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REPORT ID: **17095.01.T40.RP1**

Belle River Wind Power Project – Turbine T40 IEC 61400-11 Edition 3.0 Measurement Report

Prepared for:

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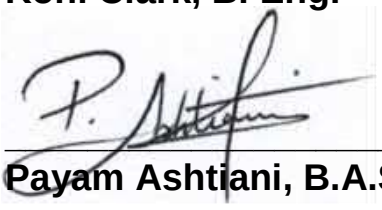

Payam Ashtiani, B.A.Sc., P.Eng.

26 November 2018 – Revision 1

Revision History

Revision Number	Description	Date
1	Issued test report	26 November 2018

This report in its entirety, including appendices contains 98 pages.

Statement Qualifications and Limitations

This report was prepared by Aercoustics Engineering Limited in accordance with International Standard IEC 61400-11 (Edition 3.0, released 2012-11), "Wind turbine generator systems – Part 11: Acoustic noise measurement techniques". This report is specific only to the Wind Turbine identified in this report.

Aercoustics Engineering Limited shall not be responsible for any events or circumstances that may have occurred since the date on which the Wind Turbine was tested and/or this report was prepared, or for any inaccuracies contained in information that was provided to Aercoustics Engineering Limited. Further, Aercoustics Engineering Limited agrees that this report represents test data analysed as per the above described standard for the specific Wind Turbine described in this report, but Aercoustics Engineering Limited makes no other representations with respect to this report or any part thereof.

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Any use of this report is subject to this Statement of Qualifications and Limitations. Any damages arising from improper use of this report or parts thereof shall be borne by the party making such use.

This Statement of Qualifications and Limitations is attached to and forms part of this report.

Table of Contents

List of Appendices

List of Appendices (cont'd)

1 Introduction

Aercoustics Engineering Limited ("Aercoustics") was retained by Belle River Wind LP to conduct testing per the IEC 61400-11 test standard on one of the wind turbines, designated as T40, located in the Belle River Wind Project. The measurements were carried out in accordance with IEC 61400-11:2012, "*Wind turbine generator systems – Part 11: Acoustic noise measurement techniques*". This report is specific only to turbine T40.

Aercoustics is accredited by the Standards Council of Canada under ISO/IEC 17025 to perform testing according to the IEC 61400-11 test standard.

2 Wind Turbine Information

2.1 Wind Turbine Equipment Details

Equipment information specific to turbine T40 was provided by the manufacturer and is summarized in Tables 1 to 5.

Table 1 – Wind Turbine Details

Wind Turbine Details	
Manufacturer	Siemens Gamesa Renewable Energy
Model Number	SWT 2.37-113
Turbine ID	T40
Serial Number	3200717

Table 2 – Operating Details

Operating Details	
Vertical or Horizontal axis wind turbine	Horizontal
Upwind or downwind rotor	Upwind rotor
Hub height	99.5 m
Horizontal distance from rotor centre to tower axis	5.5 m
Diameter of rotor	113 m
Tower type (lattice or tube)	Tubular
Passive stall, active stall, or pitch controlled turbine	Pitch controlled turbine
Constant or variable speed	Variable speed
Power curve	Rev 0
Rotational speed at each integer standardised wind speed	Max speed, 11.6 rpm
Rated power output	2370 kW
Control software version	136.1.0.1

Table 3 – Rotor Details

Rotor Details	
Rotor control devices	Pitch control
Presence of aerodynamic add-ons, such as vortex generators, stall strips, serrated trailing edges, etc.	Vortex generators and DinoTails
Blade type	B55
Serial number	Blade A: 550263401 Blade B: 550264101 Blade C: 550354201
Number of blades	3

Table 4 – Gearbox Details

Gearbox Details	
Manufacturer	N/A Direct drive
Model number	N/A Direct drive
Serial number	N/A Direct drive

Table 5 – Generator Details

Generator Details	
Manufacturer	Siemens
Model number	DD22_02
Serial number	5100235369

2.2 Wind Turbine Location

Turbine T40 is located in the town of Lakeshore, Ontario. Nearby roads are Lakeshore Road 129 and Byrnedale Road, approximately 600 m to the east and 1400 m to the south, respectively. The area surrounding T40 is flat and consists primarily of farmland and scattered woodlots. The UTM coordinates of the turbine are 365866 m E and 4679546 m N (Zone 17T).

A general layout of the area in which the turbine is located is provided in the site plan (Figure A.01).

3 Measurement Details

3.1 Measurement Equipment

3.1.1 Acoustic Measurement Equipment

Details regarding the acoustic measurement equipment utilized for the test is summarized in Table 6.

Table 6 – Acoustic Measurement Equipment

Equipment	Manufacturer Name & Model	Serial Number
Acoustic Data acquisition system	LMS SCADA Mobile SCR202	22143211
Microphone	B&K 4189	2625416
Pre-amplifier	B&K 2671	2369794
Acoustic calibrator	B&K 4231-08	3012378

A field calibration of the measurement chain was performed at the beginning and end of each measurement day.

3.1.2 Non-Acoustic Measurement Equipment

Non-acoustic measurement equipment includes an anemometer installed 10 meters above ground level ("10-m AGL") as well any sensing equipment utilized by the wind turbine to measure and record operational parameters. The 10-m AGL anemometer is provided by Aercoustics while the turbine sensing equipment is a part of the turbine installation.

Details regarding the non-acoustic measurement equipment utilized and controlled by Aercoustics is summarized in Table 7. Equipment used to measure turbine parameters, such as yaw angle and power output, are outside of Aercoustics' control and are not reported here.

Table 7 – Meteorological Measurement Equipment

Equipment	Manufacturer Name & Model	Serial Number
Anemometer	VAISALA WXT520	K2420011
Serial to Analog Converter	NOKEVAL 7470	A165152

3.2 Measurement Setup

3.2.1 Microphone Placement

The measurement microphone was setup 156 meters from the base of the turbine in a downwind position (Position 1, per IEC 61400-11), at an elevation of 0 meters relative to the base of T40. The slant distance (R_1) from microphone location to rotor centre includes

the distance from rotor center to tower axis (R_1 = 189.7 m). The microphone was placed in the centre of a circular, acoustically reflective board.

During the measurement period, data points were used only when the microphone was within 15 degrees of the downwind direction from the turbine. The microphone position relative to downwind is monitored via the turbine yaw angle provided from the turbine SCADA system (discussed further in Section 3.5).

During the test, the land surrounding the turbine consisted of short crop cover and short grass. There were no nearby reflecting surfaces (houses, barns etc.); as such the influence from reflecting surfaces is negligible.

Photos of the measurement setup are provided in Figure A.02, Appendix A.

3.2.2 Double Windscreen Setup

A double windscreen setup was not utilized.

3.3 Measurement Periods

Table 8 – Summary of Measurement Periods

Date	Test Type	Start Time	Finish time
October 10, 2018	Background	12:40 PM	1:09 PM
	Turbine ON	1:11 PM	1:53 PM
	Background	1:54 PM	2:25 PM
	Turbine ON	2:31 PM	3:13 PM
	Background	3:14 PM	3:41 PM
	Turbine ON	3:43 PM	3:56 PM
October 11, 2018	Turbine ON	9:05 AM	9:53 AM
	Background	9:53 AM	10:13 AM
	Turbine ON	10:16 AM	10:47 AM
	Background	10:50 AM	11:09 AM
	Background	11:11 AM	11:48 AM
	Turbine ON	11:51 AM	12:44 PM

3.4 Meteorological Conditions

The normalised hub height wind speed during Turbine ON periods is either derived directly using the turbine power curve and measured power output (Section 8.2.1.1 of [1]) or indirectly using the measured wind speed from the nacelle anemometer and applying a correction factor (Section 8.2.1.2 of [1]). Wind speeds during Background periods are measured using the 10-m AGL anemometer and corrected to hub-height using a correction factor (Section 8.2.2 of [1]). The downwind direction is determined using the turbine yaw angle output, also known as the nacelle position (Section 8.3 of [1]).

Other atmospheric conditions, including ambient temperature and atmospheric pressure, are measured by the 10-m AGL anemometer during the measurement periods.

Detailed meteorological data relevant to the measurement is provided in Appendix E.

3.5 Turbine operational information

Turbine operational parameters – including electrical power, nacelle position (yaw angle), rotational speed, and nacelle wind speed – are acquired from the turbine controller simultaneously with the acoustic and weather measurement data using Aercoustics' data acquisition system.

4 Measurement Results

4.1 Deviations from IEC-61400-11 Edition 3.0

No deviations.

4.2 Special Notes & Considerations

No adjacent turbines were parked during the test.

4.3 Analysis Methodology

The following section outlines any corrections applied to the acoustic or weather measurement data, per IEC 61400-11. Transient events, such as vehicle traffic, wildlife, or air traffic, are excluded from the measurement data set.

4.3.1 Double Windscreen Adjustment

No double wind screen was used in the measurements described in this report and therefore no adjustment for a double windscreen was applied to the measurement data.

4.3.2 Wind Speed Correction

Following the methodology described in Section 8.2 of [1] and summarized in Section 3.4 of this report, two correction factors are derived from the measurement data and used to determine the normalized hub-height wind speed in certain conditions. The first correction factor (k_nac) is used to correct nacelle wind speeds measured for intervals that fall outside of the allowable power curve range. The second correction factor (k_Z) is used to correct 10m-AGL wind speeds measured during Background measurement periods up to hub-height.

The k-factors for this measurement set are provided in Table 9.

Table 9 – Calculated nacelle anemometer (k_nac) and 10m (k_Z) wind speed k-factor

k_nac	k_Z
0.96	1.40

4.4 Type B uncertainties

Type B uncertainties were obtained through interpretation of the information provided in Annex C of [1]. A summary of Type B uncertainties is provided in Table 10, while detailed information, including uncertainties by 1/3 octave band, is provided in Appendix C.

Table 10 – Summary of Type B uncertainties

Component	Typical (dB)	Used (dB)
Calibration	0.2	0.2
Board	0.3	0.3
Distance & direction	0.1	0.1
Air absorption	0	0
Weather conditions	0.5	0.5
Wind speed measured	0.7	0.7
Wind speed derived	0.2	0.2
Wind speed from power curve	0.2	0.2

4.5 Sound Pressure Level Measurements

Average overall sound pressure levels in each wind bin for Turbine ON and Background periods are summarized in Table 11. Average sound levels and uncertainties by 1/3 octave band are provided in Appendix C. A copy of the measurement data used for analysis is provided in Appendix E.

Table 11 – Summary of Sound Pressure Level Measurements

Wind Speed (m/s)	Turbine ON		Background		Turbine ON, Background adjusted L_{eq}, (dBA)
	L_{eq}, (dBA)	# of data pts	L_{eq}, (dBA)	# of data pts	
7	50.4	17	41.2	35	49.9
7.5	51.3	24	40.8	38	51.0
8	51.0	77	40.6	48	50.7
8.5	51.0	125	40.7	51	50.6
9	50.9	150	40.5	49	50.5
9.5	50.7	93	40.7	44	50.2
10	50.8	113	40.6	52	50.3
10.5	50.9	94	40.6	35	50.5
11	50.9	77	41.0	32	50.4
11.5	51.2	33	41.0	24	50.7
12	51.0	17	40.2	10	50.7

4.6 Sound Power Level of Turbine

The calculated apparent sound power level at hub height is summarized in Table 12. Corresponding sound power levels for 10-meter height wind speeds are provided in Table 13. Wind speeds at 10 meters are calculated using the wind shear profile described in Section 9.4 of [1].

Sound power levels by 1/3 octave band are provided in Appendix C.

Table 12 – $L_{WA,\,K}$ at each integer wind speed

Wind Speed (m/s)	Apparent L_{WA}, (dBA)	Uncertainty (dB)
7	100.5	0.9
7.5	101.5	1.0
8	101.2	0.8
8.5	101.1	0.8
9	101.0	0.9
9.5	100.8	0.9
10	100.9	0.9
10.5	101.0	0.8
11	100.9	0.9
11.5	101.3	0.8
12	101.2	0.9

Table 13 – $L_{WA\ 10m,\,K}$ at each integer wind speed

Wind Speed (m/s)	Apparent L_{WA}, (dBA)	Uncertainty (dB)
5	101.0	1.0
6	101.1	0.8
7	100.9	0.9
8	101.1	0.7

4.7 Tonality Analysis

The tonality analysis for turbine T40 is summarized in Table 14, while plots of narrow band spectra at each wind speed are provided in Appendix D. All ΔL_{tn} and ΔL_a values reported represent the energy average of all data points with an identified tone that fall within the same frequency of origin (Section 9.5.8 of [1]).

The narrow band spectra provided in the plots represents an energy average of all data points in the given wind speed bin for both Turbine ON and Background.

Table 14 – Tonality Assessment Summary

Wind Speed (m/s)	Frequency (Hz)	Tonality, ΔL_{tn} (dB)	Tonal audibility, ΔL_a (dB)	FFT's with tones	Total # of FFT's	Presence (%)
7	61	-4.7	-2.7	11	17	65%
9	62	-5.0	-3.0	138	150	92%
11.5	62	-4.1	-2.1	25	33	76%

5 Closure

Measurements and analyses per IEC 61400-11:2012 (Edition 3.0) were performed on turbine T40 of the Belle River Wind Power Project, located in the town of Lakeshore, Ontario. The test turbine was found to have a maximum apparent sound power level of 101.5 dBA and a maximum tonal audibility of -2.1 dB.

Supplementary information to address specific local regulatory requirements are attached separately in Appendix F.

Should you have any questions or comments please contact the authors of this report.

6 References

[1] IEC 61400-11 , *Wind Turbines - Part 11: Acoustic noise measurement techniques,* International Electrotechnical Commission, 2012.

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Appendix A
Site Details

aercoustics	17095.01.T40.RP1	**Project Name**
	Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40
		Figure Title Site Plan
		Figure A.01

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17095.01.T40.RP1	**Project Name**
Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40
	Figure Title Site Photo

Figure A.02

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Appendix B
Turbine Information

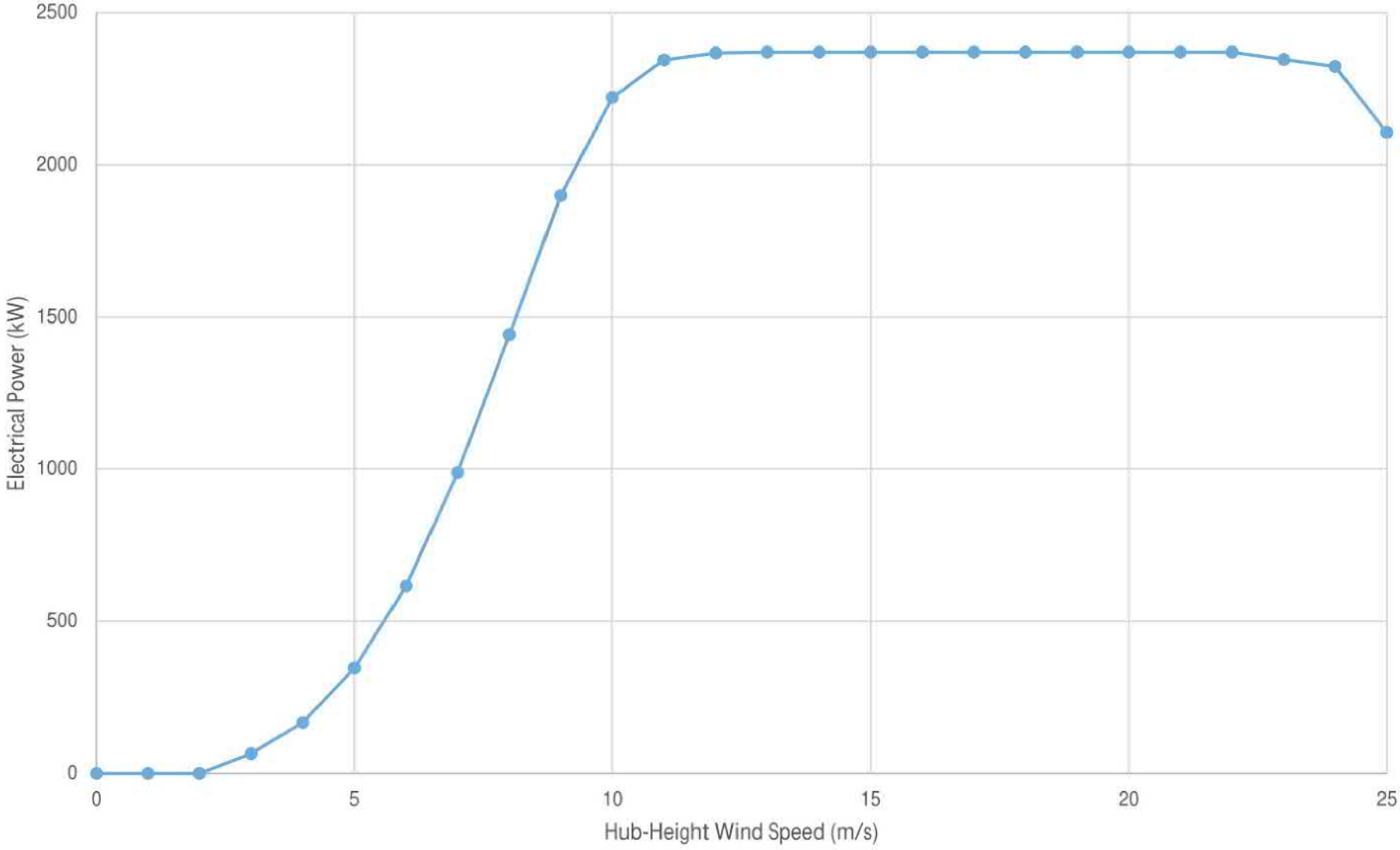
Table B.01 Allowed range of power curve and required wind speeds

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

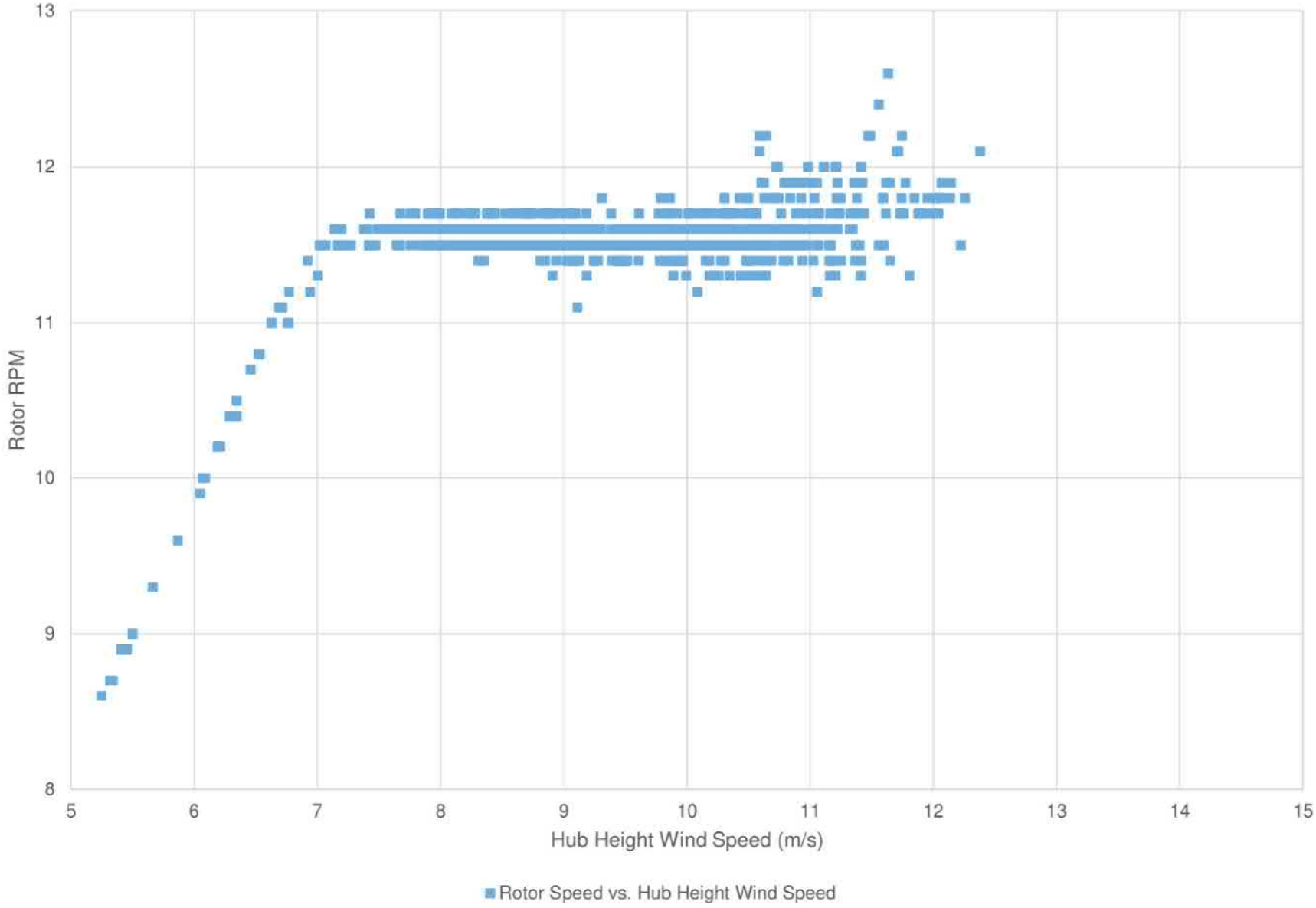
Report ID: 17095.01.T40.RP1
Created on: 11/8/2018

Power Curve & Required Wind Speeds		
Power Curve Tolerance	3%	
Acceptable range min	4	m/s
Acceptable range max	9	m/s
Min allowable range	4	m/s
Max allowable range	9	m/s
Power Output	2370	kW
85% Power	2015	kW
Corresponding wind speed	9.36	m/s
Minimum bin	7.5	m/s
Maximum bin	12.0	m/s

Power Curve (+ value = acceptable)		
Hub Wind Speed (m/s)	Power [kW]	Slope of Power Curve
0	**0**	-142
1	0	-142
2	0	-77
3	65	-40
4	167	37
5	346	127
6	615	230
7	987	314
8	1443	314
9	1899	181
10	2222	-20
11	2344	-119
12	2367	-139
13	2370	-142
14	2370	-142
15	2370	-142
16	2370	-142
17	2370	-142
18	2370	-142
19	2370	-142
20	2370	-142
21	2370	-142
22	2370	-166
23	2346	-165
24	2323	-358
25	2107	



aercoustics	17095.01.T40.RP1	**Project Name**
	Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40
		Figure Title Power Curve
		Figure B.01



aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40	
		Figure Title Rotor RPM vs. Wind Speed	**Figure B.02**

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Appendix C
Apparent Sound Power Level

Table C.01 Detailed apparent sound power level data at hub height

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

Created on: 2018-11-23

1/3 Octave values marked with brackets [ ] denote less than 3 dB difference between Turbine ON and Background

Overall levels marked with an asterisk * denote 3 to 6 dB difference between Turbine ON and Background, while Overall values with less than 3 dB difference between Turbine ON and Background are not reported

Wind Bin (m/s)	Parameter	1/3 Octave Band (Hz)																													Overall
		20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	
7.0	Turbine ON (dBA)	8.5	12.4	16.2	19.9	23.8	32.0	30.0	33.4	36.2	37.8	38.9	39.6	39.3	38.6	38.7	38.4	38.3	38.0	38.0	38.1	37.6	37.4	35.9	34.1	31.9	28.5	34.0	21.1	50.4
	Background (dBA)	6.9	10.6	13.5	16.6	19.6	23.5	24.8	25.9	27.5	29.2	28.6	28.4	29.2	28.2	29.8	28.6	28.9	28.5	27.0	26.1	24.3	23.6	21.5	22.7	23.5	22.4	34.0	19.7	41.2
	Turbine ON - background adj (dBA)	[5.5]	[9.4]	[13.2]	17.2	21.7	31.3	28.5	32.5	35.6	37.2	38.5	39.2	38.8	38.1	38.1	37.9	37.8	37.5	37.7	37.9	37.3	37.2	35.8	33.7	31.2	27.3	[31]	[18.1]	49.9
	Signal to noise (dB)	1.6	1.8	2.7	3.3	4.2	8.5	5.2	7.5	8.7	8.6	10.3	11.2	10.1	10.3	8.9	9.7	9.4	9.5	11.1	12.0	13.3	13.8	14.4	11.4	8.4	6.1	0.0	1.5	9.2
	Uncertainty (dB)	4.3	3.6	2.4	3.0	1.8	1.1	1.2	1.0	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.8	1.0	1.1	1.2	1.5	5.4	4.2	0.9
	PWL (dBA)	[56]	[59.9]	[63.7]	67.7	72.2	81.9	79.0	83.1	86.1	87.7	89.0	89.8	89.4	88.7	88.6	88.4	88.3	88.0	88.2	88.4	87.9	87.8	86.3	84.3	81.8	77.9	[81.5]	[68.7]	100.5
7.5	Turbine ON (dBA)	9.6	13.8	18.2	21.6	25.3	32.4	31.7	35.0	37.7	39.3	39.9	40.4	40.3	39.3	39.3	39.1	39.0	38.6	38.8	39.1	38.3	38.1	36.9	35.1	32.9	29.5	34.2	20.2	51.3
	Background (dBA)	5.7	9.1	12.7	16.3	19.2	23.2	24.1	26.4	27.3	28.1	28.6	28.2	28.9	27.9	29.6	28.4	28.7	28.3	26.2	24.8	23.7	23.0	20.8	22.3	23.9	21.8	33.0	18.9	40.8
	Turbine ON - background adj (dBA)	7.3	12.0	16.8	20.0	24.1	31.9	30.9	34.4	37.3	39.0	39.6	40.1	40.0	39.0	38.8	38.7	38.6	38.2	38.5	38.9	38.2	38.0	36.7	34.8	32.3	28.7	[31.2]	[17.2]	51.0
	Signal to noise (dB)	3.9	4.7	5.6	5.2	6.1	9.3	7.6	8.6	10.4	11.2	11.3	12.2	11.4	11.5	9.7	10.7	10.3	10.3	12.6	14.3	14.6	15.2	16.0	12.8	9.0	7.8	1.1	1.4	10.6
	Uncertainty (dB)	4.1	3.0	1.8	2.6	1.7	1.3	1.2	1.1	1.1	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	0.9	0.8	1.0	1.2	1.3	1.3	1.6	5.2	4.4	1.0
	PWL (dBA)	57.8	62.5	67.4	70.6	74.6	82.4	81.4	84.9	87.9	89.6	90.1	90.7	90.5	89.6	89.4	89.3	89.1	88.8	89.1	89.5	88.7	88.6	87.3	85.4	82.9	79.3	[81.7]	[67.8]	101.5
8.0	Turbine ON (dBA)	10.6	13.9	17.8	21.3	24.8	32.7	31.2	34.3	37.3	38.0	39.1	39.9	39.6	39.0	39.3	39.1	39.2	38.9	38.9	39.1	38.4	38.5	36.7	34.7	32.7	29.3	29.9	20.0	51.0
	Background (dBA)	5.6	9.1	12.8	16.4	19.3	23.3	24.1	25.4	27.3	27.7	28.2	28.2	29.3	28.4	29.6	28.5	29.0	28.5	26.4	25.1	24.1	23.3	21.1	21.7	23.7	22.0	31.9	18.5	40.6
	Turbine ON - background adj (dBA)	8.9	12.1	16.1	19.7	23.4	32.2	30.2	33.7	36.8	37.6	38.8	39.5	39.2	38.6	38.8	38.7	38.8	38.4	38.6	38.9	38.3	38.4	36.6	34.5	32.1	28.4	[26.9]	[17]	50.7
	Signal to noise (dB)	4.9	4.8	5.0	4.9	5.5	9.5	7.0	8.9	10.0	10.3	10.9	11.6	10.3	10.6	9.7	10.6	10.2	10.4	12.5	14.0	14.4	15.2	15.6	13.1	9.0	7.3	-2.0	1.5	10.4
	Uncertainty (dB)	2.9	2.4	1.5	2.2	1.4	1.0	1.0	0.9	0.9	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.7	0.7	0.8	1.0	1.0	1.1	1.3	3.5	3.7	0.8
	PWL (dBA)	59.5	62.7	66.7	70.2	73.9	82.8	80.8	84.2	87.4	88.2	89.3	90.1	89.7	89.1	89.3	89.3	89.3	89.0	89.2	89.5	88.8	88.9	87.1	85.0	82.7	78.9	[77.4]	[67.6]	101.2
8.5	Turbine ON (dBA)	10.4	13.6	17.5	21.1	24.7	32.8	31.0	34.2	37.2	37.4	38.8	39.6	39.4	38.9	39.3	39.1	39.3	38.9	39.0	39.2	38.5	38.8	36.7	34.6	32.7	29.0	28.4	19.5	51.0
	Background (dBA)	7.7	10.7	14.1	17.2	19.5	23.8	25.3	25.6	26.3	27.0	27.7	27.6	28.2	27.8	29.7	29.1	29.9	29.3	27.8	27.2	25.6	24.9	22.7	23.4	25.3	23.8	29.5	18.9	40.7
	Turbine ON - background adj (dBA)	[7.4]	[10.6]	14.8	18.9	23.2	32.3	29.6	33.6	36.8	37.0	38.5	39.3	39.1	38.5	38.8	38.7	38.8	38.4	38.6	38.9	38.3	38.6	36.5	34.2	31.9	27.4	[25.4]	[16.5]	50.6
	Signal to noise (dB)	2.6	3.0	3.3	3.9	5.2	9.0	5.7	8.7	10.8	10.4	11.2	12.0	11.2	11.1	9.6	10.0	9.5	9.6	11.2	12.0	12.9	13.9	14.0	11.2	7.5	5.2	-1.2	0.6	10.3
	Uncertainty (dB)	4.2	3.5	2.1	2.6	1.5	1.0	1.1	0.9	0.8	0.9	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.8	0.8	0.8	0.7	0.8	1.0	1.1	1.2	1.5	3.2	3.7	0.8
	PWL (dBA)	[57.9]	[61.2]	65.3	69.5	73.7	82.8	80.2	84.2	87.3	87.6	89.1	89.8	89.6	89.1	89.3	89.2	89.4	89.0	89.2	89.4	88.9	89.1	87.1	84.8	82.4	78.0	[75.9]	[67]	101.1
9.0	Turbine ON (dBA)	11.1	14.1	17.6	21.2	24.5	33.4	30.6	33.5	36.8	36.9	38.4	39.3	39.2	38.7	39.2	39.1	39.4	39.0	38.9	39.0	38.6	38.9	36.8	34.5	32.9	29.5	27.1	20.5	50.9
	Background (dBA)	7.2	10.4	14.0	17.3	19.7	23.3	25.2	25.8	26.2	26.3	26.9	26.9	27.8	27.6	29.6	28.9	29.9	29.3	27.9	27.1	26.0	25.3	23.1	23.0	25.1	23.9	29.0	18.6	40.5
	Turbine ON - background adj (dBA)	8.9	11.8	15.1	18.9	22.8	32.9	29.1	32.7	36.5	36.5	38.0	39.0	38.8	38.4	38.7	38.7	38.9	38.5	38.5	38.7	38.3	38.7	36.6	34.2	32.1	28.1	[24.1]	[17.5]	50.5
	Signal to noise (dB)	4.0	3.8	3.6	3.9	4.8	10.1	5.4	7.7	10.7	10.6	11.4	12.4	11.3	11.2	9.6	10.2	9.5	9.7	10.9	11.9	12.6	13.6	13.6	11.5	7.8	5.6	-1.9	1.9	10.3
	Uncertainty (dB)	3.5	3.1	2.0	2.8	1.7	1.0	1.2	1.0	0.9	0.9	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.9	1.1	1.1	1.2	1.5	3.2	3.8	0.9
	PWL (dBA)	59.5	62.3	65.7	69.5	73.3	83.5	79.7	83.2	87.0	87.0	88.6	89.6	89.4	88.9	89.3	89.2	89.5	89.0	89.1	89.3	88.9	89.3	87.1	84.8	82.7	78.7	[74.6]	[68.1]	101.0
9.5	Turbine ON (dBA)	11.5	13.8	17.4	21.0	24.3	32.8	30.3	33.1	36.4	36.4	38.0	38.9	38.8	38.5	39.1	39.0	39.4	39.0	38.8	38.9	38.5	38.9	36.7	34.5	32.9	29.6	26.9	20.8	50.7
	Background (dBA)	8.9	11.7	15.0	18.0	20.2	23.8	25.1	26.4	26.9	25.8	27.5	26.9	27.7	27.5	29.7	29.1	30.0	29.5	28.2	27.4	26.6	25.9	23.8	23.6	25.4	25.0	27.5	19.2	40.7
	Turbine ON - background adj (dBA)	[8.5]	[10.8]	[14.4]	18.1	22.1	32.2	28.8	32.1	35.9	36.0	37.6	38.7	38.5	38.2	38.6	38.6	38.9	38.4	38.4	38.6	38.3	38.7	36.5	34.2	32.1	27.7	[23.9]	[17.8]	50.2
	Signal to noise (dB)	2.5	2.2	2.4	3.1	4.1	9.0	5.2	6.7	9.5	10.6	10.5	12.0	11.1	11.0	9.4	9.9	9.4	9.4	10.6	11.5	12.0	13.0	12.9	10.9	7.5	4.5	-0.6	1.5	10.0
	Uncertainty (dB)	4.4	3.7	2.4	3.3	1.8	1.1	1.2	1.1	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.9	1.1	1.1	1.2	1.8	3.2	3.8	0.9
	PWL (dBA)	[59]	[61.4]	[64.9]	68.6	72.7	82.8	79.3	82.7	86.4	86.5	88.1	89.2	89.0	88.7	89.1	89.1	89.4	89.0	89.0	89.1	88.8	89.2	87.1	84.7	82.6	78.3	[74.5]	[68.3]	100.8

Table C.01 Detailed apparent sound power level data at hub height

1/3 Octave values marked with brackets [ ] denote less than 3 dB difference between Turbine ON and Background
Overall levels marked with an asterisk * denote 3 to 6 dB difference between Turbine ON and Background, while Overall values with less than 3 dB difference between Turbine ON and Background are not reported

Wind Bin (m/s)	Parameter	1/3 Octave Band (Hz)																													Overall
		20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	
10.0	Turbine ON (dBA)	12.1	14.1	17.6	21.1	24.5	32.4	30.4	33.1	36.3	36.2	37.9	39.0	38.9	38.7	39.3	39.2	39.6	39.2	39.0	39.1	38.6	39.1	36.8	34.5	33.0	29.7	27.6	21.0	50.8
	Background (dBA)	8.9	11.8	14.8	17.4	20.3	23.8	25.0	25.4	25.4	25.7	26.5	26.6	27.4	27.5	29.7	29.3	30.3	29.8	28.5	27.6	26.8	26.2	24.0	23.8	25.6	25.2	25.0	19.3	40.6
	Turbine ON - background adj (dBA)	9.3	[11.1]	[14.6]	18.6	22.4	31.7	28.9	32.3	35.9	35.8	37.6	38.7	38.6	38.3	38.7	38.7	39.1	38.6	38.6	38.8	38.3	38.8	36.5	34.2	32.2	27.7	[24.6]	[18]	50.3
	Signal to noise (dB)	3.2	2.3	2.9	3.6	4.2	8.6	5.4	7.7	10.9	10.5	11.5	12.4	11.5	11.2	9.5	9.8	9.3	9.3	10.5	11.5	11.8	12.9	12.7	10.7	7.4	4.5	2.6	1.7	10.2
	Uncertainty (dB)	4.2	3.7	2.4	2.9	1.8	1.1	1.2	1.0	0.9	0.9	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.8	0.8	0.9	1.1	1.2	1.2	1.8	3.2	3.9	0.9
	PWL (dBA)	59.9	[61.6]	[65.2]	69.2	72.9	82.3	79.4	82.9	86.5	86.3	88.2	89.2	89.1	88.9	89.3	89.3	89.6	89.2	89.1	89.3	88.9	89.4	87.1	84.7	82.7	78.3	[75.2]	[68.5]	100.9
10.5	Turbine ON (dBA)	13.1	14.7	18.0	21.5	24.6	32.1	30.4	33.0	35.8	35.9	37.7	38.8	39.0	38.9	39.5	39.5	39.9	39.5	39.3	39.3	38.8	39.3	36.8	34.6	33.1	30.0	28.0	21.8	50.9
	Background (dBA)	9.6	11.8	14.9	17.8	20.1	23.7	24.7	24.9	25.4	24.5	25.8	25.8	27.3	26.9	29.9	29.2	30.3	30.1	28.9	28.2	27.4	26.7	24.7	24.5	26.3	26.1	24.3	20.0	40.6
	Turbine ON - background adj (dBA)	10.5	[11.7]	15.0	19.0	22.7	31.4	29.0	32.2	35.4	35.5	37.4	38.6	38.6	38.6	39.0	39.1	39.4	39.0	38.9	39.0	38.5	39.0	36.5	34.2	32.1	27.8	25.7	[18.8]	50.5
	Signal to noise (dB)	3.5	3.0	3.1	3.7	4.5	8.4	5.6	8.0	10.5	11.3	11.9	13.0	11.7	12.0	9.6	10.3	9.6	9.4	10.4	11.2	11.4	12.5	12.1	10.1	6.9	4.0	3.8	1.9	10.3
	Uncertainty (dB)	3.9	3.6	2.3	2.8	1.7	1.1	1.2	1.0	0.9	0.9	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.9	1.1	1.2	1.3	1.9	2.6	3.8	0.8
	PWL (dBA)	61.1	[62.3]	65.6	69.6	73.2	82.0	79.5	82.8	86.0	86.1	88.0	89.2	89.2	89.2	89.6	89.6	90.0	89.5	89.4	89.5	89.0	89.6	87.1	84.7	82.7	78.4	76.3	[69.4]	101.0
11.0	Turbine ON (dBA)	13.4	14.8	18.1	21.4	24.4	31.6	29.8	32.4	35.4	35.3	37.2	38.4	38.8	38.9	39.6	39.7	40.2	39.7	39.5	39.5	38.8	39.3	36.6	34.2	32.8	29.7	27.6	21.6	50.9
	Background (dBA)	7.9	10.6	14.2	17.1	19.7	23.7	24.5	24.7	25.3	25.2	26.4	26.4	27.3	27.6	29.8	29.4	30.6	30.3	29.6	29.4	27.6	26.9	24.8	24.9	26.7	26.3	25.2	20.2	41.0
	Turbine ON - background adj (dBA)	11.9	12.7	15.8	19.4	22.6	30.8	28.3	31.6	34.9	34.8	36.8	38.1	38.5	38.6	39.1	39.3	39.7	39.2	39.0	39.0	38.4	39.1	36.3	33.7	31.6	27.1	[24.6]	[18.6]	50.4
	Signal to noise (dB)	5.5	4.2	3.9	4.3	4.7	7.9	5.3	7.7	10.1	10.1	10.8	12.0	11.4	11.3	9.8	10.3	9.6	9.4	9.9	10.1	11.2	12.4	11.7	9.4	6.0	3.4	2.4	1.4	9.9
	Uncertainty (dB)	2.8	2.8	1.9	2.5	1.7	1.1	1.2	1.0	0.9	0.9	0.8	0.8	0.7	0.8	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.9	1.1	1.2	1.4	2.2	3.2	3.8	0.9
	PWL (dBA)	62.5	63.3	66.4	69.9	73.2	81.4	78.9	82.1	85.5	85.4	87.3	88.7	89.0	89.1	89.7	89.8	90.3	89.8	89.5	89.6	89.0	89.6	86.8	84.2	82.1	77.6	[75.2]	[69.2]	100.9
11.5	Turbine ON (dBA)	13.0	14.6	18.0	21.2	24.1	31.8	29.9	32.0	35.0	34.6	36.8	38.2	39.0	39.2	40.1	40.3	40.8	40.3	40.0	39.9	39.2	39.7	36.6	34.3	32.9	29.9	26.5	21.8	51.2
	Background (dBA)	7.2	10.9	14.3	16.9	19.8	23.0	24.5	24.5	25.5	25.1	26.3	26.7	27.9	28.1	30.2	29.6	30.6	30.2	29.1	28.7	27.0	26.4	24.3	24.0	25.5	25.1	30.0	20.5	41.0
	Turbine ON - background adj (dBA)	11.7	12.1	15.5	19.1	22.0	31.2	28.3	31.1	34.5	34.1	36.4	37.9	38.6	38.9	39.6	39.9	40.3	39.9	39.7	39.6	38.9	39.5	36.4	33.9	32.1	28.2	[23.5]	[18.8]	50.7
	Signal to noise (dB)	5.9	3.7	3.6	4.2	4.2	8.8	5.3	7.4	9.5	9.5	10.5	11.5	11.1	11.1	9.9	10.7	10.2	10.1	11.0	11.2	12.1	13.4	12.3	10.3	7.5	4.9	-3.5	1.3	10.1
	Uncertainty (dB)	2.7	3.1	2.1	2.6	1.8	1.1	1.3	1.0	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.8	1.1	1.1	1.2	1.7	3.5	3.9	0.8
	PWL (dBA)	62.3	62.7	66.0	69.7	72.6	81.7	78.9	81.7	85.0	84.6	87.0	88.4	89.2	89.4	90.2	90.5	90.9	90.4	90.2	90.1	89.4	90.1	86.9	84.4	82.6	78.8	[74]	[69.3]	101.3
12.0	Turbine ON (dBA)	13.8	15.4	18.2	21.8	24.5	31.3	29.4	31.5	34.9	34.3	36.3	37.7	38.5	39.1	40.0	40.3	40.8	40.4	40.1	40.0	39.0	39.9	36.4	34.0	32.6	29.7	26.2	21.6	51.0
	Background (dBA)	8.1	10.8	14.4	16.7	19.4	22.5	23.8	23.9	24.1	23.6	24.9	25.1	26.5	26.7	29.4	28.9	30.2	30.1	29.0	28.0	27.3	26.7	24.7	24.5	25.7	25.5	23.1	19.2	40.2
	Turbine ON - background adj (dBA)	12.4	13.6	15.8	20.2	22.9	30.7	28.0	30.6	34.6	33.9	36.0	37.5	38.3	38.9	39.6	39.9	40.4	39.9	39.7	39.7	38.7	39.6	36.1	33.4	31.7	27.6	23.3	[18.6]	50.7
	Signal to noise (dB)	5.7	4.7	3.8	5.1	5.1	8.9	5.6	7.6	10.8	10.7	11.4	12.6	12.1	12.4	10.6	11.3	10.6	10.3	11.1	12.0	11.8	13.2	11.6	9.5	6.9	4.2	3.2	2.4	10.8
	Uncertainty (dB)	3.1	3.1	2.3	2.5	1.8	1.2	1.3	1.1	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	0.8	0.9	1.2	1.3	1.4	2.3	3.8	4.8	0.9
	PWL (dBA)	62.9	64.2	66.4	70.8	73.5	81.3	78.6	81.2	85.1	84.4	86.5	88.0	88.8	89.4	90.1	90.5	91.0	90.5	90.3	90.2	89.3	90.2	86.6	84.0	82.2	78.1	73.9	[69.1]	101.2

Table C.02 Detailed apparent sound power level data at 10m height

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

Created on: 11/14/2018

1/3 Octave values marked with brackets [ ] denote less than 3 dB difference between Turbine ON and Background

Overall levels marked with an asterisk * denote 3 to 6 dB difference between Turbine ON and Background, while Overall values with less than 3 dB difference between Turbine ON and Background are not reported

