4.5	547	T12	40.2	40.2	40.2	40.2	40.2
P844	Residence	1.5	713	T2	38.3	38.3	38.3	38.3	38.3
P845	Residence	4.5	484	T2	41.5	41.5	41.5	41.5	41.5
P885	Residence	1.5	879	T57	37.2	37.2	37.2	37.2	37.2
P988	Residence	4.5	883	T69	39.9	39.9	39.9	39.9	39.9
P994	Residence	4.5	879	T26	39.6	39.6	39.6	39.6	39.6
P995	Residence	1.5	846	T15	38.6	38.6	38.6	38.6	38.6
P996	Residence	4.5	718	T7	39.6	39.6	39.6	39.6	39.6
P997	Residence	4.5	674	T49	40.5	40.5	40.5	40.5	40.5
P999	Residence	1.5	726	T49	38.7	38.7	38.7	38.7	38.7
P1000	Residence	4.5	734	T49	39.8	39.8	39.8	39.8	39.8
P1002	Residence	4.5	655	T50	40.1	40.1	40.1	40.1	40.1
P1053	Residence	4.5	711	T67	39.5	39.5	39.5	39.5	39.5
P1056	Residence	1.5	770	T65	37.9	37.9	37.9	37.9	37.9
P1180	Residence	4.5	686	T9	36.7	36.7	36.7	36.7	36.7
P1181	Residence	1.5	630	T9	36.4	36.4	36.4	36.4	36.4
P1182	Residence	1.5	567	T9	37.4	37.4	37.4	37.4	37.4
P1183	Residence	1.5	497	T9	38.6	38.6	38.6	38.6	38.6
P1184	Residence	1.5	421	T9	40.2	40.2	40.2	40.2	40.2
P1185	Residence	1.5	365	T9	41.6	41.6	41.6	41.6	41.6
P1186	Residence	1.5	378	T9	41.2	41.2	41.2	41.2	41.2
P1187	Residence	1.5	376	T9	41.2	41.2	41.2	41.2	41.2
P1188	Residence	1.5	418	T9	40.3	40.3	40.3	40.3	40.3
P1189	Residence	1.5	468	T9	39.2	39.2	39.2	39.2	39.2
P1190	Residence	1.5	506	T9	38.5	38.5	38.5	38.5	38.5
P1191	Residence	1.5	562	T9	37.5	37.5	37.5	37.5	37.5
P1192	Residence	1.5	628	T9	36.5	36.5	36.5	36.5	36.5
P1193	Residence	1.5	688	T9	35.7	35.7	35.7	35.7	35.7
P1194	Residence	1.5	725	T9	35.2	35.2	35.2	35.2	35.2
P1195	Residence	1.5	764	T9	34.8	34.8	34.8	34.8	34.8
P1196	Residence	1.5	740	T9	35.0	35.0	35.0	35.0	35.0
P1212	Residence	4.5	678	T51	37.0	37.0	37.0	37.0	37.0
P1233	Residence	4.5	720	T5	37.5	37.5	37.5	37.5	37.5
P1234	Residence	1.5	642	T5	37.2	37.2	37.2	37.2	37.2
P1253	Residence	4.5	850	T2	36.6	36.6	36.6	36.6	36.6
P1269	Residence	1.5	375	T9	41.3	41.3	41.3	41.3	41.3

Point of Reception ID	Description	Height (m)	Distance to Nearest Project Turbine/ Transformer (m)	Nearest Project Turbine/ Transformer	Calculated Sound Level at Selected Wind Speeds (dBA)				
					6.0	7.0	8.0	9.0	10.0
P1279	Residence	1.5	616	T5	37.6	37.6	37.6	37.6	37.6
P1283	Residence	4.5	536	T67	40.6	40.6	40.6	40.6	40.6
P2882	Residence	1.5	607	T62	40.4	40.4	40.4	40.4	40.4
P2883	Residence	1.5	493	T62	42.5	42.5	42.5	42.5	42.5
P2995	Residence	4.5	685	T54	38.8	38.8	38.8	38.8	38.8
P2997	Residence	1.5	678	T54	37.9	37.9	37.9	37.9	37.9
P2998	Residence	1.5	643	T54	38.5	38.5	38.5	38.5	38.5
P3002	Residence	4.5	597	T54	40.9	40.9	40.9	40.9	40.9
P3017	Residence	1.5	642	T63	41.0	41.0	41.0	41.0	41.0

8 NOISE LEVEL ISOPLETH MAP

Figure 8-1 is a noise level isopleth map of the SPrLs (dBA) due to turbines and transformers over the full area (Wind and Solar Farms) of the project for a 10 m a.g.l. wind speed of 6 ms^{-1}. The noise levels are calculated for receptors with 1.5 m (1 storey) and 4.5 m (2 storeys) heights.

The map displays the specific noise level isopleth relevant to the MoE Guidelines limit for each wind speed as listed here:

Wind Speed	**Limiting Noise Isopleth**
6 ms^{-1}	40 dBA

Noise level isopleth maps for 8 and 10 ms^{-1} have not been included since the calculated SPrLs are identical to those calculated for the 6 ms^{-1} values.

Note that for clarity some of the isopleths have been removed from Figure 8-1 in the vicinity of the Solar Farm. However, Figure 8-2 is identical to Figure 8-1 except that the map domain has been reduced to the area surrounding the Solar farm in order to display the isopleths in more detail.

Greater detail can be seen in the tiled maps of Section 14 .

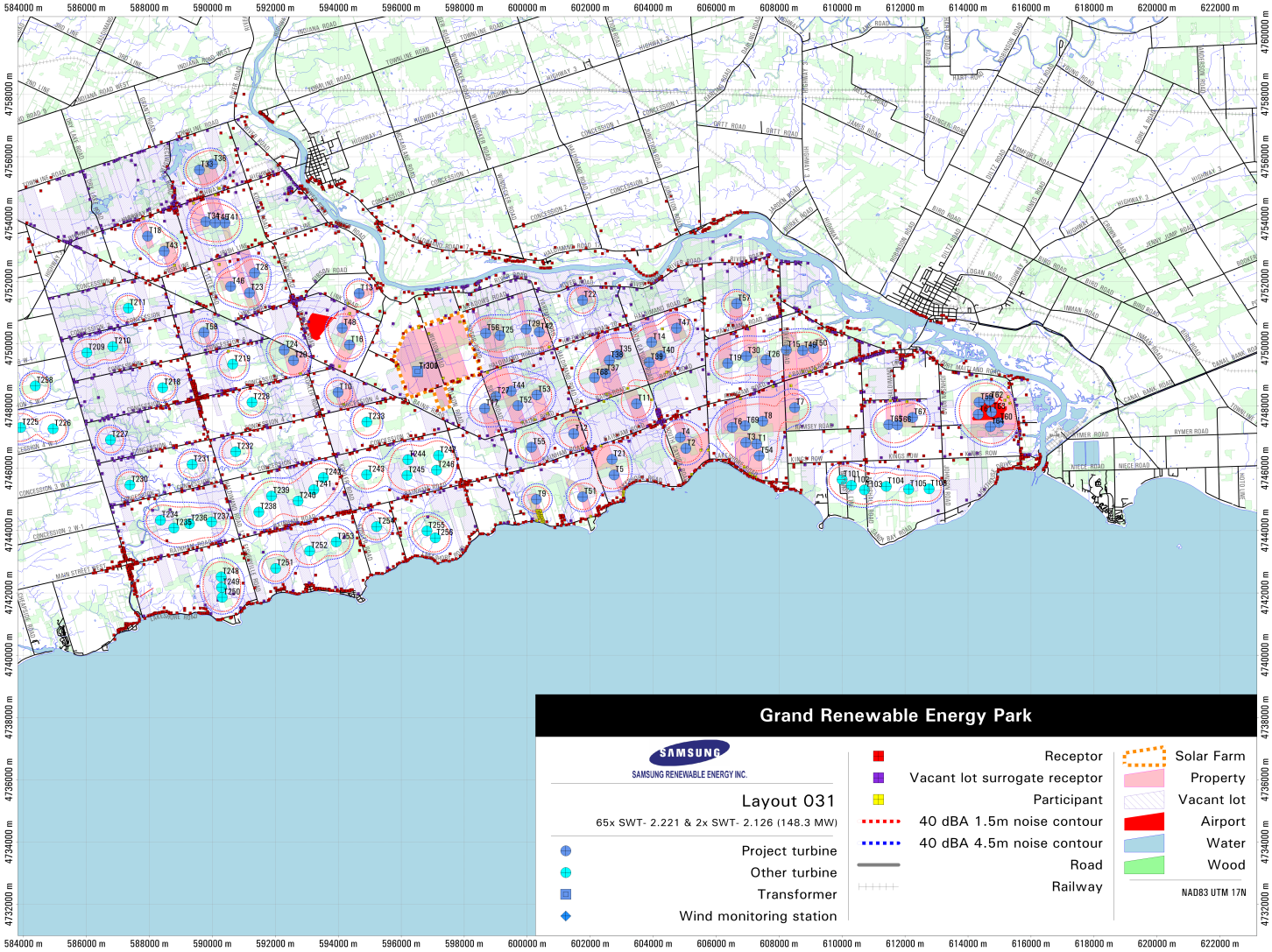

Figure 8-1 40 dBA noise isopleth map for 6 ms^{-1} (10 m) for 1.5 and 4.5 m receptor heights – full project region.

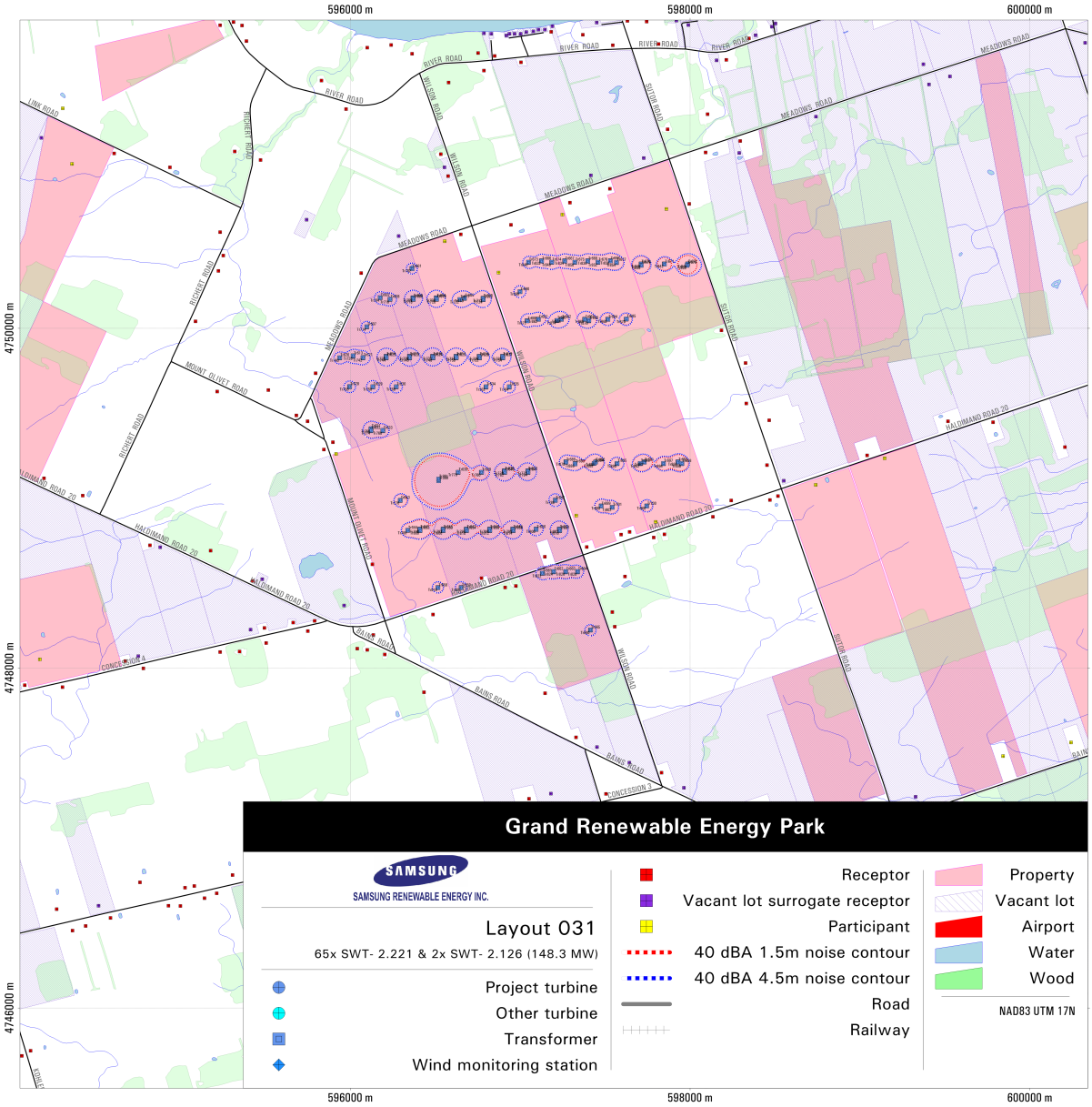

Figure 8-2 40 dBA noise isopleth map for 6 ms^{-1} (10 m) for 1.5 and 4.5 m receptor heights – Solar Farm details.

9 EXAMPLE CALCULATION

9.1 Method of Calculation

The calculation of cumulative receptor noise levels from turbines and transformers uses the methodology of ISO 9613-2, '*Acoustics — Attenuation of sound during propagation outdoors: Part 2: General method of calculation'*.

The calculation is based on equation (5) from ISO 9613-2 shown here:

$$L_{AT}(DW)=10\log_{10}\left\{\sum_{i=1}^{n}\left[\sum_{j=1}^{8}10^{0.1\left[L_{ft}(ij)+A_f(j)\right]}\right]\right\}$$

where

$L_{AT}(DW)$ is the equivalent continuous A-weighted downwind sound pressure level at a receptor location,

n is the number of turbines/transformers,

$A_f(j)$ is the standard A-weighting for octave band j,

j is an index indicating the eight standard octave-band mid-band frequencies from 63 Hz to 8 kHz,

$L_{fT}(ij) \equiv L_{fT}(DW)$ is the equivalent continuous downwind octave-band sound pressure level at a receptor location for turbine/transformer i and octave band j, and is given by

$$L_{ft}(DW)=L_W+D_C-A$$

where

L_W is the octave-band sound power level, in decibels, produced by the point sound source relative to a reference sound power of one picowatt,

D_C is the directivity correction in decibels,

A is the octave-band attenuation, in decibels, that occurs during propagation from the turbine/transformer to receptor, and is given by

$$A = A_{\text{div}} + A_{atm} + A_{gr} + A_{\text{bar}} + A_{misc}$$

where

A_{div} is the attenuation due to geometrical divergence,

A_{atm} is the attenuation due to atmospheric absorption,

A_{gr} is the attenuation due to the ground effect,

A_{bar} is the attenuation due to a barrier,

A_{misc} is the attenuation due to miscellaneous other effects,

A_{atm} is given by

$$A = \frac{\alpha d}{1000}$$

where

α is the atmospheric attenuation coefficient, in decibels per kilometre, for each octave band at the midband frequency,

d is the distance from the turbine/transformer to the receptor.

Note that α is calculated using ISO 9613-1, and not interpolated from Table 2 of ISO 9613-2. For this reason, the barometric pressure is one of the input parameters to the present calculation. Note also that A_{bar} and A_{misc} are not treated in here.

9.2 Example

The following sample calculation presents intermediate octave-band results of calculations for A-weighted sound pressure levels corresponding to a 10 m (a.g.l.) wind speed of 6 ms^{-1}. All model parameters are the same as previously tabulated.

Table 9-1 lists the intermediate sound pressure levels calculated at receptor R393 due to the single nearby turbine T56. This particular receptor has been chosen as requested by MoE as it will be affected both by the nearby turbine(s) and by the Solar Farm inverters and transformers.

Receptor R393 and turbine T56 are separated by 602 m. Note that the resultant A-weighted sound pressure level at R393 due to turbine T56 alone is 36.8 dBA.

Table 9-1 Sample calculation for receptor and turbine.

Intermediate calculations for receptor R393 and turbine T56						
Octave band	**Mid-band frequency (Hz)**	**L_W (dBA)**	**A_{div} (dB)**	**A_{atm} (dB)**	**A_{gr} (dB)**	**L_{fT}(DW) (dBA)**
1	63	82.4	66.7	0.1	-3.0	18.6
2	125	93.0	66.7	0.2	1.0	25.0
3	250	96.0	66.7	0.6	-0.1	28.7
4	500	99.8	66.7	1.2	-0.7	32.7
5	1000	100.1	66.7	2.2	-0.7	31.9
6	2000	96.5	66.7	5.9	-0.8	24.6
7	4000	89.6	66.7	20.2	-0.8	3.5
8	8000	85.7	66.7	72.2	-0.8	-52.5

In the table:

L_W is the octave-band sound power level, in decibels, produced by the point sound source relative to a reference sound power of one picowatt,

A_{div} is the attenuation due to geometrical divergence,

A_{atm} is the attenuation due to atmospheric absorption,

A_{gr} is the attenuation due to the ground effect,

$L_{fT}(DW)$ is the equivalent continuous downwind octave-band sound pressure level.

Table 9-2 shows intermediate octave band values of the calculations for the A-weighted sound pressure levels at receptor R393 due to all turbines and transformers (from all projects) within 5,000 m of the receptor. The resultant A-weighted sound pressure level at R393 due to all turbines and transformers is 39.4 dBA.

Table 9-2 Sample calculation for single receptor and multiple turbines/transformers.

Intermediate calculations for receptor R393 and multiple turbines/transformers										
Turbine/ Transformer ID	Distance (m)	Turbine/Transformer L_{ft} contribution (dB) in frequency band (Hz)								Turbine/ Transformer L_{AT} (dBA)
		63	125	250	500	1000	2000	4000	8000	
T10	4466	27.8	21.8	15.0	10.0	-0.3	-32.1	-142.7	-525.7	11.8
T12	4374	28.1	22.5	16.5	11.7	1.2	-30.0	-138.9	-514.0	13.1
T13	3880	28.9	23.7	18.0	13.6	4.0	-24.3	-121.6	-454.6	14.7
T16	3832	29.0	23.8	18.1	13.8	4.3	-23.7	-119.9	-448.8	14.9
T17	2116	33.8	29.6	24.9	22.2	15.6	-2.0	-58.2	-240.8	22.7
T22	3842	29.0	23.8	18.1	13.8	4.2	-23.8	-120.3	-450.0	14.9
T25	989	40.5	36.6	32.7	30.9	26.3	15.5	-14.5	-101.1	31.6
T27	1862	35.0	30.8	26.3	23.8	17.6	1.6	-48.7	-209.6	24.3
T29	1846	35.0	30.8	26.4	23.9	17.7	1.8	-48.1	-207.7	24.4
T35	4708	27.6	21.8	15.5	10.4	-0.6	-33.9	-150.6	-554.2	12.1
T37	4400	28.1	22.4	16.4	11.6	1.1	-30.3	-139.9	-517.2	13.0
T38	4454	28.0	22.3	16.2	11.4	0.8	-31.0	-141.7	-523.7	12.8
T42	2231	33.3	29.0	24.4	21.5	14.7	-3.6	-62.5	-254.8	22.0
T44	1991	34.4	30.1	25.6	22.9	16.6	-0.3	-53.6	-225.5	23.5
T48	4091	28.6	23.2	17.3	12.8	2.8	-26.7	-129.0	-480.0	14.0
T52	2491	32.4	28.0	23.1	20.0	12.8	-7.1	-72.0	-286.6	20.6
T53	2671	31.7	27.3	22.3	19.1	11.5	-9.4	-78.5	-308.4	19.7
T55	3843	29.0	23.8	18.1	13.8	4.2	-23.8	-120.3	-450.1	14.9
T56	602	44.8	41.1	37.3	35.9	31.9	23.4	2.5	-51.4	36.8
T68	4092	28.6	23.2	17.3	12.8	2.8	-26.8	-129.0	-480.1	14.0
T233	4121	29.0	23.2	17.3	12.7	2.7	-27.0	-130.0	-483.5	14.0
T244	4201	28.8	23.0	17.1	12.4	2.3	-27.9	-132.8	-493.1	13.8
T245	4664	28.0	21.9	15.7	10.7	-0.3	-33.3	-149.0	-548.8	12.3
T246	4182	28.8	23.0	17.1	12.5	2.4	-27.7	-132.1	-490.8	13.8
T247	3709	29.7	24.2	18.6	14.4	5.1	-22.1	-115.5	-433.8	15.5
Tr300	1884	-2.6	-1.3	3.2	9.6	3.6	-11.6	-60.8	-230.7	8.5
Tr301	1880	-2.6	-1.3	3.2	9.7	3.6	-11.5	-60.6	-230.1	8.5
Tr601	1857	8.0	-10.9	-18.8	-20.0	-28.1	-44.2	-91.6	-254.0	-16.0
Tr602	2017	7.3	-11.6	-19.7	-21.0	-29.4	-46.5	-97.6	-273.7	-16.8
Tr603	1825	8.1	-10.7	-18.6	-19.8	-27.9	-43.7	-90.4	-250.1	-15.8
Tr604	1689	8.8	-10.0	-17.8	-18.8	-26.7	-41.8	-85.2	-233.3	-15.0
Tr605	1524	9.7	-9.0	-16.8	-17.6	-25.2	-39.3	-78.9	-212.9	-14.0
Tr606	1416	10.3	-8.3	-16.0	-16.8	-24.2	-37.6	-74.7	-199.4	-13.3
Tr607	2087	7.0	-12.0	-20.1	-21.4	-30.0	-47.4	-100.2	-282.3	-17.1
Tr608	1959	7.5	-11.4	-19.4	-20.6	-28.9	-45.7	-95.4	-266.5	-16.5
Tr609	1822	8.1	-10.7	-18.6	-19.8	-27.8	-43.7	-90.3	-249.8	-15.8
Tr610	1686	8.8	-10.0	-17.8	-18.8	-26.7	-41.7	-85.1	-233.0	-15.0
Tr611	1550	9.5	-9.2	-16.9	-17.8	-25.4	-39.7	-79.9	-216.1	-14.2
Tr612	1414	10.3	-8.3	-16.0	-16.8	-24.1	-37.6	-74.6	-199.2	-13.3
Tr613	2172	6.6	-12.3	-20.5	-21.9	-30.6	-48.6	-103.3	-292.7	-17.5
Tr614	1980	7.4	-11.5	-19.5	-20.8	-29.1	-46.0	-96.2	-269.1	-16.6

Intermediate calculations for receptor R393 and multiple turbines/transformers										
Turbine/ Transformer ID	Distance (m)	Turbine/Transformer L_{ft} contribution (dB) in frequency band (Hz)								Turbine/ Transformer L_{AT} (dBA)
		63	125	250	500	1000	2000	4000	8000	
Tr615	1842	8.1	-10.8	-18.7	-19.9	-28.0	-44.0	-91.0	-252.2	-15.9
Tr616	1706	8.7	-10.1	-17.9	-19.0	-26.8	-42.0	-85.9	-235.4	-15.1
Tr617	1569	9.4	-9.3	-17.1	-18.0	-25.6	-40.0	-80.6	-218.5	-14.3
Tr618	1433	10.2	-8.4	-16.1	-16.9	-24.3	-37.9	-75.3	-201.6	-13.4
Tr619	1297	11.0	-7.5	-15.1	-15.8	-23.0	-35.7	-70.0	-184.7	-12.4
Tr620	2252	6.3	-12.7	-20.9	-22.4	-31.2	-49.7	-106.3	-302.4	-17.9
Tr621	2115	6.9	-12.1	-20.2	-21.6	-30.2	-47.8	-101.2	-285.7	-17.3
Tr622	1978	7.4	-11.5	-19.5	-20.8	-29.1	-45.9	-96.1	-268.9	-16.6
Tr623	1842	8.1	-10.8	-18.7	-19.9	-28.0	-44.0	-91.0	-252.2	-15.9
Tr624	1704	8.7	-10.1	-17.9	-19.0	-26.8	-42.0	-85.8	-235.2	-15.1
Tr625	1568	9.4	-9.3	-17.1	-18.0	-25.6	-39.9	-80.6	-218.4	-14.3
Tr626	1432	10.2	-8.4	-16.1	-16.9	-24.3	-37.8	-75.3	-201.5	-13.4
Tr627	1296	11.0	-7.5	-15.1	-15.8	-23.0	-35.7	-69.9	-184.5	-12.4
Tr628	2213	6.5	-12.5	-20.7	-22.2	-30.9	-49.2	-104.9	-297.6	-17.7
Tr629	2078	7.0	-11.9	-20.0	-21.4	-29.9	-47.3	-99.8	-281.1	-17.1
Tr630	1942	7.6	-11.3	-19.3	-20.5	-28.8	-45.4	-94.8	-264.5	-16.4
Tr631	2141	6.8	-12.2	-20.3	-21.8	-30.4	-48.2	-102.2	-288.9	-17.4
Tr632	2145	6.7	-12.2	-20.4	-21.8	-30.4	-48.2	-102.3	-289.4	-17.4
Tr633	2077	7.0	-11.9	-20.0	-21.4	-29.9	-47.3	-99.8	-281.0	-17.1
Tr634	1424	10.2	-8.4	-16.1	-16.9	-24.2	-37.7	-75.0	-200.5	-13.4
Tr635	1291	11.1	-7.5	-15.1	-15.8	-22.9	-35.6	-69.7	-183.9	-12.4
Tr636	1522	9.7	-9.0	-16.7	-17.6	-25.2	-39.2	-78.8	-212.6	-14.0
Tr637	1409	10.3	-8.3	-16.0	-16.7	-24.1	-37.5	-74.4	-198.6	-13.3
Tr638	1759	8.4	-10.3	-18.2	-19.3	-27.3	-42.8	-87.9	-242.0	-15.4
Tr639	1640	9.0	-9.7	-17.5	-18.5	-26.3	-41.0	-83.3	-227.3	-14.7
Tr640	1524	9.7	-9.0	-16.8	-17.6	-25.2	-39.3	-78.9	-212.8	-14.0
Tr641	1411	10.3	-8.3	-16.0	-16.8	-24.1	-37.5	-74.5	-198.8	-13.3
Tr642	1399	10.4	-8.2	-15.9	-16.7	-24.0	-37.3	-74.0	-197.3	-13.2
Tr643	2138	6.8	-12.2	-20.3	-21.7	-30.4	-48.1	-102.1	-288.5	-17.4
Tr644	2188	6.6	-12.4	-20.6	-22.0	-30.7	-48.8	-103.9	-294.7	-17.6
Tr645	2126	6.8	-12.1	-20.3	-21.7	-30.3	-48.0	-101.7	-287.1	-17.3
Tr646	2014	7.3	-11.6	-19.7	-21.0	-29.4	-46.4	-97.5	-273.3	-16.8
Tr647	1904	7.8	-11.1	-19.1	-20.3	-28.5	-44.9	-93.3	-259.8	-16.2
Tr648	1798	8.3	-10.6	-18.5	-19.6	-27.6	-43.4	-89.3	-246.7	-15.6
Tr649	1696	8.8	-10.0	-17.9	-18.9	-26.7	-41.9	-85.5	-234.2	-15.1
Tr650	1600	9.3	-9.5	-17.3	-18.2	-25.9	-40.4	-81.8	-222.3	-14.5
Tr651	1510	9.8	-8.9	-16.7	-17.5	-25.1	-39.1	-78.3	-211.1	-13.9
Tr652	2129	6.8	-12.1	-20.3	-21.7	-30.3	-48.0	-101.7	-287.4	-17.3
Tr653	2016	7.3	-11.6	-19.7	-21.0	-29.4	-46.5	-97.6	-273.6	-16.8
Tr654	1907	7.8	-11.1	-19.1	-20.3	-28.5	-44.9	-93.4	-260.1	-16.2
Tr655	1801	8.2	-10.6	-18.5	-19.6	-27.6	-43.4	-89.5	-247.1	-15.7
Tr656	1699	8.7	-10.0	-17.9	-18.9	-26.8	-41.9	-85.6	-234.5	-15.1
Tr657	1513	9.7	-8.9	-16.7	-17.6	-25.1	-39.1	-78.4	-211.6	-13.9