‡ marks values derived from a data set with less than 10 points

Wind Bin (m/s)	Parameter	1/3 Octave Band (Hz)																													Overall
		20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	
5.0	Turbine ON (dBA)	9.0	13.2	17.3	21.0	24.8	32.2	31.2	34.5	37.2	38.8	39.5	40.0	39.8	38.9	38.9	38.7	38.5	38.2	38.4	38.6	37.9	37.7	36.5	34.7	32.5	29.1	34.1	20.3	50.9
	Background (dBA)	6.1	9.5	12.8	16.2	19.3	23.4	24.4	27.2	27.9	28.7	28.8	28.5	29.2	28.2	29.7	28.5	28.7	28.3	26.3	25.1	23.8	23.0	20.9	22.1	23.5	21.7	33.7	19.2	41.1
	Turbine ON - background adj (dBA)	[6]	10.8	15.4	19.2	23.4	31.6	30.2	33.6	36.7	38.4	39.1	39.7	39.4	38.5	38.4	38.2	38.1	37.8	38.1	38.4	37.7	37.5	36.3	34.5	31.9	28.3	[31.1]	[17.3]	50.5
	Signal to noise (dB)	3.0	3.7	4.5	4.8	5.5	8.8	6.8	7.3	9.4	10.1	10.7	11.5	10.6	10.8	9.2	10.2	9.8	10.0	12.1	13.5	14.1	14.7	15.5	12.7	9.0	7.4	0.4	1.0	9.8
	Uncertainty (dB)	5.0	3.5	2.0	2.7	1.8	1.2	1.2	1.2	1.1	1.1	0.9	0.9	0.9	0.9	0.9	0.9	0.9	1.0	1.0	0.9	0.8	1.0	1.2	1.3	1.3	1.5	4.2	4.4	1.0
	PWL (dBA)	[56.6]	61.3	65.9	69.8	73.9	82.2	80.7	84.1	87.3	88.9	89.7	90.3	89.9	89.1	88.9	88.8	88.6	88.3	88.7	89.0	88.3	88.1	86.9	85.1	82.5	78.8	[81.6]	[67.8]	101.0
6.0	Turbine ON (dBA)	10.8	13.9	17.6	21.2	24.6	33.0	30.8	33.9	37.0	37.3	38.7	39.5	39.3	38.8	39.2	39.1	39.3	38.9	38.9	39.1	38.5	38.7	36.7	34.6	32.8	29.3	28.3	20.2	50.9
	Background (dBA)	7.4	10.4	14.0	17.3	19.6	23.5	25.1	25.5	26.5	26.8	27.6	27.4	28.3	27.8	29.6	28.9	29.7	29.2	27.7	26.9	25.6	24.9	22.8	23.0	25.1	23.8	29.6	18.7	40.6
	Turbine ON - background adj (dBA)	8.2	11.3	15.1	18.9	23.0	32.5	29.5	33.2	36.6	36.9	38.3	39.2	39.0	38.5	38.7	38.7	38.8	38.4	38.6	38.8	38.3	38.6	36.5	34.3	32.0	27.9	[25.3]	[17.2]	50.5
	Signal to noise (dB)	3.4	3.5	3.6	3.9	5.1	9.5	5.7	8.3	10.6	10.5	11.1	12.1	11.1	11.0	9.7	10.2	9.6	9.7	11.2	12.2	12.9	13.9	14.0	11.5	7.8	5.5	-1.3	1.5	10.3
	Uncertainty (dB)	3.8	3.1	2.0	2.7	1.6	1.0	1.1	0.9	0.9	0.9	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.2	1.5	3.1	3.7	0.8
	PWL (dBA)	58.7	61.9	65.6	69.5	73.6	83.1	80.0	83.8	87.2	87.4	88.9	89.8	89.5	89.0	89.3	89.2	89.4	89.0	89.1	89.3	88.8	89.1	87.1	84.8	82.6	78.4	[75.9]	[67.8]	101.1
7.0	Turbine ON (dBA)	12.2	14.2	17.6	21.1	24.4	32.4	30.4	33.1	36.2	36.1	37.9	38.9	38.9	38.7	39.3	39.2	39.7	39.2	39.0	39.1	38.6	39.1	36.8	34.6	33.0	29.7	27.5	21.1	50.8
	Background (dBA)	9.0	11.7	14.7	17.5	20.2	23.7	24.8	25.5	25.6	25.2	26.3	26.3	27.4	27.3	29.8	29.3	30.3	29.8	28.5	27.6	26.9	26.2	24.1	23.9	25.7	25.3	25.0	19.3	40.6
	Turbine ON - background adj (dBA)	9.4	[11.2]	[14.6]	18.7	22.4	31.8	28.9	32.2	35.8	35.8	37.5	38.7	38.6	38.4	38.8	38.8	39.1	38.7	38.6	38.8	38.4	38.8	36.5	34.2	32.1	27.8	[24.5]	[18.1]	50.4
	Signal to noise (dB)	3.2	2.5	2.9	3.6	4.3	8.7	5.5	7.6	10.6	10.9	11.5	12.6	11.5	11.4	9.5	10.0	9.4	9.4	10.5	11.5	11.8	12.9	12.7	10.7	7.4	4.4	2.5	1.8	10.2
	Uncertainty (dB)	4.1	3.7	2.4	2.9	1.8	1.1	1.2	1.0	0.9	0.9	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.8	0.8	0.9	1.1	1.2	1.2	1.8	3.1	3.8	0.9
	PWL (dBA)	60.0	[61.7]	[65.2]	69.2	73.0	82.3	79.5	82.8	86.3	86.3	88.1	89.2	89.1	88.9	89.3	89.3	89.7	89.2	89.2	89.3	88.9	89.4	87.1	84.7	82.7	78.3	[75.1]	[68.7]	100.9
8.0	Turbine ON (dBA)	13.1	14.8	18.0	21.4	24.4	31.5	29.7	32.1	35.1	34.7	36.8	38.1	38.7	39.0	39.8	40.0	40.5	40.0	39.8	39.7	39.0	39.6	36.6	34.2	32.8	29.8	27.1	21.8	51.0
	Background (dBA)	7.4	10.5	14.1	17.0	19.7	23.4	24.4	24.5	25.3	25.0	26.2	26.4	27.4	27.7	29.9	29.4	30.5	30.2	29.3	29.0	27.3	26.6	24.5	24.4	26.1	25.7	27.7	20.1	40.9
	Turbine ON - background adj (dBA)	11.7	12.8	15.7	19.4	22.6	30.7	28.2	31.2	34.6	34.2	36.4	37.8	38.3	38.7	39.4	39.6	40.1	39.6	39.4	39.4	38.7	39.4	36.3	33.7	31.7	27.7	[24.1]	[18.8]	50.5
	Signal to noise (dB)	5.7	4.3	3.8	4.4	4.7	8.1	5.3	7.6	9.8	9.7	10.6	11.7	11.2	11.3	9.9	10.6	10.0	9.8	10.5	10.8	11.7	13.0	12.1	9.8	6.7	4.1	-0.6	1.7	10.1
	Uncertainty (dB)	2.4	2.4	1.7	2.1	1.4	0.9	1.0	0.9	0.8	0.8	0.6	0.6	0.6	0.6	0.6	0.7	0.6	0.7	0.7	0.7	0.6	0.7	0.9	1.0	1.1	1.6	2.8	3.4	0.7
	PWL (dBA)	62.3	63.3	66.2	70.0	73.1	81.3	78.8	81.8	85.1	84.8	86.9	88.3	88.9	89.2	89.9	90.2	90.6	90.1	89.9	89.9	89.2	89.9	86.8	84.2	82.3	78.3	[74.7]	[69.4]	101.1

Table C.03 Type B measurement uncertainty summary

Overall Equipment Uncertainties		
	Typical values	Used values
Calibration	0.2 dB	0.2 dB
Board	0.3 dB	0.3 dB
Distance	0.1 dB	0.1 dB
Air absorption	0 dB	0 dB
Weather	0.5 dB	0.5 dB

1/3 Octave Band Uncertainties		
Frequency (Hz)	Microphone Uncertainty	Overall (including overall equipment Uncertainties)
20	0.8 dB	2 dB
25	0.8 dB	1.6 dB
31.5	0.5 dB	1.1 dB
40	0.5 dB	1.5 dB
50	0.5 dB	1.1 dB
63	0.5 dB	0.9 dB
80	0.5 dB	0.8 dB
100	0.5 dB	0.8 dB
125	0.5 dB	0.8 dB
160	0.5 dB	0.8 dB
200	0.3 dB	0.7 dB
250	0.3 dB	0.7 dB
315	0.3 dB	0.7 dB
400	0.3 dB	0.7 dB
500	0.3 dB	0.7 dB
630	0.3 dB	0.7 dB
800	0.3 dB	0.7 dB
1000	0.3 dB	0.8 dB
1250	0.3 dB	0.8 dB
1600	0.3 dB	0.8 dB
2000	0.3 dB	0.7 dB
2500	0.5 dB	0.8 dB
3150	0.5 dB	1.1 dB
4000	0.5 dB	1.1 dB
5000	0.5 dB	1 dB
6300	0.5 dB	1.1 dB
8000	0.5 dB	1.4 dB
10000	1.3 dB	1.7 dB

Table C.04 Detailed measurement uncertainty at hub height

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

Created on: 2018-11-23

Wind Bin (m/s)	Parameter	Average Wind Speed (m/s)	# of data points	Parameter	1/3 Octave Band (Hz)																													Overall
					20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	
7.0	Turbine ON	7.04	17	Average (dBA)	8.6	12.5	16.3	19.9	23.8	32.1	30.0	33.3	36.2	37.8	38.9	39.6	39.3	38.7	38.8	38.5	38.5	38.2	38.2	38.3	37.7	37.6	36.0	34.1	31.9	28.5	34.1	21.4	50.5
				Uncertainty A (dB)	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.4	0.4	0.6	2.3	1.2		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.0	1.7	1.1	1.6	1.1	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.1	1.2	2.7	2.1		
	Background	7.00	35	Average (dBA)	6.9	10.6	13.5	16.6	19.6	23.5	24.8	25.9	27.5	29.2	28.6	28.4	29.2	28.2	29.8	28.6	28.9	28.5	27.0	26.2	24.3	23.6	21.5	22.7	23.5	22.4	34.0	19.7	41.2
				Uncertainty A (dB)	0.6	0.5	0.4	0.4	0.4	0.4	0.3	0.3	0.4	0.6	0.4	0.4	0.4	0.3	0.2	0.2	0.3	0.3	0.7	0.9	0.8	0.8	0.8	0.7	0.9	0.9	1.6	0.6		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.1	1.7	1.1	1.6	1.1	1.0	0.9	0.9	0.9	1.0	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.8	1.0	1.1	1.1	1.1	1.3	1.3	1.4	1.4	2.1	1.8		
7.5	Turbine ON	7.56	24	Average (dBA)	9.7	13.8	18.2	21.5	25.3	32.5	31.6	34.9	37.7	39.2	39.8	40.3	40.2	39.3	39.3	39.1	39.0	38.7	38.8	39.1	38.3	38.2	36.8	35.0	32.9	29.5	33.7	20.2	51.3
				Uncertainty A (dB)	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.3	0.2	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.1	0.2	0.1	0.1	0.1	0.3	0.3	0.4	1.7	0.7		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.0	1.7	1.1	1.6	1.1	1.0	0.9	0.9	0.8	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	2.2	1.8		
	Background	7.54	38	Average (dBA)	5.6	9.0	12.6	16.3	19.2	23.1	24.0	26.4	27.3	28.0	28.6	28.2	28.9	27.8	29.6	28.4	28.7	28.3	26.2	24.7	23.7	22.9	20.8	22.2	24.0	21.7	32.9	18.8	40.7
				Uncertainty A (dB)	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.5	0.4	0.6	0.5	0.4	0.4	0.3	0.2	0.2	0.3	0.3	0.5	0.6	0.6	0.6	0.6	0.6	0.8	0.7	1.5	0.5		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.0	1.7	1.1	1.6	1.1	1.0	0.9	1.0	0.9	1.0	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.8	0.9	1.0	0.9	1.0	1.2	1.2	1.3	1.3	2.1	1.8		
8.0	Turbine ON	8.04	77	Average (dBA)	10.7	13.9	17.7	21.3	24.8	32.7	31.1	34.2	37.3	37.9	39.1	39.8	39.6	38.9	39.3	39.1	39.2	38.9	38.9	39.1	38.4	38.6	36.7	34.7	32.7	29.2	29.6	20.0	51.0
				Uncertainty A (dB)	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.2	0.1	0.2	0.7	0.4		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.0	1.7	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.5	1.7		
	Background	8.00	48	Average (dBA)	5.6	9.1	12.7	16.4	19.3	23.3	24.1	25.4	27.3	27.7	28.2	28.2	29.3	28.4	29.6	28.5	29.0	28.5	26.4	25.1	24.1	23.3	21.1	21.6	23.7	22.0	31.9	18.5	40.6
				Uncertainty A (dB)	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.5	0.5	0.4	0.3	0.2	0.2	0.2	0.3	0.4	0.5	0.5	0.6	0.6	0.5	0.7	0.7	1.5	0.5		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.0	1.7	1.1	1.5	1.1	1.0	0.9	0.9	0.9	1.0	0.8	0.9	0.8	0.8	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.2	1.2	1.2	1.3	2.0	1.8		
8.5	Turbine ON	8.53	125	Average (dBA)	10.3	13.6	17.5	21.1	24.7	32.9	31.0	34.3	37.2	37.4	38.8	39.6	39.4	38.9	39.3	39.1	39.3	39.0	39.0	39.2	38.5	38.8	36.7	34.6	32.7	29.0	28.3	19.4	51.0
				Uncertainty A (dB)	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.5	0.3		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.0	1.7	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
	Background	8.51	51	Average (dBA)	7.8	10.7	14.2	17.2	19.6	23.8	25.3	25.6	26.3	27.0	27.7	27.6	28.2	27.8	29.7	29.1	29.9	29.3	27.8	27.2	25.6	24.9	22.8	23.4	25.3	23.8	29.5	18.9	40.7
				Uncertainty A (dB)	0.6	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.1	0.2	0.2	0.3	0.4	0.6	0.5	0.6	0.6	0.6	0.7	0.7	1.2	0.5		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.1	1.7	1.1	1.6	1.1	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.8	0.9	1.0	0.9	1.0	1.2	1.2	1.2	1.3	1.8	1.8		
9.0	Turbine ON	9.00	150	Average (dBA)	11.1	14.1	17.6	21.2	24.5	33.4	30.6	33.5	36.9	36.9	38.4	39.3	39.2	38.7	39.2	39.1	39.4	39.0	38.9	39.0	38.6	38.9	36.8	34.5	32.9	29.5	27.1	20.5	50.9
				Uncertainty A (dB)	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.3	0.3		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.0	1.7	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
	Background	8.94	49	Average (dBA)	6.9	10.2	13.9	17.3	19.6	23.2	25.2	25.7	26.1	26.4	26.8	26.9	27.8	27.6	29.5	28.9	29.9	29.3	27.9	27.1	25.9	25.2	23.0	23.0	25.1	23.8	29.1	18.5	40.5
				Uncertainty A (dB)	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.5	0.5	0.5	0.5	0.7	0.6	1.2	0.5		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.0	1.7	1.1	1.6	1.1	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.7	0.8	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.2	1.2	1.2	1.2	1.8	1.8		
9.5	Turbine ON	9.51	93	Average (dBA)	11.5	13.8	17.3	21.0	24.3	32.8	30.3	33.1	36.4	36.4	38.0	38.9	38.8	38.5	39.1	39.0	39.4	39.0	38.8	38.9	38.5	38.9	36.7	34.5	32.9	29.6	26.9	20.8	50.7
				Uncertainty A (dB)	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0	0.1	0.1	0.1	0.2	0.4	0.4		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.0	1.7	1.1	1.5	1.1	1.0	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
	Background	9.47	44	Average (dBA)	8.9	11.7	15.0	18.0	20.2	23.8	25.1	26.5	26.9	25.8	27.6	26.9	27.8	27.5	29.7	29.1	30.0	29.5	28.2	27.3	26.5	25.9	23.8	23.6	25.4	25.0	27.7	19.2	40.7
				Uncertainty A (dB)	0.6	0.5	0.4	0.4	0.3	0.3	0.3	0.5	0.5	0.4	0.5	0.4	0.3	0.3	0.2	0.2	0.2	0.2	0.4	0.4	0.5	0.5	0.5	0.5	0.7	0.7	1.0	0.5		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.1	1.7	1.2	1.6	1.1	1.0	0.9	1.0	1.0	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.8	0.9	0.9	0.9	1.0	1.2	1.2	1.2	1.3	1.7	1.8		

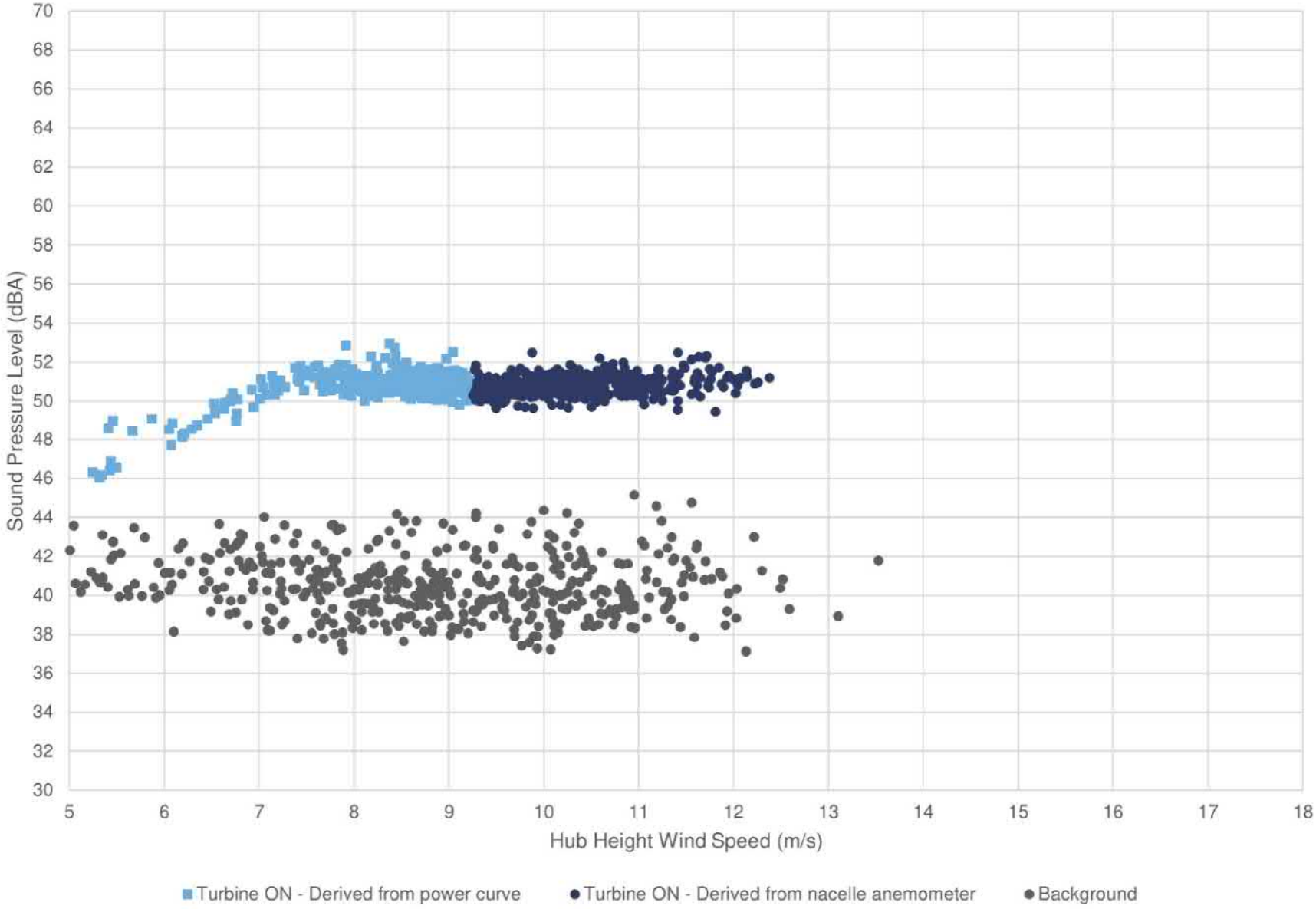
Table C.04 Detailed measurement uncertainty at hub height

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

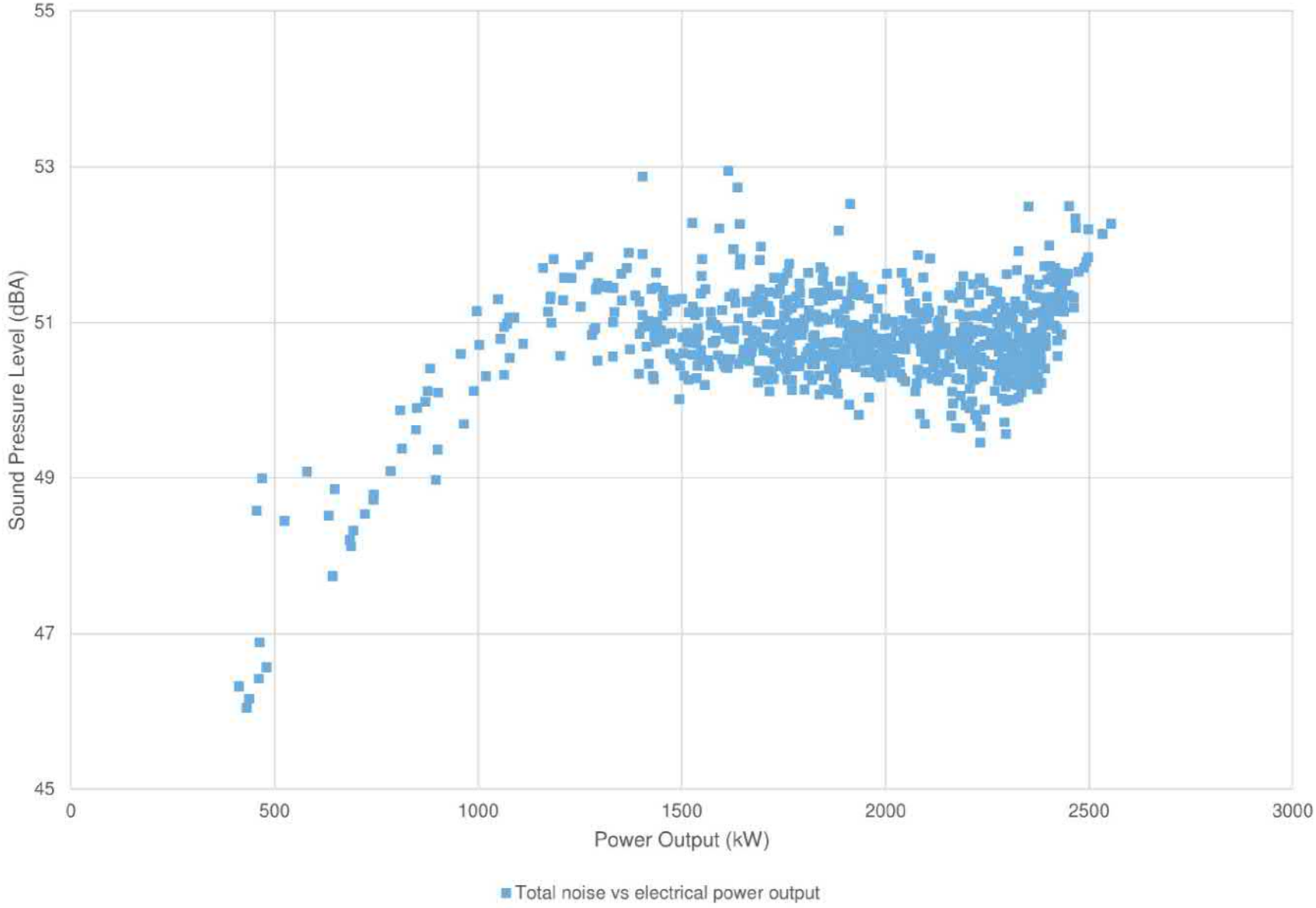
Created on: 2018-11-23

Wind Bin (m/s)	Parameter	Average Wind Speed (m/s)	# of data points	Parameter	1/3 Octave Band (Hz)																												Overall
					20	25	31.5	40	50	63	80	100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	10000	
10.0	Turbine ON	10.00	113	Average (dBA)	12.1	14.1	17.6	21.1	24.5	32.4	30.4	33.1	36.3	36.2	37.9	39.0	38.9	38.7	39.3	39.2	39.6	39.2	39.0	39.1	38.6	39.1	36.8	34.5	33.0	29.7	27.6	21.0	50.8
				Uncertainty A (dB)	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.2	0.4	0.4		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.0	1.7	1.1	1.5	1.1	1.0	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
	Background	10.02	52	Average (dBA)	8.9	11.8	14.8	17.4	20.3	23.8	25.0	25.3	25.3	25.7	26.4	26.5	27.4	27.5	29.7	29.4	30.4	29.9	28.5	27.6	26.8	26.2	24.1	23.8	25.6	25.2	24.9	19.3	40.6
				Uncertainty A (dB)	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.8	0.6		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.1	1.7	1.1	1.6	1.1	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.8	0.7	0.8	0.8	0.8	0.8	0.9	1.2	1.2	1.2	1.3	1.6	1.8		
10.5	Turbine ON	10.49	94	Average (dBA)	13.1	14.7	18.0	21.5	24.6	32.1	30.4	33.0	35.9	35.9	37.7	38.9	39.0	38.9	39.5	39.5	39.9	39.5	39.3	39.3	38.8	39.3	36.8	34.6	33.2	30.1	28.1	21.9	50.9
				Uncertainty A (dB)	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.4	0.4		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.0	1.7	1.1	1.5	1.1	1.0	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
	Background	10.47	35	Average (dBA)	9.7	11.9	15.0	17.9	20.1	23.7	24.7	25.0	25.4	24.5	25.8	25.8	27.3	26.9	29.9	29.2	30.3	30.1	28.9	28.1	27.4	26.7	24.7	24.5	26.2	26.1	24.2	20.0	40.6
				Uncertainty A (dB)	0.7	0.5	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.7		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.1	1.7	1.2	1.6	1.1	1.0	0.9	0.9	0.9	0.9	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.9	1.2	1.2	1.2	1.3	1.5	1.9		
11.0	Turbine ON	10.99	77	Average (dBA)	13.4	14.8	18.1	21.4	24.4	31.6	29.8	32.4	35.4	35.3	37.2	38.4	38.8	38.9	39.6	39.7	40.2	39.7	39.5	39.5	38.8	39.3	36.6	34.2	32.8	29.7	27.6	21.6	50.9
				Uncertainty A (dB)	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.2	0.4	0.4		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.0	1.7	1.1	1.5	1.1	1.0	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
	Background	10.94	32	Average (dBA)	8.0	10.5	14.2	17.1	19.6	23.8	24.5	24.7	25.2	25.2	26.4	26.4	27.3	27.5	29.8	29.4	30.6	30.3	29.7	29.4	27.6	27.0	24.9	25.0	26.9	26.5	24.5	20.2	41.0
				Uncertainty A (dB)	0.6	0.5	0.4	0.3	0.2	0.4	0.3	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.3	0.3	0.4	0.5	0.5	0.5	0.6	0.7	0.8	0.9	0.9	0.9		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.1	1.7	1.1	1.6	1.1	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.7	0.8	0.7	0.8	0.9	0.9	0.9	1.0	1.2	1.3	1.3	1.4	1.6	1.9		
11.5	Turbine ON	11.52	33	Average (dBA)	13.0	14.5	17.9	21.2	24.1	31.8	29.9	32.0	35.0	34.6	36.8	38.2	39.0	39.2	40.1	40.3	40.8	40.3	40.1	39.9	39.2	39.8	36.6	34.3	32.9	29.9	26.4	21.8	51.2
				Uncertainty A (dB)	0.4	0.5	0.4	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.6		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.0	1.7	1.1	1.6	1.1	1.0	0.9	0.9	0.8	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.8		
	Background	11.45	24	Average (dBA)	7.1	10.9	14.3	16.9	19.9	23.1	24.6	24.6	25.7	25.2	26.4	26.8	28.0	28.3	30.2	29.6	30.6	30.3	29.1	28.8	27.0	26.3	24.2	23.9	25.4	25.0	30.7	20.6	41.2
				Uncertainty A (dB)	0.6	0.6	0.5	0.4	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.4	0.6	0.6	0.6	0.6	0.7	0.7	0.8	1.9	0.9		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.1	1.7	1.2	1.6	1.1	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.8	0.9	1.0	0.9	1.0	1.2	1.2	1.2	1.3	2.4	1.9		
12.0	Turbine ON	11.97	17	Average (dBA)	13.7	15.4	18.2	21.8	24.5	31.4	29.4	31.5	35.0	34.3	36.3	37.7	38.6	39.1	40.0	40.3	40.8	40.4	40.1	40.0	39.0	39.9	36.4	34.0	32.7	29.7	26.2	21.6	51.0
				Uncertainty A (dB)	0.4	0.7	0.5	0.4	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.4	0.7	0.9		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.0	1.8	1.2	1.6	1.1	1.0	0.9	0.9	0.8	0.9	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.5	1.9		
	Background	11.97	10	Average (dBA)	8.0	10.8	14.4	16.7	19.4	22.5	23.8	24.0	24.2	23.7	25.0	25.2	26.5	26.8	29.4	29.0	30.2	30.1	29.0	28.0	27.3	26.7	24.7	24.4	25.7	25.5	23.5	19.3	40.3
				Uncertainty A (dB)	1.3	1.0	0.8	0.3	0.3	0.2	0.3	0.3	0.3	0.4	0.3	0.4	0.4	0.4	0.4	0.4	0.5	0.6	0.7	0.8	0.9	1.0	1.2	1.2	1.3	1.6	1.6	1.6		
				Uncertainty B (dB)	2.0	1.6	1.1	1.5	1.1	0.9	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.7	0.8	1.1	1.1	1.0	1.1	1.4	1.7		
				Combined Uncertainty (dB)	2.4	1.9	1.3	1.6	1.1	1.0	0.9	0.9	0.9	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.9	1.0	1.1	1.2	1.3	1.6	1.6	1.7	1.9	2.1	2.3		

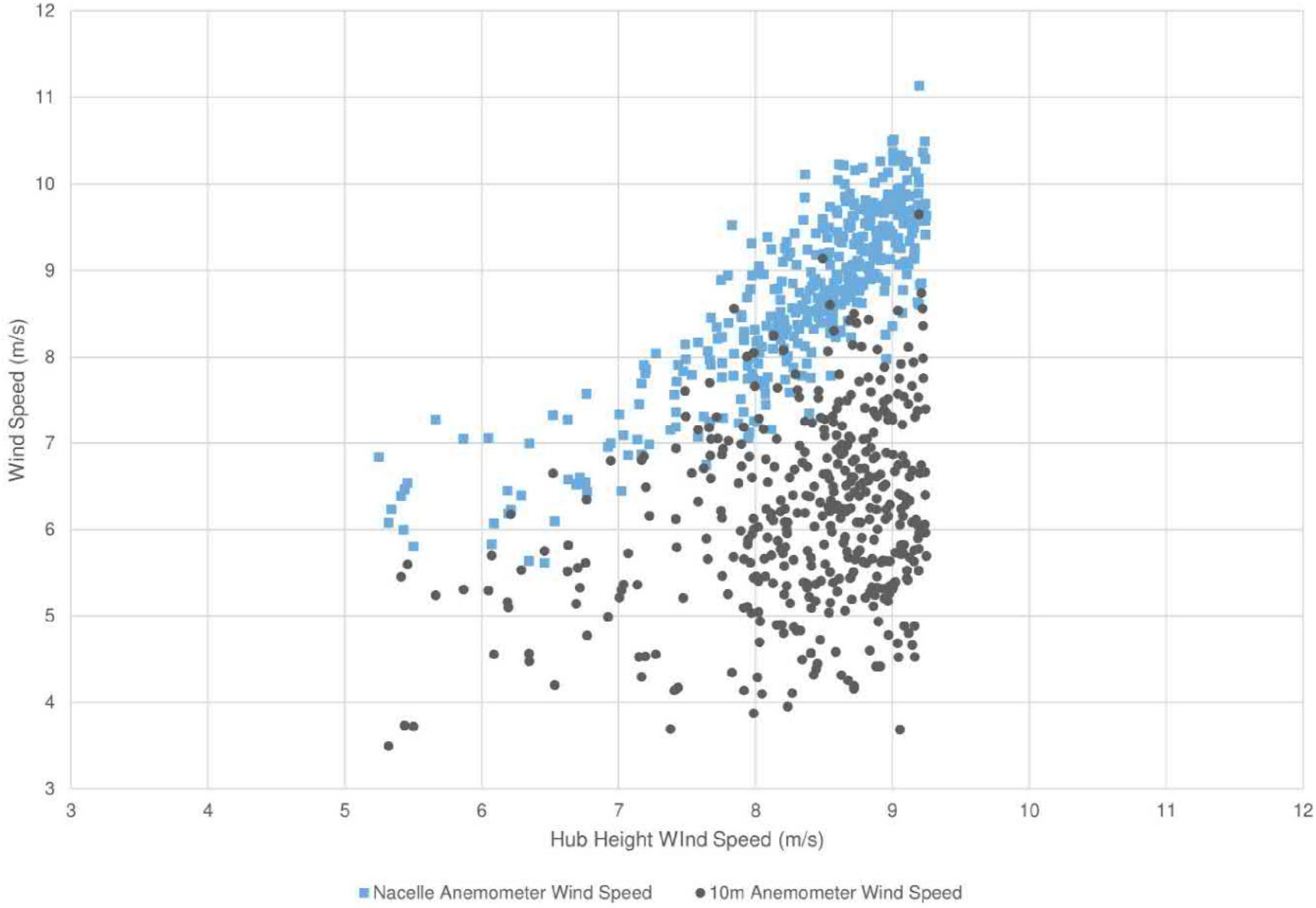


aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of overall measurement data pairs at Position 1 (Turbine ON & Background)

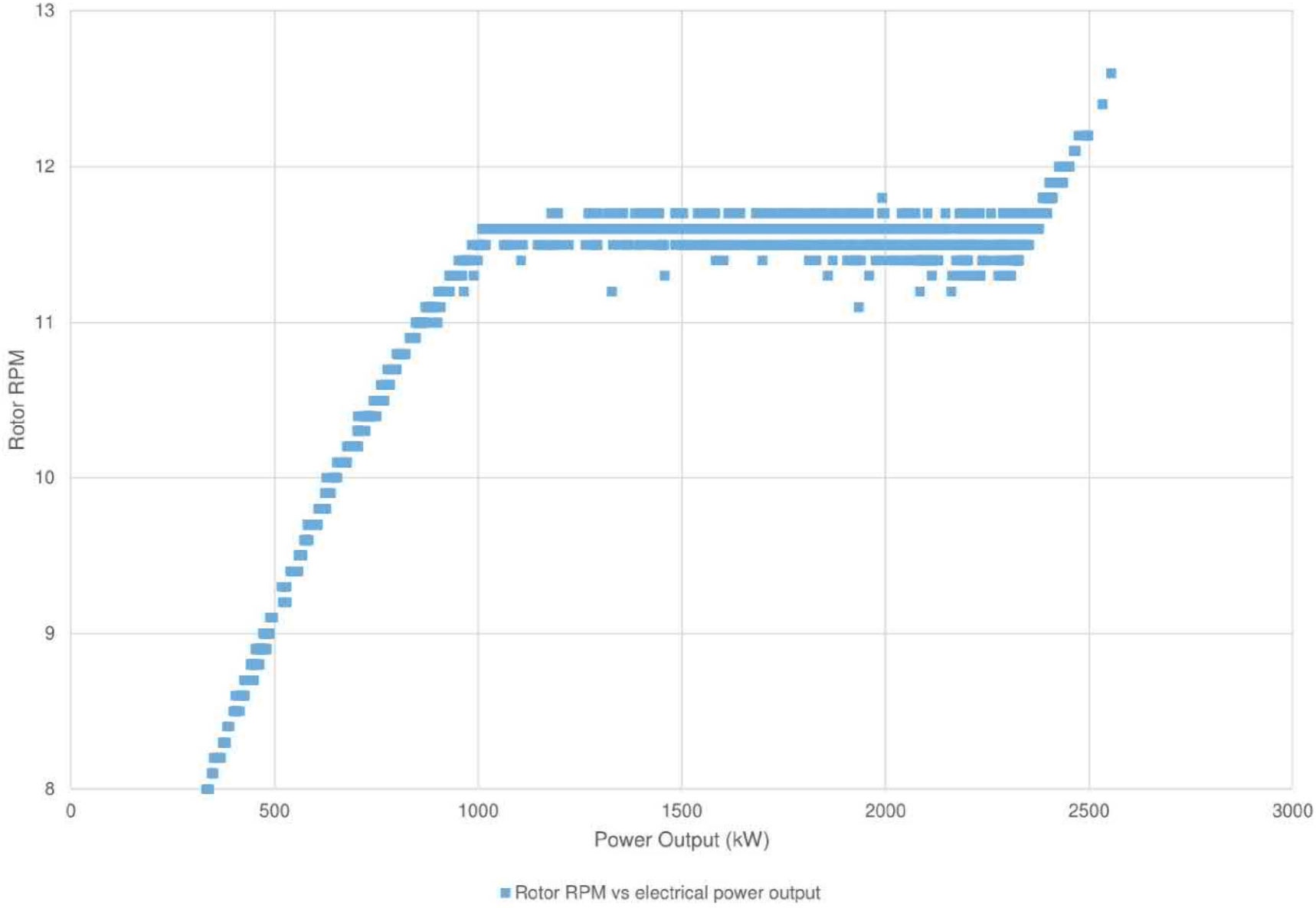
Figure C.01



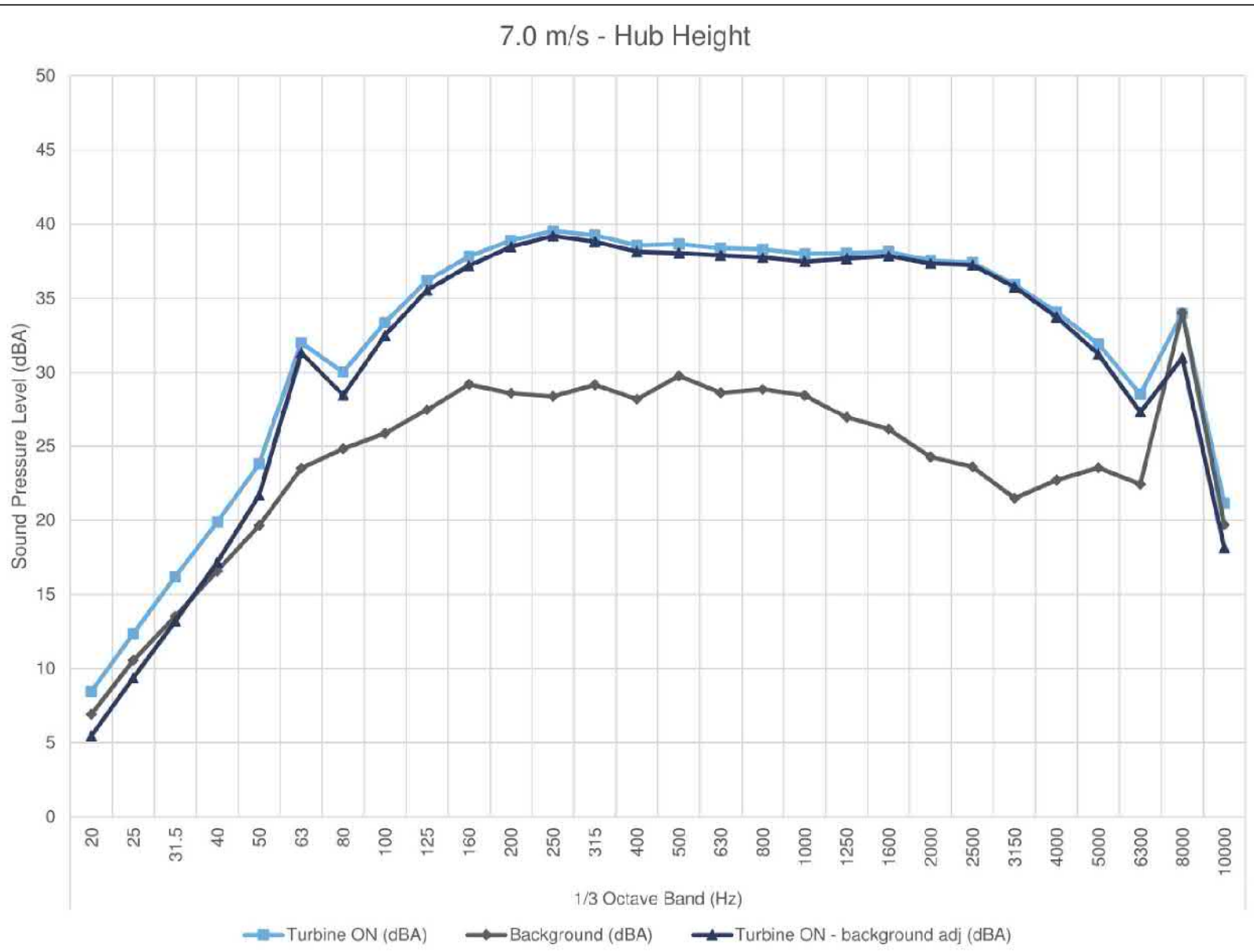
aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of measured total noise vs. electrical power output **Figure C.02**



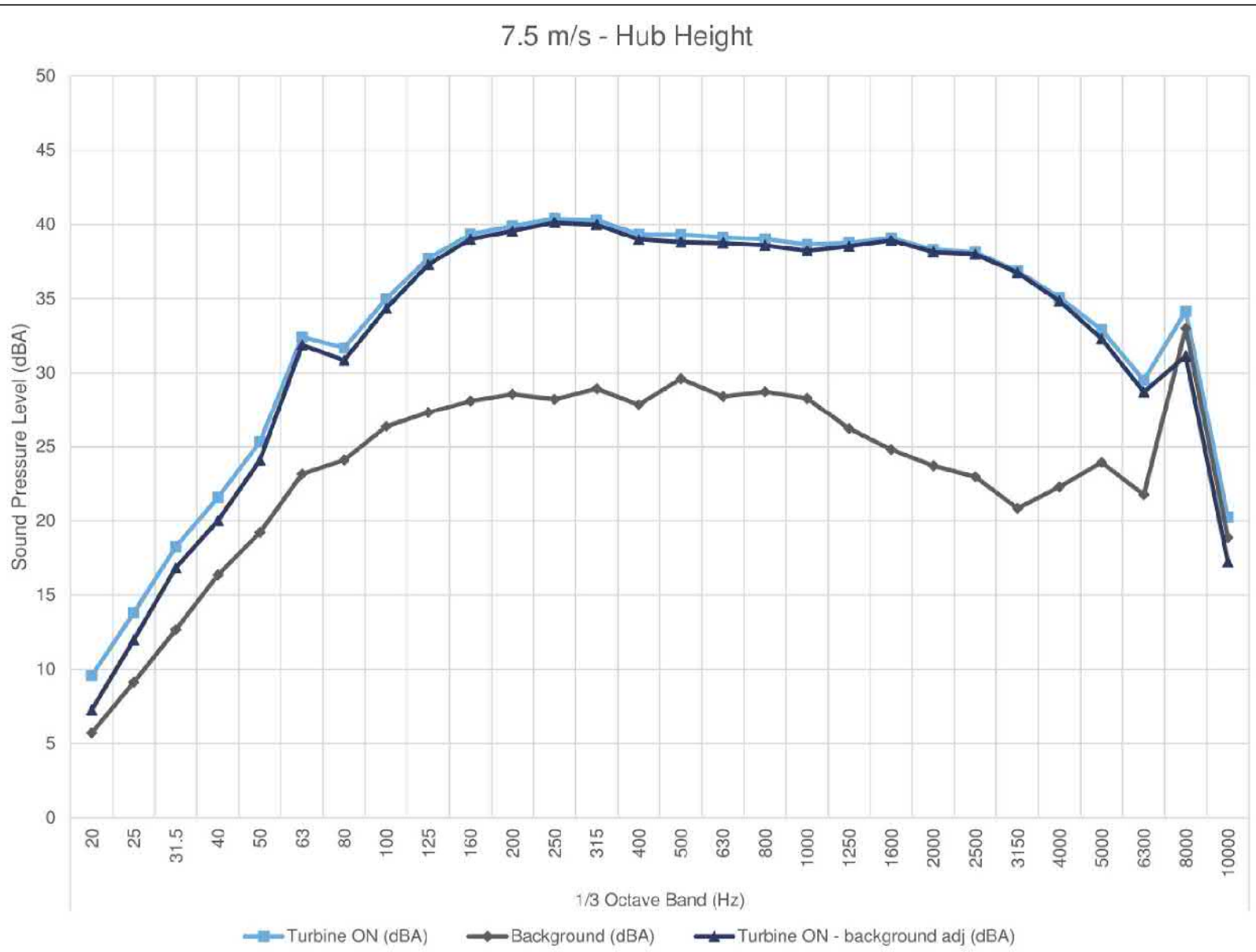
aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of power curve relative to nacelle anemometer and 10 m anemometer **Figure C.03**



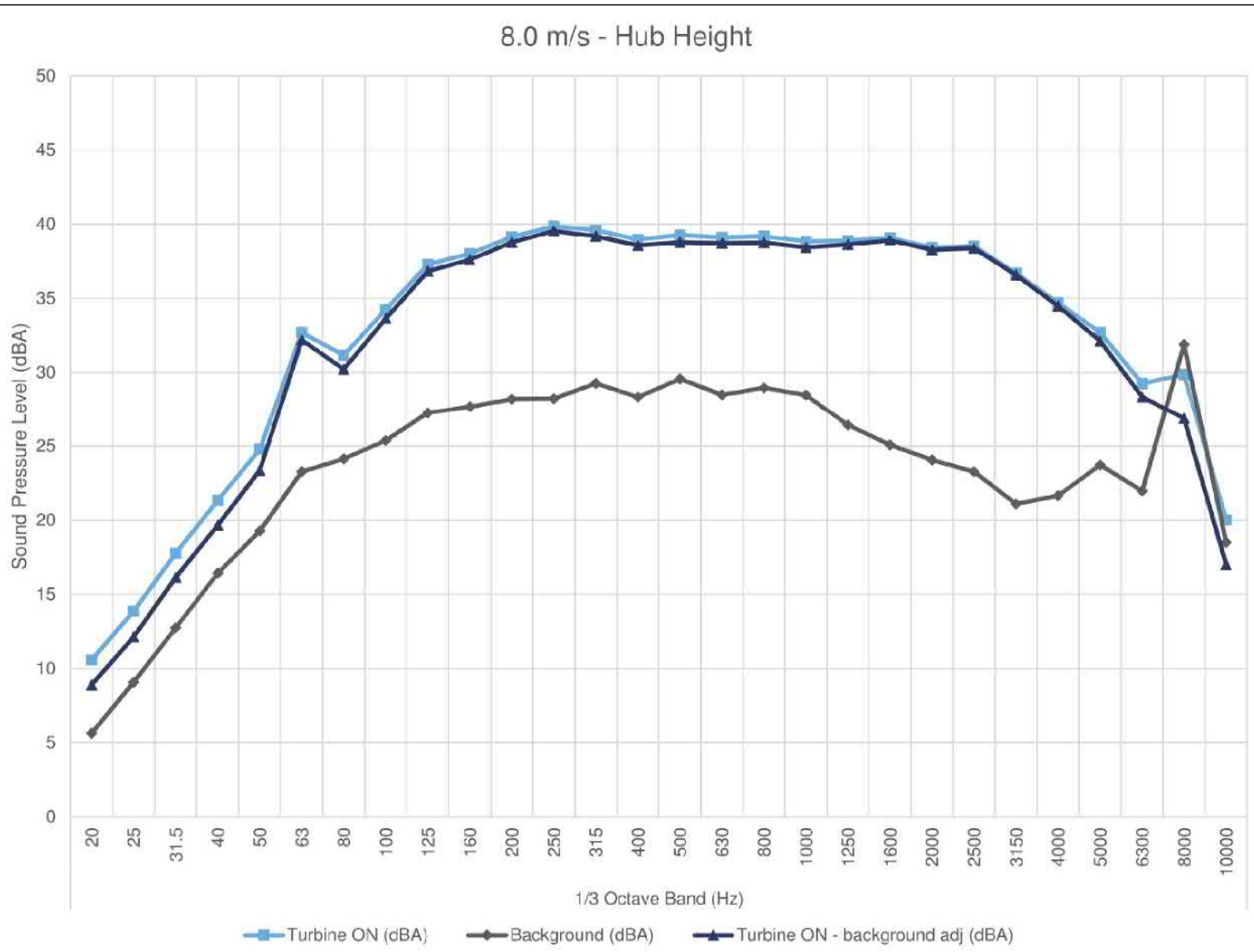
aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of rotor RPM vs. electrical power output **Figure C.04**