Intermediate calculations for receptor R393 and multiple turbines/transformers										
Turbine/ Transformer ID	Distance (m)	Turbine/Transformer L_{ft} contribution (dB) in frequency band (Hz)								Turbine/ Transformer L_{AT} (dBA)
		63	125	250	500	1000	2000	4000	8000	
Tr658	2253	6.3	-12.7	-20.9	-22.4	-31.2	-49.7	-106.3	-302.5	-17.9
Tr659	2153	6.7	-12.3	-20.4	-21.8	-30.5	-48.4	-102.6	-290.4	-17.4
Tr661	1775	8.4	-10.4	-18.3	-19.4	-27.4	-43.0	-88.5	-243.9	-15.5
Tr662	1728	8.6	-10.2	-18.1	-19.1	-27.0	-42.3	-86.7	-238.1	-15.3
Tr663	1688	8.8	-10.0	-17.8	-18.8	-26.7	-41.7	-85.2	-233.2	-15.0
Tr664	1651	9.0	-9.8	-17.6	-18.6	-26.4	-41.2	-83.8	-228.6	-14.8
Tr665	1923	7.7	-11.2	-19.2	-20.4	-28.7	-45.1	-94.1	-262.1	-16.3
Tr666	1134	12.2	-6.2	-13.8	-14.4	-21.2	-32.9	-63.4	-164.2	-11.1
Tr667	1008	13.1	-5.0	-12.7	-13.1	-19.8	-30.7	-58.3	-148.3	-10.0
Tr668	886	14.2	-3.6	-11.4	-11.8	-18.2	-28.4	-53.1	-132.7	-8.8
Tr669	771	15.3	-2.0	-10.1	-10.4	-16.6	-26.1	-48.1	-118.0	-7.5
Tr670	613	17.1	0.7	-8.0	-8.1	-14.1	-22.6	-41.0	-97.3	-5.3
Tr671	514	18.5	2.8	-6.4	-6.4	-12.2	-20.2	-36.2	-84.1	-3.7
Tr672	437	19.7	4.7	-5.0	-4.9	-10.6	-18.1	-32.3	-73.6	-2.2
Tr673	1204	11.7	-6.8	-14.4	-15.0	-22.0	-34.1	-66.3	-173.0	-11.7
Tr674	1076	12.6	-5.7	-13.3	-13.8	-20.6	-31.9	-61.1	-156.9	-10.6
Tr675	951	13.6	-4.4	-12.1	-12.5	-19.1	-29.7	-55.9	-141.0	-9.5
Tr676	830	14.7	-2.9	-10.8	-11.1	-17.4	-27.3	-50.7	-125.5	-8.2
Tr677	736	15.7	-1.5	-9.7	-9.9	-16.1	-25.4	-46.6	-113.4	-7.0
Tr678	608	17.2	0.8	-7.9	-8.0	-14.0	-22.5	-40.7	-96.6	-5.2
Tr679	434	19.8	4.8	-4.9	-4.8	-10.5	-18.0	-32.1	-73.1	-2.1
Tr680	1208	11.6	-6.8	-14.4	-15.0	-22.0	-34.2	-66.4	-173.5	-11.8
Tr681	1079	12.6	-5.7	-13.3	-13.8	-20.6	-32.0	-61.2	-157.2	-10.7
Tr682	943	13.7	-4.3	-12.0	-12.4	-19.0	-29.5	-55.5	-140.0	-9.4
Tr683	807	14.9	-2.6	-10.6	-10.8	-17.1	-26.9	-49.7	-122.5	-7.9
Tr684	671	16.4	-0.4	-8.9	-9.0	-15.1	-24.0	-43.6	-104.9	-6.2
Tr685	563	17.8	1.7	-7.2	-7.3	-13.2	-21.4	-38.6	-90.6	-4.5
Tr686	782	15.2	-2.2	-10.3	-10.5	-16.8	-26.4	-48.6	-119.4	-7.6
Tr687	970	13.4	-4.6	-12.3	-12.7	-19.3	-30.0	-56.7	-143.4	-9.6
Tr688	1144	12.1	-6.3	-13.9	-14.4	-21.3	-33.1	-63.9	-165.5	-11.2
Tr689	1199	11.7	-6.7	-14.4	-15.0	-21.9	-34.1	-66.1	-172.4	-11.7
Tr690	1073	12.6	-5.6	-13.3	-13.8	-20.5	-31.9	-60.9	-156.5	-10.6
Tr691	899	14.1	-3.8	-11.6	-11.9	-18.4	-28.7	-53.7	-134.4	-8.9
Tr692	816	14.9	-2.7	-10.7	-10.9	-17.2	-27.0	-50.1	-123.7	-8.0
Tr693	1165	11.9	-6.5	-14.1	-14.6	-21.6	-33.5	-64.7	-168.1	-11.4
Tr694	1083	12.5	-5.7	-13.4	-13.9	-20.6	-32.1	-61.3	-157.7	-10.7
Tr695	994	13.2	-4.8	-12.5	-12.9	-19.6	-30.5	-57.7	-146.4	-9.9
Tr696	916	13.9	-4.0	-11.8	-12.1	-18.6	-29.0	-54.4	-136.6	-9.1
Tr697	853	14.5	-3.2	-11.1	-11.4	-17.8	-27.8	-51.7	-128.5	-8.4
Tr698	817	14.8	-2.7	-10.7	-10.9	-17.3	-27.1	-50.1	-123.8	-8.0
Tr699	1253	11.3	-7.2	-14.8	-15.4	-22.5	-35.0	-68.2	-179.2	-12.1
Tr700	1123	12.2	-6.1	-13.7	-14.2	-21.1	-32.8	-63.0	-162.8	-11.1
Tr701	1222	11.5	-6.9	-14.6	-15.2	-22.2	-34.4	-67.0	-175.3	-11.9

Intermediate calculations for receptor R393 and multiple turbines/transformers										
Turbine/ Transformer ID	Distance (m)	Turbine/Transformer L_{ft} contribution (dB) in frequency band (Hz)								Turbine/ Transformer L_{AT} (dBA)
		63	125	250	500	1000	2000	4000	8000	
Tr702	1858	31.1	1.2	-11.7	-24.9	-35.0	-54.1	-106.5	-258.1	4.9
Tr704	2018	30.4	0.5	-12.6	-25.9	-36.3	-56.4	-112.5	-277.7	4.2
Tr706	1826	31.2	1.4	-11.5	-24.7	-34.8	-53.7	-105.3	-254.1	5.1
Tr708	1690	31.9	2.1	-10.7	-23.8	-33.6	-51.7	-100.1	-237.3	5.8
Tr710	1525	32.8	3.1	-9.7	-22.5	-32.1	-49.2	-93.8	-216.9	6.6
Tr712	1417	33.4	3.8	-8.9	-21.7	-31.1	-47.5	-89.6	-203.5	7.3
Tr714	2088	30.1	0.1	-13.0	-26.3	-36.9	-57.4	-115.1	-286.3	3.9
Tr716	1959	30.6	0.7	-12.3	-25.5	-35.9	-55.6	-110.3	-270.5	4.5
Tr718	1823	31.2	1.4	-11.5	-24.7	-34.7	-53.6	-105.2	-253.8	5.1
Tr720	1687	31.9	2.1	-10.7	-23.7	-33.6	-51.6	-100.0	-237.0	5.8
Tr722	1551	32.6	2.9	-9.8	-22.7	-32.3	-49.6	-94.8	-220.1	6.5
Tr724	1414	33.4	3.8	-8.9	-21.7	-31.0	-47.5	-89.5	-203.1	7.3
Tr726	2172	29.7	-0.2	-13.4	-26.8	-37.5	-58.5	-118.3	-296.6	3.6
Tr728	1980	30.5	0.6	-12.4	-25.7	-36.0	-55.8	-111.1	-273.0	4.4
Tr730	1843	31.1	1.3	-11.6	-24.8	-34.9	-53.9	-106.0	-256.2	5.0
Tr732	1707	31.8	2.0	-10.8	-23.9	-33.7	-51.9	-100.8	-239.4	5.7
Tr734	1570	32.5	2.8	-10.0	-22.9	-32.5	-49.9	-95.6	-222.5	6.4
Tr736	1434	33.3	3.7	-9.0	-21.8	-31.2	-47.8	-90.3	-205.6	7.2
Tr738	1298	34.1	4.6	-8.0	-20.7	-29.9	-45.6	-84.9	-188.7	8.0
Tr740	2253	29.4	-0.6	-13.8	-27.3	-38.1	-59.6	-121.2	-306.5	3.3
Tr742	2116	30.0	0.0	-13.1	-26.5	-37.1	-57.7	-116.2	-289.7	3.8
Tr744	1979	30.5	0.6	-12.4	-25.7	-36.0	-55.8	-111.0	-272.9	4.4
Tr746	1842	31.2	1.3	-11.6	-24.8	-34.9	-53.9	-105.9	-256.1	5.0
Tr748	1706	31.8	2.0	-10.8	-23.9	-33.7	-51.9	-100.7	-239.3	5.7
Tr750	1569	32.5	2.8	-10.0	-22.9	-32.5	-49.9	-95.5	-222.4	6.4
Tr752	1433	33.3	3.7	-9.0	-21.8	-31.2	-47.8	-90.2	-205.5	7.2
Tr754	1297	34.1	4.6	-8.0	-20.7	-29.9	-45.6	-84.9	-188.5	8.0
Tr756	2214	29.6	-0.4	-13.6	-27.1	-37.8	-59.1	-119.8	-301.7	3.4
Tr758	2079	30.1	0.2	-12.9	-26.3	-36.8	-57.2	-114.8	-285.1	4.0
Tr760	1943	30.7	0.8	-12.2	-25.4	-35.7	-55.3	-109.7	-268.4	4.6
Tr762	1425	33.3	3.7	-9.0	-21.8	-31.2	-47.6	-89.9	-204.6	7.2
Tr764	1292	34.2	4.6	-8.0	-20.7	-29.8	-45.5	-84.7	-187.9	8.0
Tr766	2143	29.8	-0.1	-13.2	-26.7	-37.3	-58.1	-117.2	-293.0	3.7
Tr768	2078	30.1	0.2	-12.9	-26.3	-36.8	-57.2	-114.8	-285.1	4.0
Tr770	1522	32.8	3.1	-9.6	-22.5	-32.1	-49.1	-93.7	-216.5	6.6
Tr772	1408	33.4	3.8	-8.9	-21.6	-31.0	-47.4	-89.2	-202.4	7.3
Tr774	2146	29.8	-0.1	-13.3	-26.7	-37.3	-58.2	-117.3	-293.3	3.7
Tr776	2140	29.9	-0.1	-13.2	-26.7	-37.3	-58.1	-117.0	-292.6	3.7
Tr778	1761	31.5	1.7	-11.2	-24.2	-34.2	-52.7	-102.8	-246.1	5.4
Tr780	1642	32.1	2.4	-10.4	-23.4	-33.2	-51.0	-98.3	-231.4	6.0
Tr782	1525	32.8	3.1	-9.7	-22.6	-32.1	-49.2	-93.8	-217.0	6.6
Tr784	1412	33.4	3.8	-8.9	-21.7	-31.0	-47.4	-89.4	-202.9	7.3
Tr786	1397	33.5	3.9	-8.8	-21.6	-30.9	-47.2	-88.8	-201.1	7.4

Intermediate calculations for receptor R393 and multiple turbines/transformers										
Turbine/ Transformer ID	Distance (m)	Turbine/Transformer L_{ft} contribution (dB) in frequency band (Hz)								Turbine/ Transformer L_{AT} (dBA)
		63	125	250	500	1000	2000	4000	8000	
Tr788	2190	29.7	-0.3	-13.5	-27.0	-37.7	-58.8	-118.9	-298.8	3.5
Tr790	2126	29.9	0.0	-13.2	-26.6	-37.2	-57.9	-116.5	-291.0	3.8
Tr792	2013	30.4	0.5	-12.6	-25.9	-36.3	-56.3	-112.3	-277.1	4.2
Tr794	1903	30.9	1.0	-12.0	-25.2	-35.4	-54.8	-108.2	-263.6	4.7
Tr796	1797	31.4	1.6	-11.4	-24.5	-34.5	-53.2	-104.2	-250.6	5.2
Tr798	1695	31.9	2.1	-10.8	-23.8	-33.6	-51.8	-100.4	-238.0	5.7
Tr800	1599	32.4	2.6	-10.2	-23.1	-32.8	-50.3	-96.7	-226.1	6.2
Tr802	1509	32.9	3.2	-9.6	-22.4	-32.0	-48.9	-93.2	-214.9	6.7
Tr806	2130	29.9	-0.1	-13.2	-26.6	-37.2	-57.9	-116.7	-291.5	3.8
Tr808	2018	30.4	0.5	-12.6	-25.9	-36.3	-56.4	-112.5	-277.7	4.2
Tr810	1909	30.8	1.0	-12.0	-25.2	-35.4	-54.8	-108.4	-264.3	4.7
Tr812	1802	31.3	1.5	-11.4	-24.5	-34.6	-53.3	-104.4	-251.2	5.2
Tr814	1701	31.8	2.1	-10.8	-23.8	-33.7	-51.8	-100.6	-238.7	5.7
Tr816	1515	32.8	3.1	-9.6	-22.5	-32.0	-49.0	-93.4	-215.7	6.7
Tr818	2252	29.4	-0.6	-13.8	-27.3	-38.1	-59.6	-121.2	-306.4	3.3
Tr820	2152	29.8	-0.1	-13.3	-26.7	-37.4	-58.2	-117.5	-294.2	3.7
Tr822	1777	31.5	1.7	-11.2	-24.4	-34.3	-53.0	-103.5	-248.1	5.3
Tr824	1730	31.7	1.9	-11.0	-24.0	-33.9	-52.3	-101.7	-242.3	5.6
Tr826	1690	31.9	2.1	-10.7	-23.8	-33.6	-51.7	-100.2	-237.4	5.8
Tr828	1653	32.1	2.3	-10.5	-23.5	-33.3	-51.1	-98.7	-232.8	5.9
Tr830	1925	30.8	0.9	-12.1	-25.3	-35.6	-55.1	-109.0	-266.3	4.6
Tr832	1136	35.2	5.9	-6.7	-19.3	-28.1	-42.9	-78.4	-168.3	9.1
Tr834	1010	36.2	7.1	-5.6	-18.0	-26.7	-40.7	-73.2	-152.4	10.1
Tr836	887	37.3	8.5	-4.4	-16.7	-25.1	-38.4	-68.1	-136.8	11.2
Tr838	772	38.4	10.1	-3.1	-15.3	-23.5	-36.1	-63.1	-122.0	12.3
Tr840	614	40.2	12.8	-0.9	-13.0	-21.0	-32.6	-55.9	-101.3	14.1
Tr842	516	41.5	14.8	0.6	-11.4	-19.2	-30.1	-51.2	-88.3	15.5
Tr844	440	42.8	16.7	2.1	-9.8	-17.5	-28.0	-47.3	-77.8	16.7
Tr846	1204	34.8	5.3	-7.3	-19.9	-28.9	-44.0	-81.2	-176.9	8.6
Tr848	1076	35.7	6.4	-6.2	-18.7	-27.5	-41.8	-76.0	-160.8	9.6
Tr850	951	36.7	7.7	-5.0	-17.4	-26.0	-39.6	-70.8	-144.9	10.6
Tr852	829	37.8	9.2	-3.7	-16.0	-24.3	-37.2	-65.6	-129.3	11.7
Tr854	736	38.8	10.6	-2.6	-14.8	-23.0	-35.3	-61.5	-117.2	12.7
Tr856	608	40.3	12.9	-0.8	-12.9	-20.9	-32.4	-55.6	-100.5	14.2
Tr858	433	42.9	16.9	2.2	-9.7	-17.4	-27.9	-47.0	-76.9	16.8
Tr860	1208	34.7	5.3	-7.3	-19.9	-28.9	-44.1	-81.3	-177.4	8.6
Tr862	1080	35.7	6.4	-6.2	-18.7	-27.5	-41.9	-76.1	-161.3	9.5
Tr864	943	36.8	7.8	-4.9	-17.3	-25.9	-39.4	-70.5	-143.9	10.6
Tr866	808	38.0	9.5	-3.5	-15.7	-24.0	-36.8	-64.6	-126.6	11.9
Tr868	672	39.5	11.7	-1.8	-13.9	-22.0	-33.9	-58.6	-109.0	13.4
Tr870	564	40.9	13.8	-0.2	-12.2	-20.1	-31.4	-53.5	-94.6	14.8
Tr872	1145	35.2	5.8	-6.8	-19.4	-28.3	-43.0	-78.8	-169.5	9.0
Tr874	971	36.5	7.5	-5.2	-17.6	-26.2	-39.9	-71.6	-147.4	10.4

Intermediate calculations for receptor R393 and multiple turbines/transformers										
Turbine/ Transformer ID	Distance (m)	Turbine/Transformer L_{ft} contribution (dB) in frequency band (Hz)								Turbine/ Transformer L_{AT} (dBA)
		63	125	250	500	1000	2000	4000	8000	
Tr876	783	38.3	9.9	-3.2	-15.4	-23.7	-36.3	-63.6	-123.4	12.2
Tr878	1199	34.8	5.4	-7.3	-19.9	-28.8	-43.9	-80.9	-176.2	8.7
Tr880	1072	35.7	6.5	-6.2	-18.6	-27.4	-41.8	-75.8	-160.2	9.6
Tr882	897	37.2	8.3	-4.5	-16.8	-25.3	-38.5	-68.5	-138.1	11.1
Tr884	814	38.0	9.4	-3.5	-15.8	-24.1	-36.9	-64.9	-127.4	11.9
Tr886	1164	35.0	5.6	-7.0	-19.5	-28.5	-43.4	-79.5	-171.8	8.9
Tr888	1084	35.6	6.4	-6.3	-18.8	-27.6	-42.0	-76.3	-161.8	9.5
Tr890	996	36.3	7.2	-5.5	-17.9	-26.5	-40.4	-72.7	-150.6	10.2
Tr892	918	37.0	8.1	-4.7	-17.0	-25.5	-38.9	-69.4	-140.7	10.9
Tr894	855	37.6	8.9	-4.0	-16.3	-24.7	-37.7	-66.7	-132.6	11.5
Tr896	818	37.9	9.4	-3.6	-15.8	-24.2	-37.0	-65.1	-127.9	11.8
Tr898	1252	34.4	4.9	-7.7	-20.3	-29.4	-44.8	-83.1	-182.8	8.3
Tr900	1122	35.3	6.0	-6.6	-19.1	-28.0	-42.6	-77.8	-166.6	9.2
Tr902	1224	34.6	5.2	-7.5	-20.1	-29.1	-44.4	-81.9	-179.3	8.5

10 CONCLUSIONS

This noise impact assessment for the proposed Grand Renewable Energy Park has determined that the estimated sound pressure levels at receptors and Vacant Lot Surrogate Receptors (VLSRs) in the project area comply with the Ministry of the Environment sound level limits at all qualified points of reception.

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12 APPENDIX A — TURBINE, TRANSFORMER, RECEPTOR, VACANT LOT AND PARTICIPANT LOCATIONS

This appendix contains lists of turbine and transformer locations. Coordinates are given in the Universal Transverse Mercator (UTM) Zone 17 North projection. The datum is North American Datum 1983 (NAD83, Canada).

Note that due to the very large number of receptors, vacant lot surrogate receptors (VLSRs), and participants, these have not been listed here. However, they are available in the spreadsheet submitted with this report.

For reference, the project (turbine/transformer) layout identifier is GRE10-WFL031.wfl.

Turbines

Project Name: Grand Renewable Energy Park
Datum and Projection: NAD83 (Canada); UTM 17N

Identifier	Equipment Make and Model	X(E,m)	Y(N,m)	Remarks
T1	Siemens-SWT-2.221-101	607287	4746785	GREP
T2	Siemens-SWT-2.221-101	605035	4746639	GREP
T3	Siemens-SWT-2.221-101	606942	4746830	GREP
T4	Siemens-SWT-2.221-101	604861	4746993	GREP
T5	Siemens-SWT-2.221-101	602757	4745791	GREP
T6	Siemens-SWT-2.221-101	606513	4747319	GREP
T7	Siemens-SWT-2.221-101	608495	4747949	GREP
T8	Siemens-SWT-2.221-101	607477	4747512	GREP
T9	Siemens-SWT-2.221-101	600290	4745005	GREP
T10	Siemens-SWT-2.126-101	593994	4748442	GREP
T11	Siemens-SWT-2.221-101	603472	4748075	GREP
T12	Siemens-SWT-2.221-101	601479	4747111	GREP
T13	Siemens-SWT-2.221-101	594663	4751618	GREP

T14	Siemens-SWT-2.221-101	603952	4750047	GREP
T15	Siemens-SWT-2.221-101	608232	4749798	GREP
T16	Siemens-SWT-2.221-101	594352	4749960	GREP
T17	Siemens-SWT-2.221-101	598648	4747922	GREP
T18	Siemens-SWT-2.221-101	587941	4753452	GREP
T19	Siemens-SWT-2.221-101	606366	4749368	GREP
T20	Siemens-SWT-2.221-101	592573	4749463	GREP
T21	Siemens-SWT-2.221-101	602692	4746290	GREP
T22	Siemens-SWT-2.221-101	601756	4751401	GREP
T23	Siemens-SWT-2.221-101	591178	4751634	GREP
T24	Siemens-SWT-2.221-101	592280	4749799	GREP
T25	Siemens-SWT-2.221-101	599133	4750265	GREP
T26	Siemens-SWT-2.221-101	607589	4749481	GREP
T27	Siemens-SWT-2.221-101	598999	4748313	GREP
T28	Siemens-SWT-2.221-101	591339	4752273	GREP
T29	Siemens-SWT-2.221-101	599967	4750467	GREP
T30	Siemens-SWT-2.221-101	606959	4749603	GREP
T33	Siemens-SWT-2.221-101	589588	4755581	GREP
T34	Siemens-SWT-2.221-101	589790	4753921	GREP
T35	Siemens-SWT-2.221-101	602880	4749652	GREP
T36	Siemens-SWT-2.221-101	590002	4755767	GREP
T37	Siemens-SWT-2.221-101	602481	4749039	GREP
T38	Siemens-SWT-2.221-101	602608	4749469	GREP
T39	Siemens-SWT-2.221-101	603875	4749401	GREP
T40	Siemens-SWT-2.221-101	604239	4749614	GREP
T41	Siemens-SWT-2.221-101	590395	4753879	GREP
T42	Siemens-SWT-2.221-101	600381	4750377	GREP
T43	Siemens-SWT-2.221-101	588466	4752970	GREP
T44	Siemens-SWT-2.221-101	599489	4748483	GREP
T45	Siemens-SWT-2.221-101	590085	4753880	GREP
T46	Siemens-SWT-2.221-101	590582	4751836	GREP
T47	Siemens-SWT-2.221-101	604740	4750499	GREP
T48	Siemens-SWT-2.221-101	594126	4750504	GREP
T49	Siemens-SWT-2.221-101	608750	4749784	GREP
T50	Siemens-SWT-2.221-101	609091	4749844	GREP
T51	Siemens-SWT-2.221-101	601762	4745085	GREP
T52	Siemens-SWT-2.221-101	599708	4748016	GREP
T53	Siemens-SWT-2.221-101	600301	4748359	GREP
T54	Siemens-SWT-2.221-101	607370	4746400	GREP
T55	Siemens-SWT-2.221-101	600136	4746677	GREP
T56	Siemens-SWT-2.221-101	598675	4750335	GREP
T57	Siemens-SWT-2.221-101	606650	4751283	GREP
T58	Siemens-SWT-2.126-101	589733	4750362	GREP
T59	Siemens-SWT-2.221-101	614355	4748118	GREP
T60	Siemens-SWT-2.221-101	614974	4747470	GREP
T61	Siemens-SWT-2.221-101	614326	4747732	GREP
T62	Siemens-SWT-2.221-101	614680	4748176	GREP
T63	Siemens-SWT-2.221-101	614750	4747811	GREP
T64	Siemens-SWT-2.221-101	614705	4747338	GREP
T65	Siemens-SWT-2.221-101	611480	4747403	GREP
T66	Siemens-SWT-2.221-101	611758	4747387	GREP
T67	Siemens-SWT-2.221-101	612236	4747633	GREP
T68	Siemens-SWT-2.221-101	602131	4748909	GREP
T69	Siemens-SWT-2.221-101	606923	4747368	GREP
T101	GE-1.5sle	609999	4745635	BWP
T102	GE-1.5sle	610296	4745455	BWP
T103	GE-1.5sle	610711	4745306	BWP
T104	GE-1.5sle	611401	4745418	BWP
T105	GE-1.5sle	612115	4745329	BWP
T106	GE-1.5sle	612764	4745342	BWP