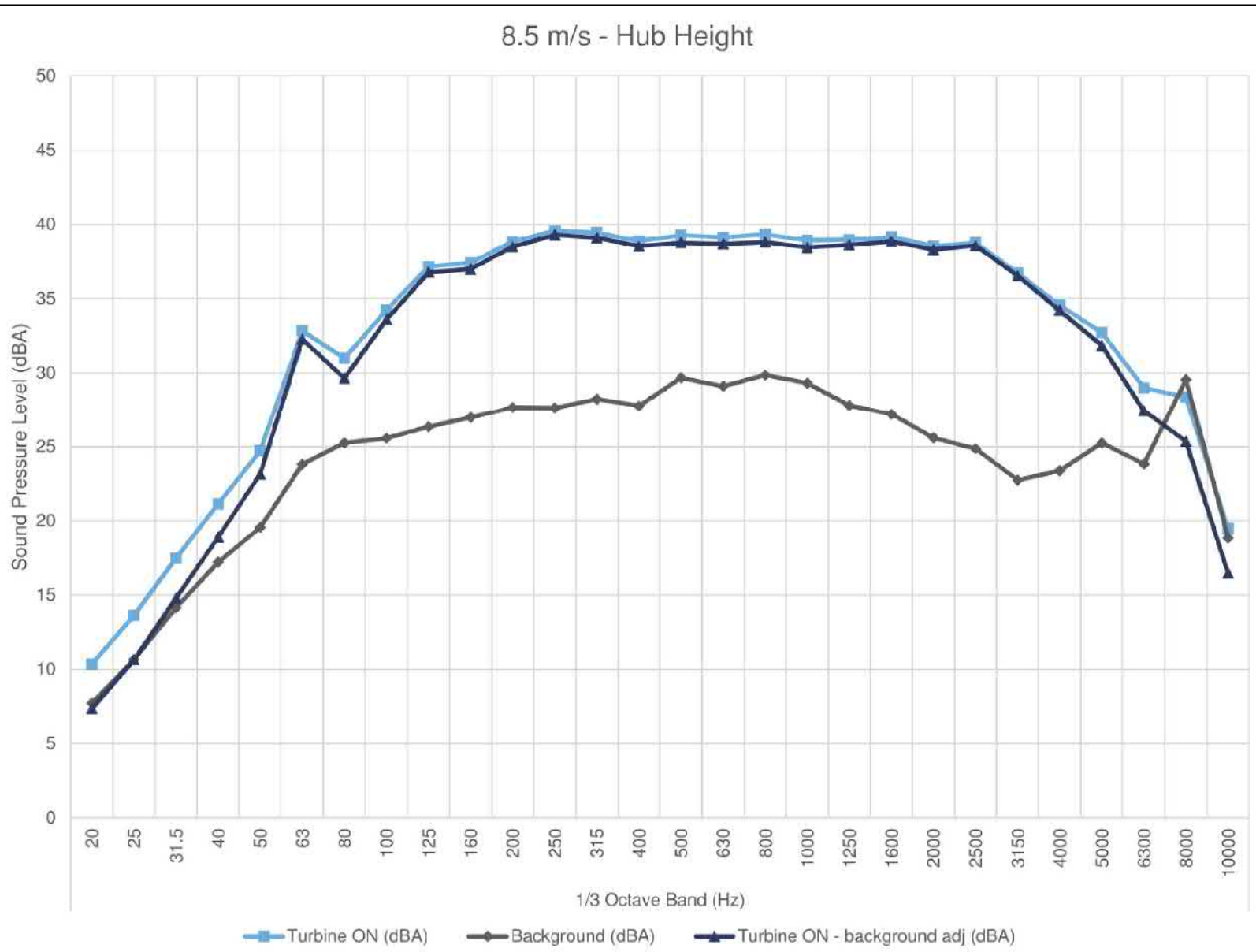
aercoustics	17095.01.T40.RP1	**Project Name**
	Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40
		Figure Title Plot of sound pressure spectrum in 1/3 Octave at 7.0 m/s
		Figure C.05



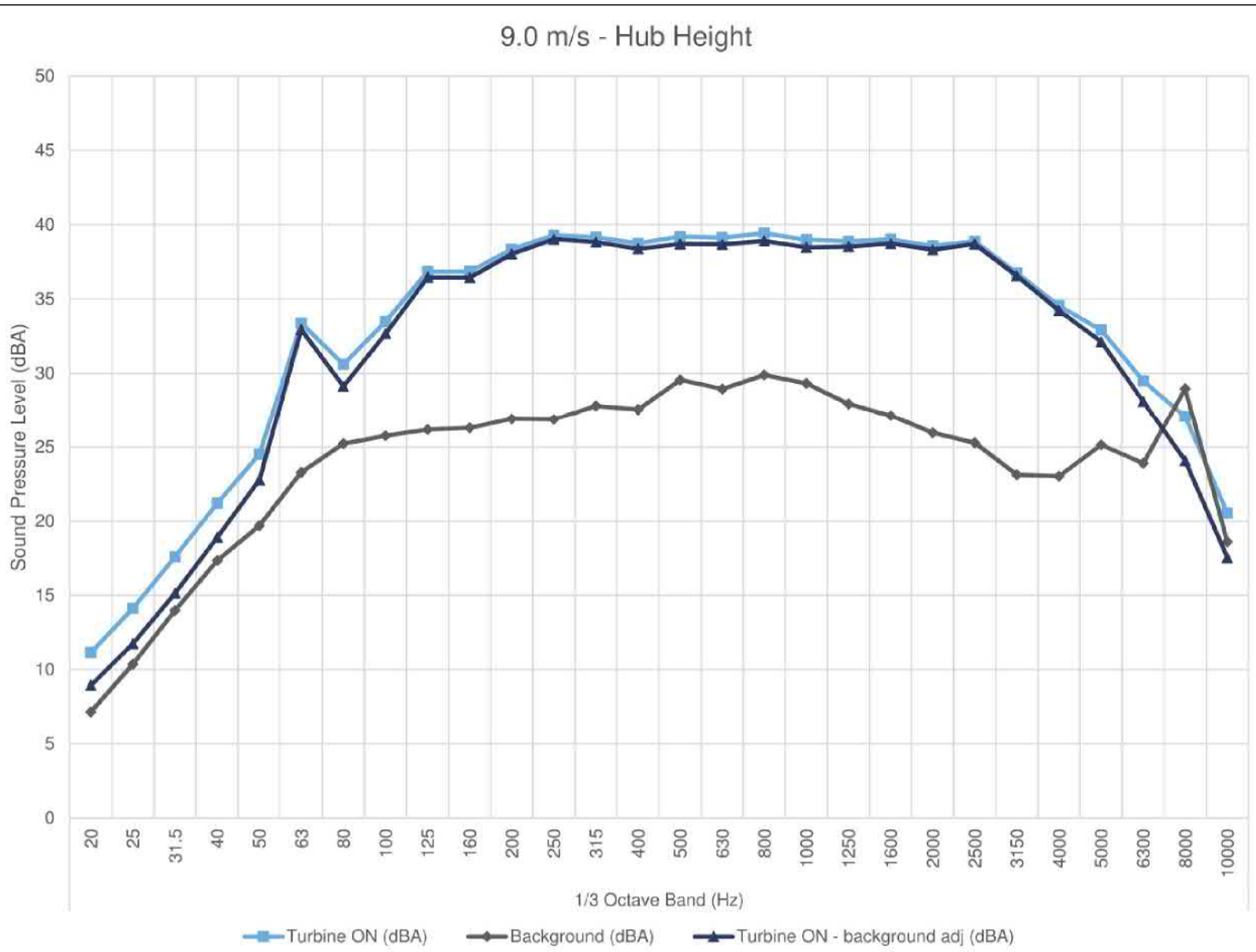
aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40	
		Figure Title Plot of sound pressure spectrum in 1/3 Octave at 7.5 m/s	**Figure C.06**



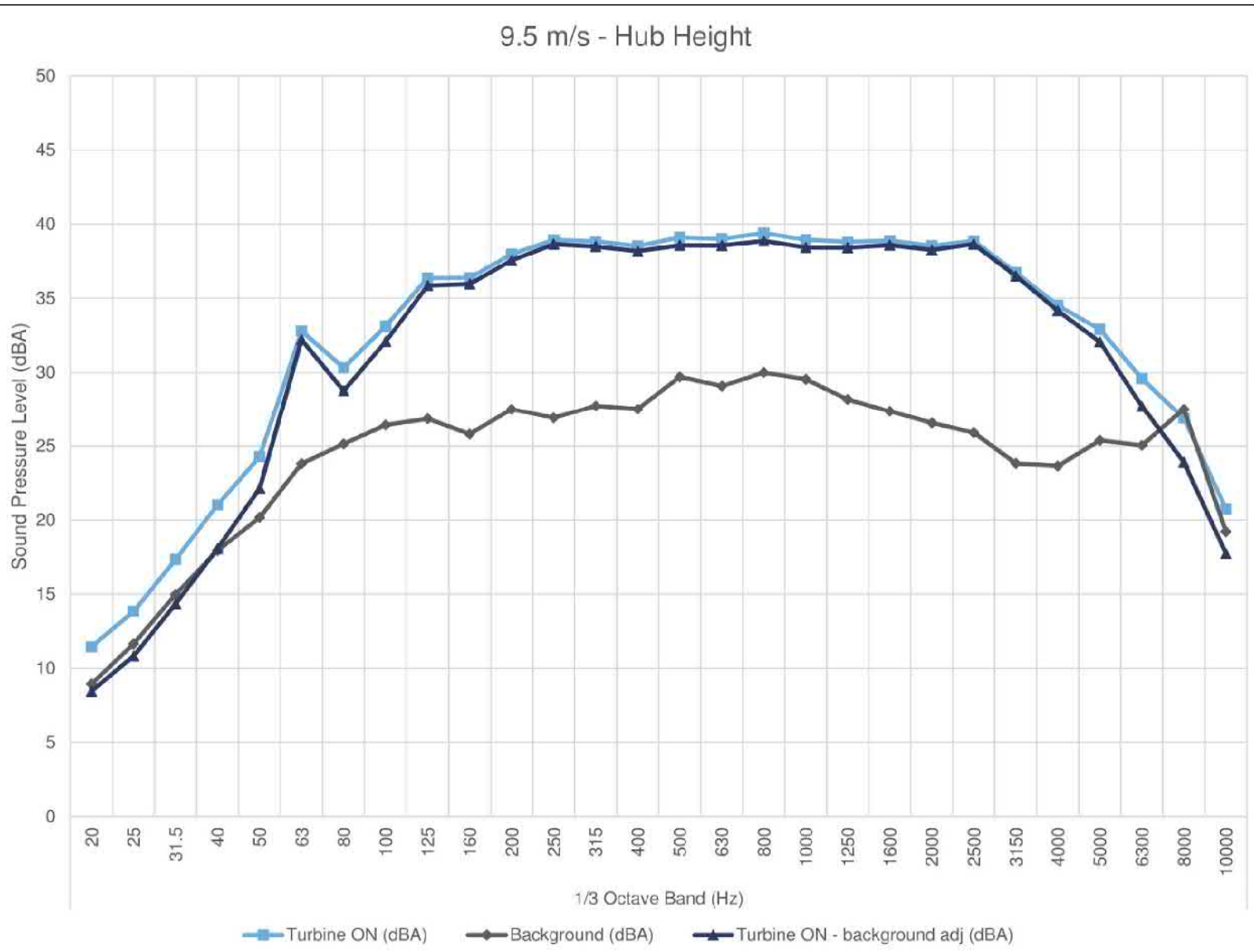
aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40	
		Figure Title Plot of sound pressure spectrum in 1/3 Octave at 8.0 m/s	**Figure C.07**



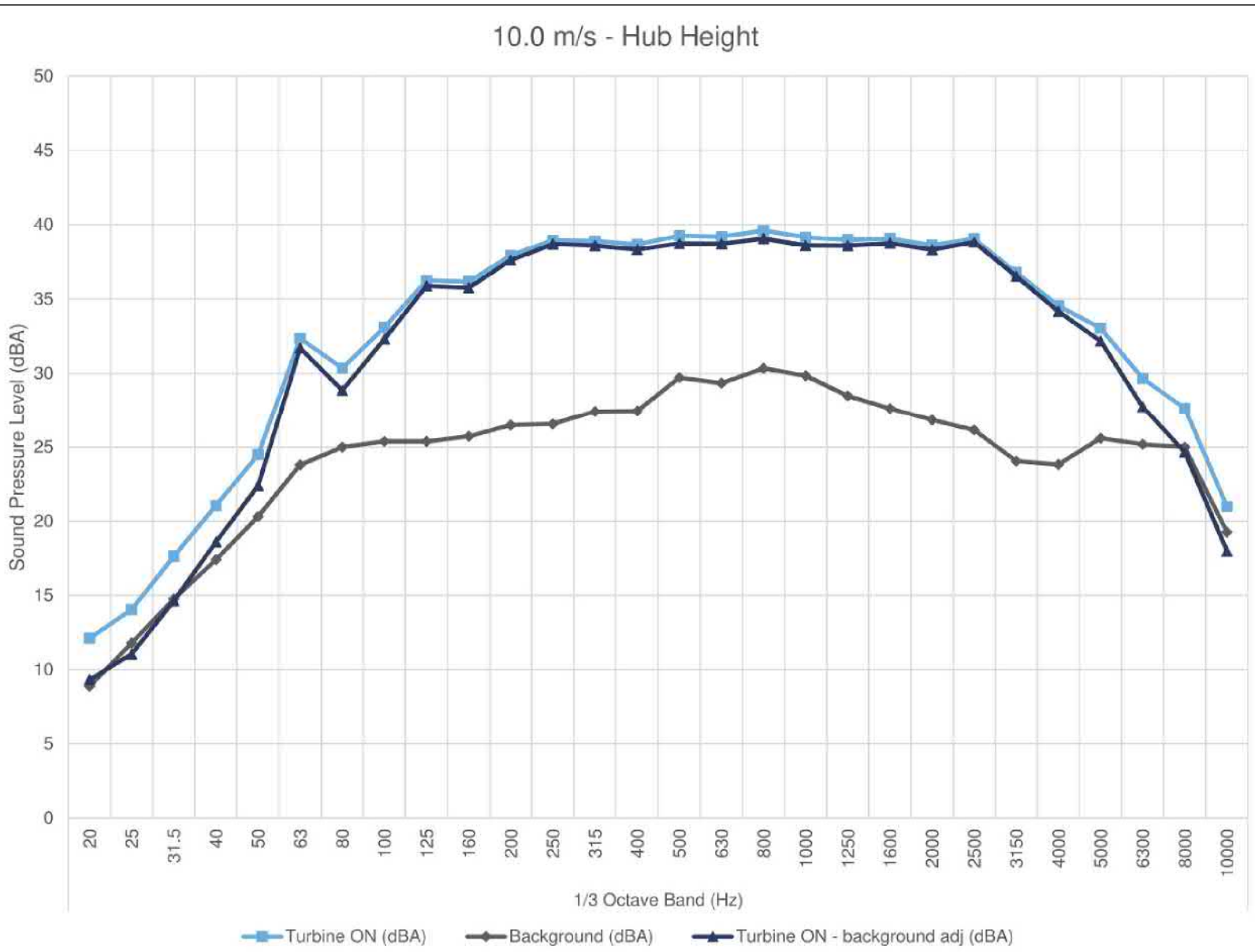
aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of sound pressure spectrum in 1/3 Octave at 8.5 m/s **Figure C.08**



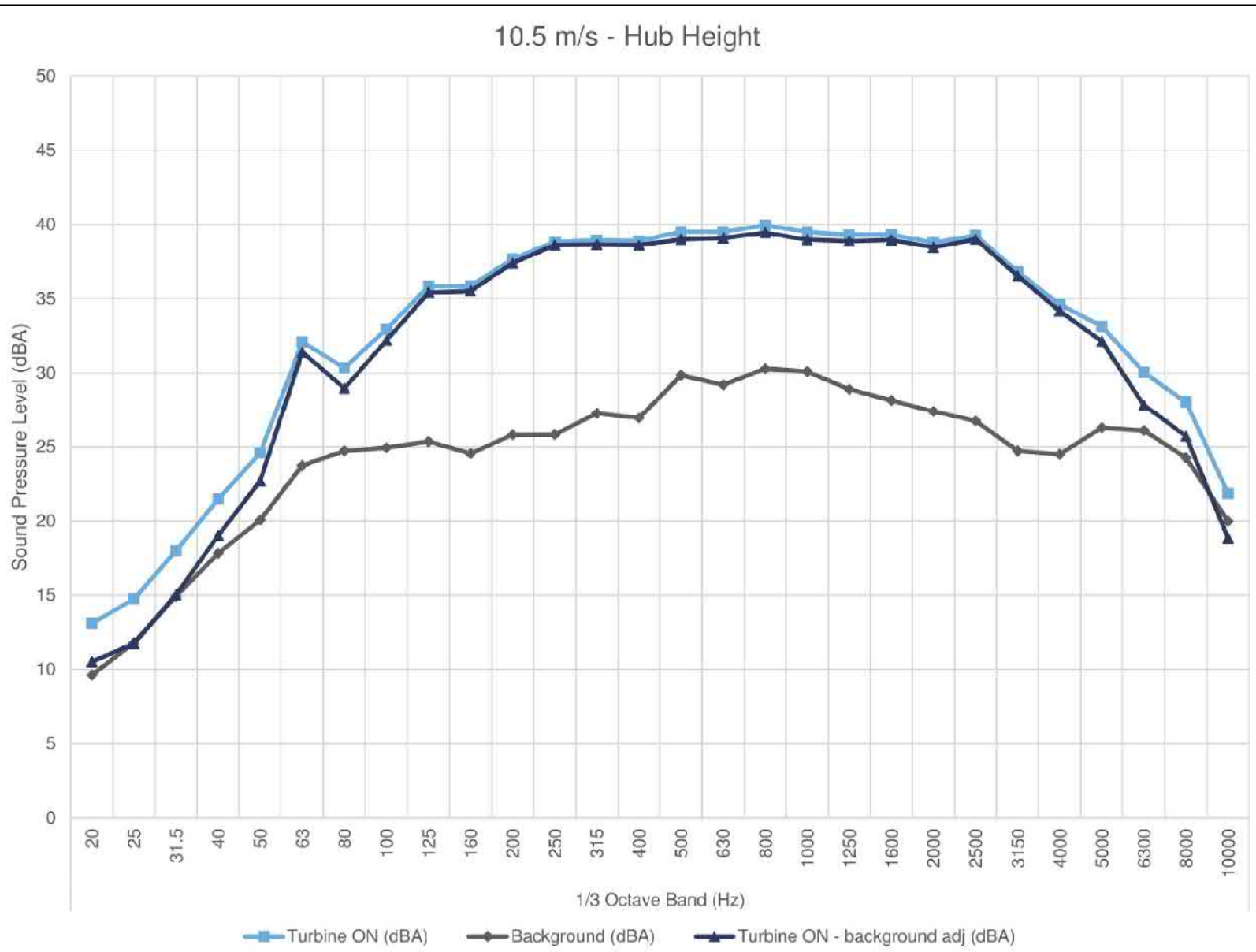
aercoustics	17095.01.T40.RP1	**Project Name**
	Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40
		Figure Title Plot of sound pressure spectrum in 1/3 Octave at 9.0 m/s
		Figure C.09



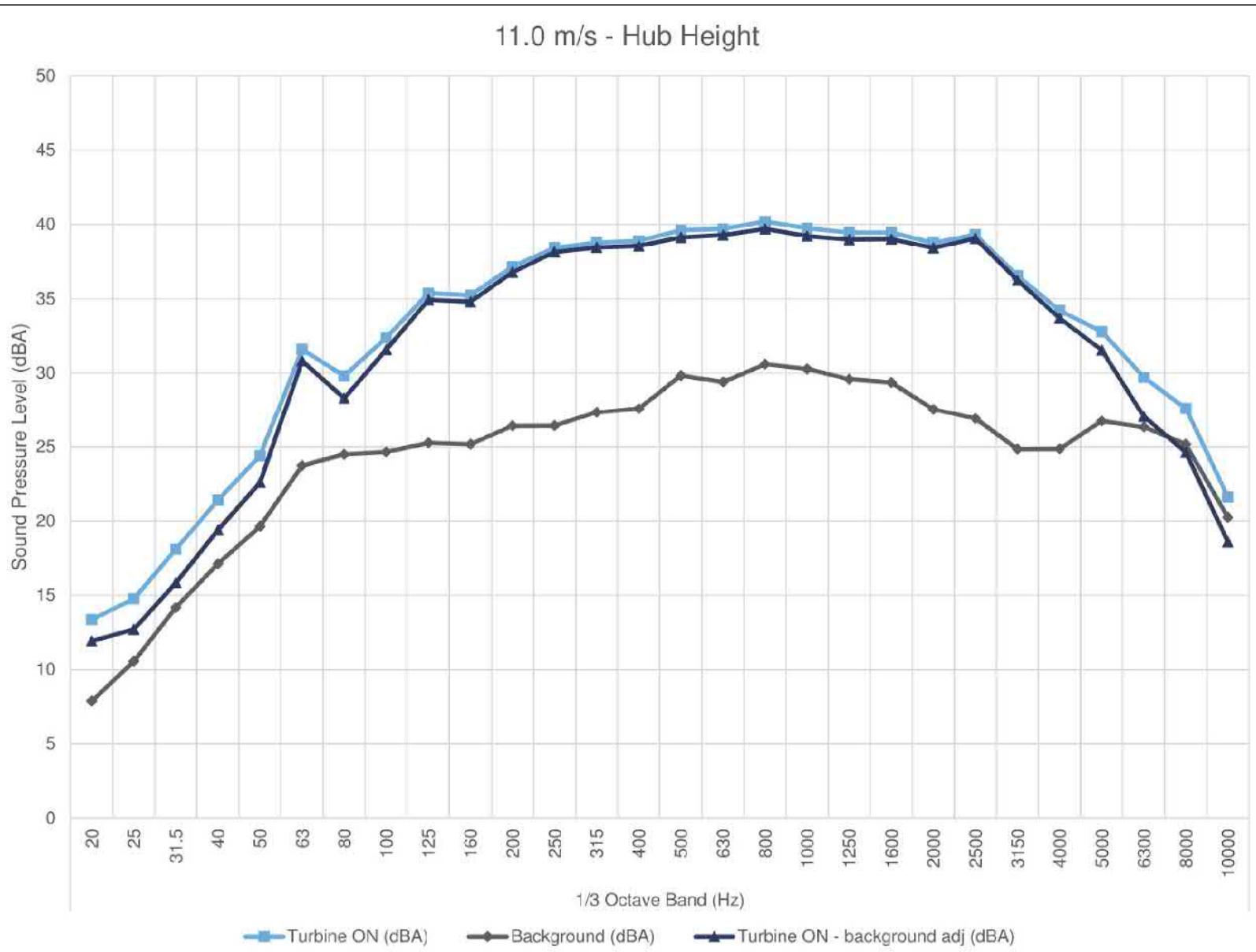
aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of sound pressure spectrum in 1/3 Octave at 9.5 m/s **Figure C.10**



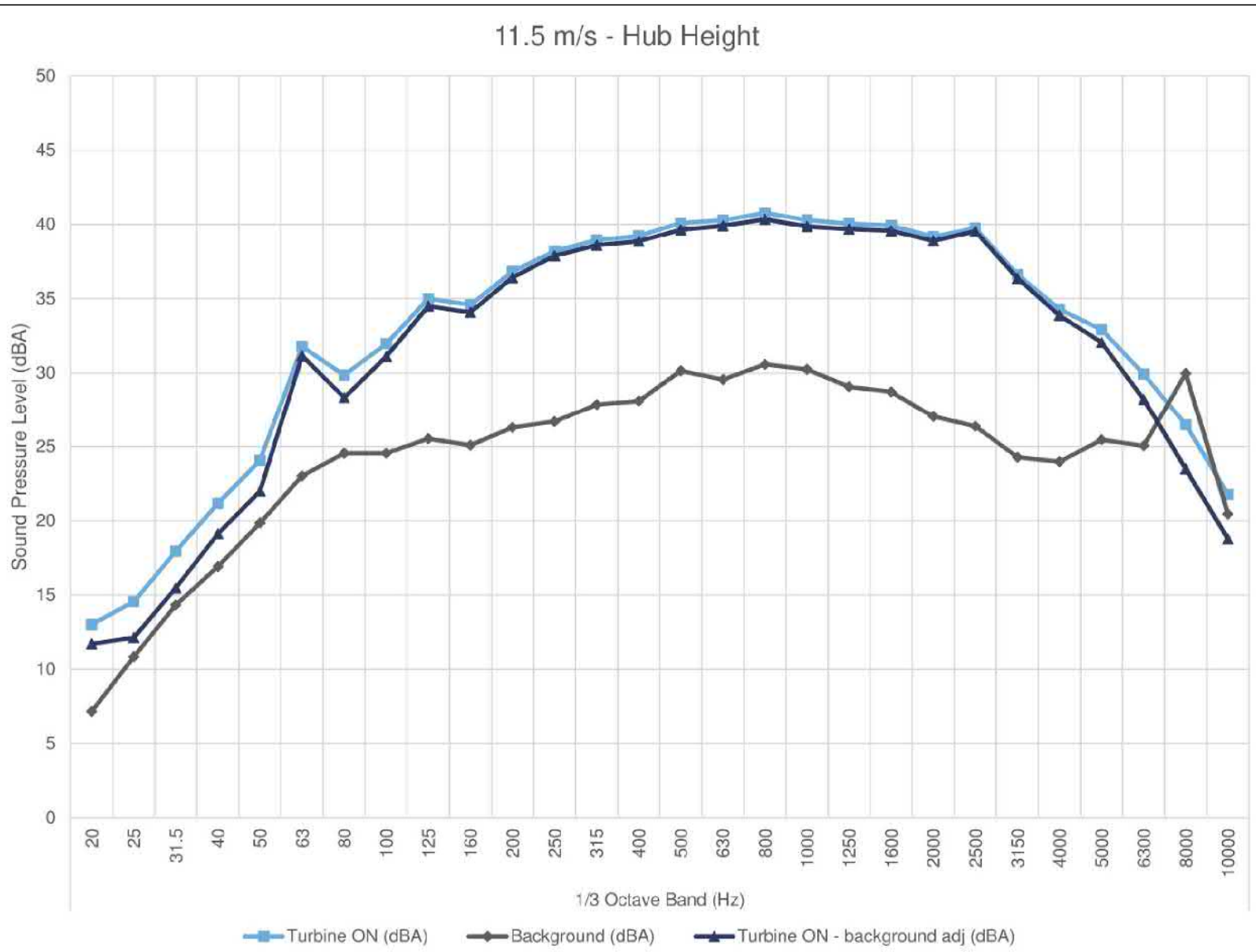
aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40	
		Figure Title Plot of sound pressure spectrum in 1/3 Octave at 10.0 m/s	**Figure C.11**



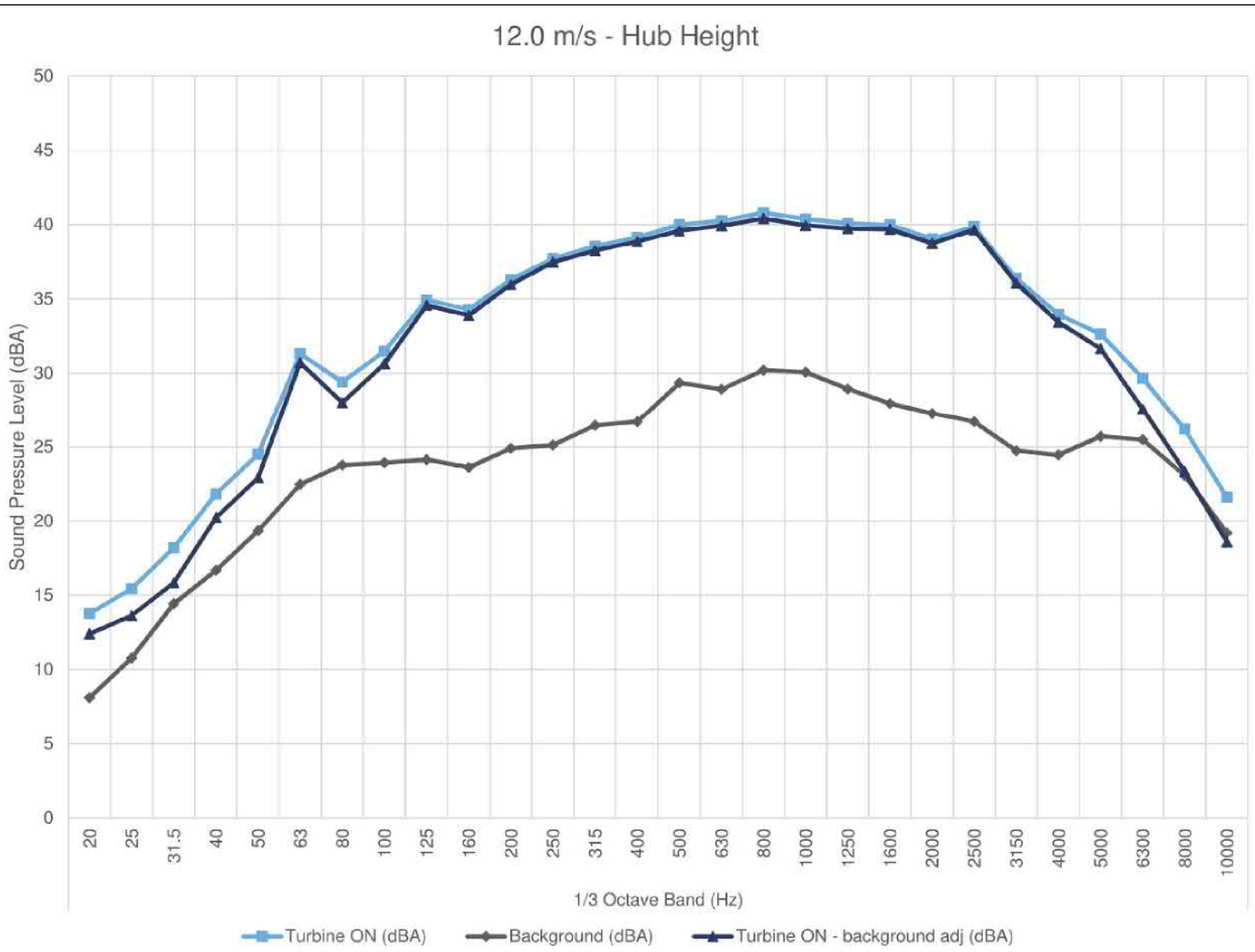
aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of sound pressure spectrum in 1/3 Octave at 10.5 m/s **Figure C.12**



aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of sound pressure spectrum in 1/3 Octave at 11.0 m/s **Figure C.13**



aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40	
		Figure Title Plot of sound pressure spectrum in 1/3 Octave at 11.5 m/s	**Figure C.14**



aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of sound pressure spectrum in 1/3 Octave at 12.0 m/s	**Figure C.15**

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Appendix D
Tonality Assessment

Table D.01 Tonality Assessment Table - 7 m/s

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

Created on: 11/14/2018

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
1115	59	19.4	37.7	36.3	-1.4	-2.0	0.6
1116	59	19.4	37.7	34.1	-3.6	-2.0	-1.6
307	60	20.4	38.6	34.6	-4.0	-2.0	-2.0
442	61	21.3	39.5	32.2	-7.3	-2.0	-5.3
1114	61	20.4	38.6	33.2	-5.4	-2.0	-3.4
1032	61	21.0	39.3	36.0	-3.3	-2.0	-1.3
1113	62	20.5	38.8	35.2	-3.6	-2.0	-1.6
1033	62	22.6	40.9	33.4	-7.5	-2.0	-5.5
1117	62	21.1	39.3	34.2	-5.1	-2.0	-3.1
1125	62	23.9	42.1	34.5	-7.6	-2.0	-5.6
444	63	21.6	39.9	31.3	-8.6	-2.0	-6.6
Average	61				-4.7	-2.0	-2.7

Table D.02 Tonality Assessment Table - 9 m/s

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

Created on: 2018-11-16

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
735	58	20.5	38.8	32.8	-6.0	-2.0	-4.0
591	58	21.6	39.8	34.2	-5.6	-2.0	-3.6
950	61	20.9	39.2	37.8	-1.4	-2.0	0.6
721	61	21.0	39.2	33.8	-5.4	-2.0	-3.4
588	61	23.1	41.4	36.0	-5.3	-2.0	-3.3
1245	61	22.0	40.3	36.2	-4.1	-2.0	-2.1
577	61	20.2	38.5	37.6	-0.8	-2.0	1.2
715	61	21.8	40.1	36.4	-3.7	-2.0	-1.6
785	61	22.0	40.2	36.7	-3.5	-2.0	-1.5
694	61	21.3	39.5	36.7	-2.8	-2.0	-0.8
609	61	21.6	39.9	37.7	-2.1	-2.0	-0.1
846	61	21.9	40.1	36.8	-3.4	-2.0	-1.4
728	62	20.6	38.8	34.3	-4.5	-2.0	-2.5
1223	62	21.4	39.7	35.3	-4.4	-2.0	-2.4
1018	62	21.9	40.1	36.2	-3.9	-2.0	-1.9
777	62	21.5	39.7	35.1	-4.6	-2.0	-2.6
754	62	21.9	40.1	34.1	-6.0	-2.0	-4.0
775	62	21.5	39.7	36.1	-3.6	-2.0	-1.6
1077	62	21.9	40.2	34.5	-5.6	-2.0	-3.6
700	62	21.9	40.1	34.7	-5.4	-2.0	-3.4
729	62	20.9	39.2	33.0	-6.2	-2.0	-4.2
996	62	22.2	40.5	34.4	-6.0	-2.0	-4.0
689	62	22.0	40.2	35.4	-4.8	-2.0	-2.8
760	62	22.6	40.8	33.3	-7.5	-2.0	-5.5
958	62	21.0	39.3	37.6	-1.6	-2.0	0.4
1260	62	21.4	39.6	34.7	-5.0	-2.0	-3.0
601	62	22.4	40.6	38.1	-2.6	-2.0	-0.6
1312	62	21.3	39.6	35.8	-3.7	-2.0	-1.7
734	62	22.2	40.4	33.4	-7.0	-2.0	-5.0
952	62	20.9	39.1	35.1	-4.1	-2.0	-2.1
695	62	22.3	40.6	36.4	-4.2	-2.0	-2.2
1170	62	24.5	42.8	33.6	-9.2	-2.0	-7.2
796	62	22.0	40.3	35.9	-4.3	-2.0	-2.3
964	62	21.5	39.7	36.3	-3.4	-2.0	-1.4
997	62	21.8	40.1	36.1	-4.0	-2.0	-2.0
736	62	20.9	39.1	33.8	-5.4	-2.0	-3.4
1076	62	21.7	40.0	33.1	-6.9	-2.0	-4.9
839	62	22.8	41.1	33.3	-7.8	-2.0	-5.8
1134	62	21.2	39.4	31.2	-8.2	-2.0	-6.2
722	62	21.5	39.8	35.3	-4.5	-2.0	-2.5
1159	62	22.3	40.5	33.6	-7.0	-2.0	-4.9
743	62	21.6	39.8	36.0	-3.8	-2.0	-1.8
641	62	22.1	40.3	37.1	-3.2	-2.0	-1.2
815	62	22.9	41.2	34.0	-7.1	-2.0	-5.1
755	62	22.0	40.3	34.7	-5.6	-2.0	-3.6
610	62	21.8	40.1	36.1	-4.0	-2.0	-2.0
698	62	21.4	39.7	35.5	-4.2	-2.0	-2.2
660	62	21.5	39.7	36.7	-3.1	-2.0	-1.1
521	62	21.8	40.1	34.1	-6.0	-2.0	-4.0
540	62	23.5	41.7	30.4	-11.3	-2.0	-9.3
932	62	21.2	39.4	36.0	-3.4	-2.0	-1.4
697	62	21.9	40.1	35.6	-4.5	-2.0	-2.5
1019	62	24.1	42.4	34.1	-8.2	-2.0	-6.2

1074	62	21.5	39.7	35.2	-4.5	-2.0	-2.5
878	62	23.7	42.0	36.3	-5.7	-2.0	-3.7
965	62	21.1	39.3	35.5	-3.8	-2.0	-1.8
1320	62	22.0	40.3	34.2	-6.1	-2.0	-4.1
998	62	22.4	40.6	35.4	-5.2	-2.0	-3.2
1107	62	21.5	39.7	34.7	-5.1	-2.0	-3.1
778	62	21.4	39.7	33.0	-6.6	-2.0	-4.6
774	62	21.7	40.0	35.6	-4.3	-2.0	-2.3
834	62	21.9	40.1	36.3	-3.8	-2.0	-1.8
934	62	22.4	40.6	34.7	-6.0	-2.0	-3.9
679	62	22.5	40.8	34.3	-6.5	-2.0	-4.5
1078	62	21.7	40.0	34.3	-5.6	-2.0	-3.6
1193	62	22.3	40.5	33.5	-7.1	-2.0	-5.1
611	62	21.8	40.0	35.0	-5.0	-2.0	-3.0
646	62	23.7	41.9	30.4	-11.6	-2.0	-9.6
927	62	22.7	41.0	37.8	-3.2	-2.0	-1.2
992	62	21.7	39.9	36.6	-3.3	-2.0	-1.3
1194	62	21.0	39.3	34.9	-4.3	-2.0	-2.3
704	62	22.4	40.6	30.9	-9.7	-2.0	-7.7
1053	62	21.1	39.3	28.4	-10.9	-2.0	-8.9
716	62	22.0	40.3	35.5	-4.8	-2.0	-2.8
966	62	21.0	39.3	36.4	-2.9	-2.0	-0.9
1108	62	20.3	38.5	34.7	-3.8	-2.0	-1.8
951	62	20.9	39.1	36.6	-2.5	-2.0	-0.5
578	62	21.9	40.2	34.8	-5.3	-2.0	-3.3
1267	62	23.4	41.6	34.9	-6.7	-2.0	-4.7
884	62	21.4	39.6	36.4	-3.2	-2.0	-1.2
696	62	21.3	39.6	36.3	-3.3	-2.0	-1.3
925	62	22.2	40.4	36.4	-4.1	-2.0	-2.1
1055	62	22.9	41.1	29.4	-11.7	-2.0	-9.6
926	62	23.4	41.6	32.4	-9.3	-2.0	-7.2
701	62	21.1	39.4	33.6	-5.7	-2.0	-3.7
877	62	23.4	41.6	37.5	-4.1	-2.0	-2.1
1080	62	21.3	39.6	33.8	-5.8	-2.0	-3.8
959	62	21.0	39.2	36.4	-2.8	-2.0	-0.8
797	62	21.1	39.3	35.8	-3.6	-2.0	-1.6
699	62	22.0	40.2	32.2	-8.1	-2.0	-6.1
962	62	21.4	39.6	36.0	-3.6	-2.0	-1.6
789	62	21.4	39.7	36.6	-3.0	-2.0	-1.0
645	62	23.7	41.9	37.1	-4.8	-2.0	-2.8
730	62	21.7	40.0	33.4	-6.6	-2.0	-4.6
889	62	22.7	40.9	37.4	-3.6	-2.0	-1.6
737	62	21.2	39.4	31.8	-7.6	-2.0	-5.6
816	62	21.9	40.1	35.0	-5.1	-2.0	-3.1
1192	62	21.7	40.0	32.5	-7.4	-2.0	-5.4
779	63	20.8	39.0	33.1	-5.9	-2.0	-3.9
954	63	23.6	41.8	34.2	-7.6	-2.0	-5.6
995	63	22.9	41.1	33.4	-7.7	-2.0	-5.7
1075	63	21.2	39.4	30.8	-8.6	-2.0	-6.6
1319	63	21.9	40.2	33.3	-6.9	-2.0	-4.9
976	63	22.8	41.1	29.9	-11.2	-2.0	-9.2
960	63	20.8	39.0	37.2	-1.9	-2.0	0.1
662	63	21.4	39.6	34.4	-5.3	-2.0	-3.3
1201	63	21.3	39.5	32.1	-7.4	-2.0	-5.4
528	63	21.4	39.7	37.7	-2.0	-2.0	0.0
504	63	22.1	40.3	38.2	-2.2	-2.0	-0.2

Table D.02 Tonality Assessment Table - 9 m/s

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

Created on: 2018-11-16

474	63	21.1	39.3	37.3	-2.1	-2.0	-0.1
1084	63	21.3	39.5	30.9	-8.6	-2.0	-6.6
1203	63	21.1	39.4	34.3	-5.1	-2.0	-3.1
684	63	22.2	40.4	33.8	-6.6	-2.0	-4.6
1086	63	22.1	40.3	30.4	-10.0	-2.0	-8.0
758	63	22.5	40.8	32.0	-8.8	-2.0	-6.8
1268	63	20.9	39.1	34.6	-4.5	-2.0	-2.5
1270	63	21.6	39.9	34.6	-5.3	-2.0	-3.3
727	63	21.2	39.4	32.3	-7.1	-2.0	-5.1
1092	63	22.4	40.7	32.5	-8.2	-2.0	-6.2
935	63	22.1	40.3	36.2	-4.1	-2.0	-2.1
502	63	21.5	39.7	35.6	-4.2	-2.0	-2.2
1214	63	22.4	40.6	31.4	-9.2	-2.0	-7.2
989	63	22.8	41.0	33.8	-7.2	-2.0	-5.2
563	63	22.3	40.6	36.1	-4.5	-2.0	-2.5
933	63	21.9	40.1	35.3	-4.8	-2.0	-2.8
1026	63	22.1	40.4	33.2	-7.2	-2.0	-5.2
1271	63	21.7	40.0	32.9	-7.1	-2.0	-5.1
759	63	22.0	40.2	33.3	-6.9	-2.0	-4.9
1091	63	21.7	39.9	30.5	-9.5	-2.0	-7.5
1079	63	21.7	40.0	32.8	-7.1	-2.0	-5.1
838	63	22.8	41.0	33.2	-7.8	-2.0	-5.8
1085	63	21.7	39.9	32.3	-7.6	-2.0	-5.6
501	64	22.2	40.4	34.8	-5.6	-2.0	-3.6
670	64	23.0	41.3	32.8	-8.4	-2.0	-6.4
520	64	22.2	40.5	32.9	-7.6	-2.0	-5.6
1328	64	21.8	40.0	33.8	-6.2	-2.0	-4.2
527	64	22.3	40.6	34.8	-5.8	-2.0	-3.8
522	70	22.6	40.9	38.9	-1.9	-2.0	0.1
Average	62				-5.0	-2.0	-3.0

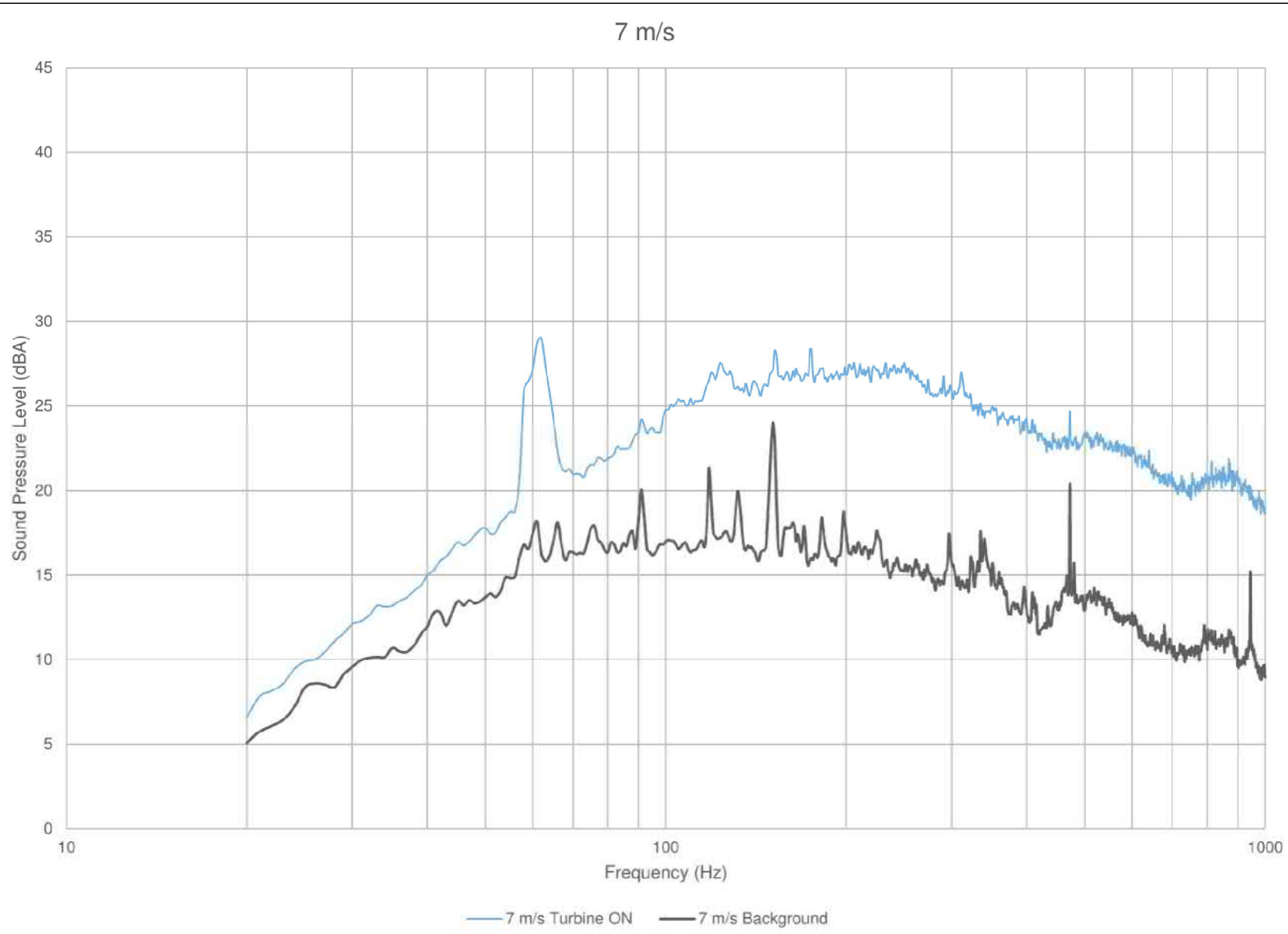
Table D.03 Tonality Assessment Table - 11.5 m/s