T201	Siemens-SWT-2.221-101	576124	4749873	SWEC
T203	Siemens-SWT-2.221-101	574742	4748226	SWEC
T204	Siemens-SWT-2.221-101	575685	4748309	SWEC
T205	Siemens-SWT-2.221-101	576990	4748661	SWEC
T206	Siemens-SWT-2.221-101	578518	4748834	SWEC
T207	Siemens-SWT-2.221-101	579869	4749156	SWEC
T208	Siemens-SWT-2.221-101	580947	4749341	SWEC
T209	Siemens-SWT-2.221-101	586015	4749711	SWEC
T210	Siemens-SWT-2.221-101	586837	4749912	SWEC
T211	Siemens-SWT-2.221-101	587326	4751141	SWEC
T212	Siemens-SWT-2.221-101	572316	4746292	SWEC
T213	Siemens-SWT-2.221-101	572920	4746475	SWEC
T214	Siemens-SWT-2.221-101	574224	4746586	SWEC
T215	Siemens-SWT-2.221-101	576150	4746799	SWEC
T216	Siemens-SWT-2.221-101	577821	4747047	SWEC
T217	Siemens-SWT-2.221-101	582468	4747896	SWEC
T218	Siemens-SWT-2.221-101	588422	4748589	SWEC
T219	Siemens-SWT-2.221-101	590644	4749342	SWEC
T220	Siemens-SWT-2.221-101	573903	4745199	SWEC
T221	Siemens-SWT-2.221-101	577726	4746477	SWEC
T222	Siemens-SWT-2.221-101	579685	4746426	SWEC
T223	Siemens-SWT-2.221-101	580952	4746798	SWEC
T224	Siemens-SWT-2.221-101	582973	4747085	SWEC
T225	Siemens-SWT-2.221-101	583914	4747307	SWEC
T226	Siemens-SWT-2.221-101	584940	4747269	SWEC
T227	Siemens-SWT-2.221-101	586761	4746915	SWEC
T228	Siemens-SWT-2.221-101	591259	4748123	SWEC
T230	Siemens-SWT-2.221-101	587383	4745469	SWEC
T231	Siemens-SWT-2.221-101	589357	4746128	SWEC
T232	Siemens-SWT-2.221-101	590737	4746531	SWEC
T233	Siemens-SWT-2.221-101	594906	4747489	SWEC
T234	Siemens-SWT-2.221-101	588348	4744337	SWEC
T235	Siemens-SWT-2.221-101	588779	4744087	SWEC
T236	Siemens-SWT-2.221-101	589271	4744225	SWEC
T237	Siemens-SWT-2.221-101	589975	4744279	SWEC
T238	Siemens-SWT-2.221-101	591475	4744600	SWEC
T239	Siemens-SWT-2.221-101	591880	4745113	SWEC
T240	Siemens-SWT-2.221-101	592721	4744952	SWEC
T241	Siemens-SWT-2.221-101	593224	4745318	SWEC
T242	Siemens-SWT-2.221-101	593522	4745702	SWEC
T243	Siemens-SWT-2.221-101	594899	4745794	SWEC
T244	Siemens-SWT-2.221-101	596210	4746279	SWEC
T245	Siemens-SWT-2.221-101	596181	4745775	SWEC
T246	Siemens-SWT-2.221-101	597119	4745943	SWEC
T247	Siemens-SWT-2.221-101	597181	4746416	SWEC
T248	Siemens-SWT-2.221-101	590280	4742517	SWEC
T249	Siemens-SWT-2.221-101	590293	4742174	SWEC
T250	Siemens-SWT-2.221-101	590314	4741857	SWEC
T251	Siemens-SWT-2.221-101	592008	4742791	SWEC
T252	Siemens-SWT-2.221-101	593087	4743349	SWEC
T253	Siemens-SWT-2.221-101	593930	4743637	SWEC
T254	Siemens-SWT-2.221-101	595213	4744131	SWEC
T255	Siemens-SWT-2.221-101	596817	4743995	SWEC
T256	Siemens-SWT-2.221-101	597076	4743766	SWEC
T257	Siemens-SWT-2.221-101	579024	4749020	SWEC
T258	Siemens-SWT-2.221-101	584373	4748649	SWEC
T259	Siemens-SWT-2.221-101	577118	4747104	SWEC
T261	Siemens-SWT-2.221-101	577924	4745876	SWEC

Transformers

Project Name: Grand Renewable Energy Park
Datum and Projection: NAD83 (Canada); UTM 17N

Identifier	Equipment Make and Model	X(E,m)	Y(N,m)	Remarks
TR300	Transformer	596520	4749103	GREP
TR301	Transformer	596520	4749113	GREP
Tr601	Solar Transformer	596363	4750350	GREP
Tr602	Solar Transformer	596176	4750180	GREP
Tr603	Solar Transformer	596369	4750177	GREP
Tr604	Solar Transformer	596506	4750177	GREP
Tr605	Solar Transformer	596672	4750178	GREP
Tr606	Solar Transformer	596781	4750176	GREP
Tr607	Solar Transformer	596097	4750009	GREP
Tr608	Solar Transformer	596234	4750171	GREP
Tr609	Solar Transformer	596371	4750171	GREP
Tr610	Solar Transformer	596508	4750171	GREP
Tr611	Solar Transformer	596645	4750170	GREP
Tr612	Solar Transformer	596782	4750169	GREP
Tr613	Solar Transformer	596017	4749838	GREP
Tr614	Solar Transformer	596210	4749834	GREP
Tr615	Solar Transformer	596348	4749834	GREP
Tr616	Solar Transformer	596485	4749834	GREP
Tr617	Solar Transformer	596622	4749834	GREP
Tr618	Solar Transformer	596759	4749833	GREP
Tr619	Solar Transformer	596896	4749833	GREP
Tr620	Solar Transformer	595938	4749827	GREP
Tr621	Solar Transformer	596075	4749828	GREP
Tr622	Solar Transformer	596212	4749828	GREP
Tr623	Solar Transformer	596349	4749828	GREP
Tr624	Solar Transformer	596487	4749828	GREP
Tr625	Solar Transformer	596624	4749828	GREP
Tr626	Solar Transformer	596761	4749827	GREP
Tr627	Solar Transformer	596898	4749827	GREP
Tr628	Solar Transformer	595996	4749657	GREP
Tr629	Solar Transformer	596133	4749656	GREP
Tr630	Solar Transformer	596270	4749656	GREP
Tr631	Solar Transformer	596122	4749410	GREP
Tr632	Solar Transformer	596121	4749399	GREP
Tr633	Solar Transformer	596192	4749399	GREP
Tr634	Solar Transformer	596799	4749656	GREP
Tr635	Solar Transformer	596936	4749656	GREP
Tr636	Solar Transformer	596907	4749159	GREP
Tr637	Solar Transformer	597044	4749159	GREP
Tr638	Solar Transformer	596635	4749153	GREP
Tr639	Solar Transformer	596772	4749153	GREP
Tr640	Solar Transformer	596909	4749153	GREP
Tr641	Solar Transformer	597046	4749153	GREP
Tr642	Solar Transformer	597206	4748987	GREP
Tr643	Solar Transformer	596294	4748988	GREP
Tr644	Solar Transformer	596338	4748812	GREP
Tr645	Solar Transformer	596409	4748816	GREP
Tr646	Solar Transformer	596546	4748816	GREP
Tr647	Solar Transformer	596683	4748816	GREP
Tr648	Solar Transformer	596820	4748816	GREP
Tr649	Solar Transformer	596613	4748897	GREP
Tr650	Solar Transformer	597050	4748987	GREP
Tr651	Solar Transformer	597187	4748987	GREP

Tr652	Solar Transformer	596410	4748810	GREP
Tr653	Solar Transformer	596547	4748810	GREP
Tr654	Solar Transformer	596684	4748810	GREP
Tr655	Solar Transformer	596821	4748810	GREP
Tr656	Solar Transformer	596915	4748981	GREP
Tr657	Solar Transformer	597189	4748981	GREP
Tr658	Solar Transformer	596516	4748473	GREP
Tr659	Solar Transformer	596653	4748473	GREP
Tr661	Solar Transformer	597130	4748216	GREP
Tr662	Solar Transformer	597197	4748226	GREP
Tr663	Solar Transformer	597268	4748226	GREP
Tr664	Solar Transformer	597338	4748226	GREP
Tr665	Solar Transformer	597414	4748225	GREP
Tr666	Solar Transformer	597126	4750395	GREP
Tr667	Solar Transformer	597262	4750395	GREP
Tr668	Solar Transformer	597398	4750395	GREP
Tr669	Solar Transformer	597530	4750396	GREP
Tr670	Solar Transformer	597711	4750377	GREP
Tr671	Solar Transformer	597849	4750377	GREP
Tr672	Solar Transformer	597986	4750377	GREP
Tr673	Solar Transformer	597049	4750389	GREP
Tr674	Solar Transformer	597186	4750389	GREP
Tr675	Solar Transformer	597322	4750389	GREP
Tr676	Solar Transformer	597458	4750389	GREP
Tr677	Solar Transformer	597567	4750388	GREP
Tr678	Solar Transformer	597713	4750371	GREP
Tr679	Solar Transformer	597982	4750371	GREP
Tr680	Solar Transformer	596998	4750215	GREP
Tr681	Solar Transformer	597107	4750052	GREP
Tr682	Solar Transformer	597243	4750052	GREP
Tr683	Solar Transformer	597380	4750052	GREP
Tr684	Solar Transformer	597516	4750052	GREP
Tr685	Solar Transformer	597625	4750055	GREP
Tr686	Solar Transformer	597404	4750046	GREP
Tr687	Solar Transformer	597216	4750046	GREP
Tr688	Solar Transformer	597041	4750043	GREP
Tr689	Solar Transformer	597269	4749212	GREP
Tr690	Solar Transformer	597443	4749211	GREP
Tr691	Solar Transformer	597730	4749211	GREP
Tr692	Solar Transformer	597929	4749212	GREP
Tr693	Solar Transformer	597323	4749202	GREP
Tr694	Solar Transformer	597435	4749205	GREP
Tr695	Solar Transformer	597571	4749205	GREP
Tr696	Solar Transformer	597707	4749205	GREP
Tr697	Solar Transformer	597843	4749205	GREP
Tr698	Solar Transformer	597952	4749204	GREP
Tr699	Solar Transformer	597476	4748953	GREP
Tr700	Solar Transformer	597745	4748953	GREP
Tr701	Solar Transformer	597542	4748947	GREP
Tr702	Solar Enclosure	596362	4750352	GREP
Tr704	Solar Enclosure	596175	4750179	GREP
Tr706	Solar Enclosure	596368	4750179	GREP
Tr708	Solar Enclosure	596505	4750179	GREP
Tr710	Solar Enclosure	596671	4750176	GREP
Tr712	Solar Enclosure	596780	4750177	GREP
Tr714	Solar Enclosure	596096	4750007	GREP
Tr716	Solar Enclosure	596233	4750169	GREP
Tr718	Solar Enclosure	596370	4750169	GREP
Tr720	Solar Enclosure	596507	4750169	GREP
Tr722	Solar Enclosure	596644	4750168	GREP