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

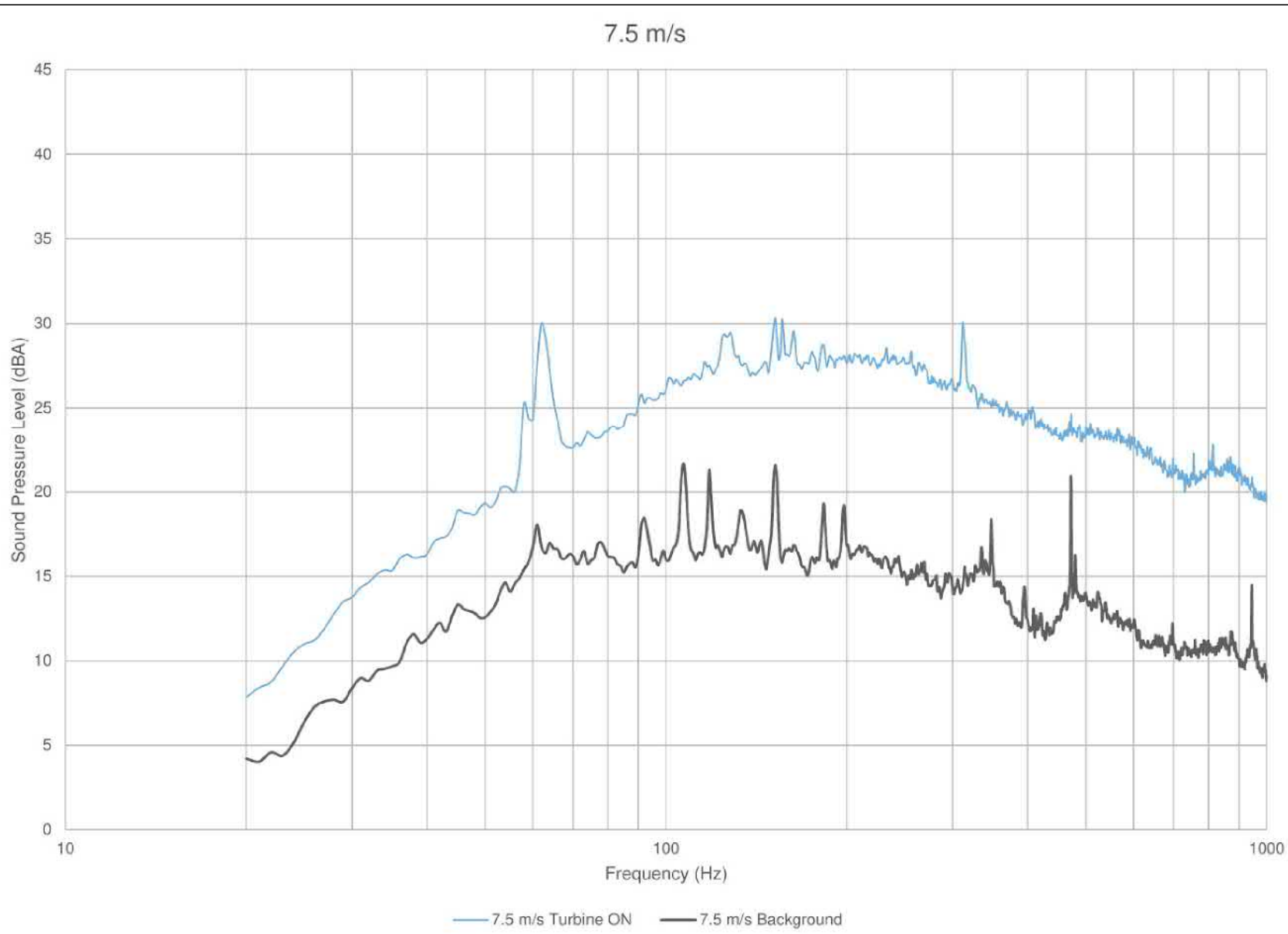
Report ID: 17095.01.T40.RP1

Created on: 11/14/2018

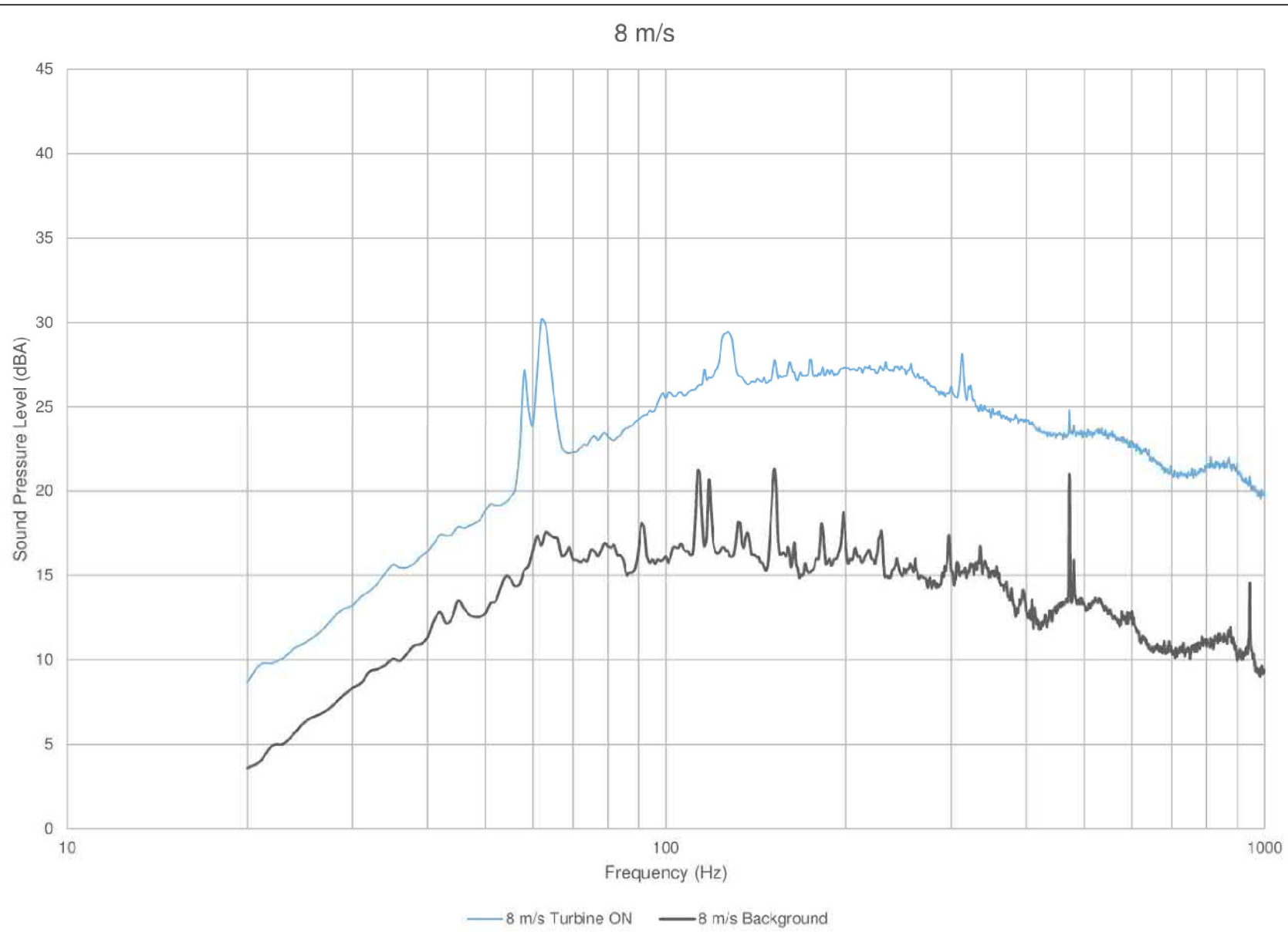
Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
903	58	18.3	36.5	35.7	-0.8	-2.0	1.2
572	58	19.4	37.7	32.7	-5.0	-2.0	-3.0
857	58	19.4	37.7	31.7	-6.0	-2.0	-4.0
1005	58	17.3	35.5	33.6	-1.9	-2.0	0.1
901	58	21.2	39.5	32.4	-7.1	-2.0	-5.1
852	58	18.1	36.3	34.0	-2.4	-2.0	-0.4
849	58	20.4	38.6	31.9	-6.7	-2.0	-4.7
855	58	18.1	36.4	33.9	-2.5	-2.0	-0.5
853	61	17.9	36.2	35.0	-1.2	-2.0	0.8
859	62	18.4	36.7	35.1	-1.5	-2.0	0.5
1279	62	20.5	38.7	26.6	-12.1	-2.0	-10.1
985	62	22.2	40.4	32.8	-7.6	-2.0	-5.6
749	63	21.4	39.6	32.2	-7.5	-2.0	-5.5
629	63	21.6	39.8	32.2	-7.6	-2.0	-5.6
1002	64	20.6	38.9	32.7	-6.2	-2.0	-4.2
1286	64	20.9	39.2	28.1	-11.1	-2.0	-9.1
1155	65	21.2	39.4	28.2	-11.2	-2.0	-9.2
918	65	21.7	39.9	33.5	-6.4	-2.0	-4.4
945	65	20.7	38.9	35.1	-3.9	-2.0	-1.9
573	65	18.8	37.0	34.0	-3.1	-2.0	-1.1
1001	66	20.6	38.8	32.9	-5.9	-2.0	-3.9
1151	66	23.0	41.3	33.9	-7.4	-2.0	-5.4
1148	66	21.9	40.1	28.7	-11.4	-2.0	-9.4
843	67	20.3	38.6	35.7	-2.9	-2.0	-0.9
842	68	20.6	38.9	40.5	1.6	-2.0	3.6
Average	62				-4.1	-2.0	-2.1



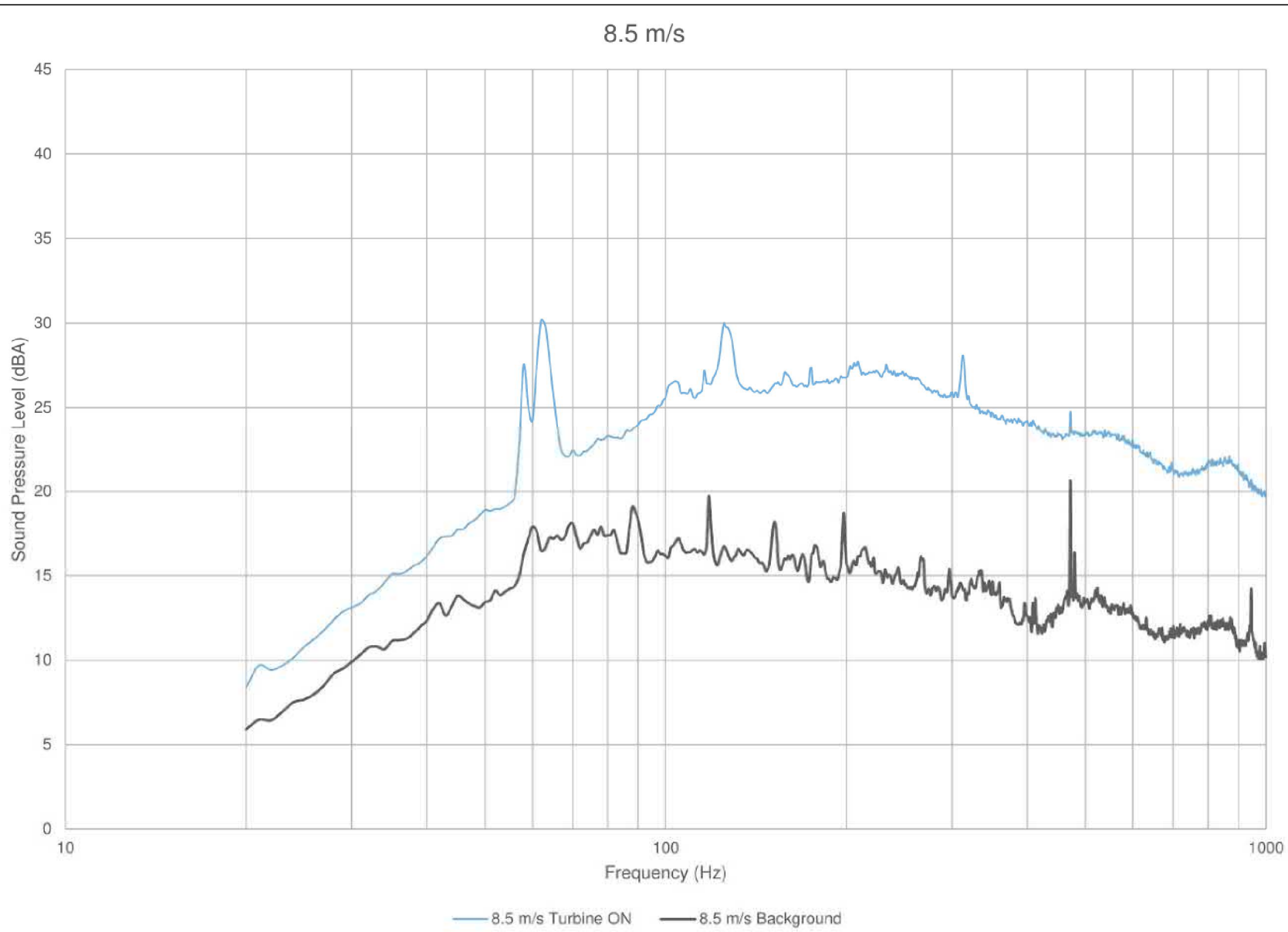
aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 7.0 m/s **Figure D.01**



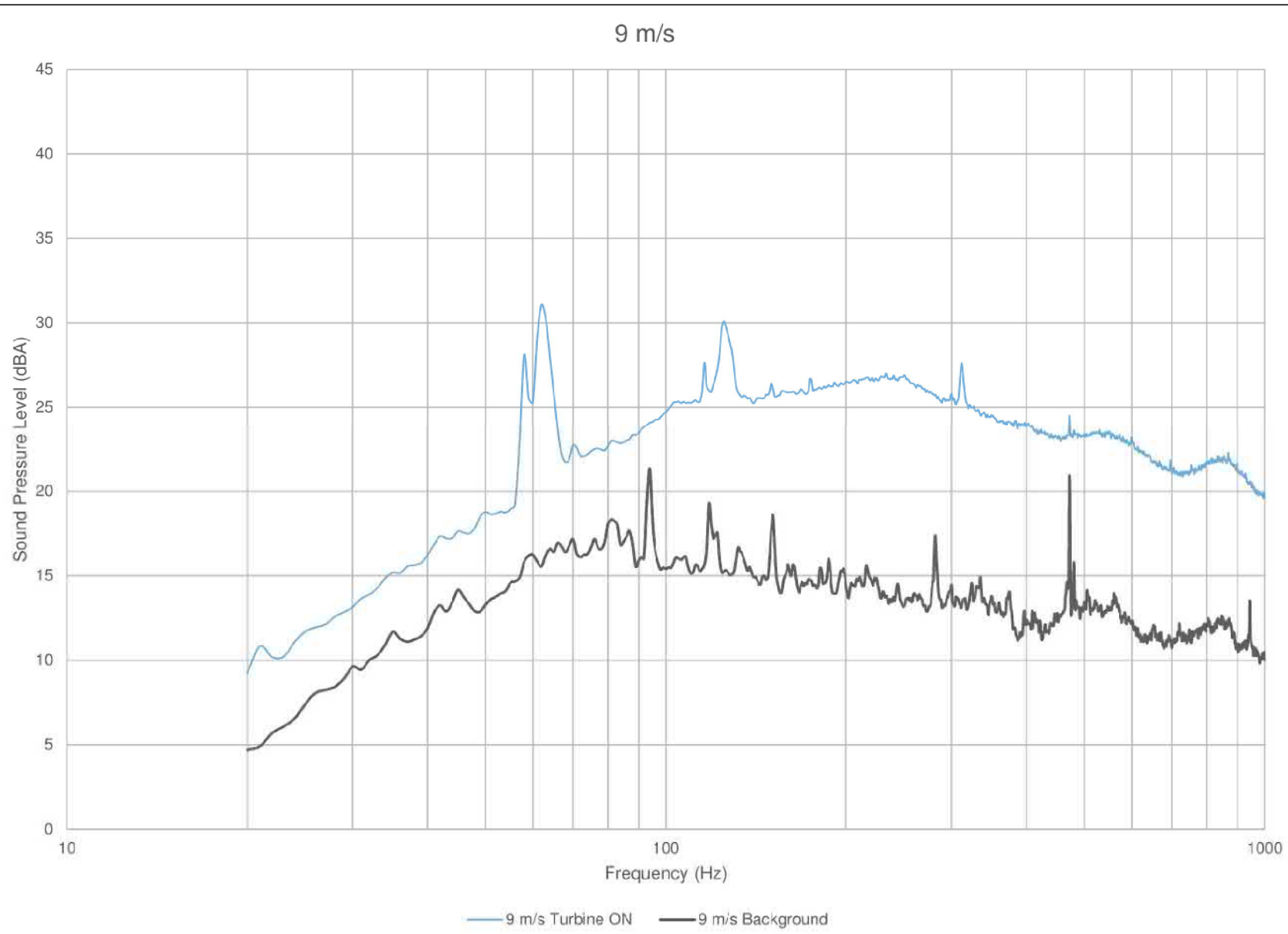
aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 7.5 m/s **Figure D.02**



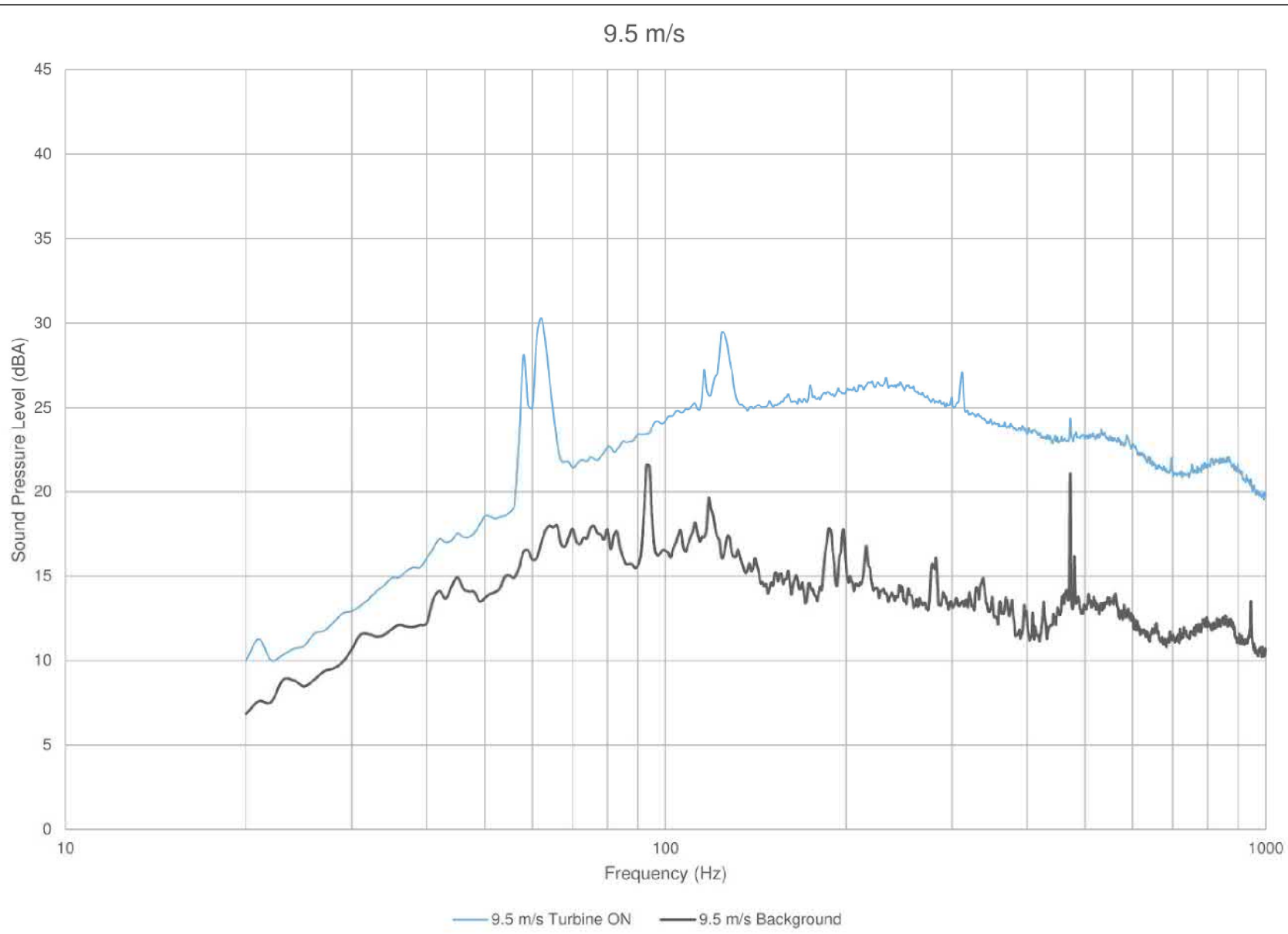
aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 8.0 m/s **Figure D.03**



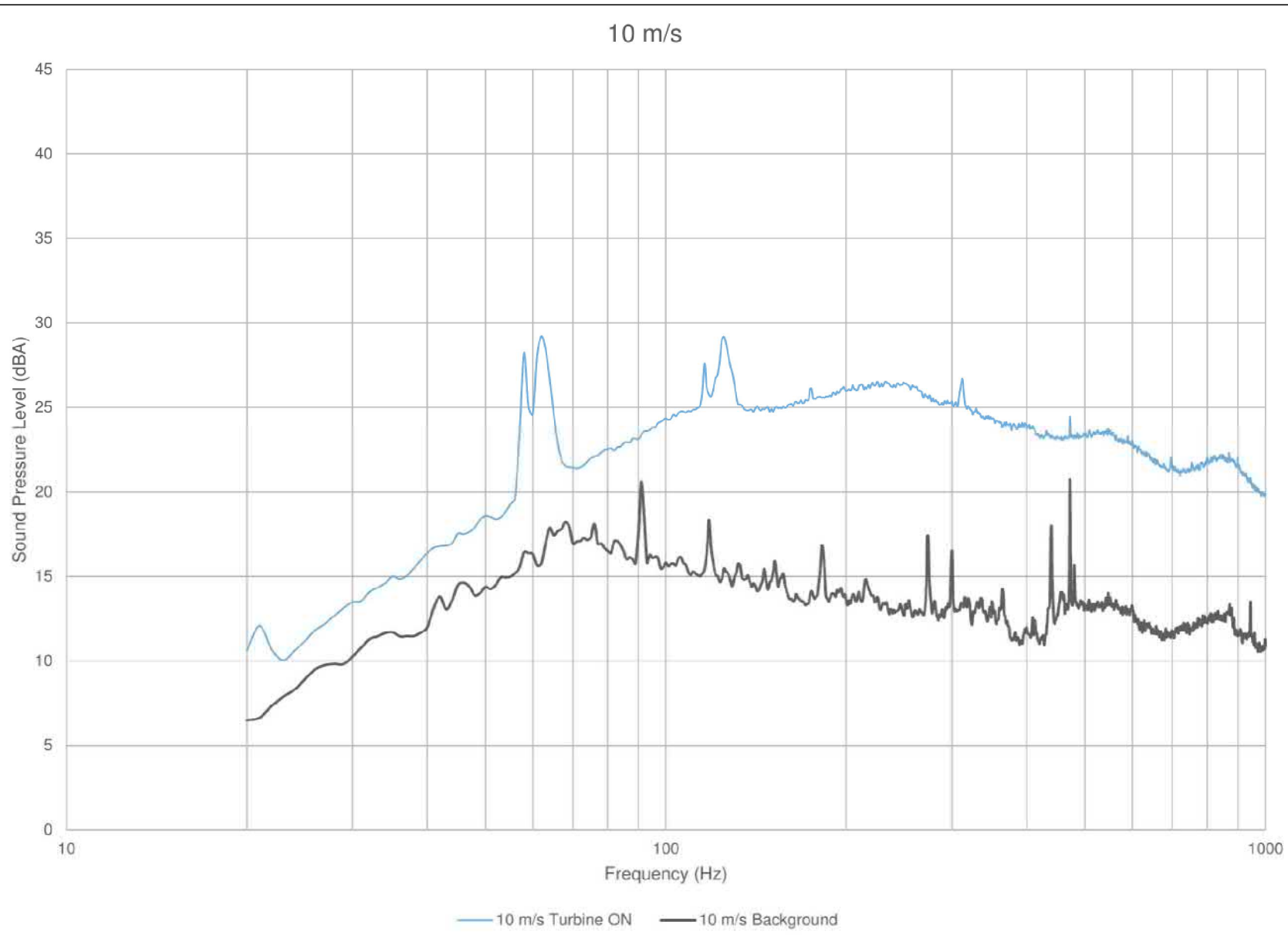
aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 8.5 m/s **Figure D.04**



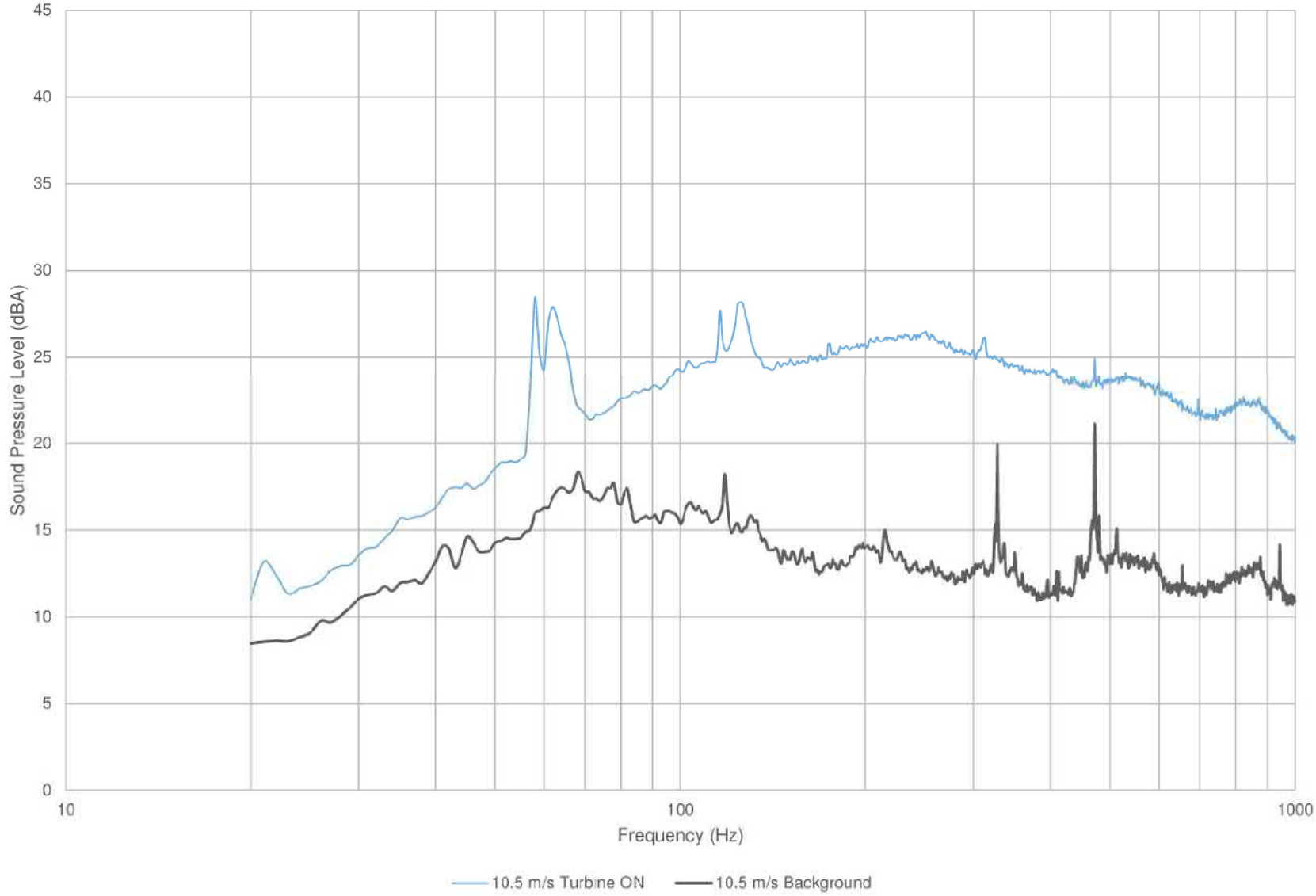
aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 9.0 m/s **Figure D.05**



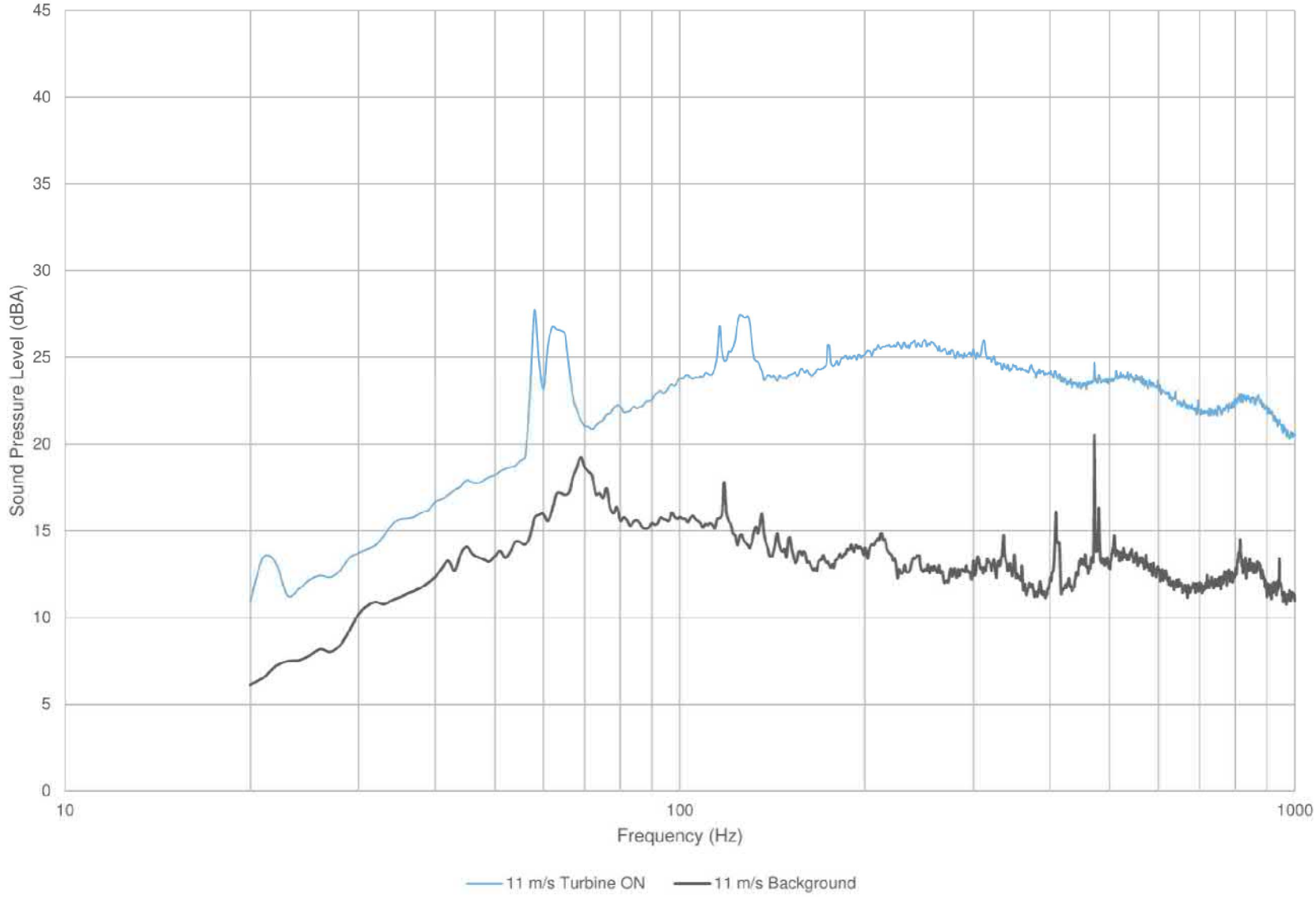
aercoustics	17095.01.T40.RP1	**Project Name**
	Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40
		Figure Title Plot of narrow band spectra - Turbine ON vs. Background at 9.5 m/s
		Figure D.06



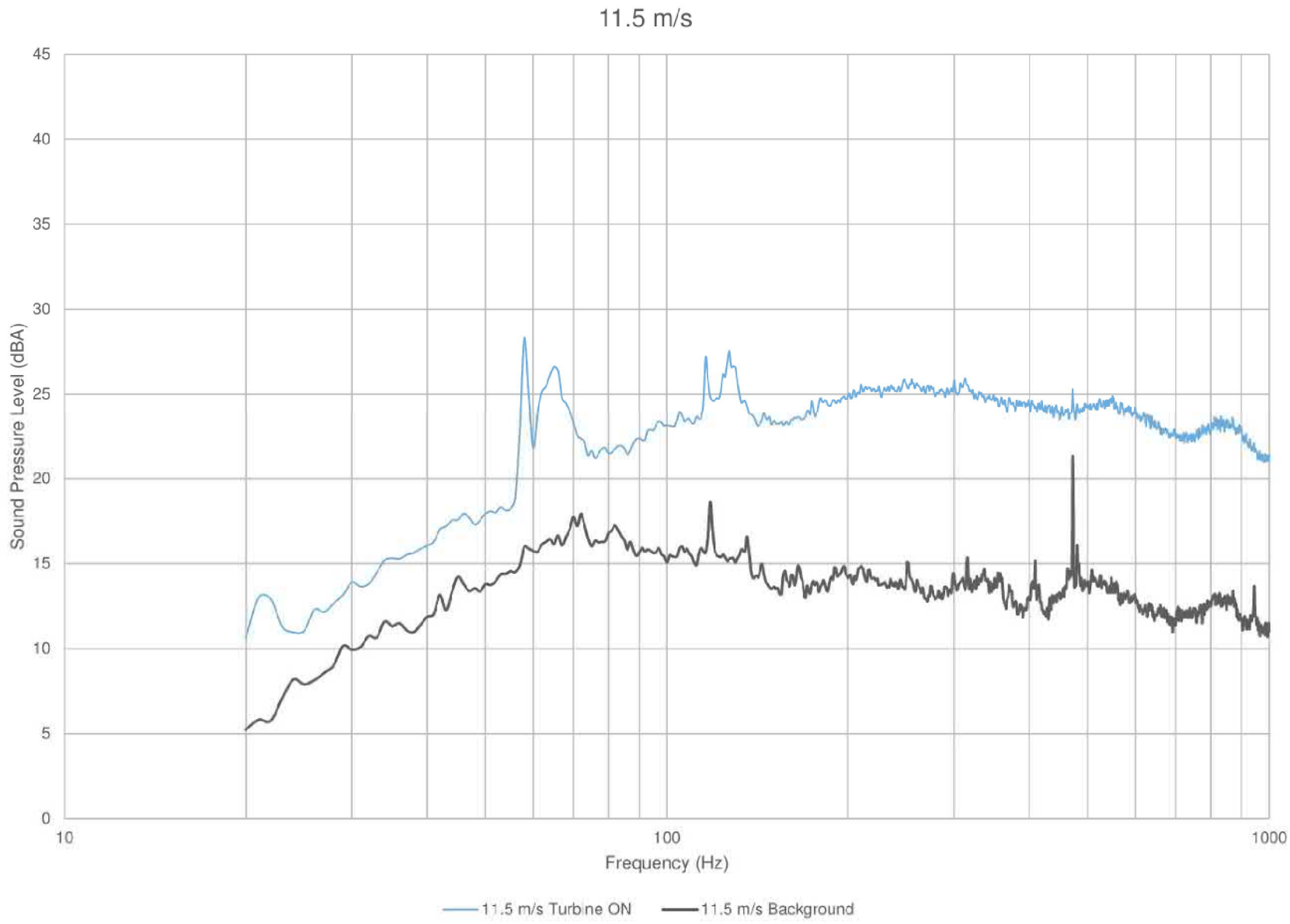
aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 10.0 m/s **Figure D.07**



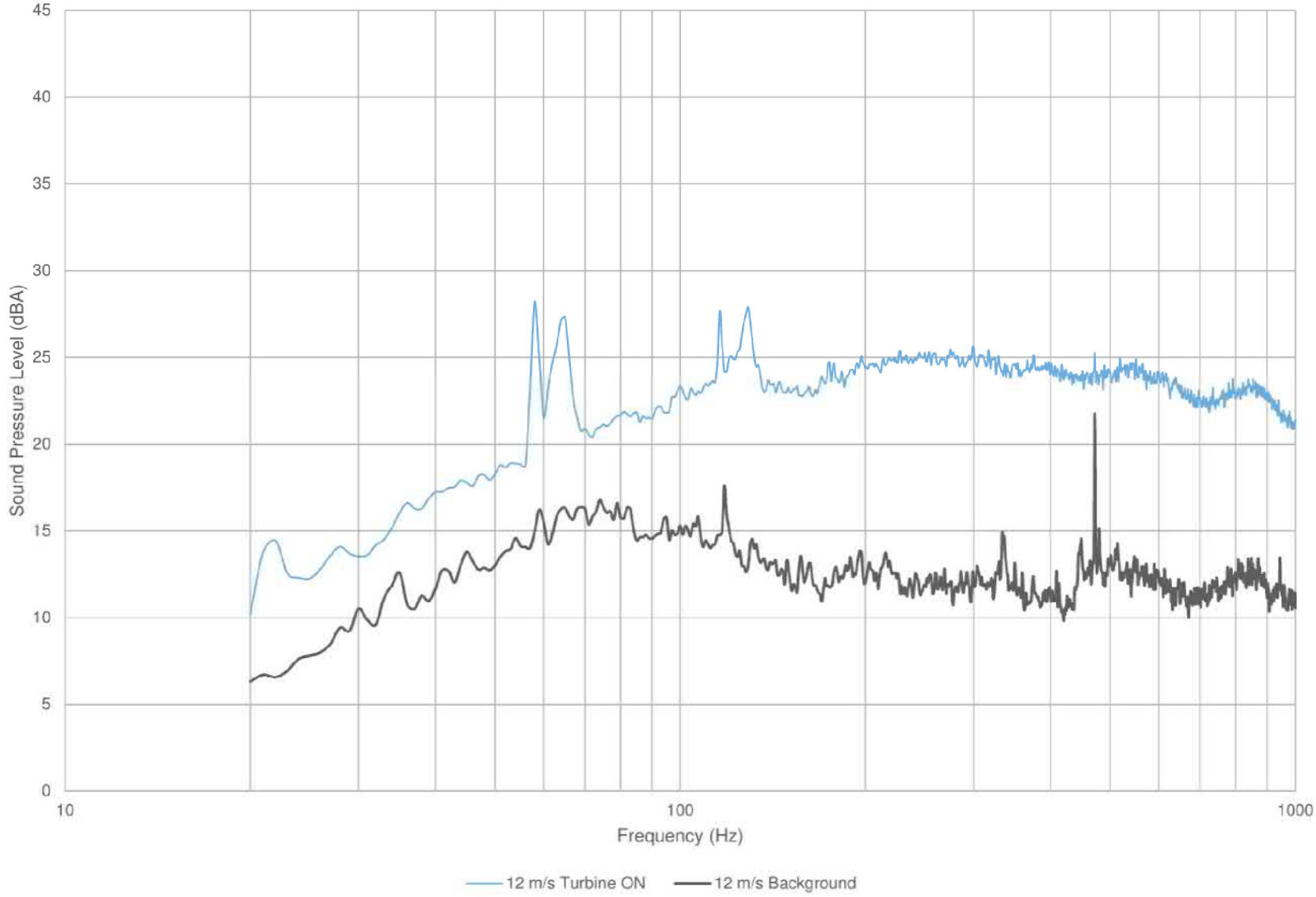
aercoustics	17095.01.T40.RP1	**Project Name**
	Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40
		Figure Title Plot of narrow band spectra - Turbine ON vs. Background at 10.5 m/s
		Figure D.08



aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 11.0 m/s **Figure D.09**



aercoustics	17095.01.T40.RP1	**Project Name**
	Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40
		Figure Title Plot of narrow band spectra - Turbine ON vs. Background at 11.5 m/s
		Figure D.10



aercoustics	17095.01.T40.RP1 Scale: NTS Drawn by: AED Reviewed by: MAD Date: Nov 2018 Revision: 1	**Project Name** Belle River Wind Power Project - IEC 61400-11 Edition 3.0 - Turbine T40 **Figure Title** Plot of narrow band spectra - Turbine ON vs. Background at 12.0 m/s **Figure D.11**

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Appendix E
Measurement Data

Table E.01 Measurement data - Turbine ON

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

Created on: 11/14/2018

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
1			0	187.0	-0.1	0.0	0.0	0.0	6.2	-5.5	79500.3	31
2			1417	187.0	197.8	1.1	11.7	7.5	8.4	24.5	98938.9	61
3			1624	187.0	197.8	-0.1	11.7	8.0	8.0	24.5	98922.4	61
4			1570	187.0	197.8	-0.6	11.6	8.5	8.4	24.5	98922.4	61
5			1522	187.0	197.8	-0.8	11.6	8.9	7.9	24.5	98922.3	61
6			1569	187.0	197.8	-0.6	11.6	8.6	8.3	24.5	98922.2	61
7			1637	187.0	197.8	-0.4	11.6	8.5	7.7	24.5	98922.1	61
8			1633	187.0	196.6	-0.5	11.6	9.0	7.8	24.5	98932.3	61
9			1710	187.0	195.8	-0.3	11.6	8.8	7.0	24.5	98949.0	61
10			1760	187.0	195.8	-0.1	11.6	9.1	6.0	24.5	98949.0	61
11			1770	187.0	195.8	0.0	11.6	9.5	5.9	24.5	98949.2	61
12			1665	187.0	195.8	-0.4	11.6	8.4	6.0	24.5	98949.0	61
13			1631	187.0	195.8	-0.5	11.6	9.3	6.7	24.5	98949.0	61
14			1685	187.0	195.8	-0.3	11.6	8.7	6.0	24.5	98938.4	61
15			1676	187.0	195.8	-0.4	11.6	8.2	7.0	24.4	98921.8	61
16			1766	187.0	195.8	-0.1	11.6	9.6	6.3	24.4	98922.0	61
17			1991	187.0	195.8	0.7	11.7	9.7	7.0	24.4	98922.0	61
18			1973	187.0	195.8	0.6	11.6	10.4	5.6	24.4	98922.1	61
19			1949	187.0	195.8	0.6	11.6	10.1	4.8	24.4	98922.0	61
20			1910	187.0	195.8	0.4	11.6	10.2	5.3	24.4	98922.1	62
21			1930	187.0	195.8	0.5	11.6	9.4	5.8	24.4	98922.1	63
22			1852	187.0	195.8	0.2	11.6	10.3	6.5	24.4	98922.2	63
23			1855	187.0	195.8	0.3	11.6	10.1	6.3	24.4	98922.2	63
24			1899	187.0	195.8	0.6	11.6	9.1	6.9	24.4	98922.4	63
25			1854	187.0	195.8	0.2	11.6	9.0	7.5	24.4	98922.3	63
26			1746	187.0	195.8	-0.1	11.6	8.9	8.2	24.4	98925.0	63
27			1730	187.0	195.8	-0.2	11.6	9.3	7.2	24.4	98922.3	62
28			1835	187.0	195.8	0.4	11.7	10.2	7.0	24.4	98922.5	62
29			1697	187.0	195.8	-0.2	11.6	10.1	7.4	24.4	98922.6	62
30			1762	187.0	195.8	0.1	11.6	9.0	6.9	24.4	98927.8	62
31			1807	187.0	195.8	0.1	11.6	9.2	6.9	24.4	98922.6	62
32			1819	187.0	195.8	0.2	11.6	9.6	5.3	24.4	98922.3	62
33			1980	187.0	195.8	1.0	11.6	10.0	6.2	24.4	98922.4	62
34			2089	187.0	195.8	1.1	11.6	9.7	7.7	24.4	98922.5	62
35			1993	187.0	195.8	0.8	11.5	10.5	6.4	24.4	98922.5	62
36			1964	187.0	195.8	0.8	11.5	9.9	6.6	24.4	98925.2	61
37			1965	187.0	195.8	0.7	11.6	9.8	5.8	24.4	98922.5	61
38			2138	187.0	195.8	1.2	11.6	10.6	5.9	24.4	98922.5	61
39			2164	187.0	195.8	1.3	11.5	10.7	4.9	24.4	98923.5	61
40			2091	187.0	198.3	1.1	11.5	10.1	6.9	24.4	98922.5	61
41			2135	187.0	198.3	1.1	11.5	10.5	6.5	24.4	98922.8	62
42			2137	187.0	198.3	1.2	11.5	10.8	6.1	24.4	98923.0	63
43			2001	187.0	198.3	0.8	11.5	9.7	5.7	24.4	98922.9	63
44			1874	187.0	198.3	0.5	11.5	9.8	5.5	24.4	98922.7	63
45			1770	187.0	198.3	0.1	11.5	9.4	6.5	24.4	98922.6	63
46			1780	187.0	198.3	0.1	11.5	8.8	7.2	24.4	98923.5	63
47			1791	187.0	198.3	0.2	11.6	9.2	7.4	24.4	98923.1	62
48			1773	187.0	198.3	0.1	11.6	9.5	7.0	24.4	98922.7	62
49			1771	187.0	198.3	0.1	11.5	8.9	8.3	24.4	98922.5	62
50			1662	187.0	198.3	-0.3	11.5	8.1	8.5	24.4	98922.7	62
51			1691	187.0	198.3	-0.3	11.6	9.1	7.7	24.4	98923.0	62
52			1595	187.0	198.3	-0.4	11.5	8.6	7.1	24.4	98922.9	62
53			1686	187.0	198.3	-0.2	11.6	9.4	6.9	24.4	98922.9	62
54			1851	187.0	198.3	0.4	11.6	10.4	6.1	24.4	98923.0	62
55			1775	187.0	199.9	0.1	11.6	9.9	5.0	24.4	98923.0	62
56			1684	187.0	201.1	-0.2	11.5	9.4	5.9	24.4	98923.6	62
57			1666	187.0	201.1	-0.4	11.6	9.2	6.2	24.4	98923.6	62
58			1451	187.0	201.1	-0.9	11.5	8.1	4.5	24.4	98923.3	62
59			1361	187.0	201.1	-1.3	11.6	7.2	5.0	24.4	98922.9	63
60			1345	187.0	201.1	-1.3	11.6	7.2	5.7	24.4	98922.8	63
61			1152	187.0	201.1	-1.7	11.5	6.5	4.6	24.4	98922.4	63
62			948	187.0	201.1	-1.8	11.3	5.8	4.9	24.4	98922.7	63
63			804	187.0	200.1	-1.8	10.8	6.0	4.0	24.4	98922.6	63
64			857	187.0	199.2	-1.8	11.0	8.5	4.2	24.4	98922.6	63
65			1106	187.0	199.3	-1.6	11.6	8.9	3.5	24.4	98908.5	64
66			1445	187.0	199.3	-1.0	11.7	9.1	4.2	24.4	98898.5	64
67			1146	187.0	199.3	-1.7	11.5	6.9	5.2	24.4	98898.5	64
68			1014	187.0	199.3	-1.8	11.5	7.7	5.5	24.4	98898.6	64
69			986	187.0	199.3	-1.8	11.4	6.8	5.4	24.4	98898.7	64
70			914	187.0	199.3	-1.8	11.2	6.7	5.2	24.4	98898.6	64
71			900	187.0	199.3	-1.8	11.1	7.3	5.0	24.4	98899.2	64
72			1112	187.0	199.3	-1.6	11.6	7.7	4.7	24.4	98899.0	64
73			1118	187.0	199.3	-1.9	11.6	7.6	4.6	24.4	98898.8	64
74			1017	187.0	199.3	-2.1	11.6	6.8	4.3	24.4	98898.4	64
75			985	187.0	199.3	-2.1	11.5	7.4	4.5	24.4	98898.4	64
76			919	187.0	199.2	-2.1	11.2	7.9	3.7	24.4	98898.5	64
77			858	187.0	199.2	-2.1	11.0	6.9	4.3	24.4	98898.5	65
78			928	187.0	199.3	-1.9	11.3	6.7	5.9	24.4	98898.5	66
79			1193	187.0	199.2	-1.5	11.7	7.3	5.1	24.4	98898.6	66
80			1205	187.0	197.0	-1.7	11.6	6.9	5.1	24.4	98898.5	66
81			1090	187.0	197.0	-1.8	11.6	7.9	4.9	24.4	98898.7	66
82			1019	187.0	197.1	-1.8	11.6	7.4	4.3	24.4	98899.1	65
83			1086	187.0	197.1	-1.7	11.6	7.8	4.3	24.4	98898.8	65
84			1484	187.0	197.1	-1.0	11.7	10.0	4.0	24.4	98898.7	65
85			1498	187.0	197.1	-0.8	11.6	9.8	5.1	24.4	98898.8	65
86			1337	187.0	197.5	-1.3	11.6	9.0	5.5	24.4	98899.5	65
87			1368	187.0	199.4	-1.2	11.6	8.7	5.3	24.4	98899.6	65
88			1166	187.0	199.4	-1.7	11.5	7.5	5.9	24.4	98899.7	64