Tr724	Solar Enclosure	596782	4750168	GREP
Tr726	Solar Enclosure	596017	4749836	GREP
Tr728	Solar Enclosure	596210	4749836	GREP
Tr730	Solar Enclosure	596347	4749836	GREP
Tr732	Solar Enclosure	596484	4749836	GREP
Tr734	Solar Enclosure	596621	4749835	GREP
Tr736	Solar Enclosure	596758	4749835	GREP
Tr738	Solar Enclosure	596895	4749835	GREP
Tr740	Solar Enclosure	595937	4749825	GREP
Tr742	Solar Enclosure	596074	4749826	GREP
Tr744	Solar Enclosure	596212	4749826	GREP
Tr746	Solar Enclosure	596349	4749826	GREP
Tr748	Solar Enclosure	596486	4749826	GREP
Tr750	Solar Enclosure	596623	4749826	GREP
Tr752	Solar Enclosure	596760	4749826	GREP
Tr754	Solar Enclosure	596897	4749826	GREP
Tr756	Solar Enclosure	595995	4749655	GREP
Tr758	Solar Enclosure	596132	4749655	GREP
Tr760	Solar Enclosure	596270	4749655	GREP
Tr762	Solar Enclosure	596798	4749654	GREP
Tr764	Solar Enclosure	596936	4749654	GREP
Tr766	Solar Enclosure	596121	4749408	GREP
Tr768	Solar Enclosure	596191	4749397	GREP
Tr770	Solar Enclosure	596906	4749161	GREP
Tr772	Solar Enclosure	597044	4749161	GREP
Tr774	Solar Enclosure	596121	4749397	GREP
Tr776	Solar Enclosure	596293	4748986	GREP
Tr778	Solar Enclosure	596634	4749152	GREP
Tr780	Solar Enclosure	596771	4749151	GREP
Tr782	Solar Enclosure	596908	4749151	GREP
Tr784	Solar Enclosure	597046	4749151	GREP
Tr786	Solar Enclosure	597206	4748989	GREP
Tr788	Solar Enclosure	596337	4748810	GREP
Tr790	Solar Enclosure	596408	4748818	GREP
Tr792	Solar Enclosure	596545	4748818	GREP
Tr794	Solar Enclosure	596682	4748818	GREP
Tr796	Solar Enclosure	596819	4748818	GREP
Tr798	Solar Enclosure	596956	4748818	GREP
Tr800	Solar Enclosure	597093	4748818	GREP
Tr802	Solar Enclosure	597230	4748818	GREP
Tr806	Solar Enclosure	596409	4748809	GREP
Tr808	Solar Enclosure	596546	4748809	GREP
Tr810	Solar Enclosure	596683	4748808	GREP
Tr812	Solar Enclosure	596821	4748808	GREP
Tr814	Solar Enclosure	596958	4748808	GREP
Tr816	Solar Enclosure	597232	4748808	GREP
Tr818	Solar Enclosure	596515	4748475	GREP
Tr820	Solar Enclosure	596652	4748475	GREP
Tr822	Solar Enclosure	597129	4748557	GREP
Tr824	Solar Enclosure	597196	4748567	GREP
Tr826	Solar Enclosure	597267	4748567	GREP
Tr828	Solar Enclosure	597337	4748567	GREP
Tr830	Solar Enclosure	597413	4748223	GREP
Tr832	Solar Enclosure	597125	4750397	GREP
Tr834	Solar Enclosure	597261	4750397	GREP
Tr836	Solar Enclosure	597397	4750397	GREP
Tr838	Solar Enclosure	597530	4750398	GREP
Tr840	Solar Enclosure	597711	4750379	GREP
Tr842	Solar Enclosure	597848	4750379	GREP
Tr844	Solar Enclosure	597985	4750379	GREP

Tr846	Solar Enclosure	597049	4750388	GREP
Tr848	Solar Enclosure	597185	4750388	GREP
Tr850	Solar Enclosure	597321	4750387	GREP
Tr852	Solar Enclosure	597458	4750387	GREP
Tr854	Solar Enclosure	597566	4750386	GREP
Tr856	Solar Enclosure	597712	4750370	GREP
Tr858	Solar Enclosure	597982	4750370	GREP
Tr860	Solar Enclosure	596998	4750216	GREP
Tr862	Solar Enclosure	597106	4750054	GREP
Tr864	Solar Enclosure	597243	4750054	GREP
Tr866	Solar Enclosure	597379	4750054	GREP
Tr868	Solar Enclosure	597515	4750054	GREP
Tr870	Solar Enclosure	597624	4750053	GREP
Tr872	Solar Enclosure	597040	4750045	GREP
Tr874	Solar Enclosure	597215	4750045	GREP
Tr876	Solar Enclosure	597403	4750044	GREP
Tr878	Solar Enclosure	597268	4749214	GREP
Tr880	Solar Enclosure	597443	4749213	GREP
Tr882	Solar Enclosure	597730	4749213	GREP
Tr884	Solar Enclosure	597928	4749214	GREP
Tr886	Solar Enclosure	597323	4749204	GREP
Tr888	Solar Enclosure	597434	4749204	GREP
Tr890	Solar Enclosure	597570	4749203	GREP
Tr892	Solar Enclosure	597706	4749203	GREP
Tr894	Solar Enclosure	597843	4749203	GREP
Tr896	Solar Enclosure	597951	4749203	GREP
Tr898	Solar Enclosure	597476	4748955	GREP
Tr900	Solar Enclosure	597744	4748955	GREP
Tr902	Solar Enclosure	597541	4748946	GREP

13 APPENDIX B — ADDITIONAL DOCUMENTATION

For reference, this appendix contains the following documents.

Siemens Wind Power A/S, 2011/09/05: *Contract Acoustic Emission, SWT-2.3-101 (2126 kW), Hub Height 99.5 m*. Document E-R-WP-CTO-40-CA00016-2064-00.

Siemens Wind Power A/S, 2011/09/05: *Contract Acoustic Emission, SWT-2.3-101 (2221 kW), Hub Height 99.5 m*. Document E-R-WP-CTO-40-CA00016-2055-00.

SMA, 2011/12/02: Letter: *Enclosed MVPP with Mitigated Sound Power Level*. Signed by i.V. Nick Morbach and i.A. Dr. Stephan Hövel

SMA, no date: Sunny Central 500HE-US, Portion of sales literature pp. 44-45.

The following document is supplied separately.

Windtest, Kaiser-Wilhelm-Koog GmbH, 2005: Report of acoustical emissions of a Siemens wind turbine generator system of the type 2.3 MW Mk II near Hovsore in Denmark. September 2005. Report WT 4498/05.

SIEMENS

Contract Acoustic Emission, SWT-2.3-101 (2126 kW), Hub Height 99.5 m
Document E-R-WP-CTO-40-CA00016-2064-00
PE, BSN / 2011.09.05
Conveyed Confidentially as Trade Secret

SWT-2.3-101, Max. Power 2126 kW
Contract Acoustic Emission, Hub Height 99.5 m

Sound Power Levels

The warranted sound power level is presented with reference to the code IEC 61400-11:2002 with amendment 1 dated 2006-05 based on a hub height of 99.5 m and a roughness length of 0.05 m as described in the IEC code. The sound power levels (L_{WA}) presented are valid for the corresponding wind speeds referenced to a height of 10 m above ground level.

Wind speed [m/s]	3	4	5	6	7	8	9	10	11	12	Up to cut-out
Sound power level	91.4	95.7	100.3	103.5	104.0	104.0	104.0	104.0	104.0	104.0	104.0

Table 1: Noise emission, L_{WA} [dB(A) re 1 pW]

Octave Band

Octave band spectra are tabulated below for 6 and 8 m/s referenced to 10 m height.

Octave band, centre frequency [Hz]	63	125	250	500	1000	2000	4000	8000
Sound power level	82.6	93.6	96.1	97.3	97.4	96.0	87.9	83.5

Table 2: Octave band for 6 m/s, L_{WA} [dB(A) re 1 pW]

Octave band, centre frequency [Hz]	63	125	250	500	1000	2000	4000	8000
Sound power level	82.2	92.5	94.8	98.5	99.1	95.5	89.0	85.1

Table 3: Octave band for 8 m/s, L_{WA} [dB(A) re 1 pW]

Siemens Wind Power A/S P. 1/1

SIEMENS

Contract Acoustic Emission, SWT-2.3-101 (2221 kW), Hub Height 99.5 m
Document E-R-WP-CTO-40-CA00016-2055-00
PE, BSN / 2011.09.05
Conveyed Confidentially as Trade Secret

SWT-2.3-101, Max. Power 2221 kW
Contract Acoustic Emission, Hub Height 99.5 m

Sound Power Levels
The warranted sound power level is presented with reference to the code IEC 61400-11:2002 with amendment 1 dated 2006-05 based on a hub height of 99.5 m and a roughness length of 0.05 m as described in the IEC code. The sound power levels (L_{WA}) presented are valid for the corresponding wind speeds referenced to a height of 10 m above ground level.

Wind speed [m/s]	3	4	5	6	7	8	9	10	11	12	Up to cut-out
Sound power level	91.4	95.7	100.5	104.5	105.0	105.0	105.0	105.0	105.0	105.0	105.0

Table 1: Noise emission, L_{WA} [dB(A) re 1 pW]

Octave Band
Octave band spectra are tabulated below for 6 and 8 m/s referenced to 10 m height.

Octave band, centre frequency [Hz]	63	125	250	500	1000	2000	4000	8000
Sound power level	82.1	93.3	96.5	99.0	99.1	96.6	88.8	84.4

Table 2: Octave band for 6 m/s, L_{WA} [dB(A) re 1 pW]

Octave band, centre frequency [Hz]	63	125	250	500	1000	2000	4000	8000
Sound power level	82.4	93.0	96.0	99.8	100.1	96.5	89.6	85.7

Table 3: Octave band for 8 m/s, L_{WA} [dB(A) re 1 pW]

Siemens Wind Power A/S

P. 1/1

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Date December, 2nd, 2011

Enclosed MVPP with Mitigated Sound Power Level

To Whom It May Concern:

SMA Solar Technology AG has preliminary determined through sound simulation that for an Enclosed Medium Voltage Power Platform (MVPP) solution, the target sound power level per Table 1 below are achievable and feasible within the Enclosure MVPP solution. This includes two SC500HE-CA inverters in an enclosure and a step-up medium voltage transformer with all components mounted on a platform as a turnkey solution.

Octave Band Center Frequency	63	125	250	500	1000	2000	4000	8000	Overall A-Weighted
Extra-mitigated MVPP	97	79	67	51	42	34	25	32	71.7

Table 1: Enclosed MVPP with two SC500HE-CA Inverter Units

Sound simulations have shown that soundproofing measures exists for sound power level reduction to the desired values per Table 1, but these simulations have to be validated through actual tests. SMA reserves the right to request additional measures external to MVPP due to the test results which could differ from the ones suggested by the simulation.

Yours faithfully,
SMA Solar Technology AG

i.V. Nick Morbach
Vice president, Product Management,
Power Plant Solutions

i.A. Dr. Stephan Hövel
Product Management,
Power Plant Solutions

High yields
- 98.6 % peak efficiency
- Suitable for ambient temperatures up to 122 °F/50 °C
- OptiCool intelligent temperature management

Low system costs
- Direct use outdoors thanks to outdoor enclosure
- Favorable installation through separate connection area
- Easy connection to all grids

Strong peripherals
- NEC-2011-compliant Disconnect Unit
- Circuit Combiner Boxes
- Sunny Central String-Monitor US
- Available as integrated complete solution

Grid management included
- Reactive power control
- Active power control
- Anti-islanding

SUNNY CENTRAL 500HE-US

The ideal solution for PV power stations in North America

Individual performance at an industrial level: In combination with an external transformer, the Sunny Central 500HE-US can be connected with any imaginable grid, which it also actively supports with the new grid management function. The outdoor enclosure with OptiCool cooling concept and the separate connection area ensure simple installation and low system costs. With its peak efficiency of 98.6 %, it outdoes all other devices in its performance class. SMA also supplies complete megawatt skids with two inverters and external AC/DC disconnectors located centrally in a Disconnect Unit and a transformer.