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
89			1081	187.0	199.4	-1.8	11.6	7.2	5.3	24.4	98899.8	63
90			1107	187.0	199.4	-1.8	11.6	7.9	5.3	24.4	98899.3	63
91			1271	187.0	199.4	-1.5	11.7	8.1	5.5	24.4	98899.3	63
92			1244	187.0	199.4	-1.6	11.6	7.1	5.4	24.4	98899.0	63
93			1070	187.0	199.3	-1.8	11.5	7.0	4.6	24.4	98898.9	63
94			982	187.0	199.3	-1.8	11.4	6.7	4.9	24.4	98898.7	63
95			999	187.0	199.3	-1.8	11.5	8.1	5.6	24.4	98898.9	63
96			1048	187.0	199.3	-1.6	11.6	7.0	5.6	24.4	98899.0	63
97			966	187.0	199.3	-1.5	11.4	6.2	5.1	24.4	98898.8	63
98			888	187.0	199.3	-1.5	11.1	6.2	6.6	24.4	98899.0	63
99			844	187.0	199.3	-1.5	10.9	7.5	6.4	24.4	98898.8	63
100			892	187.0	199.3	-1.5	11.1	8.3	6.8	24.4	98899.0	63
101			1080	187.0	200.5	-1.4	11.6	8.1	5.3	24.4	98899.0	62
102			1013	187.0	201.6	-1.8	11.5	8.7	4.2	24.4	98898.9	62
103			908	187.0	201.6	-2.1	11.1	7.3	4.9	24.4	98899.0	62
104			803	187.0	203.2	-2.1	10.8	7.0	5.1	24.4	98899.5	62
105			839	187.0	204.0	-2.1	10.9	6.6	4.7	24.4	98899.6	62
106			838	187.0	204.0	-2.1	10.9	7.0	4.4	24.4	98899.4	63
107			783	187.0	204.0	-2.1	10.6	7.0	4.5	24.4	98899.4	63
108			701	187.0	204.1	-1.7	10.2	5.5	4.3	24.4	98899.1	63
109			625	187.0	203.4	-1.5	9.9	5.3	4.1	24.4	98899.0	63
110			638	187.0	201.1	-1.5	9.9	5.9	4.0	24.4	98898.7	63
111			703	187.0	199.0	-1.5	10.3	6.3	4.5	24.4	98898.9	63
112			754	187.0	197.3	-1.5	10.5	6.1	6.2	24.4	98898.9	63
113			779	187.0	197.3	-1.5	10.6	6.5	6.0	24.4	98899.2	63
114			777	187.0	195.7	-1.8	10.7	6.7	4.7	24.4	98899.3	63
115			876	187.0	194.4	-2.1	11.0	7.1	5.3	24.4	98899.5	63
116			867	187.0	194.4	-2.1	11.0	6.4	5.9	24.4	98899.3	63
117			860	187.0	194.4	-2.1	11.0	6.8	5.6	24.4	98899.5	63
118			838	187.0	192.5	-2.1	10.9	5.7	6.8	24.4	98899.4	63
119			821	187.0	191.8	-2.1	10.8	5.8	6.1	24.4	98899.2	63
120			772	187.0	191.8	-1.5	10.6	5.9	5.5	24.4	98899.3	63
121			769	187.0	191.8	-1.5	10.5	6.6	4.8	24.4	98899.3	63
122			765	187.0	191.8	-1.5	10.5	6.9	5.2	24.4	98899.3	63
123			872	187.0	191.8	-1.5	11.1	6.9	6.3	24.4	98899.4	63
124			1172	187.0	191.8	-1.1	11.6	7.7	5.8	24.4	98899.5	63
125			1296	187.0	191.8	-1.3	11.6	7.4	5.3	24.4	98899.6	63
126			1130	187.0	191.8	-1.8	11.6	6.8	4.9	24.4	98899.3	63
127			1163	187.0	191.7	-1.8	11.6	7.3	4.9	24.4	98898.9	63
128			1119	187.0	189.5	-1.8	11.6	6.6	4.5	24.4	98898.8	63
129			999	187.0	189.3	-1.8	11.5	6.3	5.2	24.4	98899.2	63
130			911	187.0	189.4	-1.8	11.2	6.4	5.9	24.4	98899.3	63
131			866	187.0	189.3	-1.9	11.0	6.2	5.7	24.4	98899.0	63
132			883	187.0	189.4	-2.1	11.1	7.0	6.1	24.4	98899.1	63
133			848	187.0	189.4	-2.1	10.9	6.4	7.1	24.4	98899.2	63
134			796	187.0	189.4	-2.1	10.7	6.3	6.4	24.4	98899.0	63
135			729	187.0	189.4	-2.1	10.4	5.9	6.6	24.4	98899.1	63
136			670	187.0	189.4	-2.1	10.1	5.7	5.8	24.4	98899.2	62
137			623	187.0	189.4	-1.8	9.9	5.9	5.8	24.4	98899.0	62
138			602	187.0	189.4	-1.5	9.7	5.9	5.6	24.4	98899.3	62
139			568	187.0	189.4	-1.5	9.5	6.7	5.3	24.4	98899.3	62
140			584	187.0	189.4	-1.5	9.6	6.6	5.0	24.4	98899.0	62
141			606	187.0	189.4	-1.5	9.7	6.0	4.2	24.4	98899.2	63
142			671	187.0	189.4	-1.5	10.1	6.1	5.1	24.4	98899.0	64
143			645	187.0	190.5	-1.7	10.0	6.1	5.5	24.4	98899.3	64
144			688	187.0	192.3	-2.1	10.2	6.9	5.7	24.4	98899.2	64
145			693	187.0	192.3	-2.1	10.2	6.7	5.4	24.4	98899.0	64
146			634	187.0	192.3	-2.1	9.9	6.5	4.6	24.4	98899.1	64
147			607	187.0	192.3	-2.1	9.8	6.1	4.8	24.4	98899.0	64
148			563	187.0	192.3	-2.1	9.5	5.9	4.7	24.4	98898.7	64
149			523	187.0	192.6	-1.8	9.3	6.7	4.6	24.4	98899.4	64
150			529	187.0	195.2	-1.5	9.3	6.9	4.7	24.4	98900.1	64
151			529	187.0	195.3	-1.5	9.2	6.3	3.9	24.4	98899.8	64
152			539	187.0	196.8	-1.5	9.4	5.9	3.8	24.4	98899.3	64
153			552	187.0	197.6	-1.5	9.4	5.5	3.6	24.4	98899.1	64
154			529	187.0	197.6	-1.5	9.2	5.3	4.1	24.4	98899.3	64
155			472	187.0	196.6	-1.7	9.0	5.5	4.7	24.4	98899.3	64
156			444	187.0	194.2	-2.1	8.7	5.7	4.1	24.4	98899.1	64
157			411	187.0	194.2	-2.1	8.5	5.6	3.9	24.4	98899.2	64
158			399	187.0	194.2	-2.1	8.5	5.5	3.7	24.4	98899.1	64
159			425	187.0	194.2	-2.1	8.6	6.4	3.3	24.4	98899.1	65
160			480	187.0	194.2	-1.8	9.0	5.2	3.0	24.4	98898.5	66
161			452	187.0	194.2	-1.5	8.8	5.8	3.6	24.4	98898.6	66
162			439	187.0	194.2	-1.5	8.7	5.7	3.4	24.4	98898.4	66
163			450	187.0	194.2	-1.5	8.8	6.0	3.5	24.4	98898.6	66
164			448	187.0	194.2	-1.5	8.7	5.4	3.5	24.5	98899.8	66
165			414	187.0	194.2	-1.5	8.5	5.1	4.1	24.5	98899.8	66
166			407	187.0	194.2	-1.7	8.5	5.9	4.4	24.5	98899.2	66
167			427	187.0	194.2	-2.1	8.6	5.8	4.4	24.5	98899.3	66
168			441	187.0	193.6	-2.1	8.8	5.4	4.6	24.5	98899.5	66
169			521	187.0	191.6	-2.1	9.2	6.0	3.8	24.5	98899.4	66
170			654	187.0	191.5	-2.1	10.1	6.4	3.2	24.5	98886.5	65
171			776	187.0	189.0	-2.1	10.6	6.4	3.3	24.5	98873.0	65
172			832	187.0	188.2	-1.8	10.9	7.1	3.2	24.5	98872.9	65
173			833	187.0	186.0	-1.5	10.9	6.4	4.6	24.5	98873.1	65
174			750	187.0	185.9	-1.5	10.4	6.6	5.0	24.5	98875.1	65
175			700	187.0	185.9	-1.5	10.2	7.5	3.8	24.5	98873.9	65
176			651	187.0	185.9	-1.5	10.0	6.8	4.2	24.5	98873.8	64

Table E.01 Measurement data - Turbine ON

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

Created on: 11/14/2018

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
177			622	187.0	185.9	-1.5	9.8	5.6	4.9	24.5	98873.7	64
178			654	187.0	185.9	-1.7	10.0	6.5	4.8	24.5	98873.5	64
179			701	187.0	185.9	-2.1	10.2	7.0	5.0	24.5	98873.7	64
180			677	187.0	185.9	-2.1	10.1	6.9	4.5	24.5	98874.0	64
181			671	187.0	186.4	-2.1	10.1	6.9	4.7	24.5	98873.4	64
182			750	187.0	188.6	-2.1	10.5	6.3	4.8	24.5	98873.4	64
183			734	187.0	188.7	-2.1	10.4	5.6	5.6	24.5	98873.7	64
184			628	187.0	188.7	-1.9	9.8	5.9	5.9	24.5	98873.4	64
185			523	187.0	188.7	-1.5	9.2	5.7	5.5	24.5	98873.3	64
186			450	187.0	188.7	-1.5	8.7	5.7	4.1	24.5	98873.3	64
187			425	187.0	188.2	-1.5	8.7	5.4	3.9	24.5	98874.4	64
188			476	187.0	185.4	-1.5	9.0	6.5	4.6	24.5	98874.2	64
189			621	187.0	185.3	-1.5	9.8	7.3	4.3	24.5	98873.7	63
190			779	187.0	185.3	-1.7	10.6	7.2	5.2	24.5	98873.8	63
191			861	187.0	183.2	-2.1	11.0	8.1	5.1	24.5	98873.2	63
192			913	187.0	182.7	-2.1	11.2	7.1	3.8	24.5	98873.0	63
193			979	187.0	182.7	-2.1	11.4	6.1	5.0	24.5	98873.5	63
194			1044	187.0	182.7	-2.1	11.6	7.6	5.3	24.5	98874.0	63
195			1017	187.0	182.7	-2.1	11.5	7.3	6.0	24.5	98873.9	63
196			926	187.0	182.7	-1.9	11.2	6.1	6.2	24.5	98874.1	63
197			970	187.0	182.7	-1.5	11.4	7.3	5.6	24.5	98874.1	63
198			1140	187.0	182.7	-1.4	11.6	7.4	4.8	24.5	98874.4	63
199			1136	187.0	182.7	-1.5	11.6	7.1	4.3	24.5	98873.8	63
200			1044	187.0	182.7	-1.5	11.6	7.1	4.9	24.5	98873.5	64
201			962	187.0	182.7	-1.6	11.3	6.8	5.4	24.5	98873.8	64
202			821	187.0	182.7	-2.1	10.8	6.4	4.3	24.5	98873.9	64
203			723	187.0	182.7	-2.1	10.3	6.0	6.2	24.5	98873.7	64
204			694	187.0	183.5	-2.1	10.2	6.4	6.5	24.5	98874.0	64
205			779	187.0	185.7	-2.1	10.6	6.1	5.4	24.5	98873.7	64
206			854	187.0	186.2	-2.1	11.0	8.1	7.2	24.5	98873.8	64
207			1109	187.0	188.6	-1.7	11.6	8.1	6.3	24.5	98873.6	64
208			1272	187.0	188.6	-1.5	11.6	8.6	6.6	24.5	98873.5	64
209			1198	187.0	190.8	-1.7	11.6	7.9	6.6	24.5	98873.9	64
210			1158	187.0	191.5	-1.8	11.6	6.7	5.5	24.5	98873.9	64
211			1130	187.0	191.5	-1.8	11.6	6.2	5.0	24.5	98874.4	63
212			1007	187.0	191.5	-1.8	11.5	6.4	4.9	24.5	98873.7	62
213			964	187.0	191.5	-1.7	11.4	7.2	5.4	24.5	98876.7	62
214			930	187.0	191.5	-1.5	11.2	6.9	4.9	24.5	98873.9	62
215			865	187.0	191.5	-1.5	11.0	6.6	4.6	24.5	98873.5	62
216			784	187.0	191.5	-1.5	10.6	6.3	4.7	24.5	98873.6	62
217			685	187.0	191.5	-1.5	10.2	6.2	4.0	24.5	98873.9	63
218			678	187.0	191.5	-1.5	10.1	5.9	4.1	24.5	98873.8	64
219			705	187.0	191.5	-1.6	10.2	5.9	4.3	24.5	98873.7	64
220			664	187.0	191.5	-2.1	10.1	5.6	5.1	24.5	98876.2	64
221			615	187.0	191.5	-2.1	9.8	5.2	4.4	24.5	98874.2	64
222			598	187.0	189.1	-2.1	9.7	6.1	3.9	24.5	98874.6	64
223			614	187.0	188.9	-2.1	9.8	6.0	3.4	24.5	98874.0	64
224			559	187.0	188.9	-2.1	9.4	5.5	4.1	24.6	98875.6	65
225			463	187.0	188.9	-2.0	8.8	5.1	4.9	24.6	98873.7	65
226			384	187.0	190.8	-1.5	8.4	6.1	4.9	24.6	98873.6	65
227			400	187.0	191.8	-1.5	8.5	6.1	5.2	24.6	98873.5	65
228			413	187.0	191.8	-1.5	8.5	6.0	5.4	24.6	98873.7	65
229			427	187.0	191.8	-1.5	8.6	6.2	5.2	24.6	98873.8	64
230			486	187.0	191.8	-1.5	9.0	5.6	5.0	24.6	98873.6	62
231			481	187.0	191.8	-1.6	8.9	5.5	4.3	24.6	98874.7	62
232			473	187.0	191.8	-2.1	8.9	5.7	4.2	24.6	98874.6	62
233			477	187.0	191.8	-2.1	8.9	6.2	4.5	24.6	98873.6	62
234			455	187.0	191.8	-2.1	8.8	6.0	4.0	24.6	98873.5	62
235			389	187.0	191.9	-2.1	8.4	4.8	5.3	24.6	98873.9	62
236			368	187.0	191.9	-2.1	8.2	6.0	4.8	24.6	98874.1	63
237			410	187.0	192.2	-2.0	8.6	6.5	5.6	24.6	98873.9	63
238			469	187.0	194.5	-1.5	8.9	6.5	5.4	24.6	98873.8	63
239			487	187.0	194.5	-1.5	9.0	5.6	5.5	24.6	98873.7	63
240			350	187.0	194.5	-1.5	8.1	4.9	5.2	24.6	98873.1	63
241			272	187.0	194.5	-1.5	7.6	5.0	5.9	24.6	98873.4	63
242			305	187.0	194.5	-1.5	7.8	5.6	6.8	24.6	98873.1	63
243			323	187.0	194.5	-2.1	7.9	5.0	5.7	24.6	98873.2	63
244			298	187.0	194.5	-2.1	7.7	5.8	5.8	24.6	98873.4	63
245			297	187.0	194.5	-2.1	7.7	5.6	7.3	24.6	98873.7	63
246			325	187.0	194.5	-2.1	7.9	5.3	7.1	24.6	98873.7	63
247			340	187.0	194.5	-2.1	8.0	4.9	6.2	24.6	98873.5	61
248	5.2	46.3	413	187.0	195.5	-1.5	8.6	6.8	2.8	25.9	98766.0	60
249	5.4	46.4	461	187.0	196.3	-2.1	8.9	6.0	2.5	25.9	98765.8	60
250	5.5	46.6	480	187.0	196.3	-2.1	9.0	5.8	3.7	25.9	98765.9	60
251	5.4	46.9	463	187.0	196.3	-2.1	8.9	6.5	3.7	25.9	98766.0	60
252	5.3	46.0	432	187.0	196.3	-2.1	8.7	6.1	3.5	25.9	98766.0	59
253	5.3	46.2	438	187.0	196.4	-2.1	8.7	6.2	2.8	25.9	98765.9	59
254			432	187.0	196.4	-2.0	8.7	5.8	3.2	25.9	98765.9	59
255			417	187.0	196.4	-1.5	8.6	6.1	4.6	25.9	98766.0	59
256			404	187.0	196.4	-1.5	8.5	5.5	4.7	25.9	98766.0	59
257			362	187.0	196.4	-1.5	8.2	5.5	5.1	25.9	98765.6	59
258			351	187.0	196.2	-1.5	8.2	5.7	5.0	25.9	98765.7	59
259			373	187.0	193.0	-1.5	8.3	5.7	5.8	26.0	98765.8	59
260			399	187.0	191.8	-1.5	8.5	5.0	5.9	26.0	98766.1	59
261	5.4	48.6	456	187.0	190.0	-2.1	8.9	6.4	5.5	26.0	98766.4	59
262	5.9	49.1	580	187.0	189.9	-2.1	9.6	7.0	5.3	26.0	98767.2	59
263			686	187.0	189.9	-2.1	10.2	6.4	6.5	26.0	98767.5	59
264	6.5	49.9	809	187.0	189.9	-2.1	10.8	7.3	6.6	26.0	98766.9	59

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
265	6.6	49.9	850	187.0	189.9	-2.1	11.0	6.6	5.8	26.0	98766.9	58
266			865	187.0	189.9	-2.0	11.0	6.3	8.1	29.2	98767.2	69
267			884	187.0	189.9	-1.5	11.1	6.8	7.4	26.0	98767.2	58
268	7.2	51.0	1072	187.0	189.9	-1.1	11.6	7.9	6.8	26.0	98766.8	58
269	8.0	51.5	1436	187.0	189.5	-0.7	11.7	8.0	5.4	26.0	98766.7	58
270	8.2	50.7	1514	187.0	187.2	-0.5	11.6	8.4	4.9	26.0	98766.9	58
271			1263	187.0	187.1	-1.2	11.5	8.4	5.7	26.0	98766.7	58
272	7.1	50.3	1019	187.0	187.1	-1.5	11.5	6.9	5.7	26.0	98766.8	58
273	7.1	51.3	1049	187.0	187.2	-1.7	11.6	7.0	5.4	26.0	98766.8	58
274	7.8	51.6	1351	187.0	187.2	-1.3	11.7	8.9	5.3	26.0	98766.6	58
275	7.7	51.4	1328	187.0	187.2	-1.3	11.6	8.9	6.2	26.0	98766.8	58
276	7.7	51.5	1317	187.0	187.2	-1.4	11.6	8.2	7.1	26.0	98766.7	58
277	7.5	51.6	1211	187.0	188.0	-1.6	11.6	8.0	7.3	26.0	98766.6	58
278	7.8	51.3	1352	187.0	189.9	-1.3	11.6	8.4	7.0	26.0	98766.5	58
279	7.6	51.7	1252	187.0	190.0	-1.6	11.6	7.1	6.3	26.0	98766.6	58
280	8.1	51.3	1484	187.0	190.0	-0.9	11.7	7.8	6.5	26.0	98766.7	58
281	8.2	52.3	1525	187.0	190.0	-0.8	11.6	8.5	5.8	26.0	98766.7	58
282	8.4	51.9	1627	187.0	190.0	-0.5	11.7	9.0	4.6	26.0	98766.9	58
283			1652	187.0	190.0	-0.4	11.6	9.0	5.7	26.0	98766.8	58
284	8.6	52.0	1694	187.0	190.0	-0.3	11.6	7.8	6.3	26.0	98766.4	57
285	8.5	51.3	1693	187.0	190.0	-0.3	11.6	8.4	5.2	26.0	98766.5	57
286	8.5	51.8	1691	187.0	189.2	-0.5	11.6	8.3	5.5	26.0	98766.7	57
287	8.7	51.5	1748	187.0	187.7	-0.4	11.6	8.7	5.7	26.0	98766.6	57
288	8.6	51.2	1697	187.0	187.7	-0.6	11.6	8.6	6.0	26.0	98766.3	57
289	8.4	51.4	1629	187.0	187.7	-0.8	11.6	8.1	5.6	26.0	98766.4	57
290	8.0	50.9	1445	187.0	187.7	-1.3	11.5	8.2	5.5	26.0	98766.8	57
291	7.9	51.4	1386	187.0	187.7	-1.5	11.6	7.2	6.5	26.0	98766.9	57
292	7.7	50.9	1289	187.0	187.7	-1.5	11.5	7.2	7.2	26.0	98766.8	57
293	7.5	51.6	1230	187.0	187.7	-1.6	11.6	7.8	6.7	26.0	98767.2	57
294	7.7	51.5	1314	187.0	187.7	-1.4	11.6	8.3	7.3	26.0	98767.0	57
295	8.0	51.0	1422	187.0	187.7	-1.1	11.6	7.1	6.8	26.0	98766.7	57
296	7.4	51.3	1178	187.0	187.7	-1.7	11.5	7.4	6.9	26.0	98766.5	57
297			1140	187.0	187.7	-1.8	11.6	6.4	5.2	26.0	98766.4	57
298			1185	187.0	187.7	-1.7	11.6	6.7	6.7	26.0	98766.6	57
299			1079	187.0	187.7	-1.8	11.6	7.2	6.4	26.0	98766.8	57
300	7.0	51.1	996	187.0	187.7	-1.8	11.5	6.4	5.3	26.0	98767.2	57
301	6.8	50.1	902	187.0	187.7	-1.8	11.2	6.4	4.8	26.0	98766.6	57
302	6.7	50.4	882	187.0	187.7	-1.8	11.1	6.6	5.3	26.0	98766.6	57
303	6.7	50.0	871	187.0	186.3	-1.8	11.1	6.5	5.1	26.0	98766.7	57
304	6.5	49.4	813	187.0	185.3	-1.6	10.8	6.1	4.2	26.0	98767.2	57
305	6.3	48.8	744	187.0	185.3	-1.5	10.5	7.0	4.5	26.0	98767.0	57
306	6.1	48.9	648	187.0	185.3	-1.5	10.0	6.1	4.6	26.0	98766.8	57
307			546	187.0	185.3	-1.5	9.4	6.3	4.7	26.0	98759.4	57
308			453	187.0	186.9	-1.5	8.9	5.9	5.0	25.9	98741.0	58
309			426	187.0	188.0	-1.5	8.6	6.9	6.1	25.9	98740.8	58
310			443	187.0	190.7	-2.0	8.8	6.3	6.3	25.9	98740.5	58
311	5.5	49.0	469	187.0	191.1	-2.1	8.9	6.5	5.6	25.9	98740.5	58
312	5.7	48.4	524	187.0	191.9	-2.1	9.3	7.3	5.2	25.9	98740.8	58
313	6.0	48.5	633	187.0	193.8	-2.1	9.9	7.1	5.3	25.9	98740.9	58
314	6.2	48.1	688	187.0	193.8	-2.1	10.2	6.2	5.1	25.9	98741.1	58
315	6.2	48.2	685	187.0	193.8	-2.1	10.2	6.5	5.2	25.9	98741.1	58
316	6.3	48.5	722	187.0	193.8	-1.6	10.4	6.4	5.5	25.9	98741.3	58
317	6.6	49.6	848	187.0	193.7	-1.5	11.0	7.3	5.5	25.9	98741.4	58
318	6.7	50.1	876	187.0	191.1	-1.5	11.1	6.5	5.6	25.9	98741.0	58
319			754	187.0	190.8	-1.5	10.5	6.2	5.5	25.9	98741.2	58
320			686	187.0	190.8	-1.5	10.2	6.3	5.1	25.9	98741.1	58
321			583	187.0	189.4	-1.5	9.7	5.9	5.1	25.9	98741.0	58
322			559	187.0	188.3	-2.0	9.5	5.6	4.9	25.9	98741.1	58
323			573	187.0	188.3	-2.1	9.6	5.4	4.6	25.9	98741.1	58
324	6.2	48.3	694	187.0	188.3	-2.1	10.2	6.2	6.2	25.9	98741.5	58
325	6.5	49.1	786	187.0	188.3	-2.1	10.7	5.6	5.8	25.9	98741.4	57
326	6.3	48.7	743	187.0	188.3	-2.1	10.4	5.6	4.6	25.9	98741.1	57
327			634	187.0	188.3	-1.7	9.9	5.4	5.1	25.9	98740.7	57
328	6.1	47.7	642	187.0	188.3	-1.5	10.0	5.8	5.7	25.9	98740.8	57
329			724	187.0	188.3	-1.5	10.4	6.0	5.3	25.9	98740.8	57
330			799	187.0	187.0	-1.5	10.8	6.1	4.8	25.9	98740.8	58
331			1008	187.0	185.9	-1.3	11.5	7.2	5.2	25.9	98741.1	59
332			1319	187.0	186.0	-0.9	11.7	8.0	5.7	25.9	98741.2	59
333			1293	187.0	184.3	-1.4	11.6	6.9	5.8	25.9	98741.0	59
334			1227	187.0	183.2	-1.6	11.6	7.1	5.4	25.9	98741.3	59
335			1113	187.0	183.2	-1.8	11.6	7.6	4.6	25.9	98741.1	59
336			1010	187.0	183.2	-1.8	11.6	7.2	5.1	25.9	98742.5	59
337			1122	187.0	183.2	-1.8	11.6	7.0	4.8	25.9	98742.0	60
338			1150	187.0	183.2	-1.8	11.6	7.0	4.8	25.9	98741.4	60
339			1115	187.0	183.2	-2.0	11.6	7.3	5.6	25.9	98741.4	60
340			1038	187.0	183.2	-2.1	11.6	6.6	5.3	25.9	98741.2	60
341			1009	187.0	182.7	-2.1	11.6	6.9	5.6	25.9	98741.2	60
342			1000	187.0	181.3	-2.1	11.5	6.9	4.6	25.9	98741.4	60
343			935	187.0	181.3	-2.1	11.3	6.1	6.6	26.0	98741.4	60
344			766	187.0	181.3	-2.1	10.5	5.8	5.3	26.0	98741.2	60
345			704	187.0	182.0	-1.7	10.4	5.9	5.5	26.0	98741.3	60
346			732	187.0	184.5	-1.5	10.4	6.1	4.9	26.0	98741.4	60
347			730	187.0	184.5	-1.5	10.4	5.7	5.4	26.0	98741.5	60
348			686	187.0	184.5	-1.5	10.2	5.2	5.1	26.0	98741.2	60
349			574	187.0	184.5	-1.5	9.6	5.1	5.3	26.0	98741.2	58
350			553	187.0	184.5	-1.5	9.4	5.9	5.9	26.0	98741.4	58
351			486	187.0	184.5	-1.9	9.0	4.9	5.9	26.0	98741.3	58
352			381	187.0	184.5	-2.1	8.3	4.9	5.3	26.0	98741.1	58

Table E.01 Measurement data - Turbine ON

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
353			303	187.0	184.6	-2.1	7.8	4.0	4.9	26.0	98741.3	58
354			333	187.0	187.3	-2.1	8.0	5.9	4.5	26.0	98741.1	58
355			374	187.0	187.5	-2.1	8.3	6.1	4.6	26.0	98741.3	58
356			446	187.0	187.5	-2.1	8.8	6.4	4.5	26.0	98741.5	58
357			483	187.0	187.5	-1.7	9.0	5.6	4.9	26.0	98741.3	58
358			518	187.0	187.2	-1.5	9.3	5.7	5.1	26.0	98741.2	58
359			548	187.0	184.7	-1.5	9.4	5.7	5.3	26.0	98741.2	58
360			580	187.0	184.6	-1.5	9.6	6.4	5.1	26.0	98739.1	59
361			627	187.0	183.1	-1.5	10.0	6.9	4.7	26.0	98714.4	60
362			707	187.0	181.4	-1.5	10.3	6.8	5.4	26.0	98716.4	60
363			761	187.0	178.9	-1.9	10.6	6.9	4.8	26.0	98714.6	60
364			807	187.0	178.7	-2.1	10.8	7.3	5.0	26.0	98715.7	60
365			816	187.0	178.7	-2.1	10.8	6.4	4.5	26.0	98714.7	60
366			857	187.0	178.7	-2.1	11.0	7.0	3.7	26.2	98714.5	59
367			909	187.0	178.7	-2.1	11.2	7.2	5.0	26.2	98714.5	59
368			864	187.0	178.7	-1.8	11.0	6.1	5.8	26.2	98714.7	59
369			847	187.0	178.7	-1.5	11.0	6.5	6.4	26.2	98714.8	59
370			815	187.0	178.7	-1.5	10.8	7.3	8.1	26.2	98715.0	59
371			688	187.0	178.7	-1.5	10.2	6.2	7.4	26.2	98714.9	59
372			601	187.0	178.7	-1.5	9.7	5.7	6.9	26.3	98714.9	57
373			554	187.0	178.7	-1.5	9.4	5.9	6.3	26.3	98715.0	57
374			565	187.0	178.7	-1.8	9.5	6.0	6.6	26.3	98714.8	57
375			581	187.0	179.5	-2.1	9.7	7.3	6.5	26.3	98714.7	57
376			678	187.0	181.4	-2.1	10.2	6.7	6.3	26.3	98714.4	57
377			800	187.0	181.3	-2.1	10.7	7.8	6.5	26.3	98714.5	57
378			770	187.0	181.4	-2.1	10.6	6.7	6.1	26.3	98714.3	56
379			707	187.0	181.4	-2.1	10.3	6.9	5.5	26.3	98714.6	56
380			605	187.0	181.4	-1.8	9.7	6.7	5.3	26.3	98714.5	56
381			490	187.0	183.5	-1.5	9.1	4.9	5.0	26.3	98714.4	56
382			403	187.0	186.0	-1.5	8.5	6.1	5.3	26.3	98714.6	56
383			332	187.0	186.0	-1.5	8.0	6.0	6.1	26.3	98714.5	57
384			346	187.0	188.2	-1.5	8.1	6.0	6.6	26.3	98714.5	59
385			430	187.0	188.4	-1.5	8.7	6.3	8.1	26.3	98714.6	59
386			404	187.0	189.9	-1.8	8.6	6.0	6.6	26.3	98714.7	59
387			384	187.0	190.8	-2.1	8.4	6.2	6.5	26.3	98714.6	59
388			406	187.0	190.8	-2.1	8.5	6.9	6.9	26.3	98714.7	59
389			462	187.0	190.8	-2.1	8.9	6.0	6.6	26.3	98714.6	59
390			496	187.0	190.8	-2.1	9.1	6.2	7.1	26.2	98714.8	57
391			495	187.0	190.8	-2.1	9.1	5.2	7.3	26.2	98714.7	57
392			488	187.0	190.8	-1.8	9.1	5.0	7.0	26.2	98714.6	57
393			594	187.0	188.4	-1.5	9.7	5.9	6.0	26.2	98714.8	57
394			851	187.0	187.7	-1.4	11.0	6.9	5.5	26.2	98715.0	57
395			1196	187.0	186.2	-0.8	11.7	6.6	5.8	26.2	98714.4	57
396			1357	187.0	184.7	-1.0	11.7	7.9	5.7	26.2	98714.5	57
397			1385	187.0	183.4	-0.9	11.6	7.9	6.2	26.2	98714.3	57
398			1328	187.0	182.3	-1.2	11.6	8.6	6.4	26.2	98714.8	57
399			1195	187.0	182.2	-1.7	11.6	7.7	6.2	26.2	98714.5	57
400	7.5	51.3	1209	187.0	182.2	-1.7	11.6	8.1	7.6	26.2	98714.6	57
401	7.6	51.2	1252	187.0	182.2	-1.6	11.6	8.2	7.2	26.2	98714.7	57
402			1342	187.0	182.2	-1.3	11.6	8.1	7.8	26.1	98715.2	57
403			1345	187.0	182.2	-1.3	11.6	8.1	6.7	26.1	98714.6	57
404			1638	187.0	182.3	-0.5	11.7	9.0	5.7	26.1	98715.0	57
405			1727	187.0	182.3	-0.2	11.6	9.2	7.7	26.1	98715.5	57
406			1786	187.0	182.3	0.0	11.6	8.6	6.1	26.1	98714.8	57
407			1922	187.0	182.3	0.4	11.7	9.8	6.0	26.0	98715.0	59
408			2051	187.0	182.3	1.0	11.7	9.9	5.6	26.0	98715.8	59
409			2059	187.0	181.1	1.0	11.6	9.2	6.3	26.0	98714.4	59
410			2067	187.0	179.7	1.0	11.5	9.7	5.8	26.0	98714.6	59
411	10.3	51.3	2164	187.0	179.7	1.3	11.5	10.7	5.5	26.0	98714.8	59
412	10.8	51.4	2229	187.0	179.7	1.6	11.5	11.2	6.1	26.0	98714.7	59
413	10.1	51.4	2181	187.0	179.7	1.4	11.5	10.5	6.8	26.0	98714.5	59
414	10.2	51.1	2097	187.0	179.7	1.1	11.5	10.6	7.7	26.0	98714.5	59
415	10.5	51.2	2103	187.0	179.7	1.1	11.5	10.9	5.9	26.0	98714.4	59
416			1950	187.0	179.7	0.7	11.5	9.0	6.2	26.0	98714.7	59
417			1841	187.0	179.7	0.3	11.5	8.8	7.5	26.0	98714.8	59
418			1860	187.0	179.8	0.4	11.5	8.8	8.6	26.0	98715.2	58
419			1855	187.0	179.8	0.3	11.6	8.7	7.1	25.9	98715.1	57
420			1889	187.0	177.8	0.6	11.5	9.5	6.4	25.9	98714.9	57
421			2021	187.0	177.4	1.0	11.6	10.1	7.6	25.9	98715.5	57
422			1988	187.0	177.4	0.8	11.6	9.8	6.9	25.9	98715.2	57
423			1923	187.0	177.4	0.5	11.6	9.5	8.0	25.9	98716.5	57
424			1978	187.0	177.4	0.9	11.6	10.0	8.1	25.9	98715.6	57
425			1937	187.0	177.4	0.7	11.5	9.7	7.4	25.9	98714.8	57
426			1919	187.0	178.8	0.5	11.5	9.0	6.3	25.9	98716.1	57
427	8.9	51.4	1831	187.0	179.6	0.3	11.5	9.7	5.7	25.9	98716.4	57
428			1721	187.0	179.6	-0.1	11.5	8.8	6.1	25.9	98714.8	57
429			1646	187.0	179.6	-0.4	11.5	8.7	5.8	25.9	98714.3	57
430			1593	187.0	179.7	-0.5	11.5	8.1	5.6	25.9	98709.9	57
431			1490	187.0	179.7	-0.9	11.6	8.4	5.4	25.9	98690.5	58
432			1411	187.0	179.7	-1.1	11.6	8.0	5.9	25.9	98690.4	58
433	7.7	50.9	1284	187.0	179.7	-1.5	11.6	8.1	5.7	25.9	98690.5	58
434	7.3	50.7	1111	187.0	179.7	-1.8	11.5	8.0	4.6	25.9	98690.5	58
435	7.0	50.7	1003	187.0	179.7	-1.8	11.5	7.1	5.4	25.9	98690.5	58
436	6.9	50.6	958	187.0	179.6	-1.8	11.4	7.0	5.0	25.9	98690.7	58
437	7.1	50.8	1055	187.0	179.7	-1.8	11.6	7.5	4.5	25.9	98690.5	58
438	7.2	51.1	1076	187.0	179.7	-1.8	11.6	7.8	4.5	25.9	98690.5	58
439			1154	187.0	179.7	-1.9	11.6	7.9	5.6	25.9	98690.7	58
440			1275	187.0	179.7	-1.8	11.7	8.0	5.5	25.9	98690.4	58

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
441			1360	187.0	179.7	-1.6	11.6	8.9	6.0	25.9	98690.3	58
442			1424	187.0	179.7	-1.4	11.6	8.0	7.0	25.9	98691.3	58
443			1401	187.0	179.7	-1.4	11.6	8.1	6.3	26.0	98690.5	58
444			1531	187.0	179.7	-0.9	11.6	8.6	6.2	26.0	98690.4	58
445			1370	187.0	179.7	-1.2	11.5	8.3	5.5	26.0	98690.3	58
446			1223	187.0	179.7	-1.6	11.5	8.0	6.0	26.0	98690.3	58
447			999	187.0	179.7	-1.8	11.4	7.7	5.6	26.0	98690.4	58
448			939	187.0	179.7	-1.8	11.3	7.1	6.7	26.0	98690.5	59
449			970	187.0	179.7	-1.8	11.4	7.4	6.1	26.0	98690.3	59
450			952	187.0	179.6	-1.8	11.4	7.2	5.8	26.0	98690.8	59
451			1056	187.0	179.6	-1.8	11.6	7.5	5.8	26.0	98690.7	59
452			1060	187.0	179.6	-1.8	11.6	7.2	5.8	26.0	98691.2	59
453			1020	187.0	179.6	-1.8	11.6	7.5	5.4	26.0	98690.8	58
454	7.4	51.0	1180	187.0	179.6	-1.7	11.7	7.7	5.8	26.0	98690.4	58
455	8.1	51.3	1501	187.0	179.6	-0.9	11.7	8.1	5.4	26.0	98690.2	58
456	8.4	51.3	1616	187.0	179.6	-0.5	11.7	8.5	6.7	26.0	98690.2	58
457	8.0	51.4	1426	187.0	179.7	-1.1	11.6	8.8	5.6	26.0	98690.7	58
458			1582	187.0	179.7	-0.7	11.7	9.1	5.2	26.0	98691.0	58
459			1647	187.0	179.7	-0.4	11.6	8.3	5.3	26.0	98690.9	58
460			1654	187.0	179.7	-0.4	11.6	8.2	6.2	26.0	98690.8	59
461			1737	187.0	179.7	-0.1	11.6	8.5	7.0	26.0	98690.7	59
462			1519	187.0	179.7	-0.8	11.5	8.3	6.2	26.0	98690.5	59
463			1579	187.0	179.7	-0.7	11.6	8.5	5.9	26.0	98690.5	59
464			1512	187.0	178.2	-0.8	11.6	8.4	6.5	26.0	98690.3	59
465			1591	187.0	177.3	-0.6	11.6	9.0	5.2	26.0	98690.4	59
466			1682	187.0	177.3	-0.4	11.7	8.4	5.8	26.0	98690.5	58
467	8.7	51.8	1763	187.0	177.3	-0.1	11.6	8.4	5.2	26.0	98690.7	58
468	8.8	51.4	1824	187.0	177.3	0.2	11.6	9.0	4.6	26.0	98690.9	58
469	8.5	51.0	1661	187.0	177.3	-0.4	11.5	8.4	5.4	26.0	98690.5	58
470	8.0	51.2	1456	187.0	177.3	-1.0	11.5	8.1	4.7	26.0	98690.2	58
471			1470	187.0	177.3	-0.9	11.6	8.0	6.5	26.0	98690.2	58
472			1400	187.0	177.3	-1.2	11.6	8.2	6.8	26.0	98690.1	58
473			1683	187.0	177.3	-0.4	11.7	9.1	7.7	26.0	98690.2	58
474			1807	187.0	177.3	0.3	11.7	8.9	6.8	26.0	98690.2	58
475			1692	187.0	177.3	-0.3	11.6	8.5	6.6	26.0	98690.1	58
476			1582	187.0	177.3	-0.6	11.6	8.1	5.0	26.0	98689.7	58
477			1585	187.0	177.3	-0.6	11.6	9.2	5.1	26.0	98690.3	58
478			1649	187.0	177.3	-0.5	11.6	8.9	5.7	26.0	98690.6	58
479			1540	187.0	177.3	-0.7	11.6	8.2	5.6	26.0	98690.3	58
480			1542	187.0	177.3	-0.8	11.6	8.8	6.5	26.0	98690.3	58
481			1591	187.0	177.3	-0.6	11.6	8.4	5.8	26.0	98690.5	58
482			1529	187.0	177.3	-0.8	11.6	8.2	6.6	26.0	98690.6	58
483			1690	187.0	177.3	-0.3	11.7	9.4	6.1	26.0	98690.4	58
484			1446	187.0	177.3	-1.0	11.5	8.1	5.5	26.0	98690.3	58
485			1323	187.0	175.2	-1.4	11.6	6.8	6.6	26.0	98690.6	58
486			1261	187.0	174.7	-1.5	11.6	8.0	5.8	26.0	98690.9	58
487	7.4	51.3	1177	187.0	174.7	-1.7	11.5	7.2	6.1	26.0	98691.0	58
488			1049	187.0	174.7	-1.8	11.6	7.4	7.0	26.0	98691.3	57
489			1105	187.0	174.7	2.2	11.4	7.6	6.6	26.0	98691.4	57
490			1328	187.0	183.7	3.6	11.2	8.5	6.0	25.9	98663.8	58
491			1458	187.0	183.7	1.7	11.3	8.1	6.2	25.9	98663.5	58
492			1346	187.0	183.7	0.2	11.5	8.4	5.8	25.9	98663.8	58
493			1410	187.0	182.2	-1.1	11.6	8.2	5.5	25.9	98663.7	58
494			1621	187.0	180.9	-0.5	11.7	8.0	6.0	25.9	98663.5	58
495	8.8	51.2	1790	187.0	180.8	0.0	11.7	9.1	6.7	25.9	98663.5	58
496	8.9	51.0	1836	187.0	180.8	0.2	11.6	9.3	7.1	25.9	98663.6	58
497	8.7	51.6	1750	187.0	179.1	-0.1	11.6	8.9	7.0	25.9	98663.6	58
498	8.8	51.5	1789	187.0	178.0	0.0	11.6	9.3	6.4	25.9	98663.5	58
499	8.5	51.2	1686	187.0	178.0	-0.3	11.6	8.6	6.3	25.9	98663.6	58
500	8.0	51.1	1453	187.0	178.0	-1.0	11.5	7.9	5.4	25.9	98663.8	58
501	8.0	51.1	1464	187.0	178.0	-1.0	11.6	8.1	4.1	25.9	98663.9	58
502	8.0	50.9	1449	187.0	178.0	-1.0	11.6	7.2	4.3	25.9	98663.8	58
503	7.8	51.4	1332	187.0	178.0	-1.3	11.6	7.9	5.5	25.9	98663.9	58
504	7.8	51.9	1369	187.0	177.9	-1.3	11.6	7.8	5.7	25.9	98663.9	58
505			1720	187.0	177.9	0.2	11.7	8.5	4.9	25.8	98663.8	60
506			2052	187.0	177.9	1.3	11.7	9.1	5.3	25.8	98663.7	60
507	10.1	51.5	2241	187.0	177.9	1.8	11.6	10.5	6.0	25.8	98663.8	60
508	9.4	51.2	2072	187.0	177.9	1.1	11.5	9.8	6.3	25.8	98663.8	60
509	8.9	51.3	1835	187.0	177.9	0.3	11.5	9.1	5.1	25.8	98663.7	60
510	8.3	51.4	1558	187.0	178.0	-0.6	11.5	9.2	5.1	25.8	98661.4	59
511	8.0	51.3	1453	187.0	177.9	-1.0	11.6	9.0	5.0	25.8	98638.4	59
512	8.4	51.7	1643	187.0	177.9	-0.5	11.7	8.9	5.2	25.8	98638.4	59
513	8.9	51.5	1846	187.0	177.9	0.6	11.7	9.2	6.4	25.8	98638.3	59
514	9.1	51.4	1930	187.0	178.0	0.7	11.6	9.9	6.3	25.8	98638.6	59
515	9.1	51.4	1924	187.0	178.0	0.7	11.6	10.3	6.2	25.8	98638.7	59
516	9.0	51.3	1905	187.0	178.0	0.5	11.5	9.8	6.7	25.8	98638.5	59
517	8.5	51.1	1673	187.0	178.0	-0.1	11.5	8.5	7.1	25.8	98638.7	58
518	8.7	51.4	1741	187.0	178.0	-0.1	11.6	8.8	6.7	25.8	98638.7	58
519	8.5	51.3	1681	187.0	178.0	-0.2	11.5	9.2	6.8	25.8	98638.8	58
520	8.7	51.6	1760	187.0	178.0	-0.1	11.6	9.0	6.3	25.8	98638.7	58
521	9.0	51.5	1890	187.0	178.0	0.3	11.7	9.1	5.6	25.8	98638.7	58
522	9.1	51.5	1932	187.0	178.0	0.6	11.6	9.0	5.4	25.8	98638.3	58
523	9.6	51.3	2206	187.0	178.0	1.7	11.6	10.0	5.0	25.8	98638.1	59
524			2204	187.0	178.0	1.4	11.5	9.6	4.3	25.8	98638.4	59
525	9.7	51.0	2287	187.0	178.0	1.7	11.5	10.1	4.1	25.8	98638.4	59
526	9.5	51.2	2065	187.0	178.0	1.0	11.4	9.9	4.0	25.8	98638.4	59
527	9.9	51.6	2093	187.0	177.4	1.2	11.5	10.3	5.0	25.8	98638.4	59
528	9.7	51.4	2156	187.0	175.3	1.3	11.5	10.0	5.1	25.8	98638.4	59