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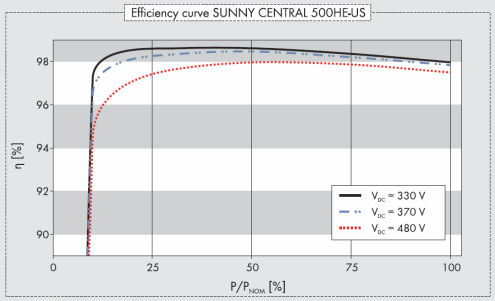

1) Specifications apply to irradiation values at STC
2) AC voltage range for full active power: 196 V – 210 V
3) Measured without internal power supply at V_{DC} = 330 V
4) Max. temperature at nominal conditions +45 °C/+113 °F
5) Sound pressure level at a distance of 10 m
6) No reduction in power up until 1000 m, afterwards 5 % per 1000 m

Technical Data	Sunny Central 500HE-US	
Input (DC)		
Max. DC power (@ cos φ=1)	513 kW [1]	
Max. input voltage	600 V	
MPP voltage range	330 V – 600 V	
Rated input voltage	380 V	
Minimum input voltage	330 V	
Max. input current	1600 A	
Number of independent MPP inputs	1	
Number of DC inputs	6 – 9	
Output (AC)		
Rated power (@ 25 °C) / nominal AC power (@ 50 °C)	500 kVA / 351 kVA	
Nominal AC voltage / range	200 V / 180 V – 220 V [2]	
AC power frequency / range	60 Hz / 59.3 Hz ... 60.5 Hz	
Rated power frequency / rated power voltage	60 Hz / 200 V	
Max. output current	1470 A	
Max. THD	3 %	
Power factor at rated power / adjustable shift factor	> 0.99 / 0.9 leading ... 0.9 lagging	
Feed-in phases, connection phases	3 / 3	
Efficiency [3]		
Max. efficiency / European efficiency / CEC	98.6 % / 97.9 % / 98.0 %	
Protection		
Input side disconnection device	Motor-driven contactor	
Output side disconnection device	AC circuit breaker	
DC overvoltage protection, AC overvoltage protection	O / O	
Grid monitoring	●	
Ground fault monitoring	●	
General Data		
Dimensions (W / H / D)	2562 / 2277 / 956 mm (101 / 90 / 38 inch)	
Weight	1800 kg	
Operating temperature range	-25 °C ... +50 °C / -13 °F ... +122 °F [4]	
Noise emission	59.3 db(A) [5]	
Max. self-consumption (in operation) / self-consumption (at night)	1700 W / < 110 W	
Cooling concept	OptiCool	
Degree of protection	NEMA 3R	
Application	Unprotected outdoors	
Maximum permissible value for relative humidity (non-condensing)	15 % ... 95 %	
Maximum operating altitude above MSL	4000 m [6]	
Fresh air consumption	3000 m³/h	
Features		
Display	LC graphic display	
Communication interfaces	Ethernet, modbus, TCP, analog	
Internal power supply transformer	●	
PV plant monitoring	Optional (via Sunny Portal)	
Color of enclosure / door / base / roof	RAL 9016 / 9016 / 7005 / 7004	
Certificates and approvals (more upon request)	EMC conformity according to FCC, Part 15, Class A, UL 1741, UL 1998, IEEE 1547	
● Standard features O Optional features – Not available		
Type designation	SC 500HE-US	

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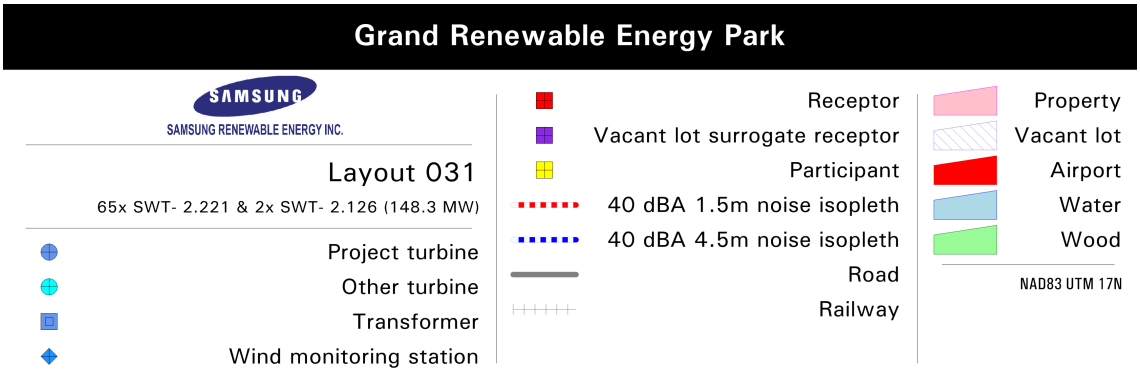
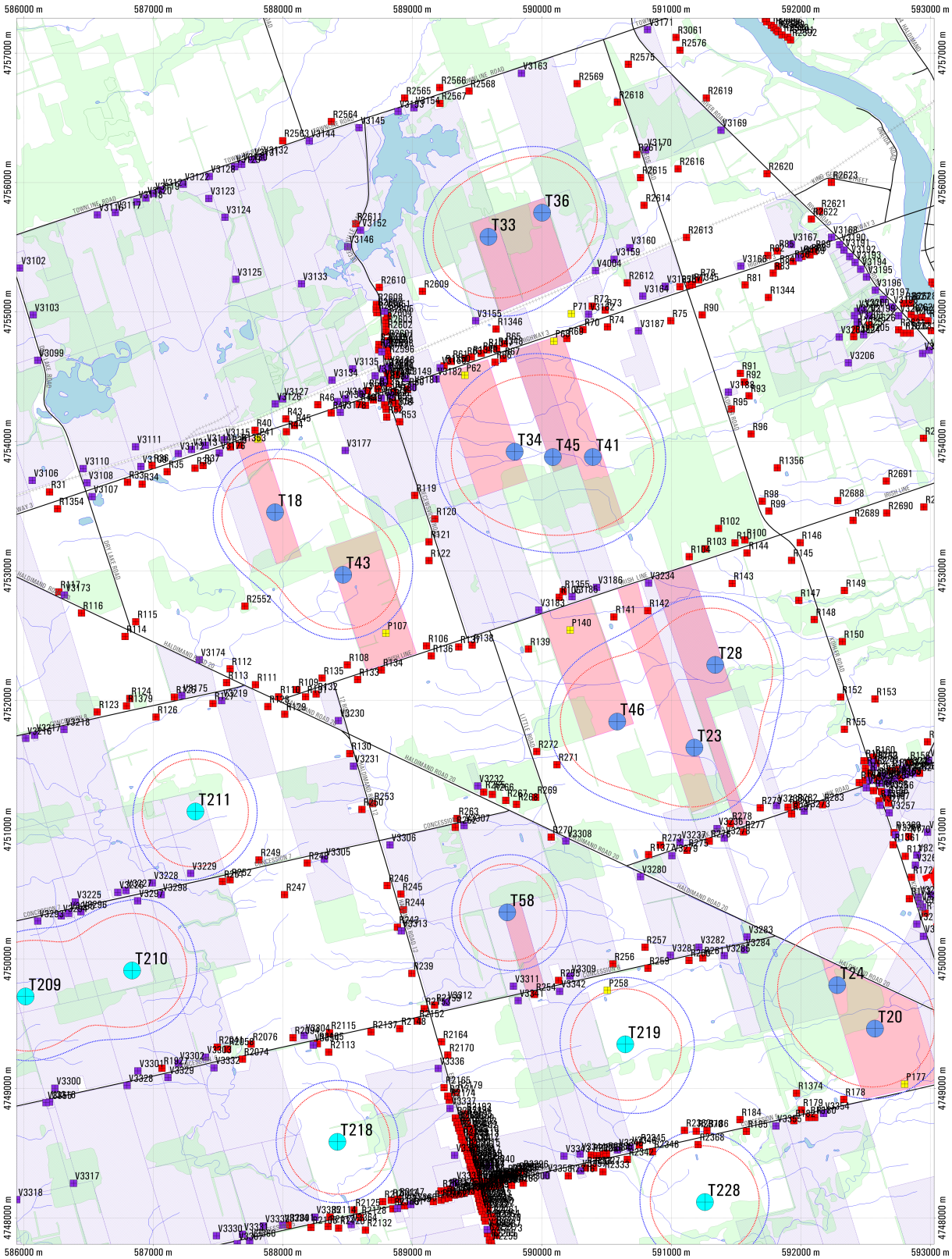
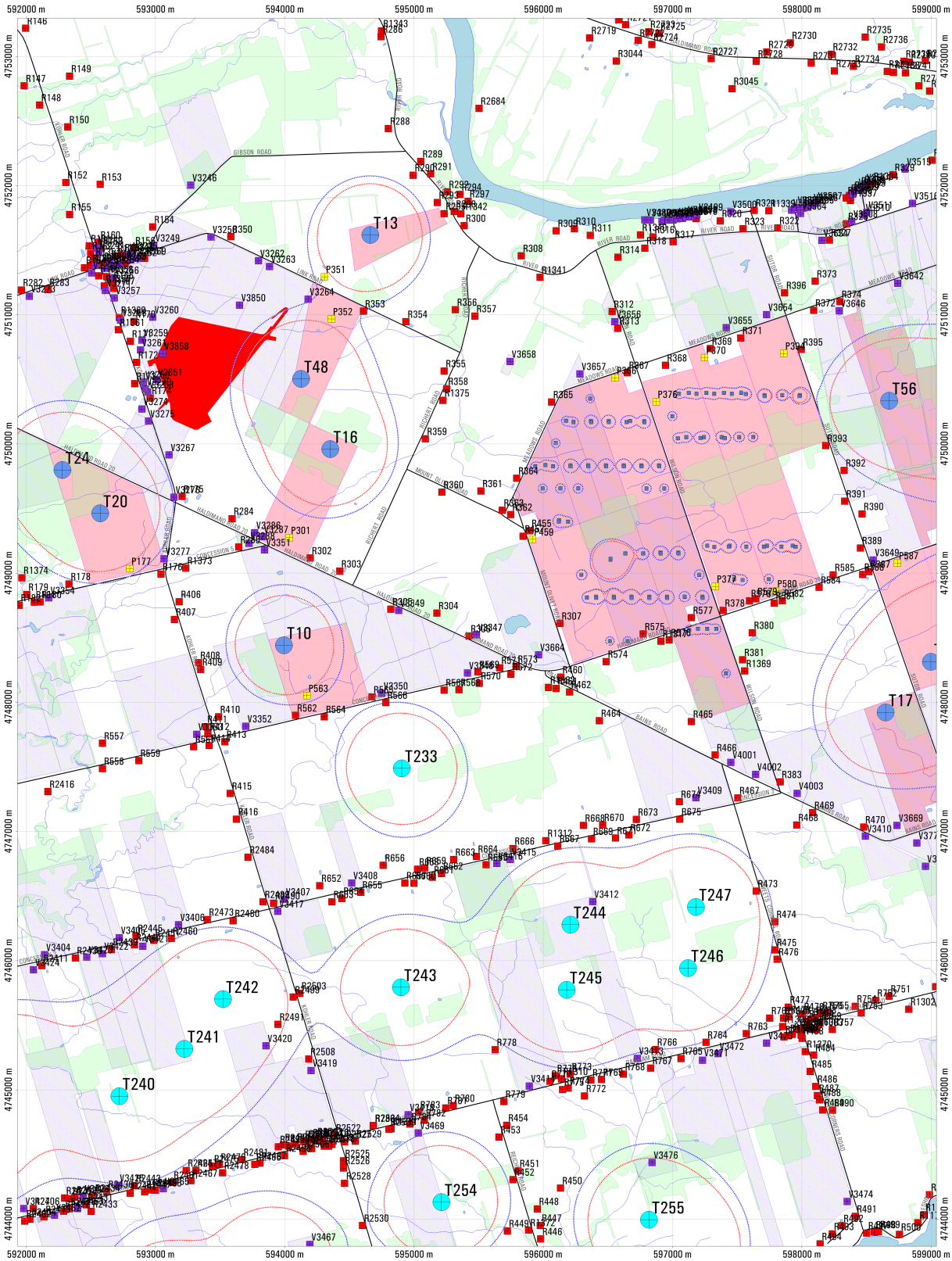
14 APPENDIX C — DETAILED MAPS

This appendix contains a set of tiled maps covering the project area and providing greater detail. The legend below applies to all maps in this appendix.





Zephyr North



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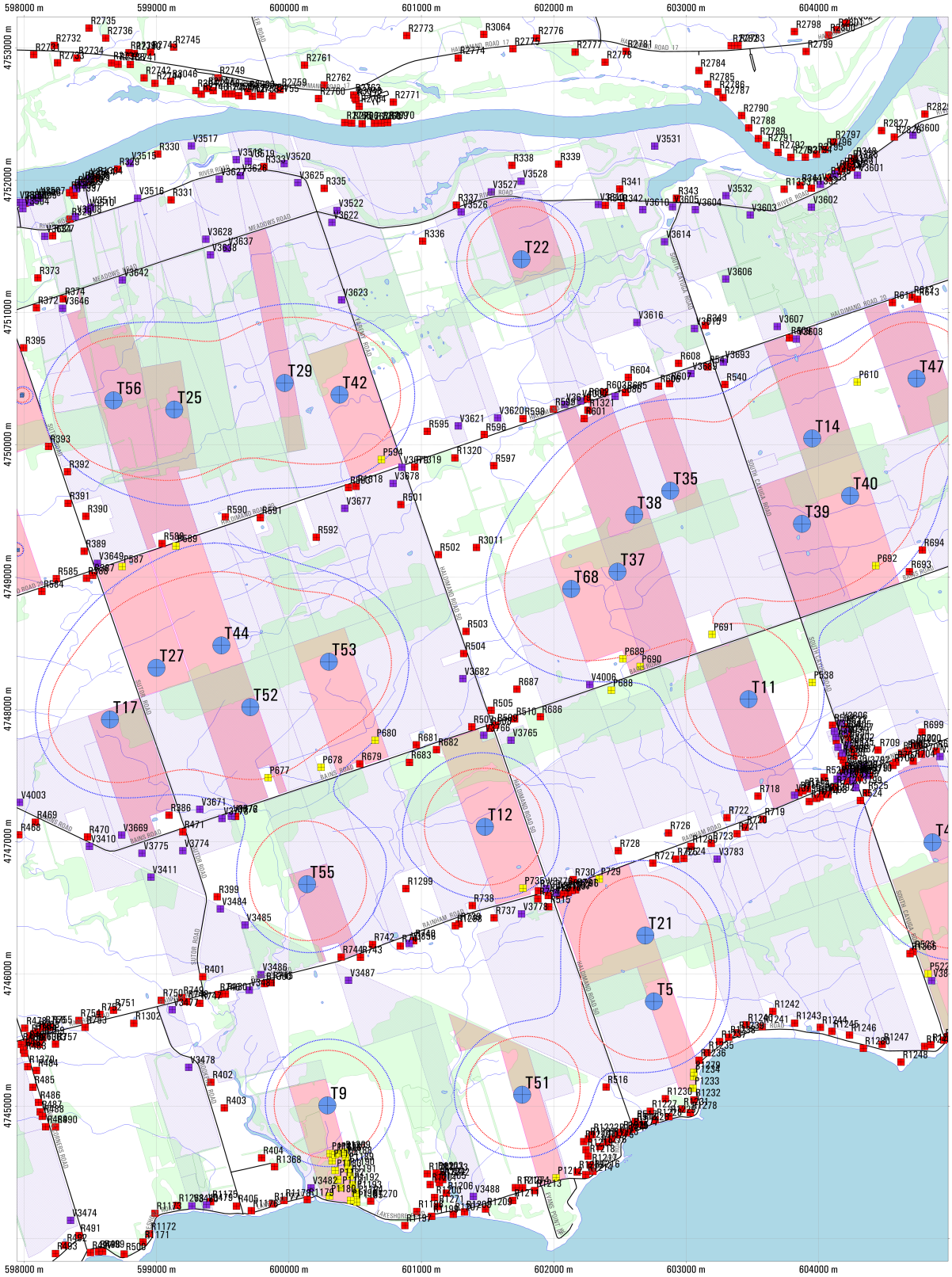