Table E.01 Measurement data - Turbine ON

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

Created on: 11/14/2018

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
529	9.7	51.5	2216	187.0	175.3	1.4	11.5	10.1	5.1	25.8	98638.5	59
530	9.1	51.5	1918	187.0	175.3	0.6	11.5	9.9	5.8	25.8	98638.6	59
531	9.0	52.2	1886	187.0	175.3	0.5	11.5	9.7	4.8	25.8	98638.7	59
532	9.0	52.5	1913	187.0	175.2	0.5	11.6	9.7	4.5	25.8	98638.8	59
533	9.3	51.8	2110	187.0	175.2	1.4	11.6	9.7	4.3	25.8	98638.8	60
534	9.0	51.4	1884	187.0	175.2	0.4	11.5	9.9	5.2	25.7	98638.6	60
535	8.8	51.4	1790	187.0	175.2	0.0	11.6	8.9	5.8	25.7	98638.6	60
536	8.5	51.2	1682	187.0	175.2	-0.3	11.5	9.4	6.6	25.7	98638.6	60
537	8.4	51.1	1639	187.0	175.3	-0.5	11.6	8.9	6.5	25.7	98638.8	60
538	8.1	51.3	1496	187.0	175.3	-0.9	11.5	7.2	5.7	25.7	98638.8	60
539	8.1	51.3	1477	187.0	175.3	-0.9	11.6	7.5	6.8	25.7	98638.9	60
540	7.9	51.9	1404	187.0	175.3	-1.1	11.6	7.4	7.2	25.7	98638.9	59
541			1388	187.0	175.3	-1.2	11.6	8.2	6.8	25.7	98638.7	59
542			1239	187.0	175.2	-1.6	11.6	7.8	5.4	25.7	98638.8	59
543			1385	187.0	175.2	-1.2	11.7	7.5	5.8	25.7	98638.4	59
544	8.4	52.9	1614	187.0	175.2	-0.6	11.7	8.4	5.3	25.7	98638.6	59
545	8.4	52.3	1643	187.0	175.3	-0.5	11.6	9.4	5.4	25.7	98638.7	59
546	8.3	52.2	1592	187.0	175.3	-0.6	11.6	8.6	4.8	25.7	98638.7	59
547	8.4	52.7	1636	187.0	175.3	-0.5	11.6	8.3	4.3	25.7	98638.7	59
548	7.9	52.9	1404	187.0	175.3	-1.1	11.6	8.3	4.1	25.7	98638.8	59
549	8.2	51.8	1550	187.0	175.3	-0.7	11.6	9.2	4.0	25.7	98638.7	60
550	10.2	50.8	2264	272.0	264.1	2.5	11.6	10.6	7.0	13.3	98554.5	68
551	10.2	51.1	2247	272.0	264.1	2.0	11.5	10.6	5.7	13.3	98576.9	67
552	9.7	50.3	2089	272.0	264.1	1.2	11.5	10.1	4.9	13.3	98576.6	67
553	10.0	50.7	2097	272.0	264.1	1.1	11.5	10.4	5.8	13.3	98577.4	67
554	9.6	50.8	2072	272.0	264.1	1.1	11.5	10.0	5.3	13.3	98577.3	67
555	8.8	51.6	1810	272.0	264.1	0.1	11.5	9.8	6.4	13.3	98577.2	67
556			2089	272.0	264.1	1.4	11.6	9.6	6.2	13.3	98575.9	67
557	10.1	51.3	2279	272.0	264.1	1.7	11.6	10.5	4.5	13.3	98575.9	67
558	10.3	51.3	2379	272.0	264.1	2.6	11.7	10.7	5.2	13.3	98576.3	67
559	10.6	52.2	2497	272.0	264.1	5.5	12.2	11.0	4.5	13.3	98576.0	67
560	11.0	51.2	2426	272.0	264.1	6.0	11.9	11.4	5.6	13.3	98575.8	67
561	10.7	51.3	2408	272.0	264.1	6.4	11.8	11.2	6.1	13.3	98575.8	67
562	11.1	50.7	2377	272.0	264.1	6.5	11.6	11.5	5.3	13.3	98575.8	67
563	12.0	51.1	2374	272.0	264.1	6.5	11.7	12.5	7.0	13.3	98576.2	67
564	11.7	51.0	2386	272.0	264.1	6.8	11.7	12.2	7.0	13.3	98576.3	67
565	11.7	50.7	2395	272.0	264.1	7.5	11.8	12.2	7.2	13.3	98576.5	67
566	11.0	50.2	2324	272.0	264.1	6.3	11.4	11.5	7.2	13.3	98576.5	67
567	11.2	50.4	2323	272.0	264.1	5.5	11.4	11.7	7.0	13.3	98576.4	67
568	10.3	49.7	2233	272.0	264.1	4.0	11.3	10.7	7.2	13.3	98576.8	67
569	9.2	50.0	1960	272.0	264.1	2.7	11.3	9.9	7.5	13.3	98576.4	67
570	9.2	50.6	1962	272.0	264.1	2.5	11.5	11.1	6.0	13.3	98576.4	67
571	10.4	51.2	2320	272.0	264.1	3.1	11.7	10.8	6.8	13.3	98576.5	67
572	11.1	50.9	2368	272.0	264.1	2.8	11.6	11.5	6.5	13.3	98576.4	67
573	10.3	50.9	2381	272.0	264.1	3.5	11.7	10.7	5.7	13.3	98575.8	67
574	10.2	50.6	2279	272.0	264.1	2.5	11.5	10.7	7.5	13.3	98575.6	67
575	9.9	50.8	2342	272.0	264.1	2.5	11.5	10.3	8.5	13.3	98575.8	66
576	9.9	50.6	2318	272.0	264.1	2.0	11.5	10.3	9.0	13.2	98575.8	66
577	10.6	51.6	2407	272.0	264.1	3.1	11.8	11.1	7.9	13.2	98575.8	66
578	10.6	51.8	2493	272.0	264.1	6.2	12.2	11.1	7.3	13.2	98575.8	66
579	9.9	51.0	2274	272.0	264.1	4.4	11.4	10.4	8.0	13.2	98575.8	66
580	8.9	51.5	1859	272.0	264.1	2.4	11.3	9.1	7.7	13.2	98575.8	66
581	8.7	51.2	1770	272.0	263.0	2.1	11.5	9.8	8.5	13.2	98575.5	66
582	8.6	50.6	1721	272.0	261.7	1.3	11.5	9.2	7.8	13.2	98575.7	66
583	8.8	50.8	1795	272.0	261.7	0.3	11.6	9.2	8.1	13.2	98574.7	66
584	8.6	50.8	1703	272.0	261.7	-0.2	11.6	8.8	7.2	13.2	98571.5	66
585	8.3	51.0	1573	272.0	261.7	-0.6	11.6	9.4	6.7	13.2	98569.5	66
586	8.5	50.9	1660	272.0	261.7	-0.4	11.6	8.9	7.3	13.2	98569.4	66
587	8.5	50.6	1671	272.0	261.7	-0.4	11.6	8.7	7.2	13.2	98568.8	66
588	8.6	51.3	1700	272.0	261.7	-0.2	11.6	8.4	7.3	13.2	98568.6	66
589	8.2	50.9	1514	272.0	261.6	-0.8	11.5	8.3	7.0	13.2	98568.4	66
590	8.7	51.3	1762	272.0	261.6	-0.1	11.7	8.9	6.6	13.2	98568.2	66
591	10.1	51.6	2040	272.0	261.6	1.5	11.7	10.6	6.5	13.2	98568.1	66
592	10.3	51.1	2075	272.0	261.7	1.4	11.5	10.7	7.7	13.2	98568.2	66
593	8.9	51.4	1867	272.0	261.7	0.4	11.5	10.1	6.5	13.2	98568.3	66
594	9.7	51.4	2058	272.0	261.6	1.1	11.6	10.1	6.1	13.2	98568.8	66
595	10.5	50.9	2334	272.0	261.6	1.9	11.6	11.0	6.2	13.2	98568.8	66
596	10.6	50.7	2275	272.0	261.6	1.8	11.5	11.0	6.2	13.2	98569.0	66
597	9.6	50.7	2170	272.0	261.7	1.4	11.5	10.0	4.9	13.2	98569.4	66
598	10.0	50.8	2180	272.0	261.7	1.3	11.5	10.4	5.9	13.2	98569.9	67
599	9.7	50.7	2180	272.0	261.7	1.3	11.5	10.1	6.1	13.2	98569.8	67
600			2085	272.0	261.7	1.0	11.5	9.5	7.1	13.2	98570.2	67
601	8.9	50.6	1844	272.0	261.6	0.3	11.5	9.7	6.8	13.2	98570.5	67
602	9.1	51.0	1923	272.0	261.6	0.6	11.6	9.1	6.9	13.2	98570.5	67
603	8.8	50.6	1806	272.0	261.6	0.3	11.5	9.2	6.7	13.2	98570.4	67
604	8.7	51.0	1782	272.0	261.6	0.0	11.6	9.1	5.7	13.2	98570.6	67
605	9.8	51.5	2052	272.0	261.6	1.1	11.6	10.2	5.6	13.2	98570.4	67
606	9.9	50.9	2130	272.0	261.6	1.4	11.5	10.3	5.5	13.2	98570.1	67
607	10.2	51.4	2185	272.0	261.7	1.4	11.6	10.7	6.5	13.2	98570.3	67
608	10.3	51.2	2400	272.0	261.7	3.0	11.8	10.7	6.0	13.2	98570.8	67
609	10.7	51.5	2444	272.0	261.7	4.9	12.0	11.2	8.2	13.2	98571.6	67
610	9.5	50.3	2085	272.0	261.7	3.0	11.4	9.9	6.9	13.2	98572.4	67
611			2095	272.0	261.6	2.7	11.5	9.5	6.5	13.2	98572.6	67
612	10.9	51.3	2319	272.0	261.6	3.0	11.6	11.3	6.2	13.2	98573.1	67
613	10.9	51.2	2427	272.0	261.6	4.5	11.9	11.3	7.8	13.2	98573.5	67
614	11.1	50.9	2421	272.0	261.7	5.5	11.9	11.5	8.4	13.2	98573.2	67
615	10.9	50.3	2338	272.0	261.7	4.5	11.5	11.4	6.3	13.2	98573.0	67
616	9.9	50.6	2115	272.0	261.7	3.3	11.4	10.3	8.0	13.2	98573.0	67

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
617	10.3	50.2	2207	272.0	261.7	3.2	11.5	10.7	7.8	13.2	98572.9	67
618	9.8	50.6	2196	272.0	261.7	2.8	11.5	10.2	7.1	13.2	98572.9	67
619	10.4	50.7	2354	272.0	261.7	2.9	11.6	10.8	6.4	13.2	98573.1	67
620	10.6	50.8	2201	272.0	261.7	1.9	11.4	11.0	6.9	13.2	98573.5	67
621	11.4	51.0	2294	272.0	261.6	1.8	11.5	11.9	7.3	13.2	98573.2	67
622	10.3	50.7	2289	272.0	261.6	1.7	11.5	10.7	6.7	13.2	98573.5	67
623	9.8	50.7	2254	272.0	261.6	1.7	11.5	10.2	6.3	13.2	98573.7	67
624	9.4	50.9	2259	272.0	261.6	1.7	11.5	9.8	7.9	13.2	98573.8	67
625	9.5	50.7	2048	272.0	261.6	1.0	11.4	9.9	7.5	13.2	98573.6	67
626	9.7	50.8	2166	272.0	261.6	1.4	11.6	10.1	6.3	13.2	98573.6	67
627			2153	272.0	261.6	1.4	11.5	9.2	5.6	13.2	98573.2	67
628			2245	272.0	261.6	1.6	11.5	9.6	7.1	13.2	98573.4	67
629	10.2	51.5	2376	272.0	261.6	2.4	11.7	10.6	6.8	13.2	98573.5	67
630			2001	272.0	261.6	0.8	11.5	9.2	7.5	13.2	98573.6	67
631	9.7	50.9	2228	272.0	261.6	1.5	11.6	10.1	6.9	13.2	98573.4	67
632	10.2	50.7	2049	272.0	261.6	1.1	11.5	10.6	7.1	13.2	98573.0	67
633	9.1	50.8	1922	272.0	261.6	0.6	11.5	9.7	6.4	13.2	98573.4	67
634	8.7	50.4	1741	272.0	261.6	0.1	11.5	8.7	5.9	13.2	98573.7	67
635	10.6	51.6	2231	272.0	261.6	1.8	11.7	11.0	6.1	13.2	98573.6	67
636	10.7	51.4	2274	272.0	261.6	2.6	11.6	11.1	4.8	13.2	98573.4	67
637	8.8	51.1	1830	272.0	261.7	0.6	11.4	9.7	5.3	13.2	98573.5	67
638	8.8	51.0	1801	272.0	261.6	0.2	11.6	9.4	5.6	13.2	98573.6	67
639	9.4	50.5	2145	272.0	261.6	1.7	11.6	9.8	6.9	13.2	98573.2	68
640	10.5	50.7	2232	272.0	261.6	1.6	11.6	10.9	5.8	13.2	98573.1	68
641	10.7	51.2	2406	272.0	261.6	3.0	11.8	11.1	5.8	13.2	98572.3	68
642	11.2	51.6	2447	272.0	261.6	4.8	12.0	11.7	7.3	13.2	98572.1	68
643	10.5	51.3	2394	272.0	261.6	5.1	11.8	10.9	5.5	13.2	98571.7	68
644	11.0	51.2	2401	272.0	261.6	5.7	11.8	11.5	6.1	13.2	98574.3	68
645	10.4	50.1	2164	272.0	261.6	3.9	11.3	10.9	6.1	13.2	98574.8	67
646	10.0	50.5	2006	272.0	261.6	3.1	11.4	10.4	6.3	13.2	98574.7	67
647	10.3	50.4	2025	272.0	261.6	2.8	11.5	10.7	6.0	13.2	98574.4	67
648	11.0	50.5	2189	272.0	261.6	2.8	11.6	11.5	5.6	13.2	98574.4	67
649	11.2	51.1	2101	272.0	263.3	2.1	11.5	11.6	5.1	13.2	98574.5	67
650	10.1	50.9	2195	272.0	264.6	1.9	11.5	10.5	5.6	13.2	98574.9	67
651			1985	272.0	264.7	0.9	11.5	9.3	8.1	13.2	98574.9	68
652	9.0	50.5	1884	272.0	264.7	0.5	11.5	9.5	7.5	13.2	98575.0	68
653	8.4	51.3	1632	272.0	265.2	-0.4	11.5	8.8	7.2	13.2	98575.1	68
654	9.1	50.8	1923	272.0	267.1	0.8	11.7	8.5	7.2	13.2	98572.7	68
655			2186	272.0	267.1	1.6	11.6	9.6	7.2	13.2	98568.3	68
656	10.2	50.8	2128	272.0	267.1	1.3	11.5	10.6	6.5	13.2	98568.3	68
657	8.6	50.6	1730	272.0	267.1	-0.1	11.5	9.3	7.0	13.2	98569.2	67
658	7.9	50.5	1419	272.0	267.2	-1.1	11.5	7.1	5.9	13.2	98571.0	67
659	8.3	51.0	1570	272.0	266.1	-0.6	11.7	7.9	5.6	13.2	98572.0	67
660	8.7	50.9	1768	272.0	263.9	0.2	11.7	8.9	5.5	13.2	98573.6	67
661	8.7	51.2	1760	272.0	263.9	0.1	11.6	9.5	5.4	13.2	98575.1	67
662	9.2	51.3	1959	272.0	264.0	0.8	11.7	9.8	5.9	13.2	98575.8	67
663	9.6	51.1	2194	272.0	264.0	1.5	11.6	10.0	5.8	13.2	98575.8	68
664	10.3	50.5	2312	272.0	263.9	2.0	11.6	10.7	6.2	13.2	98576.7	68
665	10.9	51.1	2302	272.0	263.9	1.8	11.5	11.4	5.9	13.2	98576.6	68
666	10.1	50.6	2223	272.0	263.9	1.6	11.5	10.5	5.6	13.2	98576.8	68
667	10.9	51.7	2417	272.0	263.9	3.3	11.9	11.3	5.7	13.2	98576.8	68
668	9.9	51.3	2404	272.0	264.0	4.4	11.8	10.3	5.4	13.2	98580.2	68
669	10.3	50.6	2216	272.0	264.0	3.0	11.5	10.7	5.6	13.2	98604.2	68
670	9.3	51.6	2004	272.0	264.0	1.6	11.5	9.6	7.6	13.2	98604.7	68
671	9.2	51.1	1971	272.0	264.0	1.0	11.5	10.4	8.4	13.2	98605.0	68
672	8.7	50.7	1761	272.0	264.0	0.0	11.5	8.7	7.6	13.2	98605.0	68
673	8.7	51.1	1755	272.0	263.9	0.0	11.6	8.9	7.1	13.2	98605.1	68
674	8.4	50.8	1624	272.0	263.9	-0.5	11.5	8.8	6.4	13.2	98605.2	67
675	8.2	50.7	1535	272.0	263.9	-0.7	11.6	8.3	8.1	13.2	98605.5	67
676	8.9	51.3	1843	272.0	263.9	0.5	11.7	9.0	7.3	13.2	98605.7	67
677	10.0	51.0	2074	272.0	263.9	1.4	11.6	10.4	7.3	13.2	98605.6	67
678	10.1	50.6	2194	272.0	263.9	1.6	11.6	10.6	6.3	13.2	98605.8	67
679	10.0	50.5	2327	272.0	264.0	1.9	11.6	10.4	5.9	13.2	98605.7	67
680	9.4	50.6	2088	272.0	264.0	1.2	11.4	9.8	6.0	13.2	98605.6	68
681	9.1	50.8	1937	272.0	264.0	0.7	11.6	9.1	4.8	13.2	98605.5	68
682	10.4	51.1	2385	272.0	264.0	2.8	11.8	10.9	4.7	13.2	98605.6	68
683	9.5	50.5	2223	272.0	264.0	1.9	11.5	9.9	7.4	13.2	98606.1	68
684	10.4	50.9	2319	272.0	264.0	1.9	11.5	10.8	7.7	13.2	98606.1	68
685	10.2	50.8	2197	272.0	264.0	1.5	11.4	10.6	8.1	13.2	98606.0	68
686	9.1	50.5	1939	272.0	264.0	0.7	11.4	9.6	6.3	13.2	98606.2	67
687	9.0	50.8	1906	272.0	264.0	0.5	11.5	9.3	5.4	13.2	98606.2	67
688	9.1	50.6	1945	272.0	264.0	0.8	11.5	9.4	6.1	13.2	98606.2	67
689	8.9	50.6	1849	272.0	263.9	0.3	11.6	9.3	6.0	13.2	98606.6	67
690	9.1	50.8	1924	272.0	263.8	0.8	11.5	8.8	5.7	13.2	98606.7	67
691	8.9	51.4	1836	272.0	261.4	0.3	11.6	9.2	6.8	13.2	98606.4	67
692	9.0	50.6	1877	272.0	261.2	0.5	11.6	9.4	5.6	13.2	98606.5	67
693	9.2	50.7	1948	272.0	261.2	0.7	11.6	9.7	7.9	13.2	98606.5	67
694	8.7	51.0	1743	272.0	261.2	0.1	11.5	9.8	6.2	13.2	98606.2	67
695	8.6	50.8	1703	272.0	261.2	-0.3	11.6	8.7	6.4	13.2	98606.0	67
696	8.8	51.0	1793	272.0	261.2	0.1	11.6	8.8	6.1	13.2	98606.1	67
697	8.5	50.7	1666	272.0	261.2	-0.4	11.6	9.5	6.2	13.2	98606.1	67
698	8.5	50.8	1675	272.0	261.2	-0.4	11.6	8.7	5.6	13.2	98606.1	67
699	8.6	50.6	1701	272.0	261.2	-0.1	11.6	8.5	5.4	13.2	98606.3	67
700	9.2	50.6	1950	272.0	261.2	1.2	11.6	9.1	5.8	13.2	98606.2	67
701	9.6	50.9	2226	272.0	261.2	1.8	11.7	10.0	5.9	13.2	98606.3	67
702	10.3	51.7	2390	272.0	260.9	3.1	11.8	10.7	6.2	13.2	98606.2	67
703	10.8	52.0	2402	272.0	258.9	4.1	11.8	11.3	6.4	13.2	98606.2	67
704	9.6	50.3	2212	272.0	258.8	2.7	11.5	10.0	6.1	13.2	98606.2	67

Table E.01 Measurement data - Turbine ON

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

Created on: 11/14/2018

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
705	10.1	50.6	2318	272.0	258.8	2.7	11.6	10.5	6.2	13.2	98606.1	67
706	10.2	50.6	2342	272.0	258.8	3.2	11.6	10.6	6.5	13.2	98606.5	67
707	9.2	50.8	1976	272.0	258.8	1.5	11.4	9.8	6.7	13.2	98606.5	67
708	8.8	50.9	1789	272.0	258.8	0.6	11.5	9.0	6.5	13.2	98606.4	67
709	8.3	51.0	1582	272.0	258.8	-0.5	11.5	8.4	6.2	13.2	98606.4	67
710	8.2	51.1	1541	272.0	258.7	-0.7	11.6	8.4	6.1	13.2	98606.3	67
711	8.8	50.8	1826	272.0	258.8	0.2	11.7	9.2	7.6	13.2	98606.4	67
712	9.4	50.9	2147	272.0	258.8	1.5	11.7	9.8	8.1	13.2	98606.7	67
713	9.2	50.4	1971	272.0	258.8	0.8	11.5	9.7	8.0	13.2	98606.7	67
714	9.1	50.8	1919	272.0	258.8	0.5	11.5	9.3	7.9	13.2	98606.5	67
715	9.6	50.8	2065	272.0	258.8	1.2	11.6	9.9	6.3	13.2	98606.6	67
716	10.2	50.8	2151	272.0	258.8	1.3	11.5	10.6	5.9	13.2	98606.6	67
717	8.4	50.5	1603	272.0	258.8	-0.4	11.4	9.6	5.4	13.2	98606.4	67
718	8.2	51.1	1533	272.0	258.8	-0.7	11.6	9.1	5.7	13.2	98606.3	67
719	8.9	50.7	1858	272.0	258.8	0.6	11.6	9.7	4.4	13.2	98606.4	67
720	8.9	50.5	1868	272.0	258.8	0.5	11.5	9.5	5.6	13.2	98606.5	67
721	8.9	51.0	1859	272.0	258.8	0.3	11.6	10.3	6.6	13.2	98606.4	68
722	9.2	50.8	1956	272.0	258.7	0.8	11.6	9.6	6.1	13.2	98606.2	68
723	10.0	51.0	2091	272.0	258.8	1.1	11.6	10.4	5.2	13.2	98605.9	68
724	9.8	50.6	2197	272.0	258.8	1.5	11.5	10.2	4.8	13.2	98606.2	68
725	10.3	50.8	2014	272.0	258.8	0.9	11.5	10.7	5.7	13.2	98606.2	68
726	9.2	50.8	1978	272.0	258.8	0.7	11.6	9.6	5.7	13.2	98606.4	68
727	9.2	50.6	1977	272.0	258.8	0.6	11.6	9.6	6.0	13.2	98606.4	69
728	9.0	50.7	1901	272.0	258.8	0.4	11.6	10.3	5.3	13.2	98606.4	69
729	8.8	50.6	1824	272.0	258.8	0.2	11.6	8.9	5.3	13.2	98606.3	69
730	8.4	50.4	1611	272.0	258.8	-0.5	11.5	8.7	6.4	13.2	98606.3	69
731	8.5	51.2	1692	272.0	258.8	0.0	11.6	9.1	6.2	13.2	98606.3	69
732	9.9	51.1	2182	272.0	258.8	1.7	11.7	10.3	6.1	13.2	98606.5	68
733	10.3	51.0	2053	272.0	258.8	1.0	11.5	10.7	5.3	13.2	98606.3	68
734	10.4	50.8	2044	272.0	258.8	0.9	11.6	10.8	6.4	13.2	98606.7	68
735	9.1	50.7	1920	272.0	258.8	0.6	11.5	9.7	6.2	13.2	98606.8	68
736	10.1	51.0	1999	272.0	258.8	1.0	11.6	10.5	6.2	13.2	98606.7	68
737	10.4	51.0	2043	272.0	258.8	1.2	11.6	10.8	7.6	13.2	98607.1	68
738	9.5	50.8	1992	272.0	258.8	0.9	11.5	9.9	7.3	13.2	98606.7	68
739	9.7	50.8	2084	272.0	258.8	1.1	11.6	10.1	6.4	13.2	98606.6	67
740	10.8	50.9	2279	272.0	258.8	1.8	11.6	11.2	6.6	13.2	98606.7	67
741	11.3	51.2	2330	272.0	260.9	1.9	11.6	11.8	6.5	13.2	98606.8	67
742	10.7	51.9	2328	272.0	261.3	1.9	11.5	11.2	6.3	13.2	98606.9	67
743	10.5	51.1	2238	272.0	261.3	1.7	11.4	10.9	7.3	13.2	98606.7	67
744	10.0	51.0	2048	272.0	261.3	1.0	11.4	10.4	6.2	13.2	98606.6	67
745	9.7	51.1	2001	272.0	261.3	0.8	11.5	10.0	6.0	13.2	98606.6	68
746	9.1	50.9	1933	272.0	261.3	0.6	11.5	10.0	5.5	13.2	98606.7	68
747	9.0	51.0	1887	272.0	261.3	0.4	11.6	9.8	5.3	13.2	98606.5	68
748	8.7	50.1	1770	272.0	261.3	0.2	11.5	9.3	4.2	13.2	98606.5	68
749	8.2	50.6	1526	272.0	261.3	-0.8	11.5	8.7	6.2	13.2	98606.5	68
750	8.9	51.3	1846	272.0	261.3	0.2	11.7	9.7	6.2	13.2	98606.5	68
751	9.0	51.0	1900	272.0	261.3	0.4	11.6	9.4	5.3	13.2	98606.8	68
752	9.1	51.4	1939	272.0	261.3	0.6	11.6	9.3	6.6	13.2	98606.8	68
753			2099	272.0	261.2	1.6	11.6	9.3	6.4	13.2	98606.8	68
754	9.5	50.9	2063	272.0	261.2	1.2	11.5	9.8	7.4	13.2	98606.9	68
755	9.8	50.6	2108	272.0	261.2	1.1	11.5	10.2	7.2	13.2	98606.8	68
756	10.1	51.2	2140	272.0	261.2	1.2	11.5	10.5	6.2	13.2	98606.7	68
757	10.2	50.8	2271	272.0	261.2	1.6	11.6	10.7	6.6	13.2	98606.8	68
758	9.3	51.0	2071	272.0	261.2	1.1	11.5	9.7	7.1	13.2	98606.6	68
759	10.2	51.3	2283	272.0	261.3	1.8	11.6	10.6	7.0	13.2	98606.8	68
760	9.6	50.7	2036	272.0	261.3	1.0	11.5	10.0	6.6	13.2	98606.9	68
761	9.6	51.0	2128	272.0	261.3	1.3	11.6	10.0	6.0	13.2	98607.1	68
762	9.8	50.8	2258	272.0	261.3	1.6	11.5	10.2	5.5	13.2	98607.1	68
763	10.6	50.8	2351	272.0	261.3	2.0	11.6	11.1	6.2	13.2	98607.2	68
764	9.9	50.9	2237	272.0	261.3	1.6	11.4	10.3	7.3	13.2	98607.3	68
765	9.5	51.0	2018	272.0	261.3	0.8	11.5	9.8	6.6	13.2	98607.4	68
766	9.2	50.8	1970	272.0	261.3	0.8	11.5	9.6	8.6	13.2	98607.0	68
767	9.1	50.7	1936	272.0	261.2	0.7	11.5	9.6	7.5	13.2	98607.0	68
768	9.4	50.7	2005	272.0	261.2	0.8	11.6	9.8	6.8	13.2	98607.2	67
769	8.9	50.6	1870	272.0	261.2	0.3	11.6	9.7	7.5	13.2	98607.1	67
770	8.8	50.7	1815	272.0	261.2	0.1	11.6	9.7	7.1	13.2	98607.3	67
771	9.2	50.8	1964	272.0	261.2	0.9	11.6	8.8	6.7	13.2	98607.4	67
772			1999	272.0	261.2	0.9	11.6	9.4	6.3	13.2	98607.5	67
773			2089	272.0	261.2	1.1	11.5	9.0	6.0	13.2	98607.4	67
774	10.0	50.6	2162	272.0	261.3	1.2	11.5	10.4	4.8	13.2	98607.3	68
775	10.2	50.9	2211	272.0	261.3	1.5	11.5	10.6	4.1	13.2	98607.2	68
776	10.0	51.1	2192	272.0	261.3	1.4	11.5	10.4	3.9	13.2	98607.2	68
777	9.1	50.4	1927	272.0	261.3	0.6	11.4	10.2	4.9	13.2	98607.5	68
778			2067	272.0	261.3	1.0	11.6	9.4	5.5	13.2	98607.6	68
779	10.1	50.7	2181	272.0	261.3	1.4	11.5	10.5	5.6	13.2	98607.6	68
780	10.1	50.8	2079	272.0	261.3	1.0	11.5	10.6	5.4	13.2	98607.5	68
781	9.0	50.8	1911	272.0	261.3	0.5	11.5	9.9	4.7	13.2	98607.5	68
782	11.0	51.0	2288	272.0	261.2	1.9	11.7	11.4	5.9	13.2	98607.9	68
783	10.5	51.3	2401	272.0	261.3	3.0	11.8	10.9	5.9	13.2	98608.0	68
784	12.1	51.2	2429	272.0	261.3	4.6	11.9	12.6	6.2	13.2	98607.8	68
785	11.0	50.7	2303	272.0	261.8	4.0	11.5	11.4	7.7	13.2	98607.6	68
786	10.9	50.5	2120	272.0	264.3	2.9	11.4	11.4	6.2	13.2	98607.7	67
787	9.5	50.3	1983	272.0	264.3	2.2	11.5	9.9	6.2	13.2	98607.6	67
788	9.0	50.9	1914	272.0	264.3	1.6	11.5	9.1	6.4	13.2	98607.7	67
789	9.2	50.6	1962	272.0	264.3	1.3	11.5	8.6	6.0	13.2	98607.6	67
790	8.7	50.7	1744	272.0	264.2	-0.1	11.5	9.0	6.5	13.2	98607.7	67
791	8.6	50.8	1736	272.0	264.2	-0.2	11.6	10.2	6.9	13.2	98607.7	68
792	8.4	50.8	1616	272.0	264.2	-0.5	11.6	9.2	5.8	13.2	98607.8	68

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
793	8.1	50.5	1483	272.0	264.2	-0.9	11.5	9.4	5.9	13.2	98608.0	68
794	8.2	51.1	1517	272.0	264.3	-0.8	11.6	8.8	5.9	13.2	98607.9	68
795	8.7	50.8	1741	272.0	264.3	0.0	11.7	9.9	5.1	13.2	98607.8	68
796	8.6	51.0	1722	272.0	264.4	-0.2	11.6	10.2	5.4	13.2	98608.2	68
797	8.6	51.2	1715	272.0	266.7	-0.2	11.6	9.7	6.3	13.2	98608.1	69
798	8.3	50.9	1588	272.0	266.9	-0.6	11.5	8.3	7.5	13.2	98608.2	69
799	7.8	50.6	1331	272.0	266.9	-1.3	11.5	8.2	6.1	13.2	98608.3	69
800	8.0	50.8	1458	272.0	266.9	-1.0	11.6	7.7	4.9	13.2	98608.2	69
801	7.6	50.8	1279	272.0	266.9	-1.5	11.5	6.7	5.9	13.2	98608.2	69
802	7.9	50.9	1403	272.0	266.8	-1.1	11.7	8.2	5.1	13.2	98608.4	69
803	8.4	50.8	1627	272.0	266.9	-0.4	11.7	7.8	5.7	13.2	98608.2	68
804	7.9	50.3	1394	272.0	266.9	-1.1	11.5	7.5	6.0	13.2	98608.1	68
805	8.2	51.4	1546	272.0	266.8	-0.5	11.7	8.0	6.0	13.2	98607.8	68
806	9.9	51.1	2103	272.0	264.4	1.6	11.7	10.3	5.4	13.2	98608.0	68
807	9.0	51.0	1890	272.0	264.1	0.5	11.5	9.5	6.3	13.2	98608.1	68
808	9.2	50.9	1954	272.0	264.0	0.7	11.6	10.1	6.1	13.2	98608.0	68
809	10.1	50.7	2242	272.0	264.0	1.6	11.6	10.5	5.4	13.2	98607.8	68
810	10.0	50.5	2274	272.0	264.1	1.7	11.5	10.4	6.2	13.2	98608.2	68
811	9.4	50.4	2225	272.0	264.1	1.5	11.5	9.7	6.1	13.2	98608.3	68
812			2156	272.0	264.1	1.3	11.5	9.6	5.9	13.2	98608.1	68
813	9.5	50.7	2030	272.0	264.1	0.9	11.5	9.9	5.5	13.2	98608.1	68
814	9.6	50.6	2115	272.0	264.1	1.2	11.6	10.0	6.7	13.2	98608.3	68
815	10.3	50.6	2177	272.0	264.1	1.3	11.5	10.8	8.0	13.2	98608.3	68
816	10.2	50.7	2262	272.0	264.1	1.7	11.6	10.6	6.6	13.2	98608.4	68
817	10.8	50.3	2359	272.0	264.1	2.1	11.6	11.2	7.6	13.2	98608.6	68
818	9.9	50.5	2244	272.0	264.1	1.6	11.5	10.3	6.0	13.2	98608.6	68
819	10.0	50.3	2215	272.0	264.1	1.5	11.5	10.5	5.6	13.2	98608.3	68
820	9.3	50.3	2130	272.0	264.1	1.3	11.4	9.6	6.8	13.2	98608.4	68
821			2063	272.0	264.1	1.0	11.5	9.1	6.9	13.2	98608.6	67
822	9.3	50.5	2120	272.0	264.1	1.1	11.5	9.7	5.6	13.2	98608.5	67
823	10.1	50.5	2184	272.0	264.1	1.3	11.5	10.5	5.8	13.2	98608.6	67
824	9.3	50.3	2238	272.0	264.1	1.6	11.5	9.7	5.6	13.2	98608.8	67
825	9.9	50.4	2020	272.0	264.1	0.9	11.5	10.3	5.1	13.2	98608.9	67
826	8.8	51.2	1812	272.0	263.2	0.4	11.4	9.3	5.6	13.2	98608.7	68
827	8.3	50.8	1583	272.0	282.0	1.9	11.4	8.2	7.6	13.3	98610.6	65
828	8.4	50.4	1607	272.0	280.7	1.5	11.5	8.1	7.3	13.3	98610.8	65
829	8.5	50.7	1652	272.0	280.7	0.9	11.6	8.5	7.6	13.3	98610.8	65
830	9.0	51.2	1899	272.0	278.2	0.9	11.6	8.4	7.3	13.3	98610.7	65
831	9.1	51.0	1917	272.0	278.0	0.7	11.6	10.0	6.1	13.3	98622.9	65
832			2013	272.0	278.0	0.9	11.6	9.6	6.0	13.3	98638.8	65
833	9.8	50.7	2297	272.0	278.0	2.0	11.7	10.2	7.4	13.3	98639.0	65
834	11.6	52.3	2554	272.0	278.0	6.3	12.6	12.1	7.8	13.3	98639.1	65
835	11.6	52.1	2533	272.0	278.0	8.9	12.4	12.0	7.7	13.3	98639.1	65
836	12.0	50.4	2392	272.0	278.0	8.4	11.8	12.5	7.8	13.3	98638.9	65
837	11.8	49.5	2232	272.0	278.0	6.8	11.3	12.3	6.9	13.3	98639.0	65
838	9.1	49.8	1935	272.0	278.0	4.4	11.1	10.3	5.4	13.3	98639.1	66
839	9.4	50.5	2098	272.0	278.0	3.9	11.4	9.8	5.7	13.3	98639.0	66
840	10.6	51.3	2402	272.0	278.0	5.4	11.9	11.1	7.1	13.3	98638.9	66
841	11.7	51.7	2474	272.0	278.0	7.7	12.2	12.2	6.1	13.3	98638.8	66
842	12.4	51.2	2463	272.0	278.0	9.0	12.1	12.9	7.9	13.3	98639.0	66
843	12.0	51.0	2402	272.0	278.0	9.5	11.8	12.5	8.2	13.3	98639.0	65
844	11.4	50.0	2312	272.0	278.0	8.3	11.4	11.9	7.5	13.3	98639.0	64
845	11.4	49.6	2295	272.0	278.0	7.2	11.3	11.9	8.1	13.3	98639.0	64
846	11.2	50.1	2334	272.0	278.0	6.9	11.5	11.6	8.3	13.3	98638.9	64
847	11.4	50.8	2380	272.0	278.0	7.6	11.7	11.8	6.5	13.3	98638.9	64
848	11.9	50.7	2385	272.0	278.0	7.9	11.7	12.4	6.1	13.3	98638.9	64
849	11.7	50.8	2376	272.0	278.0	8.2	11.7	12.2	8.0	13.3	98626.8	64
850	10.7	51.6	2354	272.0	278.0	7.9	11.6	11.2	8.3	13.2	98611.0	65
851	11.6	50.2	2327	272.0	278.0	7.3	11.4	12.1	8.0	13.2	98610.7	65
852	10.3	50.3	2301	272.0	277.8	6.4	11.4	10.7	7.7	13.2	98610.9	65
853	11.2	50.3	2302	272.0	275.5	5.3	11.3	11.7	5.9	13.2	98610.7	65
854	11.2	50.9	2328	272.0	275.5	4.7	11.4	11.6	5.9	13.2	98610.9	65
855	11.2	50.0	2327	272.0	275.5	4.2	11.4	11.7	7.2	13.2	98623.3	65
856	9.8	49.7	2097	272.0	275.5	3.1	11.4	10.2	7.2	13.2	98639.2	65
857	10.8	50.5	2141	272.0	275.5	2.9	11.5	11.2	7.5	13.2	98639.2	65
858	10.9	50.6	2278	272.0	275.5	2.8	11.5	11.3	6.8	13.2	98639.2	65
859	10.2	50.3	2220	272.0	275.5	2.2	11.5	10.6	7.7	13.2	98639.3	65
860	10.4	50.4	2336	272.0	275.5	2.5	11.7	10.8	7.8	13.2	98639.5	65
861	10.6	51.3	2463	272.0	275.5	5.0	12.1	11.0	7.0	13.2	98639.2	64
862	10.7	51.4	2451	272.0	275.5	6.3	12.0	11.2	5.5	13.2	98639.0	64
863	11.0	50.3	2365	272.0	275.5	5.7	11.6	11.5	6.9	13.2	98639.3	64
864	10.2	49.8	2221	272.0	275.5	3.9	11.3	10.6	7.2	13.2	98639.5	64
865	9.5	50.9	2085	272.0	273.5	3.2	11.4	9.9	7.0	13.2	98639.4	64
866	10.2	50.4	2159	272.0	273.1	3.1	11.5	10.6	5.9	13.2	98639.5	64
867	10.4	51.2	2326	272.0	273.1	2.7	11.5	10.8	4.7	13.3	98639.5	66
868	10.3	51.9	2079	272.0	273.1	1.6	11.4	10.7	4.7	13.3	98639.6	66
869	8.9	51.7	1840	272.0	273.1	0.3	11.5	10.0	5.2	13.3	98639.3	66
870	8.9	51.1	1847	272.0	273.1	0.4	11.6	9.4	5.5	13.3	98639.2	66
871	10.4	51.0	2290	272.0	273.1	2.0	11.7	10.8	4.5	13.3	98639.3	66
872	10.6	51.1	2387	272.0	273.1	2.6	11.7	11.0	5.5	13.3	98639.1	66
873	10.6	50.4	2312	272.0	273.1	2.2	11.5	11.1	9.9	13.3	98639.6	65
874	9.9	50.9	2026	272.0	273.1	0.9	11.4	10.3	9.8	13.3	98639.4	65
875	9.4	50.5	2018	272.0	273.1	0.9	11.5	9.7	7.4	13.3	98639.5	65
876	9.2	50.5	1961	272.0	273.1	0.7	11.5	10.0	9.6	13.3	98639.6	65
877	10.5	50.2	2076	272.0	273.1	1.2	11.6	10.9	9.4	13.3	98639.6	65
878	9.9	50.7	2098	272.0	273.1	1.1	11.5	10.3	8.6	13.3	98639.5	65
879			2053	272.0	273.1	1.0	11.5	9.2	7.7	13.2	98639.4	64
880	9.7	51.1	2108	272.0	273.1	1.1	11.5	10.1	7.7	13.2	98639.4	64

Table E.01 Measurement data - Turbine ON

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
881	9.2	51.0	1957	272.0	273.1	0.7	11.5	8.6	7.4	13.2	98639.4	64
882			2009	272.0	273.1	0.9	11.6	9.3	9.0	13.2	98639.5	64
883	10.5	51.0	2313	272.0	273.1	2.1	11.7	10.9	8.4	13.2	98639.9	64
884	10.2	50.4	2103	272.0	273.1	1.5	11.4	10.6	7.0	13.2	98639.9	64
885			1985	272.0	273.1	0.9	11.5	8.6	5.7	13.2	98639.5	65
886	9.9	50.8	2117	272.0	273.1	1.2	11.5	10.3	5.9	13.2	98639.5	65
887			2111	272.0	273.1	1.1	11.5	9.4	4.9	13.2	98639.5	65
888	10.4	51.6	2297	272.0	273.1	1.7	11.6	10.8	4.6	13.2	98639.7	65
889	10.6	51.3	2371	272.0	273.1	2.3	11.6	11.1	6.0	13.2	98639.6	65
890	9.8	51.2	2339	272.0	273.1	2.4	11.6	10.2	5.2	13.2	98639.2	65
891	9.8	51.7	2322	272.0	273.1	2.2	11.6	10.1	5.8	13.2	98639.3	65
892	11.7	52.3	2466	272.0	273.1	4.6	12.1	12.2	5.3	13.2	98639.1	65
893	11.5	51.8	2497	272.0	273.1	7.1	12.2	11.9	5.3	13.2	98639.3	65
894	12.1	51.2	2420	272.0	273.1	7.4	11.9	12.6	6.8	13.2	98639.4	65
895	11.3	50.6	2381	272.0	273.1	7.4	11.7	11.8	7.4	13.2	98639.4	65
896	10.8	50.7	2335	272.0	273.1	6.7	11.5	11.3	6.2	13.2	98639.2	65
897	10.8	50.3	2327	272.0	273.1	6.0	11.4	11.3	7.0	13.2	98639.1	65
898	11.4	50.5	2324	272.0	273.1	5.3	11.4	11.8	7.9	13.2	98639.2	65
899	10.5	49.9	2197	272.0	273.1	3.7	11.3	11.0	8.0	13.2	98639.4	65
900	11.2	50.5	2218	272.0	273.1	3.5	11.6	11.6	8.6	13.2	98639.5	65
901	11.6	50.8	2383	272.0	273.1	4.3	11.7	12.1	8.1	13.2	98639.4	65
902	10.7	51.4	2349	272.0	273.1	3.9	11.5	11.1	8.7	13.2	98639.1	65
903	10.0	50.8	2205	272.0	273.1	3.0	11.5	10.4	7.8	13.2	98639.2	64
904	10.5	50.5	2287	272.0	273.1	2.8	11.5	10.9	7.7	13.2	98639.0	64
905	9.7	50.3	2224	272.0	273.1	2.2	11.5	10.1	7.3	13.2	98639.1	64
906	10.4	50.7	2201	272.0	273.1	1.7	11.5	10.8	6.2	13.2	98639.0	64
907	9.7	50.3	2133	272.0	273.1	1.2	11.5	10.1	5.9	13.2	98638.9	64
908	9.8	51.5	2185	272.0	273.1	1.4	11.5	10.2	6.1	13.2	98639.0	65
909	11.4	52.5	2451	272.0	273.1	4.2	12.0	11.9	8.3	13.2	98639.1	65
910	11.6	51.4	2435	272.0	273.1	5.3	11.9	12.1	8.6	13.2	98639.3	65
911	9.9	50.2	2302	272.0	273.1	4.1	11.5	10.3	8.5	13.2	98639.4	65
912	9.5	50.3	2130	272.0	273.1	3.2	11.4	9.8	8.1	13.2	98639.3	65
913	10.2	50.7	2196	272.0	273.1	3.0	11.5	10.6	7.5	13.2	98639.2	65
914	10.0	50.5	2308	272.0	273.1	2.9	11.6	10.4	8.2	13.2	98639.1	64
915	10.1	50.6	2365	272.0	273.1	3.0	11.6	10.6	7.0	13.2	98639.3	64
916	9.4	50.3	2183	272.0	273.1	1.9	11.4	9.8	7.9	13.2	98639.3	64
917	9.1	50.7	1945	272.0	273.1	0.9	11.5	9.6	7.7	13.2	98639.2	64
918	9.1	51.5	1946	272.0	273.1	0.7	11.5	9.5	6.7	13.2	98638.9	64
919	8.8	50.9	1799	272.0	273.1	0.2	11.5	10.2	6.5	13.2	98639.0	64
920	8.6	50.3	1713	272.0	273.1	-0.1	11.5	9.7	7.1	13.2	98638.8	65
921	8.7	50.8	1766	272.0	273.1	0.0	11.6	9.6	8.1	13.2	98638.9	65
922	8.7	50.4	1755	272.0	273.1	0.0	11.6	9.5	6.4	13.2	98638.8	65
923	9.8	50.5	2007	272.0	273.1	0.9	11.6	10.2	5.8	13.2	98638.9	65
924	9.0	50.1	1884	272.0	273.1	0.6	11.5	10.1	7.3	13.2	98638.7	65
925	9.0	50.7	1885	272.0	273.1	0.5	11.5	9.9	6.2	13.2	98638.8	65
926	8.8	50.3	1811	272.0	273.1	0.3	11.5	9.7	6.9	13.2	98639.2	65
927	8.9	50.7	1873	272.0	273.1	0.4	11.6	8.8	7.9	13.2	98639.1	65
928	9.3	50.7	2004	272.0	273.1	1.0	11.6	9.7	7.9	13.2	98639.0	65
929	9.6	50.7	2021	272.0	273.1	0.9	11.5	10.0	5.8	13.2	98638.9	65
930	10.0	51.2	2058	272.0	273.1	1.0	11.6	10.4	6.4	13.2	98639.1	65
931	10.4	51.4	2260	272.0	273.1	1.9	11.7	10.9	6.3	13.2	98639.2	66
932	10.6	51.3	2436	272.0	273.1	4.3	11.9	11.0	6.2	13.2	98639.3	65
933	9.6	50.7	2085	272.0	273.1	2.3	11.4	10.0	6.6	13.2	98639.4	65
934	11.1	50.8	2089	272.0	273.1	2.0	11.5	11.5	6.5	13.2	98639.4	65
935	10.7	51.1	2397	272.0	273.1	3.0	11.8	11.2	7.4	13.2	98639.4	65
936	11.2	50.9	2432	272.0	273.1	4.4	11.9	11.7	6.1	13.2	98639.7	65
937	11.6	51.2	2406	272.0	273.1	5.0	11.8	12.1	6.0	13.2	98639.6	65
938	11.8	51.5	2425	272.0	273.1	6.1	11.9	12.3	7.0	13.2	98639.5	65
939	11.8	51.7	2404	272.0	273.1	6.6	11.8	12.3	7.9	13.2	98639.5	65
940	10.8	50.4	2322	272.0	273.1	5.4	11.4	11.2	7.4	13.1	98629.5	65
941	9.9	49.6	2184	272.0	273.1	3.7	11.3	10.3	8.8	13.1	98628.4	65
942	9.0	49.9	1911	272.0	273.1	2.5	11.4	9.6	8.5	13.1	98629.5	65
943	8.8	50.1	1801	272.0	273.1	2.0	11.5	8.8	7.0	13.1	98629.4	65
944	9.1	50.6	1926	272.0	273.1	1.9	11.6	9.5	7.5	13.1	98629.6	65
945	9.4	50.4	2079	272.0	273.1	1.8	11.5	9.7	7.0	13.1	98629.5	65
946	9.2	50.7	1961	272.0	273.1	0.8	11.6	10.1	5.8	13.1	98628.9	65
947			2028	272.0	273.1	1.0	11.6	9.5	6.3	13.1	98626.9	65
948	9.4	50.8	2048	272.0	273.1	1.0	11.6	9.8	6.0	13.1	98625.7	65
949	9.3	50.4	2014	272.0	273.1	1.0	11.5	9.7	5.9	13.1	98626.1	65
950	8.9	50.6	1851	272.0	273.1	0.4	11.5	8.9	4.9	13.1	98629.4	65
951	9.2	50.5	1951	272.0	273.1	0.7	11.6	9.2	4.9	13.1	98629.8	65
952	9.2	50.9	1950	272.0	273.1	0.7	11.5	9.5	5.6	13.1	98631.5	65
953	9.7	50.7	2000	272.0	273.1	0.9	11.6	10.1	4.9	13.1	98632.2	65
954	9.2	50.5	1952	272.0	273.1	0.7	11.5	9.3	4.5	13.1	98633.2	65
955	9.6	50.4	1984	272.0	273.1	0.8	11.5	10.0	4.0	13.2	98658.0	67
956	9.0	50.5	1903	272.0	273.1	0.5	11.5	10.5	5.4	13.1	98657.4	67
957	9.1	50.6	1940	272.0	273.1	0.6	11.6	9.9	5.7	13.1	98655.2	67
958	8.8	50.5	1789	272.0	273.1	0.1	11.5	9.7	5.8	13.1	98654.2	67
959	8.6	50.8	1729	272.0	273.1	-0.2	11.6	8.6	4.3	13.1	98655.0	67
960	8.3	50.5	1564	272.0	273.1	-0.7	11.5	8.6	4.1	13.2	98654.7	67
961	8.2	50.3	1536	272.0	273.1	-0.7	11.6	8.1	4.8	13.2	98655.3	67
962	7.9	51.1	1404	272.0	272.6	-1.1	11.6	8.2	5.7	13.2	98654.9	67
963	7.9	51.0	1418	272.0	270.5	-1.1	11.6	7.9	5.8	13.2	98654.5	67
964	8.0	50.8	1436	272.0	270.4	-1.0	11.6	7.8	6.1	13.2	98654.4	67
965	8.1	50.6	1472	272.0	270.4	-1.0	11.6	7.7	5.7	13.2	98654.4	67
966	8.1	50.9	1476	272.0	270.4	-1.0	11.6	7.6	5.5	13.2	98654.2	67
967	8.4	51.8	1644	272.0	270.2	-0.4	11.7	9.2	4.4	13.2	98654.2	66
968	9.1	51.4	1916	272.0	268.1	0.8	11.7	9.8	3.7	13.2	98654.4	66

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
969	10.8	50.8	2188	272.0	268.1	1.6	11.6	11.2	5.6	13.2	98654.6	66
970	10.5	51.1	2295	272.0	268.1	1.8	11.5	10.9	7.5	13.2	98654.5	66
971	9.8	50.5	1983	272.0	268.1	0.8	11.4	10.2	7.6	13.2	98654.2	66
972	9.6	50.7	2032	272.0	268.1	0.9	11.5	10.0	6.5	13.2	98654.4	66
973	10.6	50.4	2293	272.0	268.1	1.7	11.6	11.0	5.2	13.2	98654.7	66
974	10.1	50.8	2390	272.0	268.1	2.7	11.7	10.5	4.5	13.2	98654.6	66
975	10.5	50.6	2197	272.0	268.1	1.5	11.4	10.9	4.1	13.2	98656.2	66
976	9.7	51.6	2191	272.0	268.1	1.3	11.5	10.0	5.9	13.2	98657.2	66
977	11.4	50.6	2201	272.0	268.1	1.5	11.5	11.8	6.7	13.2	98656.6	66
978	10.6	50.7	1992	272.0	268.1	0.9	11.5	11.0	5.7	13.2	98656.3	66
979			1698	272.0	268.0	0.0	11.4	9.0	5.3	13.2	98656.0	65
980	8.6	50.8	1701	272.0	268.0	0.0	11.5	8.4	6.5	13.2	98655.8	65
981	9.0	51.1	1879	272.0	266.8	0.6	11.6	8.0	6.9	13.2	98655.6	65
982	9.5	50.8	2089	272.0	264.5	1.2	11.6	9.9	6.2	13.2	98655.4	65
983	9.8	50.6	2158	272.0	264.6	1.3	11.5	10.2	7.1	13.2	98655.7	65
984	9.2	50.7	1972	272.0	264.6	0.8	11.5	9.7	7.8	13.2	98655.5	65
985			1988	272.0	264.6	0.8	11.5	9.4	7.7	13.2	98655.4	64
986	9.4	51.2	1980	272.0	263.5	0.8	11.5	9.7	7.2	13.2	98655.4	64
987	9.0	50.9	1912	272.0	261.8	0.8	11.7	9.3	7.6	13.2	98654.3	64
988	9.1	50.9	1936	272.0	261.8	0.7	11.6	9.6	8.1	13.2	98654.1	64
989	9.0	51.0	1914	272.0	261.8	0.6	11.5	9.9	7.8	13.2	98653.8	64
990	8.8	51.1	1819	272.0	261.8	0.3	11.5	9.0	7.8	13.1	98653.7	63
991	9.9	51.0	2133	272.0	261.8	1.4	11.6	10.3	7.7	13.1	98653.4	63
992	11.2	51.6	2426	272.0	261.8	3.6	12.0	11.7	7.7	13.1	98653.3	63
993	11.5	51.7	2488	272.0	261.8	6.2	12.2	12.0	10.0	13.1	98653.4	63
994	11.4	51.3	2411	272.0	261.8	6.3	11.8	11.8	8.0	13.1	98653.2	63
995	11.9	51.3	2409	272.0	261.8	6.9	11.8	12.4	7.8	13.1	98653.4	63
996	12.1	51.1	2402	272.0	261.8	7.5	11.8	12.6	8.5	13.1	98653.2	63
997	11.6	50.4	2345	272.0	261.8	7.0	11.5	12.0	7.8	13.1	98653.6	63
998	10.6	50.0	2297	272.0	261.8	5.6	11.3	11.1	7.2	13.1	98653.7	63
999	10.6	50.2	2301	272.0	261.8	4.2	11.3	11.0	6.6	13.1	98653.6	63
1000	10.5	51.1	2250	272.0	261.8	3.6	11.4	10.9	8.2	13.1	98654.0	63
1001	10.6	50.5	2283	272.0	261.8	3.5	11.5	11.0	6.7	13.1	98654.8	63
1002	10.3	50.7	2364	272.0	261.8	3.5	11.6	10.7	7.9	13.1	98655.3	63
1003	10.9	50.7	2359	272.0	261.8	3.3	11.6	11.3	7.3	13.1	98654.9	63
1004	10.9	51.2	2397	272.0	261.8	4.1	11.7	11.4	7.5	13.1	98654.8	63
1005	10.9	51.3	2427	272.0	261.8	5.5	11.9	11.3	7.8	13.1	98654.4	63
1006	10.9	50.5	2373	272.0	264.6	5.6	11.7	11.3	8.0	13.3	98637.5	59
1007	11.9	50.9	2384	272.0	264.6	6.2	11.7	12.4	7.3	13.5	98637.9	59
1008	10.0	50.3	2277	272.0	264.6	4.5	11.3	10.4	6.0	13.5	98638.8	59
1009	10.3	50.3	2114	272.0	264.6	3.3	11.3	10.8	5.5	13.5	98639.1	59
1010	9.1	50.6	1930	272.0	264.6	2.6	11.4	9.7	6.4	13.5	98639.5	59
1011	9.1	51.6	1920	272.0	264.6	2.2	11.5	10.3	5.7	13.5	98639.7	59
1012	9.5	50.2	2049	272.0	264.6	2.1	11.6	9.9	5.6	13.5	98639.7	59
1013	9.5	50.6	2122	272.0	264.6	1.7	11.5	9.9	6.9	13.6	98639.9	61
1014	8.7	50.4	1780	272.0	264.6	0.2	11.5	9.4	8.4	13.6	98640.0	61
1015	8.5	50.7	1674	272.0	264.6	-0.4	11.5	8.8	7.3	13.6	98639.8	61
1016	8.5	50.4	1689	272.0	264.6	-0.3	11.6	9.2	6.6	13.6	98640.2	61
1017	8.7	50.6	1771	272.0	264.6	-0.1	11.6	9.8	6.4	13.6	98640.3	61
1018	8.9	50.8	1876	272.0	264.6	0.3	11.6	8.3	6.5	13.6	98640.2	60
1019	8.5	50.7	1669	272.0	264.6	-0.3	11.5	9.2	6.6	13.6	98640.0	59
1020	8.1	50.8	1501	272.0	264.6	-0.9	11.5	8.3	6.1	13.6	98640.2	59
1021	8.3	50.7	1580	272.0	264.6	-0.7	11.6	9.1	4.8	13.6	98640.5	59
1022	8.2	50.8	1530	272.0	264.6	-0.7	11.6	8.9	4.9	13.6	98640.5	59
1023	7.5	50.6	1202	272.0	264.6	-1.6	11.5	7.8	5.2	13.6	98640.6	59
1024	7.0	50.1	989	272.0	264.6	-1.8	11.3	7.3	5.2	13.6	98640.9	59
1025	7.2	50.9	1064	272.0	264.6	-1.7	11.5	7.7	4.3	13.6	98641.2	59
1026	7.9	51.0	1415	272.0	264.6	-1.1	11.7	7.8	5.1	13.6	98640.8	59
1027	8.2	50.9	1539	272.0	264.6	-0.8	11.7	8.1	5.3	13.6	98640.4	59
1028	8.7	51.1	1751	272.0	264.6	-0.1	11.7	8.4	4.3	13.6	98640.5	59
1029	8.6	51.0	1709	272.0	263.7	-0.2	11.6	8.2	4.6	13.6	98640.4	59
1030	8.3	51.1	1570	272.0	261.4	-0.6	11.5	8.2	4.9	13.6	98640.4	59
1031	7.8	51.7	1365	272.0	259.2	-1.2	11.5	9.5	4.3	13.6	98640.4	60
1032	7.4	51.8	1185	272.0	259.1	-1.7	11.5	7.9	4.2	13.6	98640.1	60
1033	7.4	51.7	1160	272.0	259.1	-1.7	11.6	7.2	3.7	13.6	98640.3	60
1034	7.4	51.1	1172	272.0	259.1	-1.7	11.6	7.6	4.1	13.6	98640.7	60
1035	8.0	51.6	1436	272.0	259.0	-1.1	11.7	8.0	3.9	13.6	98640.9	60
1036	9.3	51.4	1991	272.0	259.0	1.3	11.8	9.7	4.7	13.6	98640.9	60
1037	10.7	51.1	2218	272.0	259.0	1.7	11.6	11.1	6.8	13.6	98641.0	60
1038	9.6	50.8	2114	272.0	259.0	1.1	11.5	10.0	6.8	13.6	98640.9	60
1039	10.8	51.1	2349	272.0	259.0	2.0	11.6	11.2	7.1	13.6	98640.4	60
1040	9.9	50.4	2118	272.0	259.1	1.3	11.4	10.3	6.8	13.6	98640.5	60
1041	9.4	50.8	2047	272.0	259.1	1.0	11.5	9.8	7.0	13.6	98640.7	60
1042	9.4	50.7	2122	272.0	259.1	1.1	11.5	9.8	7.6	13.7	98640.9	60
1043			1973	272.0	259.1	0.7	11.5	10.3	8.1	13.7	98640.9	58
1044	9.0	51.2	1913	272.0	259.1	0.5	11.6	9.4	6.7	13.7	98640.9	58
1045	9.2	50.5	1976	272.0	259.1	1.0	11.6	10.3	6.4	13.7	98640.9	58
1046	9.8	50.6	2001	272.0	259.0	0.8	11.6	10.2	6.0	13.7	98641.0	58
1047	9.1	50.6	1946	272.0	259.0	0.6	11.5	9.4	4.7	13.7	98641.1	59
1048	8.7	50.3	1771	272.0	259.0	0.2	11.5	9.6	4.2	13.7	98641.4	60
1049	8.4	50.9	1629	272.0	261.2	-0.2	11.5	8.5	5.1	13.7	98641.7	60
1050	8.5	51.3	1659	272.0	264.0	-0.2	11.6	8.5	6.3	13.7	98641.5	60
1051	8.6	51.4	1736	272.0	266.9	0.0	11.6	9.4	5.9	13.7	98641.4	60
1052	10.0	51.2	2062	272.0	268.2	1.2	11.7	10.4	6.1	13.7	98641.6	60
1053	10.9	51.3	2391	272.0	269.8	2.8	11.8	11.4	7.4	13.8	98641.6	59
1054	10.6	51.2	2433	272.0	269.9	4.3	11.9	11.0	7.6	13.8	98641.5	58
1055	11.9	51.2	2394	272.0	269.9	4.5	11.7	12.4	7.9	13.8	98641.6	58
1056	11.1	50.3	2369	272.0	269.9	4.3	11.6	11.5	6.6	13.8	98641.6	58

Table E.01 Measurement data - Turbine ON

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

Created on: 11/14/2018

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
1057	11.2	50.2	2361	272.0	269.9	4.3	11.6	11.7	7.2	13.8	98641.8	58
1058	10.3	50.2	2295	272.0	269.9	3.4	11.5	10.8	7.2	13.8	98641.6	58
1059	10.6	50.7	2309	272.0	272.0	3.1	11.5	11.1	6.2	13.8	98641.7	58
1060	11.1	50.4	2322	272.0	272.4	2.8	11.5	11.5	7.1	13.7	98641.7	58
1061	10.9	50.3	2376	272.0	272.4	3.3	11.6	11.4	7.9	13.7	98641.5	58
1062	9.9	50.2	2343	272.0	272.4	2.9	11.5	10.3	8.4	13.7	98641.9	58
1063	10.0	50.1	2269	272.0	272.5	2.1	11.5	10.5	7.4	13.7	98641.3	58
1064	9.6	49.9	2206	272.0	272.5	1.6	11.5	10.0	7.7	13.7	98641.1	58
1065	9.4	50.3	1987	272.0	272.5	0.8	11.5	9.7	8.3	13.7	98641.0	58
1066	9.0	50.4	1879	272.0	272.5	0.5	11.5	9.4	7.4	13.6	98641.1	57
1067	9.2	50.4	1952	272.0	272.5	0.7	11.6	9.6	7.3	13.6	98641.1	57
1068	9.0	50.6	1901	272.0	272.5	0.5	11.5	10.4	6.9	13.6	98641.3	57
1069	8.9	50.4	1860	272.0	272.5	0.3	11.5	9.1	5.6	13.7	98641.4	57
1070	8.8	50.5	1808	272.0	272.5	0.3	11.5	9.5	7.4	13.7	98641.3	57
1071	9.0	50.6	1898	272.0	272.5	0.5	11.6	10.5	7.3	13.6	98641.6	58
1072	8.9	50.3	1837	272.0	272.5	0.4	11.5	9.8	7.4	13.6	98641.5	59
1073	8.6	50.4	1712	272.0	272.5	-0.1	11.5	9.0	6.9	13.6	98641.4	59
1074	8.6	50.4	1721	272.0	272.5	-0.1	11.5	9.4	7.5	13.6	98641.4	59
1075	8.7	50.4	1757	272.0	272.5	0.1	11.6	9.9	5.4	13.6	98641.7	59
1076	8.8	50.5	1820	272.0	272.5	0.2	11.6	9.7	6.6	13.6	98641.5	59
1077	8.8	50.6	1809	272.0	272.5	0.1	11.6	9.2	5.2	13.6	98647.3	59
1078	8.9	50.7	1845	272.0	272.5	0.2	11.6	9.5	4.4	13.6	98667.8	59
1079	8.5	50.2	1688	272.0	272.5	-0.3	11.5	9.5	5.0	13.6	98668.1	59
1080	8.7	50.8	1773	272.0	274.0	-0.1	11.6	10.2	6.8	13.6	98668.5	59
1081	8.4	50.5	1640	272.0	274.6	-0.4	11.5	8.8	6.0	13.6	98668.6	59
1082	8.2	50.4	1539	272.0	274.6	-0.8	11.6	8.4	5.6	13.6	98668.7	59
1083	8.8	50.7	1825	272.0	274.6	0.6	11.7	9.6	6.3	13.6	98662.6	59
1084	8.8	50.8	1822	272.0	274.7	0.1	11.6	8.9	6.1	13.6	98642.6	59
1085			1994	272.0	274.6	1.0	11.7	9.6	5.5	13.6	98642.5	59
1086	9.6	50.5	2198	272.0	271.6	1.4	11.5	10.0	5.9	13.6	98642.9	59
1087	10.0	50.6	2354	272.0	271.6	2.2	11.6	10.5	5.2	13.6	98642.8	59
1088	10.3	50.5	2382	272.0	271.6	2.7	11.7	10.7	5.6	13.6	98648.7	59
1089	10.6	50.5	2304	272.0	271.6	1.8	11.5	11.0	4.9	13.7	98668.8	59
1090	9.9	50.5	2270	272.0	270.3	1.7	11.5	10.3	5.9	13.7	98668.9	59
1091	10.5	50.5	2353	272.0	269.0	2.0	11.5	10.9	5.5	13.7	98668.9	59
1092	10.1	50.4	2312	272.0	269.0	1.9	11.5	10.5	5.4	13.7	98668.9	59
1093	9.3	50.5	2216	272.0	269.0	1.5	11.5	9.7	5.3	13.7	98668.6	59
1094	9.4	50.1	2074	272.0	269.0	1.0	11.5	9.8	7.5	13.7	98668.3	59
1095			2100	272.0	268.9	1.1	11.5	9.4	7.5	13.8	98668.1	58
1096			2066	272.0	266.7	0.9	11.5	9.5	7.3	13.8	98668.1	58
1097			2121	272.0	266.7	1.1	11.5	9.1	10.1	13.8	98668.2	58
1098			2032	272.0	266.7	0.8	11.5	8.7	9.0	13.8	98668.1	58
1099	9.2	50.9	1967	272.0	266.7	0.7	11.5	8.9	8.7	13.8	98667.9	58
1100	8.8	50.4	1789	272.0	266.7	0.0	11.5	8.8	7.7	13.8	98667.9	58
1101	8.6	50.3	1725	272.0	266.7	-0.2	11.6	8.3	7.0	13.8	98667.4	56
1102	8.5	50.7	1693	272.0	266.7	-0.3	11.6	8.3	6.0	13.8	98666.9	56
1103	8.2	50.3	1517	272.0	266.7	-0.8	11.5	8.5	7.6	13.8	98667.3	56
1104	7.7	50.5	1293	272.0	266.7	-1.4	11.5	7.9	6.6	13.8	98667.6	56
1105	7.2	50.3	1063	272.0	266.7	-1.8	11.5	6.9	6.8	13.8	98667.2	56
1106	6.9	49.7	965	272.0	266.7	-1.8	11.2	7.0	6.8	13.8	98667.7	56
1107	6.8	49.0	896	272.0	266.7	-1.8	11.0	6.5	5.6	13.7	98667.8	57
1108	6.8	49.4	900	272.0	266.7	-1.8	11.0	7.6	6.3	13.7	98667.8	57
1109	7.2	50.5	1077	272.0	266.7	-1.6	11.5	7.9	6.5	13.7	98667.7	57
1110	7.8	51.0	1332	272.0	266.7	-1.3	11.7	7.8	6.9	13.7	98667.6	57
1111	7.9	51.3	1396	272.0	266.7	-1.2	11.7	8.5	7.0	13.7	98668.1	57
1112	8.0	50.7	1437	272.0	266.7	-1.0	11.6	7.3	6.0	13.7	98668.1	57
1113	8.2	51.2	1526	272.0	263.9	-0.6	11.6	8.2	6.3	13.6	98668.0	57
1114	8.0	50.8	1452	272.0	263.0	-1.0	11.6	8.2	6.0	13.7	98668.3	57
1115	8.0	50.8	1432	272.0	263.0	-1.0	11.6	7.8	6.0	13.6	98668.3	57
1116	7.8	51.1	1335	272.0	263.0	-1.3	11.6	7.3	6.9	13.7	98668.4	57
1117	7.2	51.1	1089	272.0	262.9	-1.7	11.5	7.0	6.2	13.6	98668.1	57
1118	7.7	51.5	1294	272.0	260.4	-0.8	11.7	8.5	7.0	13.7	98668.1	57
1119	8.3	50.4	1567	272.0	260.2	-0.5	11.7	8.8	6.4	13.6	98668.0	58
1120	8.9	50.3	1873	272.0	260.2	0.6	11.7	9.7	5.2	13.6	98667.9	58
1121			2028	272.0	260.2	1.1	11.6	9.1	6.3	13.6	98668.2	58
1122	10.0	51.3	2102	272.0	258.1	1.2	11.5	10.4	5.0	13.6	98668.0	58
1123	9.4	50.9	2184	272.0	257.9	1.3	11.5	9.8	6.9	13.6	98668.0	58
1124	9.7	50.4	2151	272.0	257.9	1.3	11.5	10.1	5.7	13.7	98668.3	58
1125			2072	272.0	257.9	1.0	11.5	9.4	6.3	13.7	98668.4	58
1126	9.2	50.8	1977	272.0	257.9	0.7	11.5	9.4	7.4	13.7	98668.4	58
1127			2064	272.0	257.9	1.0	11.6	9.4	6.8	13.7	98668.7	58
1128	10.0	50.3	2037	272.0	257.9	0.9	11.5	10.4	6.1	13.7	98668.7	58
1129	9.7	50.7	2146	272.0	257.9	1.2	11.5	10.1	5.8	13.7	98668.6	58
1130	9.4	50.9	2239	272.0	257.9	1.6	11.5	9.8	7.0	13.8	98668.7	58
1131	9.9	50.8	2286	272.0	257.9	1.8	11.5	10.3	6.5	13.8	98668.6	58
1132	10.6	50.7	2373	272.0	257.9	2.5	11.7	11.0	6.4	13.8	98668.5	58
1133	11.2	51.6	2407	272.0	257.9	3.5	11.8	11.7	7.8	13.8	98668.5	58
1134	10.9	51.4	2426	272.0	257.9	4.9	11.9	11.4	6.6	13.8	98668.8	58
1135	10.5	51.2	2271	272.0	257.9	3.6	11.5	10.9	6.2	13.8	98668.4	58
1136	10.6	50.8	2328	272.0	257.9	3.3	11.5	11.1	6.3	13.7	98668.7	58
1137	10.6	51.1	2359	272.0	257.9	3.4	11.6	11.0	5.8	13.7	98668.7	58
1138	10.4	50.6	2369	272.0	257.9	3.5	11.6	10.9	7.5	13.7	98669.0	58
1139	11.0	51.6	2433	272.0	257.8	5.0	12.0	11.4	5.4	13.7	98669.2	58
1140	11.4	51.5	2415	272.0	257.8	6.1	11.9	11.8	5.0	13.7	98669.2	58
1141	11.2	51.2	2293	272.0	257.8	4.4	11.4	11.6	6.9	13.8	98669.2	58
1142	11.1	50.7	2372	272.0	257.8	4.7	11.7	11.5	7.9	13.8	98669.1	58
1143	11.7	52.2	2467	272.0	257.9	7.2	12.1	12.2	5.5	13.8	98669.7	58
1144	12.0	50.8	2394	272.0	257.9	7.4	11.7	12.5	4.7	13.8	98669.2	58

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (-C)	Pressure (kPa)	Relative Humidity (%)
1145	11.1	49.8	2085	272.0	257.9	4.5	11.2	11.5	3.8	13.8	98669.1	58
1146	11.8	51.1	2340	272.0	257.8	5.3	11.7	12.2	4.6	13.8	98669.2	58
1147	11.6	51.2	2422	272.0	257.9	6.9	11.9	12.1	5.2	13.8	98668.9	58
1148	12.1	51.6	2398	272.0	257.9	7.4	11.8	12.6	5.1	14.0	98669.1	59
1149	11.2	51.1	2309	272.0	257.9	5.9	11.3	11.6	4.7	14.0	98669.4	59
1150	10.1	49.8	2162	272.0	257.9	4.0	11.2	10.5	4.3	14.0	98669.2	59
1151	9.1	50.7	1926	272.0	257.9	2.7	11.4	9.9	5.8	14.0	98669.2	59
1152	10.8	51.2	2405	272.0	257.9	4.4	11.9	11.2	5.1	14.0	98669.0	59
1153	10.9	51.2	2425	272.0	257.9	5.7	11.9	11.4	6.5	14.0	98669.1	59
1154	11.3	50.6	2354	272.0	257.9	5.0	11.6	11.8	7.0	14.0	98668.9	58
1155	10.8	50.6	2344	272.0	258.1	4.7	11.6	11.2	5.2	14.0	98669.0	58
1156	10.0	50.8	2344	272.0	260.6	4.4	11.5	10.4	6.3	14.0	98668.8	58
1157	9.8	51.0	2203	272.0	260.6	3.3	11.4	10.2	8.5	14.0	98668.7	58
1158	10.9	50.3	2356	272.0	260.6	3.5	11.6	11.3	8.0	14.0	98668.5	58
1159	9.9	52.5	2352	272.0	260.6	3.3	11.5	10.3	8.9	14.0	98668.5	58
1160	10.1	51.2	2263	272.0	260.6	2.5	11.5	10.5	7.7	14.0	98668.4	56
1161	9.6	50.0	2287	272.0	260.7	2.2	11.5	10.0	7.2	14.0	98668.2	56
1162	9.0	51.3	1905	272.0	260.7	0.6	11.4	9.9	5.7	14.0	98668.4	56
1163	8.7	51.2	1752	272.0	260.7	-0.1	11.5	9.5	5.7	14.0	98668.4	56
1164	8.4	50.9	1608	272.0	260.7	-0.5	11.5	10.1	6.2	14.0	98668.2	56
1165	8.0	51.4	1454	272.0	260.7	-1.0	11.5	9.0	7.3	13.9	98668.5	56
1166	7.7	51.4	1289	272.0	263.4	-1.5	11.6	8.0	7.7	13.8	98668.1	57
1167	7.6	51.8	1270	272.0	263.4	-1.5	11.6	7.3	6.7	13.8	98668.1	57
1168			1641	272.0	263.4	-0.2	11.7	8.0	5.6	13.8	98668.2	57
1169			1870	272.0	262.9	0.5	11.7	8.5	6.2	13.8	98668.4	57
1170			1956	272.0	260.5	0.8	11.6	10.3	5.7	13.8	98667.7	57
1171			1707	272.0	260.5	-0.2	11.5	9.5	6.4	13.7	98668.1	58
1172	8.6	51.4	1715	272.0	260.5	-0.3	11.6	8.9	5.3	13.7	98668.2	58
1173	8.4	50.5	1613	272.0	260.5	-0.5	11.6	7.9	5.4	13.7	98668.3	58
1174	8.0	50.9	1436	272.0	260.5	-1.0	11.5	8.0	8.1	13.7	98668.1	58
1175	8.3	50.7	1576	272.0	260.5	-0.6	11.6	8.5	7.8	13.7	98668.1	58
1176	8.3	51.2	1599	272.0	260.5	-0.6	11.6	8.6	6.8	13.7	98668.7	58
1177	8.7	51.3	1780	272.0	260.5	0.1	11.7	8.6	6.1	13.7	98668.0	57
1178	8.6	50.8	1731	272.0	260.5	-0.1	11.6	8.8	7.2	13.7	98667.9	57
1179	8.5	50.9	1671	272.0	260.5	-0.4	11.6	8.6	5.8	13.7	98668.1	57
1180	8.6	51.6	1726	272.0	259.7	-0.2	11.6	8.3	6.1	13.7	98667.8	57
1181	8.2	50.6	1542	272.0	257.6	-0.7	11.5	7.7	5.8	13.7	98667.4	57
1182	8.7	51.0	1775	272.0	257.6	0.2	11.7	9.1	5.7	13.7	98666.8	58
1183	10.5	50.8	2189	272.0	257.6	1.7	11.7	10.9	5.5	13.7	98666.0	59
1184	9.2	50.9	1961	272.0	257.9	0.8	11.5	9.7	5.5	13.7	98664.7	59
1185	8.9	50.6	1849	272.0	260.7	0.4	11.5	9.3	5.3	13.7	98665.4	59
1186	8.8	51.0	1796	272.0	262.8	0.2	11.5	8.6	5.9	13.7	98666.2	59
1187	8.2	50.2	1556	272.0	264.5	-0.5	11.5	7.6	6.6	13.7	98665.2	59
1188	7.7	51.4	1292	272.0	267.1	-1.4	11.5	7.3	6.9	13.7	98665.5	59
1189	7.9	50.7	1414	272.0	268.8	-1.1	11.6	8.7	8.0	13.7	98665.8	58
1190	8.0	51.0	1440	272.0	270.8	-0.9	11.7	8.3	7.7	13.7	98666.1	58
1191	8.6	51.2	1713	272.0	272.6	-0.2	11.7	8.9	7.4	13.7	98665.3	58
1192	8.7	50.9	1766	272.0	272.6	-0.1	11.7	9.1	6.8	13.7	98665.1	58
1193	9.1	50.9	1930	272.0	274.5	0.9	11.7	9.1	6.8	13.7	98665.2	58
1194	9.3	50.7	1995	272.0	275.2	1.0	11.6	9.7	6.3	13.7	98664.2	58
1195	8.9	50.1	1838	272.0	275.2	0.2	11.5	9.2	5.9	13.7	98663.9	58
1196	8.1	50.3	1506	272.0	275.2	-0.8	11.5	8.8	6.7	13.7	98664.6	58
1197	8.0	50.3	1431	272.0	275.2	-1.1	11.6	8.9	6.6	13.7	98665.2	58
1198	8.0	50.3	1429	272.0	275.2	-1.0	11.6	9.3	5.0	13.7	98664.3	58
1199	8.1	50.4	1496	272.0	275.2	-0.8	11.6	9.2	6.2	13.7	98665.0	58
1200	8.3	50.6	1589	272.0	275.2	-0.6	11.6	8.7	7.0	13.7	98666.1	58
1201	8.2	50.8	1542	272.0	276.5	-0.7	11.6	9.3	6.2	13.6	98665.7	58
1202	8.1	50.0	1494	272.0	278.0	-0.8	11.6	8.5	6.1	13.6	98665.9	58
1203	8.1	50.6	1479	272.0	278.0	-0.9	11.6	8.4	6.2	13.6	98665.9	58
1204	8.2	50.5	1550	272.0	278.0	-0.7	11.6	8.0	6.1	13.6	98666.6	58
1205	8.5	50.6	1651	272.0	278.0	-0.4	11.6	8.6	7.5	13.6	98666.2	58
1206	8.8	50.5	1827	272.0	275.0	0.1	11.6	8.9	6.9	13.7	98639.6	58
1207	8.7	50.3	1760	272.0	275.0	0.0	11.6	9.0	6.6	13.7	98640.3	58
1208	8.2	51.6	1549	272.0	274.6	-0.7	11.5	8.3	6.0	13.7	98640.4	58
1209			1713	272.0	272.7	-0.3	11.7	8.6	5.9	13.7	98639.8	58
1210			1951	272.0	272.6	0.7	11.7	9.0	5.2	13.7	98640.1	58
1211			2086	272.0	271.4	1.2	11.6	9.5	4.9	13.8	98645.4	58
1212	10.2	50.7	2127	272.0	269.5	1.2	11.5	10.6	5.2	13.8	98666.4	58
1213	10.2	50.5	2255	272.0	269.6	1.6	11.6	10.6	5.7	13.8	98666.5	58
1214	9.5	50.0	2166	272.0	269.6	1.4	11.5	9.8	6.0	13.8	98666.9	58
1215	8.9	50.4	1876	272.0	269.6	0.4	11.5	8.9	6.1	13.8	98667.2	58
1216	8.2	50.6	1546	272.0	269.6	-0.7	11.5	8.3	5.3	13.8	98668.2	58
1217	8.1	50.9	1469	272.0	269.6	-1.0	11.6	9.0	7.2	13.9	98662.8	58
1218	7.9	50.9	1396	272.0	269.5	-1.1	11.5	8.5	6.7	14.0	98643.2	58
1219	7.8	50.7	1372	272.0	269.5	-1.2	11.6	8.0	8.6	14.0	98643.7	58
1220	8.1	50.6	1503	272.0	269.5	-0.9	11.7	8.2	8.3	14.0	98644.0	58
1221	8.5	50.9	1683	272.0	269.5	-0.4	11.7	9.2	8.1	14.0	98643.5	58
1222	8.7	50.6	1757	272.0	269.5	0.0	11.6	8.8	8.4	14.0	98643.6	58
1223	8.5	50.5	1667	272.0	269.5	-0.4	11.6	9.6	9.1	14.0	98643.6	58
1224	8.5	51.4	1692	272.0	270.8	-0.3	11.6	9.7	8.6	14.1	98643.4	56
1225	8.7	50.9	1748	272.0	271.9	-0.1	11.6	9.0	7.5	14.1	98643.3	56
1226	8.6	50.5	1728	272.0	271.9	-0.2	11.6	9.3	6.9	14.1	98642.9	56
1227	8.4	50.9	1607	272.0	271.9	-0.5	11.5	9.8	6.9	14.1	98643.0	56
1228	8.6	51.1	1717	272.0	271.9	0.2	11.7	10.0	6.8	14.1	98643.2	56
1229	10.8	50.8	2074	272.0	273.4	1.4	11.7	11.2	8.6	14.1	98643.2	56
1230	9.6	50.3	2041	272.0	275.0	1.2	11.5	10.0	8.5	14.1	98643.1	56
1231	9.9	50.9	2283	272.0	275.1	1.8	11.6	10.3	8.2	14.1	98643.1	56
1232	11.2	50.8	2327	272.0	277.5	1.9	11.6	11.6	6.9	14.1	98643.2	56

Table E.01 Measurement data - Turbine ON

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

Created on: 11/14/2018

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Turbine Power Output (kW)	Reference Yaw Angle (°)	Yaw Angle (°)	Pitch Angle (°)	Rotor RPM	Nacelle Anemometer Wind Speed (m/s)	10m Anemometer Wind Speed (m/s)	Air Temperature (oC)	Pressure (kPa)	Relative Humidity (%)
1233	10.9	50.5	2361	272.0	277.9	2.4	11.6	11.3	7.8	14.1	98643.0	56
1234	11.1	51.0	2389	272.0	278.0	3.0	11.7	11.5	8.7	14.1	98643.1	56
1235	10.8	51.3	2428	272.0	280.6	4.7	11.9	11.3	9.7	14.0	98643.3	56
1236	9.7	49.8	2225	272.0	281.0	3.7	11.5	10.1	8.8	14.0	98643.1	55
1237	8.9	50.1	1870	272.0	281.0	2.2	11.4	9.7	7.4	14.0	98643.3	55
1238	9.8	50.5	2035	272.0	281.0	2.3	11.6	10.2	8.9	14.0	98643.2	55
1239			2157	272.0	281.0	2.1	11.5	9.6	6.9	14.0	98643.3	55
1240			2030	272.0	281.0	1.3	11.5	9.3	8.2	14.0	98643.5	55
1241			1989	272.0	281.0	0.8	11.5	8.7	7.5	13.9	98643.4	55
1242	9.7	50.4	1985	272.0	281.0	0.8	11.5	10.0	8.4	13.8	98643.9	56
1243	9.5	50.8	2052	272.0	281.1	1.0	11.6	9.9	8.1	13.8	98643.9	56
1244	11.2	51.2	2337	272.0	283.4	2.1	11.7	11.7	8.7	13.8	98643.2	56
1245	10.9	51.1	2287	272.0	283.7	1.9	11.5	11.3	11.4	13.8	98643.8	56
1246	9.7	50.4	2307	272.0	283.7	1.9	11.6	10.1	8.6	13.8	98643.4	56
1247	10.8	51.0	2416	272.0	283.7	3.6	11.9	11.2	7.9	13.8	98643.0	55
1248	10.3	50.1	2373	272.0	283.7	3.4	11.6	10.7	8.7	13.8	98643.6	55
1249	9.8	50.2	2383	272.0	283.7	4.0	11.7	10.2	9.1	13.8	98643.0	55
1250	9.8	50.4	2356	272.0	283.7	3.5	11.6	10.2	8.7	13.8	98643.3	55
1251	9.3	50.1	2184	272.0	283.7	2.6	11.4	9.7	8.9	13.8	98643.3	55
1252	8.9	50.1	1850	272.0	283.7	0.9	11.5	9.4	8.1	13.8	98643.0	56
1253	8.6	50.3	1704	272.0	283.7	-0.3	11.5	8.9	8.3	13.7	98643.1	57
1254	8.7	50.5	1761	272.0	283.6	0.1	11.6	8.2	7.1	13.7	98643.7	57
1255	10.0	50.5	2205	272.0	281.4	1.8	11.7	10.4	6.7	13.7	98643.8	57
1256	10.2	50.2	2357	272.0	281.3	2.2	11.7	10.6	6.8	13.7	98643.7	57
1257	9.5	49.9	2244	272.0	281.3	1.9	11.5	9.9	7.3	13.7	98643.8	57
1258			2025	272.0	279.9	1.0	11.4	9.4	8.5	13.7	98643.7	57
1259	8.8	50.5	1819	272.0	278.4	0.3	11.5	9.7	8.4	13.7	98643.3	57
1260	8.9	50.7	1846	272.0	278.4	0.3	11.6	9.2	6.6	13.7	98643.1	57
1261			1998	272.0	278.4	0.9	11.7	9.0	6.3	13.7	98643.3	57
1262	8.8	50.3	1820	272.0	278.4	0.1	11.5	9.5	6.6	13.7	98643.2	57
1263	9.0	50.5	1888	272.0	278.4	0.8	11.6	9.8	5.3	13.7	98643.4	57
1264	10.0	50.6	2334	272.0	278.4	2.4	11.7	10.4	5.6	13.7	98643.5	57
1265	10.8	51.1	2425	272.0	278.5	4.0	11.9	11.3	5.6	13.7	98643.5	58
1266	11.6	51.0	2399	272.0	278.4	4.4	11.8	12.1	6.3	13.7	98644.0	58
1267	11.4	50.8	2389	272.0	278.4	4.9	11.7	11.9	7.4	13.7	98643.4	58
1268	12.3	51.0	2396	272.0	278.5	5.4	11.8	12.8	6.9	13.7	98643.2	58
1269	11.4	51.4	2431	272.0	278.4	6.9	11.9	11.9	8.6	13.7	98643.5	58
1270	12.2	50.9	2329	272.0	279.4	5.9	11.5	12.7	8.5	13.7	98643.5	58
1271	11.6	50.4	2336	272.0	280.7	5.4	11.5	12.1	8.9	13.7	98643.4	57
1272	11.2	51.1	2401	272.0	280.7	6.5	11.8	11.7	8.9	13.7	98643.0	57
1273	11.2	50.5	2374	272.0	280.7	6.6	11.7	11.7	8.4	13.7	98643.0	57
1274	10.6	50.6	2313	272.0	280.7	5.4	11.4	11.1	8.3	13.7	98642.0	57
1275	10.5	49.7	2292	272.0	280.7	4.0	11.3	10.9	8.5	13.6	98640.3	57
1276	10.9	50.4	2361	272.0	280.6	4.5	11.6	11.3	8.8	13.6	98640.5	57
1277	10.3	50.6	2355	272.0	280.7	4.4	11.6	10.8	9.2	13.6	98640.9	57
1278	11.4	50.8	2382	272.0	280.7	4.9	11.7	11.9	9.8	13.6	98641.2	57
1279	11.0	50.3	2360	272.0	280.7	4.7	11.6	11.4	8.8	13.6	98641.2	57
1280	11.2	50.7	2379	272.0	280.7	5.2	11.7	11.6	6.7	13.6	98641.0	57
1281	11.2	50.6	2360	272.0	280.7	5.0	11.6	11.7	7.1	13.6	98641.0	57
1282	10.7	50.3	2280	272.0	280.7	3.8	11.4	11.1	7.8	13.6	98640.2	57
1283			2238	272.0	280.7	3.4	11.5	10.5	8.2	13.6	98638.2	58
1284	9.6	50.5	2295	272.0	280.7	3.2	11.5	10.0	6.5	13.6	98640.4	58
1285	9.9	50.8	2285	272.0	280.7	2.7	11.5	10.3	6.2	13.6	98641.2	58
1286	10.6	50.8	2299	272.0	280.7	2.1	11.6	11.0	7.8	13.7	98641.9	58
1287	10.2	50.6	2205	272.0	280.6	1.7	11.5	10.7	7.7	13.7	98642.8	58
1288	10.3	50.7	2314	272.0	280.6	2.0	11.6	10.8	8.2	13.7	98642.7	58
1289	10.5	51.4	2356	272.0	278.9	2.5	11.6	11.0	10.6	13.7	98642.7	58
1290	11.1	51.1	2439	272.0	278.2	4.7	12.0	11.6	9.5	13.7	98642.5	58
1291	10.4	50.2	2308	272.0	278.3	4.0	11.5	10.8	9.1	13.7	98642.5	58
1292			2126	272.0	278.3	3.0	11.5	9.2	9.0	13.7	98642.2	58
1293	10.9	50.8	2422	272.0	278.3	4.8	11.9	11.3	6.5	13.7	98641.8	58
1294	10.9	50.6	2422	272.0	278.3	5.9	11.9	11.4	7.0	13.7	98642.3	59
1295	10.2	50.4	2212	272.0	278.3	3.8	11.3	10.6	8.0	13.7	98642.4	59
1296			2111	272.0	278.3	3.2	11.4	11.0	7.7	13.7	98641.7	59
1297			2374	272.0	278.2	4.0	11.7	11.5	6.9	13.7	98641.6	59
1298	10.8	51.3	2369	272.0	278.2	4.2	11.6	11.3	6.1	13.7	98642.2	59
1299	9.9	50.8	2101	272.0	278.3	2.9	11.4	10.3	8.2	13.7	98641.5	59
1300	9.5	50.8	2145	272.0	278.3	2.7	11.6	9.9	8.3	13.8	98640.9	56
1301	9.8	51.0	2388	272.0	277.8	3.9	11.8	10.2	7.2	13.8	98641.0	56
1302	9.5	49.6	2174	272.0	275.9	2.5	11.4	9.9	6.4	13.8	98641.5	56
1303			2009	272.0	275.9	1.7	11.5	8.9	6.8	13.8	98641.3	56
1304	9.0	50.2	1878	272.0	275.9	0.9	11.5	9.8	6.2	13.8	98640.1	56
1305	8.9	51.7	1848	272.0	275.9	0.5	11.5	9.3	7.3	13.8	98640.5	57
1306			2105	272.0	275.9	1.2	11.6	9.1	8.9	13.8	98640.3	58
1307	9.6	50.6	2236	272.0	275.9	1.6	11.6	10.0	9.5	13.8	98640.4	58
1308	9.3	50.3	2174	272.0	275.9	1.3	11.5	9.7	8.7	13.8	98640.2	58
1309	9.3	50.0	2213	272.0	275.9	1.5	11.5	9.7	6.3	13.8	98640.4	58
1310			2076	272.0	275.9	1.1	11.4	9.3	6.0	13.8	98640.5	58
1311	9.2	50.4	1975	272.0	275.9	0.7	11.5	10.5	6.1	13.8	98639.5	58
1312	9.2	50.6	1967	272.0	275.9	0.8	11.5	9.6	6.7	13.8	98638.6	58
1313	8.7	50.5	1769	272.0	275.9	0.1	11.5	8.8	6.6	13.8	98638.9	58
1314	8.7	50.5	1740	272.0	275.9	0.1	11.6	10.0	6.2	13.8	98637.7	58
1315	8.6	50.1	1715	272.0	275.9	-0.1	11.6	9.4	6.2	13.8	98637.6	58
1316	8.5	50.6	1659	272.0	275.9	-0.4	11.6	8.6	4.7	13.8	98639.1	58
1317	8.5	50.5	1649	272.0	275.9	-0.5	11.6	8.7	4.4	13.8	98642.0	58
1318	8.4	50.5	1621	272.0	275.9	-0.5	11.6	7.4	5.2	14.0	98639.4	58
1319	8.3	50.5	1599	272.0	275.9	-0.5	11.6	7.8	4.5	14.0	98639.7	58
1320	8.9	50.6	1867	272.0	275.9	0.9	11.6	9.7	5.3	14.0	98640.1	58