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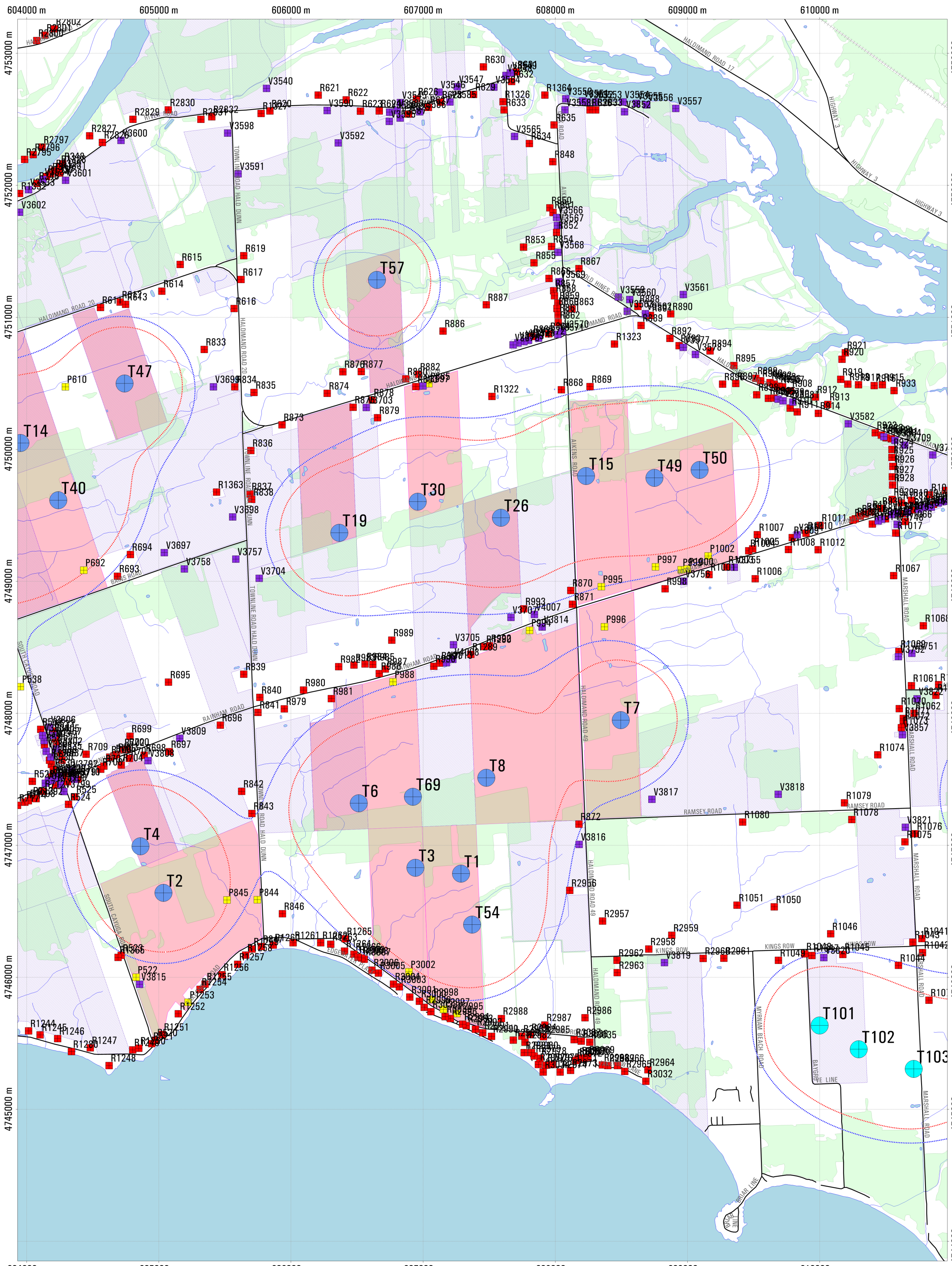

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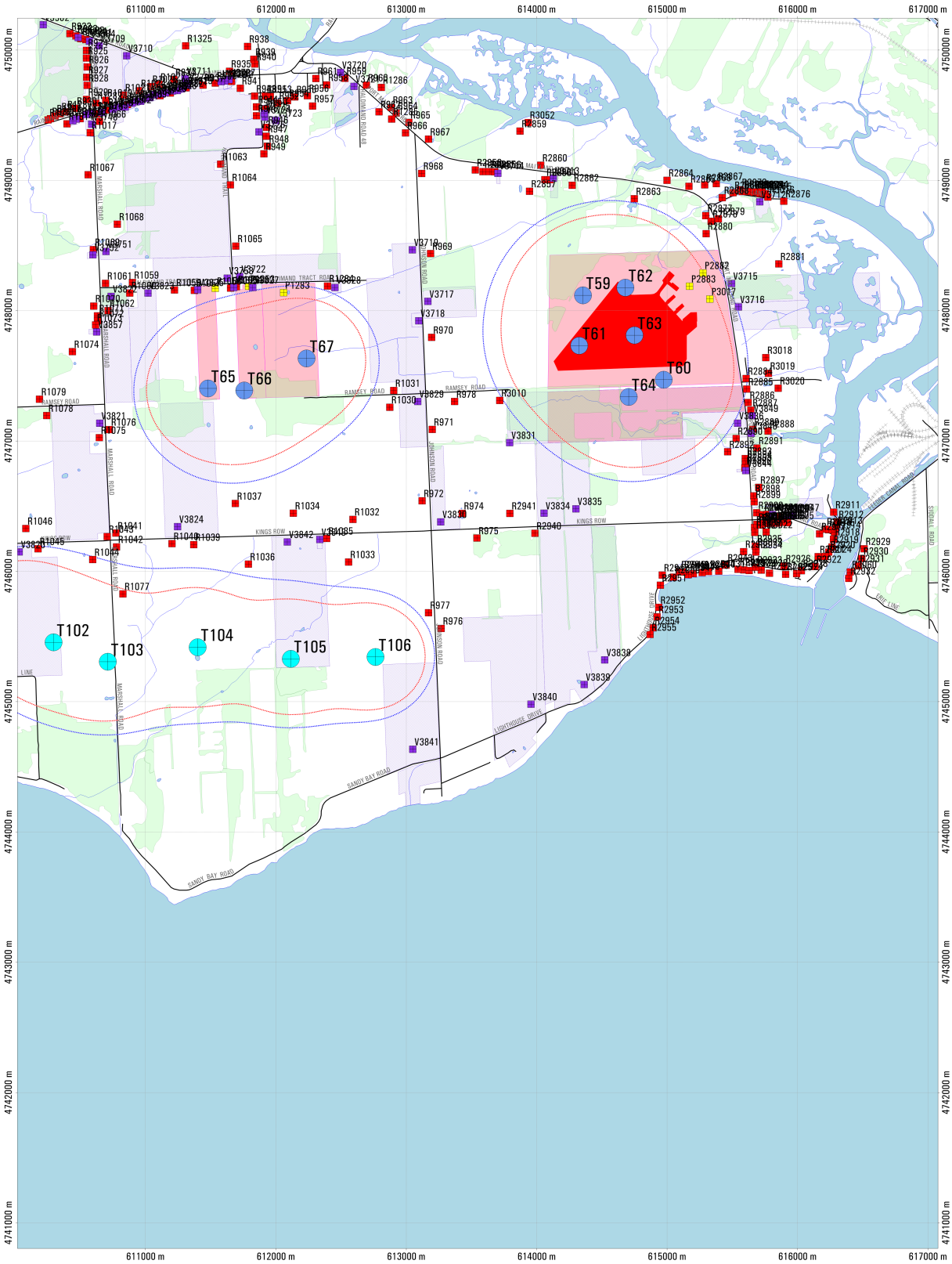

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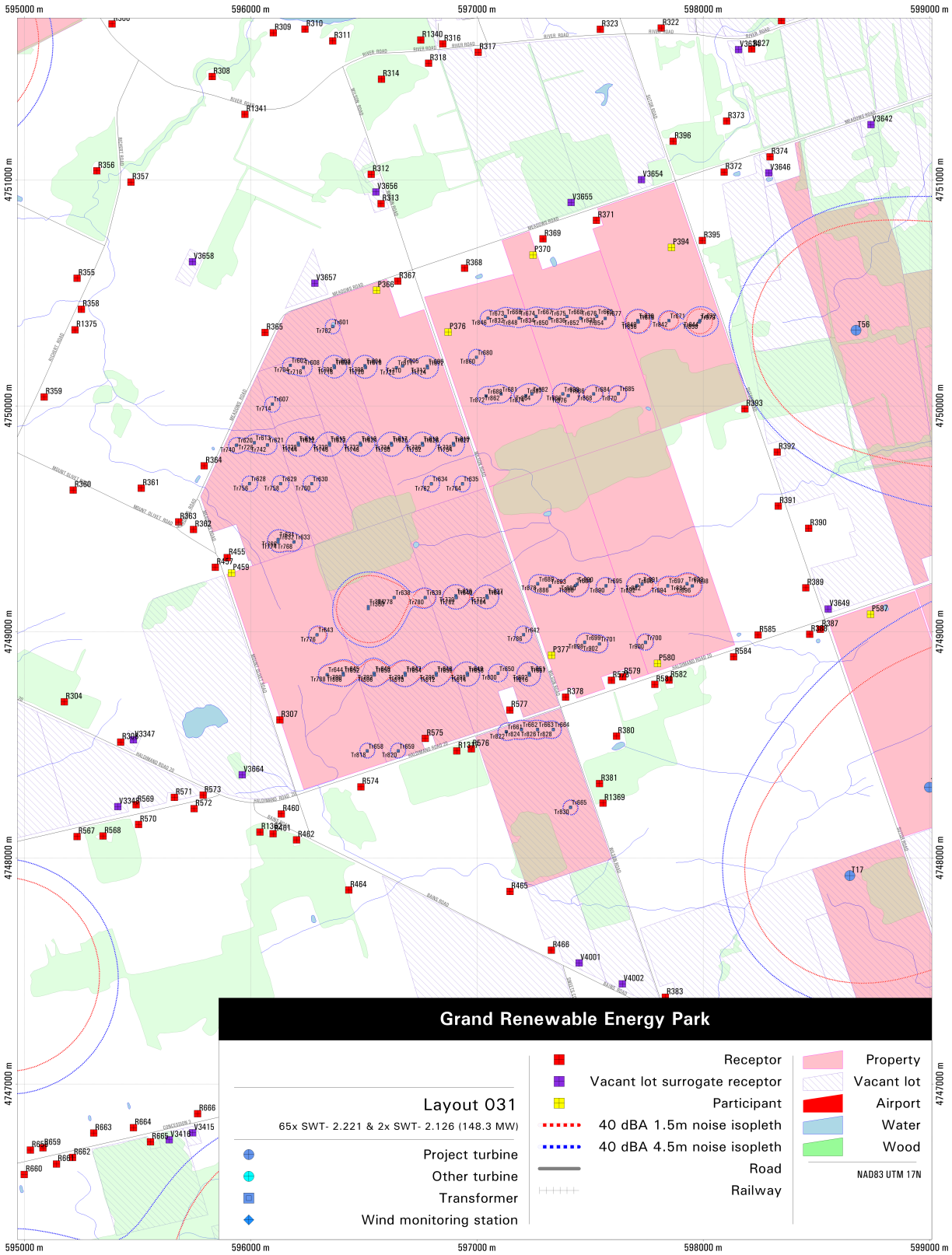

Zephyr North

END