Table E.02 Measurement data - Background

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

Created on: 11/14/2018

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (C)	Pressure (kPa)	Relative Humidity (%)
1			0.3	5.3	24	98973.6	62
2			0.3	5.1	24	98973.7	62
3			0.4	4.8	24	98973.8	62
4			0.5	4.9	24	98973.8	62
5			0.3	6.9	24	98974.0	62
6			0.3	5.2	24	98973.7	63
7			0.2	6.3	24	98974.5	63
8			0.1	5.9	24	98974.5	63
9			0.2	4.6	24	98975.2	63
10			0.5	4.2	24	98975.2	63
11			0.5	5.4	24	98974.7	63
12			0.3	4.9	24	98975.1	63
13			0.4	4.4	24	98975.7	63
14			0.3	4.2	24	98976.8	63
15			0.3	7.4	24	98977.6	63
16			0.3	8.0	24	98975.6	63
17			0.2	6.9	24	98974.3	63
18			0.3	6.4	24	98975.4	63
19			0.4	5.9	24	98974.2	63
20			0.4	6.4	24	98974.2	63
21			0.5	5.7	24	98974.0	63
22			0.4	4.8	24	98974.0	63
23			0.5	4.8	24	98973.8	63
24			0.6	5.0	24	98973.9	63
25			0.5	4.3	24	98974.1	63
26			0.5	3.7	24	98974.0	63
27			0.4	5.5	24	98974.3	63
28			0.5	6.8	25	98974.5	64
29			0.5	6.5	25	98974.5	64
30			0.4	6.7	25	98974.5	64
31			0.4	6.4	25	98974.0	64
32			0.4	6.0	25	98974.1	64
33			0.4	6.5	25	98973.9	62
34			0.6	6.5	25	98974.3	61
35			0.5	6.3	25	98974.0	61
36			0.5	5.4	25	98974.0	61
37			0.5	6.1	25	98974.2	61
38			0.5	6.0	25	98974.3	61
39			0.4	5.4	25	98974.6	61
40			0.4	6.1	25	98974.3	61
41			0.4	6.9	25	98973.8	61
42			0.4	7.1	25	98973.6	61
43			0.3	6.6	25	98973.2	61
44			0.4	6.0	25	98974.0	61
45			0.4	5.5	25	98974.4	61
46			0.3	5.6	25	98974.5	61
47			0.5	4.6	25	98974.0	61
48			0.4	5.0	25	98974.3	61
49			0.4	6.6	25	98974.5	61
50			0.3	6.4	25	98974.5	61
51			0.3	5.9	24	98949.3	61
52			0.3	5.8	24	98949.4	61
53			0.4	6.8	24	98949.4	61
54			0.4	7.0	24	98948.7	61
55			0.3	5.8	24	98948.8	61
56			0.3	4.7	24	98948.7	61
57			0.3	6.0	24	98948.5	62
58			0.3	6.2	24	98948.6	62
59			0.3	5.7	24	98948.8	62
60			0.3	4.9	24	98949.6	62
61			0.3	5.0	24	98948.4	62
62			0.2	5.0	24	98948.6	62
63			0.2	4.5	24	98951.8	62
64			0.2	4.1	24	98953.0	62
65			0.3	4.1	24	98953.8	62
66			0.3	3.9	24	98953.5	62
67			0.2	3.2	24	98954.2	62
68			0.1	3.6	24	98956.0	62
69			0.2	4.0	24	98955.1	65
70			0.2	4.2	24	98953.6	65
71			0.2	4.0	24	98953.3	65
72			0.1	3.8	24	98949.8	65
73			0.1	3.6	24	98948.1	65
74			0.1	4.2	24	98948.3	65
75			0.0	4.3	24	98948.9	65
76			0.0	4.8	24	98949.3	65
77			0.0	5.2	24	98948.5	65
78			0.2	4.3	24	98951.1	65
79			0.3	4.4	24	98948.4	65
80			0.3	5.1	24	98948.4	65
81			0.3	5.3	24	98952.4	63
82			0.3	5.8	24	98950.3	63
83			0.3	5.5	24	98948.2	63

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (C)	Pressure (kPa)	Relative Humidity (%)
84			0.3	5.4	24	98947.9	63
85			0.3	5.5	24	98948.2	63
86			0.2	5.5	24	98948.1	63
87			0.1	4.6	24	98948.0	63
88			0.2	5.2	24	98947.7	63
89			0.2	5.3	24	98947.7	63
90			0.2	5.2	24	98947.8	62
91			0.2	5.1	24	98948.2	62
92			0.3	5.0	24	98948.4	62
93			0.3	4.6	24	98948.5	62
94			0.3	4.1	24	98948.6	62
95			0.3	3.9	24	98948.6	62
96			0.3	4.6	24	98948.2	63
97			0.3	3.6	24	98948.1	63
98			0.4	3.9	24	98948.2	63
99			0.3	4.1	24	98948.2	63
100			0.2	3.9	24	98948.3	63
101			0.3	3.8	24	98948.9	63
102			0.2	5.0	25	98948.8	64
103			0.2	5.3	25	98948.9	64
104			0.2	4.9	25	98948.8	64
105			0.2	5.5	25	98948.6	64
106			0.3	5.1	25	98949.2	64
107			0.2	5.6	25	98948.9	64
108			0.2	5.6	25	98948.8	62
109			0.3	6.2	25	98949.0	62
110			0.2	6.8	25	98949.1	62
111			0.2	5.8	25	98948.9	62
112			0.1	4.9	25	98949.1	62
113			0.1	4.4	25	98949.4	62
114			0.1	5.2	25	98949.0	63
115			0.3	5.3	25	98948.7	64
116			0.2	4.5	25	98948.7	64
117			0.3	3.9	25	98948.4	64
118			0.4	5.0	25	98948.7	63
119			0.3	5.8	25	98948.8	63
120			0.3	6.3	25	98948.8	63
121			0.3	5.6	25	98948.9	63
122			0.2	6.6	25	98949.0	63
123			0.3	6.9	25	98949.8	63
124			0.6	7.4	25	98949.8	62
125			0.6	6.2	25	98949.1	62
126	11.5	41.8	0.5	8.2	25	98949.3	62
127			0.4	6.7	25	98949.1	62
128			0.3	6.7	25	98949.9	62
129			0.3	7.4	25	98949.9	62
130			0.3	8.4	25	98949.0	62
131			0.3	7.6	25	98949.1	62
132			0.3	7.2	25	98948.6	62
133			0.4	7.9	25	98948.6	62
134			0.5	7.0	25	98948.7	62
135			0.5	7.4	25	98948.5	62
136			0.5	6.5	25	98948.5	62
137			0.4	7.6	25	98948.4	63
138			0.4	7.6	25	98948.3	63
139			0.4	7.6	25	98948.3	63
140			0.3	6.8	25	98948.4	63
141			0.4	6.7	25	98948.3	63
142			0.3	7.1	25	98948.3	62
143			0.3	7.4	25	98948.4	61
144			0.3	6.4	25	98948.6	61
145			0.4	5.5	25	98948.6	61
146			0.3	5.8	25	98948.5	61
147			0.5	6.4	25	98948.7	61
148			0.4	6.1	25	98949.0	61
149			0.4	7.0	25	98948.9	63
150			0.5	6.9	25	98949.0	63
151			0.3	6.9	25	98948.8	63
152			0.3	6.5	25	98948.9	63
153			0.3	5.3	25	98948.9	63
154			0.4	6.1	25	98949.1	62
155			0.4	5.5	25	98949.2	61
156			0.3	5.5	25	98949.4	61
157			0.5	4.7	25	98949.6	61
158			0.4	5.6	25	98949.7	61
159			0.3	6.3	25	98948.8	61
160			0.5	5.7	25	98948.8	62
161			0.3	5.0	25	98949.0	63
162			0.3	5.2	25	98949.0	63
163			0.3	5.4	25	98949.1	63
164			0.8	5.1	25	98949.0	63
165			1.4	6.3	25	98949.0	63
166			0.4	5.3	25	98873.7	62

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (C)	Pressure (kPa)	Relative Humidity (%)
167			0.2	6.3	25	98874.2	63
168			0.1	6.3	25	98873.8	63
169			0.2	5.6	25	98873.6	63
170			0.3	5.2	25	98873.5	63
171			0.4	7.0	25	98873.0	62
172	9.0	43.4	0.5	6.5	25	98873.3	62
173	9.3	42.3	0.5	6.7	25	98873.3	62
174	9.0	42.4	0.5	6.4	25	98873.5	62
175	7.4	43.2	0.4	5.3	25	98873.4	61
176	7.8	41.4	0.4	5.6	25	98873.5	61
177			0.4	5.7	25	98873.5	61
178	7.0	42.5	0.5	5.0	25	98873.6	61
179	7.0	42.0	0.5	5.0	25	98873.5	61
180			0.6	10.3	34	98874.6	61
181			0.5	5.9	25	98861.6	61
182			0.4	6.1	25	98848.9	61
183			0.4	6.0	25	98848.3	61
184			0.4	6.5	25	98848.4	61
185			0.4	5.4	25	98848.1	61
186			0.4	5.3	25	98848.0	61
187			0.4	5.7	25	98848.1	62
188			0.3	5.1	25	98847.9	62
189	7.8	41.8	0.3	5.6	25	98848.2	62
190	9.3	40.9	0.4	6.7	25	98848.2	62
191	8.5	40.7	0.3	6.1	25	98848.1	62
192	7.4	41.3	0.3	5.3	25	98847.8	62
193	7.2	41.7	0.3	5.2	25	98848.0	62
194	8.3	41.2	0.2	5.9	25	98848.3	62
195	7.6	41.2	0.2	5.5	25	98848.3	62
196	7.7	41.2	0.2	5.5	25	98848.5	62
197	7.6	41.3	0.2	5.5	25	98848.3	62
198	7.6	40.9	0.3	5.4	25	98848.4	62
199	9.3	40.8	0.3	6.7	25	98848.3	62
200	8.3	41.5	0.3	5.9	25	98848.3	62
201	8.2	40.6	0.3	5.9	25	98848.5	62
202	7.2	40.7	0.3	5.2	25	98848.6	62
203	7.1	41.2	0.2	5.1	25	98848.3	62
204	7.1	41.1	0.2	5.1	25	98848.4	62
205	6.4	41.2	0.2	4.6	25	98848.2	62
206	8.8	41.2	0.3	6.3	25	98848.4	62
207	8.5	41.3	0.3	6.1	25	98848.3	62
208	7.4	41.7	0.2	5.3	25	98848.3	62
209	6.2	42.7	0.2	4.4	25	98848.3	62
210			0.2	4.4	25	98848.1	62
211			0.2	4.9	25	98848.4	62
212			0.2	5.0	25	98849.1	62
213			0.1	4.9	25	98848.3	62
214			0.1	4.7	25	98848.2	62
215	5.7	43.5	0.2	4.1	25	98848.1	62
216	4.6	42.6	0.3	3.3	25	98848.0	62
217	5.0	42.3	0.3	3.6	25	98848.3	64
218	4.8	41.6	0.3	3.4	25	98848.1	65
219	6.8	41.8	0.2	4.9	25	98847.4	65
220	6.3	41.7	0.2	4.5	25	98847.6	65
221	5.9	40.4	0.3	4.2	25	98847.7	65
222	5.2	41.2	0.2	3.7	25	98847.7	65
223	5.5	39.9	0.1	4.0	25	98827.2	62
224	5.3	40.9	0.2	3.8	25	98822.0	62
225	4.4	40.1	0.2	3.2	25	98821.9	62
226	4.0	39.7	0.2	2.9	25	98822.2	62
227	3.9	40.8	0.2	2.8	25	98822.0	62
228	5.9	41.7	0.4	4.3	25	98822.3	62
229	8.5	41.1	0.4	6.1	25	98824.9	63
230	8.1	39.6	0.4	5.8	25	98822.6	63
231	7.1	40.3	0.3	5.1	25	98822.4	63
232	7.6	39.7	0.3	5.5	25	98823.1	63
233	6.8	41.4	0.3	4.9	25	98822.4	63
234			0.3	5.3	25	98822.2	63
235	8.6	40.6	0.2	6.1	25	98822.3	61
236	8.9	39.0	0.1	6.4	25	98822.2	60
237	8.4	40.3	0.3	6.0	25	98822.1	60
238	8.5	40.5	0.2	6.1	25	98822.0	60
239	7.9	40.1	0.1	5.7	25	98822.1	60
240	8.8	40.4	0.1	6.3	25	98822.2	60
241	8.1	40.5	0.2	5.8	25	98822.4	60
242	6.9	40.7	0.2	5.0	25	98822.5	60
243	6.0	40.0	0.4	4.3	25	98822.3	60
244	4.9	40.0	0.4	3.5	25	98822.2	60
245	5.6	40.0	0.3	4.0	25	98822.1	60
246	5.1	40.2	0.3	3.7	25	98822.3	60
247	4.9	40.1	0.3	3.5	25	98822.3	64
248	7.8	40.4	0.3	5.6	25	98822.7	64
249	8.1	40.9	0.3	5.8	25	98822.4	64

Table E.02 Measurement data - Background

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

Created on: 11/14/2018

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (oC)	Pressure (kPa)	Relative Humidity (%)
250	8.4	40.7	0.4	6.0	25	98822.6	64
251	7.6	40.4	0.4	5.4	25	98822.8	64
252	8.0	40.2	0.4	5.7	25	98823.3	63
253	6.9	40.3	0.5	5.0	25	98822.9	61
254	7.7	40.4	0.5	5.5	25	98822.8	61
255	9.4	39.8	0.3	6.7	25	98822.6	61
256	8.8	40.0	0.4	6.3	25	98823.5	61
257	8.4	40.3	0.4	6.0	25	98822.8	61
258	8.0	40.9	0.4	5.8	25	98822.7	61
259	7.2	40.1	0.4	5.2	25	98822.6	60
260	5.4	40.4	0.3	3.9	25	98822.5	60
261	7.2	40.3	0.2	5.2	25	98822.7	60
262	8.0	40.4	0.2	5.7	25	98822.7	60
263	7.4	40.3	0.3	5.3	25	98822.7	60
264	7.6	40.7	0.4	5.5	25	98822.6	60
265	7.0	41.7	0.3	5.0	25	98822.5	60
266	6.1	42.4	0.3	4.4	25	98822.9	60
267	5.8	43.0	0.3	4.2	25	98822.6	60
268			0.2	4.0	25	98822.2	60
269			0.2	4.2	25	98822.3	60
270			0.1	4.0	25	98822.2	60
271			0.1	4.3	25	98822.5	62
272	5.0	43.6	0.1	3.6	25	98824.9	62
273	5.3	43.1	0.1	3.8	25	98821.9	62
274	5.5	42.2	0.1	4.0	25	98822.0	62
275	6.7	41.2	0.2	4.8	25	98822.0	62
276	6.6	42.2	0.2	4.7	25	98822.0	62
277	6.2	41.1	0.2	4.4	25	98822.2	60
278	5.6	40.3	0.2	4.0	25	98822.3	60
279	8.2	39.8	0.2	5.9	25	98822.3	60
280	8.6	40.0	0.2	6.2	25	98824.7	60
281	7.5	40.8	0.1	5.4	25	98823.0	60
282	7.7	41.1	0.2	5.5	25	98822.8	60
283	7.6	41.3	0.3	5.4	25	98822.6	61
284	6.6	40.4	0.3	4.7	25	98822.5	61
285	7.7	40.3	0.2	5.5	25	98822.3	61
286	7.9	40.7	0.2	5.6	25	98822.3	61
287	6.5	40.7	0.2	4.6	25	98822.2	61
288	6.0	41.1	0.2	4.3	25	98822.0	61
289	5.3	40.8	0.3	3.8	25	98822.0	60
290	5.1	40.6	0.3	3.6	25	98821.7	60
291	5.2	40.6	0.4	3.7	25	98821.9	60
292	5.3	40.6	0.3	3.8	25	98822.0	60
293	4.8	40.4	0.2	3.4	25	98822.1	60
294	4.2	41.3	0.3	3.0	25	98822.1	61
295	5.4	41.8	0.3	3.9	25	98822.2	63
296	7.4	41.8	0.3	5.3	25	98822.3	63
297	7.8	41.9	0.3	5.6	25	98822.2	63
298	6.5	41.8	0.1	4.6	25	98822.1	63
299	5.5	42.0	0.1	3.9	25	98822.3	63
300	6.4	41.9	0.2	4.6	25	98822.3	63
301	6.8	42.6	0.3	4.8	25	98822.4	60
302	7.9	43.4	0.3	5.6	25	98822.1	60
303			0.1	5.2	25	98822.3	60
304			0.1	5.1	25	98822.4	60
305			0.2	5.0	25	98822.4	60
306			0.3	4.8	25	98822.3	60
307			0.3	5.6	25	98822.5	60
308	7.8	43.6	0.3	5.6	25	98822.4	60
309	6.8	42.7	0.3	4.9	25	98822.2	60
310	7.4	42.7	0.3	5.3	25	98822.5	60
311	6.6	42.7	0.2	4.8	25	98822.3	60
312	7.1	41.6	0.1	5.1	25	98822.2	59
313	6.6	39.8	0.2	4.7	25	98822.2	59
314	6.1	40.3	0.3	4.3	25	98822.1	59
315	5.7	40.6	0.4	4.1	25	98822.1	59
316	4.9	40.8	0.5	3.5	25	98822.1	59
317	5.3	40.9	0.5	3.8	25	98819.9	60
318	6.8	42.8	0.3	4.9	25	98793.7	61
319	5.5	42.7	0.3	3.9	25	98793.6	61
320	5.5	42.7	0.2	3.9	25	98793.7	61
321	4.6	43.4	0.1	3.3	25	98793.6	61
322	6.8	43.2	0.3	4.9	25	98794.0	61
323	8.1	42.4	0.3	5.8	25	98793.8	60
324	9.2	42.5	0.3	6.6	26	98793.9	60
325	10.2	42.6	0.2	7.3	26	98794.0	60
326	8.5	43.8	0.3	6.1	26	98793.8	60
327			0.3	5.1	26	98793.9	60
328			0.2	5.1	26	98794.2	60
329			0.2	4.9	26	98794.3	60
330			0.1	5.0	26	98794.2	60
331			0.2	6.1	26	98794.1	60
332	7.8	43.3	0.2	5.6	26	98794.2	60

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (oC)	Pressure (kPa)	Relative Humidity (%)
333	6.7	42.4	0.3	4.8	26	98794.1	60
334	7.6	42.6	0.3	5.4	26	98794.2	60
335			0.2	6.0	26	98794.3	59
336			0.2	5.1	26	98794.3	59
337			0.2	4.8	26	98794.5	59
338	6.6	43.7	0.3	4.7	26	98794.4	59
339			0.2	4.9	26	98794.2	59
340			0.3	4.8	26	98794.0	60
341			0.3	4.1	26	98794.4	61
342			0.3	5.0	26	98794.4	61
343			0.5	5.2	26	98794.3	61
344			0.4	4.7	26	98795.0	61
345			0.4	3.8	26	98690.6	57
346			0.2	4.0	26	98690.7	58
347			0.2	4.5	26	98690.7	60
348			0.2	4.6	26	98690.6	60
349			0.3	5.1	26	98690.6	60
350			0.3	5.5	26	98690.5	60
351			0.3	7.3	26	98690.8	59
352			0.4	7.1	26	98690.9	57
353			0.3	6.6	26	98690.8	57
354			0.3	6.6	26	98690.9	57
355			0.3	6.7	26	98690.7	57
356			0.3	5.6	26	98690.5	57
357			0.3	5.8	26	98690.6	58
358			0.3	5.8	26	98690.4	58
359			0.4	4.8	26	98690.4	58
360			0.4	4.4	26	98690.7	58
361			0.5	5.4	26	98690.7	58
362			0.5	7.9	26	98691.0	58
363			0.4	7.5	26	98690.8	58
364			0.4	8.5	26	98690.6	57
365			0.4	8.6	26	98690.7	57
366			0.3	7.5	26	98690.8	57
367			0.5	7.6	26	98690.7	57
368			0.4	7.7	26	98690.8	57
369			0.3	7.2	26	98690.9	57
370			0.4	7.8	26	98691.1	57
371			0.3	7.4	26	98691.0	57
372			0.5	5.5	26	98690.7	57
373			0.4	4.9	26	98690.5	58
374			0.4	4.9	26	98690.5	58
375			0.4	5.7	26	98690.9	58
376			0.3	5.5	26	98690.4	58
377			0.3	6.2	26	98690.3	58
378			0.3	5.8	26	98690.4	58
379			0.5	5.4	26	98690.6	58
380			0.5	5.4	26	98690.6	58
381			0.4	5.6	26	98691.4	58
382			0.2	5.6	26	98691.2	58
383			0.2	5.4	26	98691.2	58
384			0.4	5.1	26	98691.0	58
385			0.4	4.3	26	98690.4	58
386			0.4	8.2	26	98697.2	58
387			0.4	4.2	26	98697.9	58
388			0.4	4.3	26	98701.9	58
389			0.4	4.1	26	98717.7	58
390			0.4	3.8	26	98690.1	60
391			0.4	4.7	26	98690.0	60
392			0.5	4.2	26	98689.8	60
393			0.4	4.6	26	98689.6	60
394			0.4	4.8	26	98689.5	60
395			0.3	5.1	26	98689.7	60
396			0.3	4.3	26	98689.7	59
397			0.3	3.9	26	98689.7	59
398			0.4	3.6	26	98689.9	59
399			0.3	4.1	26	98690.0	59
400			0.3	4.3	26	98689.8	59
401			0.4	5.2	26	98689.3	59
402			0.4	5.3	26	98674.1	59
403			0.3	6.0	26	98663.5	59
404			0.2	5.5	26	98663.5	59
405			0.3	4.1	26	98663.5	59
406			0.3	3.8	26	98663.4	59
407			0.3	5.2	26	98663.6	59
408			0.4	5.5	26	98684.3	59
409			0.6	6.4	26	98690.0	59
410			0.4	6.5	26	98689.9	59
411			0.4	7.4	26	98689.9	59
412			0.4	7.9	26	98690.0	59
413			0.3	7.6	26	98690.2	59
414			0.4	7.8	26	98671.9	58
415			0.4	8.5	26	98663.7	57

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (oC)	Pressure (kPa)	Relative Humidity (%)
416			0.3	6.7	26	98663.5	57
417			0.4	5.9	26	98663.2	57
418	12.3	41.3	0.4	8.8	26	98663.0	57
419			0.3	8.1	26	98663.2	57
420			0.3	7.1	26	98663.4	57
421			0.2	7.0	26	98663.3	57
422			0.3	6.5	26	98663.3	57
423			0.3	6.5	26	98663.0	57
424			0.2	6.8	26	98663.2	57
425			0.3	7.1	26	98663.3	57
426			0.4	7.0	26	98663.3	57
427			0.3	6.1	26	98663.2	57
428			0.3	5.7	26	98663.0	57
429			0.2	6.0	26	98663.3	57
430			0.3	6.3	26	98663.6	57
431			0.3	6.7	26	98663.3	57
432			0.4	5.9	26	98663.2	58
433			0.4	5.7	26	98663.2	58
434			0.4	5.0	26	98663.4	58
435			0.4	5.1	26	98663.5	58
436			0.4	5.5	26	98663.5	58
437			0.4	6.4	26	98663.5	58
438			0.3	6.2	26	98663.4	58
439			0.4	5.5	26	98663.5	58
440			0.4	4.0	26	98663.5	58
441			0.4	5.6	26	98663.7	58
442			0.4	6.6	26	98663.6	58
443			0.6	7.4	26	98663.6	58
444			0.5	6.4	26	98663.5	58
445			0.5	6.1	26	98663.7	57
446			0.5	5.8	26	98663.7	57
447			0.6	5.5	26	98663.7	57
448			0.4	5.7	26	98663.6	57
449			0.5	6.6	26	98663.6	57
450			0.5	6.0	26	98663.7	57
451			0.5	7.0	26	98663.8	57
452			0.4	6.9	26	98663.9	57
453			0.4	5.3	26	98663.8	57
454			0.5	5.2	26	98663.8	57
455			0.6	5.6	26	98663.8	57
456			0.4	5.8	26	98663.7	57
457			0.4	4.9	26	98663.7	57
458	11.6	44.8	0.5	8.3	26	98663.8	57
459			0.6	5.0	26	98663.9	57
460			0.5	8.1	26	98663.9	57
461			0.4	8.1	26	98663.7	57
462			0.5	7.1	26	98663.6	57
463			0.4	7.2	26	98663.7	57
464			0.4	6.0	26	98664.0	57
465			0.4	8.7	26	98664.0	57
466			0.4	8.1	26	98664.0	57
467			0.5	7.8	26	98664.3	57
468			0.5	8.8	26	98664.0	57
469			0.5	8.4	26	98664.1	57
470			0.5	8.4	26	98664.2	57
471			0.4	7.2	26	98664.0	57
472			0.4	6.5	26	98663.8	57
473			0.5	7.0	26	98663.7	56
474			0.5	7.0	26	98663.9	56
475			0.4	6.6	26	98663.7	56
476			0.4	6.1	26	98663.8	56
477			0.4	5.7	26	98663.8	56
478			0.3	5.5	26	98663.9	56
479			0.2	5.7	26	98663.9	58
480			0.3	5.3	26	98664.0	58
481			0.4	6.1	26	98664.0	58
482			0.3	5.7	26	98663.8	58
483			0.4	7.4	26	98663.9	58
484			0.3	8.0	26	98663.9	57
485			0.4	7.7	26	98664.0	57
486			0.5	7.3	26	98663.9	57
487			0.3	6.4	26	98664.0	57
488			0.3	6.2	26	98664.0	57
489			0.3	6.8	26	98663.8	57
490			0.3	5.8	26	98663.7	57
491			0.4	6.0	26	98663.5	57
492			0.5	5.3	26	98663.5	57
493			0.4	5.8	26	98663.6	57
494			0.4	6.4	26	98663.5	57
495			0.2	6.5	26	98663.8	57
496			0.3	6.1	26	98663.9	58
497			0.4	5.4	26	98663.9	58
498			0.3	5.7	26	98663.9	58

Table E.02 Measurement data - Background

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement

Report ID: 17095.01.T40.RP1

Created on: 11/14/2018

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (°C)	Pressure (kPa)	Relative Humidity (%)
499	7.1	44.0	0.4	5.1	13	98608.5	68
500	7.3	39.7	0.5	5.2	13	98608.8	68
501	6.5	39.2	0.4	4.7	13	98608.6	68
502	7.6	38.6	0.3	5.5	13	98608.8	68
503	8.0	38.7	0.3	5.8	13	98608.6	68
504	8.4	38.6	0.4	6.1	13	98608.8	68
505	10.1	38.4	0.4	7.2	13	98608.6	68
506	11.4	38.4	0.4	8.2	13	98608.8	67
507	9.9	37.9	0.5	7.1	13	98608.6	67
508	8.7	38.1	0.4	6.3	13	98608.6	67
509	9.2	38.1	0.4	6.6	13	98608.6	67
510	8.0	38.3	0.5	5.7	13	98608.6	67
511	7.9	37.6	0.5	5.6	13	98608.5	67
512	11.3	40.2	0.4	8.1	13	98608.9	67
513	11.2	43.8	0.3	8.1	13	98608.8	68
514	11.0	39.3	0.5	7.8	13	98608.8	68
515	10.1	38.0	0.5	7.2	13	98608.9	68
516	10.8	40.6	0.5	7.7	13	98608.7	68
517	10.4	41.8	0.4	7.5	13	98608.4	68
518	9.5	40.0	0.5	6.8	13	98606.1	67
519	10.1	39.0	0.6	7.2	13	98596.3	67
520	9.7	38.2	0.5	6.9	13	98598.2	67
521	10.7	38.5	0.4	7.7	13	98597.2	67
522	8.9	38.9	0.4	6.4	13	98596.9	67
523	8.3	38.5	0.5	6.0	13	98598.9	67
524	7.6	38.4	0.5	5.5	13	98600.2	67
525	8.5	37.6	0.4	6.1	13	98602.8	67
526	8.5	38.4	0.4	6.1	13	98604.4	67
527	7.1	38.2	0.5	5.1	13	98604.8	67
528	7.1	38.2	0.5	5.1	13	98605.3	67
529	7.8	38.6	0.4	5.6	13	98605.2	67
530	6.7	39.0	0.4	4.8	13	98623.2	67
531	7.7	40.5	0.4	5.5	13	98633.9	67
532	8.8	38.2	0.5	6.3	13	98633.7	67
533	9.0	38.0	0.3	6.5	13	98634.0	67
534	7.4	37.8	0.4	5.3	13	98633.9	67
535	7.9	37.2	0.4	5.7	13	98634.3	67
536	9.3	38.4	0.4	6.7	13	98619.2	67
537	10.1	39.1	0.5	7.2	13	98605.5	67
538	8.2	41.2	0.5	5.9	13	98605.3	67
539	8.2	38.5	0.4	5.9	13	98605.2	67
540	8.6	38.9	0.5	6.2	13	98605.3	67
541	6.6	40.3	0.5	4.7	13	98606.1	67
542			0.4	5.1	13	98634.0	68
543			0.4	5.8	13	98634.0	68
544	7.9	42.2	0.3	5.7	13	98634.0	68
545	8.8	41.4	0.4	6.3	13	98634.0	68
546	8.7	40.1	0.4	6.2	13	98634.0	68
547	9.9	40.9	0.3	7.1	13	98634.1	68
548	9.9	41.5	0.5	7.1	13	98634.4	67
549	9.3	39.7	0.5	6.7	13	98634.3	67
550	10.6	39.6	0.4	7.6	13	98634.5	67
551	9.3	39.2	0.3	6.6	13	98634.7	67
552	9.0	40.7	0.3	6.4	13	98634.7	67
553	8.2	41.4	0.4	5.9	13	98628.1	67
554	9.9	37.9	0.4	7.1	13	98606.7	67
555	10.2	38.1	0.3	7.3	13	98606.1	67
556	9.8	37.4	0.5	7.0	13	98606.5	67
557	9.7	37.9	0.3	6.9	13	98606.8	67
558	8.6	38.9	0.4	6.1	13	98609.8	67
559	10.5	38.4	0.3	7.5	13	98610.0	67
560	10.1	38.8	0.1	7.2	13	98609.9	67
561	10.6	38.5	0.2	7.6	13	98609.7	67
562	10.3	43.2	0.2	7.4	13	98609.7	67
563	11.2	40.7	0.3	8.0	13	98609.7	67
564	10.2	39.3	0.2	7.3	13	98609.8	67
565	9.2	39.1	0.3	6.6	13	98609.8	67
566	9.3	41.9	0.4	6.6	13	98609.6	66
567	9.6	39.6	0.4	6.9	13	98609.7	66
568	9.6	39.4	0.4	6.9	13	98609.7	66
569	8.8	38.4	0.4	6.3	13	98609.8	66
570	8.7	39.6	0.4	6.2	13	98609.7	66
571	11.3	39.8	0.5	8.1	13	98609.8	66
572	11.1	38.8	0.5	7.9	13	98609.8	66
573	10.1	41.6	0.4	7.3	13	98609.9	66
574	11.1	39.9	0.6	8.0	13	98609.8	66
575	10.8	40.0	0.6	7.8	13	98610.0	66
576	12.5	40.8	0.5	9.0	13	98610.1	66
577	11.7	41.8	0.6	8.4	13	98609.9	66
578	10.1	42.3	0.6	7.2	13	98635.9	66
579	11.0	42.8	0.5	7.9	13	98638.5	66
580	10.9	41.6	0.5	7.8	13	98638.6	66
581	11.3	43.0	0.4	8.1	13	98638.4	66

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (°C)	Pressure (kPa)	Relative Humidity (%)
582	13.5	41.8	0.4	9.7	13	98638.6	66
583	10.6	42.2	0.4	7.6	13	98638.5	66
584	11.0	45.2	0.4	7.8	13	98638.6	65
585	11.2	44.6	0.4	8.0	13	98638.6	65
586	10.3	42.0	0.4	7.4	13	98638.5	65
587	11.9	41.2	0.4	8.5	13	98638.7	65
588	11.5	40.7	0.4	8.2	13	98638.7	65
589	10.3	39.5	0.5	7.4	13	98632.4	65
590	10.8	39.9	0.5	7.8	13	98610.4	65
591	8.3	41.5	0.4	5.9	13	98610.2	65
592			0.4	7.1	13	98610.2	65
593	8.6	43.2	0.4	6.2	13	98610.4	65
594	8.9	40.0	0.6	6.4	13	98610.3	65
595	10.4	43.7	0.5	7.4	13	98610.4	65
596	9.3	44.0	0.6	6.7	13	98610.4	65
597	11.3	39.3	0.7	8.1	13	98610.6	65
598	9.7	39.9	0.5	7.0	13	98610.6	65
599			0.4	6.6	13	98610.5	65
600			0.4	8.0	13	98610.5	65
601	9.7	40.2	0.6	6.9	13	98610.5	65
602	10.7	39.1	0.7	7.7	13	98610.6	64
603	10.8	39.3	0.5	7.7	13	98610.5	64
604	9.4	39.7	0.6	6.8	13	98610.5	64
605	8.9	40.1	0.5	6.4	13	98610.6	64
606	8.2	42.8	0.3	5.9	13	98610.5	64
607			0.3	4.3	13	98610.6	65
608			0.4	5.3	13	98610.6	66
609	7.5	41.8	0.4	5.4	13	98610.6	66
610	8.4	43.3	0.4	6.0	13	98610.7	66
611	8.8	41.6	0.5	6.3	13	98610.6	66
612	12.5	40.4	0.5	8.9	13	98610.4	66
613	9.9	39.9	0.4	7.1	13	98610.5	66
614	11.3	42.4	0.4	8.1	13	98610.7	65
615	11.9	38.5	0.5	8.5	13	98656.7	62
616	10.9	39.9	0.4	7.8	13	98656.6	62
617	10.6	39.1	0.5	7.6	13	98656.6	62
618	9.7	38.6	0.5	7.0	13	98656.5	62
619	9.0	40.0	0.5	6.5	13	98656.9	62
620	8.5	42.1	0.4	6.1	13	98656.8	63
621	8.7	40.0	0.4	6.2	13	98656.6	63
622	9.5	40.8	0.4	6.8	13	98656.6	63
623	10.1	42.9	0.5	7.2	13	98656.5	63
624	8.5	44.2	0.5	6.1	13	98656.2	63
625			0.6	5.5	13	98656.3	63
626	7.8	41.8	0.5	5.6	13	98652.5	64
627	10.2	44.2	0.5	7.3	13	98655.3	64
628	11.5	41.0	0.6	8.2	13	98655.2	64
629	9.9	40.6	0.6	7.1	13	98655.0	64
630	11.6	42.4	0.6	8.3	13	98655.0	64
631	10.1	43.1	0.6	7.2	13	98654.8	63
632	8.9	41.0	0.5	6.4	13	98654.9	62
633	10.4	42.1	0.5	7.5	13	98655.4	62
634	10.9	40.1	0.5	7.8	13	98655.3	62
635	10.4	40.7	0.5	7.4	13	98655.7	62
636	8.9	41.2	0.4	6.4	13	98655.9	62
637	9.5	42.4	0.4	6.8	13	98656.1	62
638	10.0	44.4	0.5	7.2	13	98656.3	63
639			0.4	8.8	13	98656.4	63
640			0.4	6.7	13	98656.4	63
641	8.3	42.9	0.5	5.9	13	98656.7	63
642	9.3	41.9	0.5	6.7	13	98656.6	63
643			0.5	8.1	13	98656.6	62
644			0.5	6.5	13	98656.8	62
645	7.8	43.6	0.4	5.6	13	98656.7	62
646	7.3	43.6	0.5	5.2	13	98656.9	62
647	6.8	43.1	0.4	4.9	13	98656.7	62
648	8.9	40.5	0.3	6.4	13	98656.9	62
649	8.8	40.3	0.3	6.3	13	98656.7	63
650	9.3	40.7	0.4	6.7	13	98656.9	64
651	11.8	40.8	0.5	8.4	13	98657.0	64
652			0.6	7.1	13	98657.1	64
653			0.5	9.2	13	98657.1	64
654			0.4	8.0	13	98657.3	64
655	12.0	40.3	0.4	8.6	13	98657.2	62
656	11.3	39.7	0.4	8.1	13	98657.1	61
657	10.6	40.3	0.4	7.6	13	98657.3	61
658	10.3	41.5	0.5	7.4	13	98657.3	61
659	11.1	41.3	0.4	7.9	13	98657.4	61
660	9.7	40.8	0.5	6.9	13	98657.2	61
661	9.9	43.8	0.6	7.1	13	98657.1	62
662	8.9	40.5	0.5	6.4	13	98657.3	62
663	8.2	41.1	0.5	5.8	13	98657.4	62
664	10.2	40.0	0.4	7.3	13	98657.2	62

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (°C)	Pressure (kPa)	Relative Humidity (%)
665	10.9	39.7	0.4	7.8	13	98657.3	62
666	10.4	41.6	0.5	7.5	13	98657.3	62
667	10.4	41.7	0.7	7.4	13	98657.5	62
668	10.0	40.8	0.6	7.1	13	98657.4	62
669	11.4	41.9	0.5	8.2	13	98657.4	62
670	9.4	41.6	0.4	6.7	13	98657.6	62
671	10.4	39.7	0.6	7.5	13	98656.6	61
672	9.9	41.5	0.5	7.1	13	98655.1	60
673	10.7	39.2	0.4	7.7	13	98653.6	60
674			0.5	7.3	13	98654.0	60
675	9.9	40.7	0.5	7.1	13	98655.6	60
676	10.2	41.1	0.5	7.3	13	98655.6	60
677	8.7	39.8	0.7	6.3	13	98656.1	60
678	10.5	41.0	0.7	7.5	13	98656.0	61
679	10.6	39.0	0.7	7.6	13	98653.6	61
680	11.6	42.6	0.5	8.3	13	98656.6	61
681			0.4	8.1	13	98656.1	61
682			0.5	7.6	13	98656.0	61
683			0.5	5.8	13	98656.4	61
684			0.5	5.9	13	98657.0	62
685	7.2	42.9	0.4	5.1	13	98657.0	62
686	7.6	39.1	0.5	5.4	13	98657.2	62
687	8.4	39.8	0.5	6.0	13	98657.4	62
688	8.8	39.5	0.4	6.3	13	98656.9	62
689	11.5	40.0	0.5	8.2	13	98657.7	62
690	8.1	39.6	0.5	5.8	13	98657.6	61
691	7.1	38.7	0.4	5.1	13	98657.3	61
692	8.6	38.8	0.4	6.1	13	98657.0	61
693	9.3	39.2	0.3	6.6	13	98656.6	61
694	8.4	40.9	0.3	6.0	13	98656.1	61
695	8.2	40.6	0.4	5.8	13	98655.5	61
696	7.4	40.3	0.4	5.3	13	98656.1	62
697	6.1	41.2	0.3	4.3	13	98655.3	62
698	6.1	40.6	0.3	4.4	13	98654.6	62
699	7.4	41.6	0.3	5.3	13	98654.8	62
700			0.3	7.1	13	98654.1	62
701	9.2	42.6	0.4	6.6	13	98655.3	62
702	9.5	43.4	0.2	6.8	13	98654.5	61
703	9.8	43.1	0.4	7.0	13	98654.9	60
704			0.3	6.6	13	98655.8	60
705	8.5	41.3	0.3	6.1	13	98657.0	60
706	9.0	38.3	0.3	6.5	13	98656.8	60
707	8.4	38.2	0.3	6.0	13	98655.9	60
708	8.0	39.5	0.4	5.7	13	98656.8	61
709	7.9	38.9	0.4	5.7	13	98658.0	61
710	8.1	38.2	0.5	5.8	13	98658.3	61
711	8.9	40.0	0.4	6.4	13	98658.3	61
712	9.6	39.3	0.5	6.9	13	98658.4	61
713	6.4	40.3	0.5	4.6	13	98660.7	61
714	7.5	40.1	0.4	5.4	13	98683.8	61
715	7.7	42.3	0.4	5.5	13	98683.5	61
716	8.2	39.3	0.4	5.9	13	98684.2	61
717	9.0	39.3	0.4	6.4	13	98684.5	61
718	9.0	40.7	0.4	6.4	13	98684.5	61
719	11.7	40.8	0.4	8.4	13	98683.6	61
720			0.3	9.1	13	98658.5	59
721	11.4	41.8	0.3	8.1	13	98658.3	59
722	10.0	42.5	0.3	7.2	13	98657.3	59
723	9.7	41.4	0.5	7.0	13	98657.5	59
724	10.5	41.3	0.5	7.5	13	98657.3	59
725	10.3	40.7	0.5	7.4	13	98657.6	59
726	9.7	41.6	0.5	6.9	13	98658.3	60
727	8.2	39.2	0.5	5.9	13	98655.7	60
728	6.8	39.1	0.3	4.8	13	98655.3	60
729	6.9	38.5	0.3	4.9	13	98654.7	60
730	9.5	39.0	0.4	6.8	13	98653.5	60
731	10.2	40.0	0.4	7.3	13	98653.9	60
732	8.7	39.5	0.4	6.2	13	98654.7	60
733	8.1	40.3	0.4	5.8	13	98655.1	60
734	7.2	38.5	0.3	5.2	13	98654.9	60
735	10.8	38.9	0.3	7.7	13	98655.0	60
736	11.3	39.4	0.3	8.1	13	98655.1	60
737	11.0	39.5	0.4	7.8	13	98655.6	60
738	10.8	40.3	0.5	7.7	13	98656.0	60
739	11.9	39.2	0.6	8.5	13	98656.5	60
740	11.3	40.2	0.7	8.1	13	98656.5	60
741	9.9	39.5	0.5	7.1	13	98657.4	60
742	8.7	39.4	0.4	6.2	13	98657.9	60
743			0.4	6.5	13	98658.1	60
744	8.5	40.9	0.5	6.1	13	98658.5	61
745	6.9	41.3	0.6	4.9	13	98658.6	61
746	6.7	39.7	0.6	4.8	13	98658.6	61
747	8.7	40.3	0.4	6.2	13	98658.9	61

Table E.02 Measurement data - Background

Project: Belle River Wind Power Project - Turbine T40 - IEC 61400-11 Measurement
Report ID: 17095.01.T40.RP1

Created on: 11/14/2018

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (C)	Pressure (kPa)	Relative Humidity (%)
748	8.8	41.2	0.4	6.3	13	98658.8	61
749	7.8	41.1	0.6	5.6	13	98658.5	61
750	8.7	40.7	0.8	6.2	13	98658.6	61
751	8.9	41.0	0.7	6.4	13	98658.9	61
752	7.6	40.1	0.4	5.5	13	98658.0	61
753	5.9	39.9	0.3	4.2	13	98657.7	61
754	5.8	40.0	0.3	4.1	13	98658.0	61
755	8.9	40.4	0.3	6.4	13	98658.3	61
756	10.9	40.3	0.3	7.8	13	98658.3	61
757	11.2	42.1	0.5	8.0	13	98657.6	61
758	9.7	41.9	0.4	6.9	13	98658.3	61
759	8.7	40.4	0.5	6.2	13	98658.9	61
760	9.6	38.8	0.5	6.9	13	98658.7	61
761	10.4	38.4	0.6	7.5	13	98670.2	60
762	9.9	38.4	0.6	7.1	13	98685.0	59
763	10.2	39.3	0.5	7.3	13	98685.2	59
764	10.2	40.0	0.3	7.3	13	98684.8	59
765	10.2	41.5	0.4	7.3	13	98685.0	59
766	8.2	40.5	0.5	5.9	13	98685.3	59
767	8.4	39.8	0.4	6.0	13	98676.7	60
768	8.0	38.8	0.4	5.7	13	98658.8	60
769	10.1	41.3	0.4	7.2	13	98657.3	60
770			0.5	7.9	13	98657.7	60
771	10.5	40.0	0.3	7.5	13	98657.8	60
772	10.1	40.1	0.2	7.2	13	98659.1	60
773	8.8	40.2	0.4	6.3	13	98659.7	59
774	9.8	38.7	0.6	7.1	13	98659.8	58
775			0.5	7.2	13	98659.9	58
776			0.4	8.1	13	98660.1	58
777	10.8	39.4	0.4	7.8	13	98660.1	58
778	10.1	38.1	0.4	7.3	13	98660.0	58
779	12.6	39.3	0.4	9.0	13	98659.8	58
780	11.5	41.4	0.4	8.3	13	98659.8	58
781			0.4	8.0	13	98660.1	58
782	9.4	39.5	0.4	6.7	13	98653.1	58
783	9.3	39.2	0.3	6.7	13	98653.6	58
784	10.4	40.1	0.3	7.4	13	98654.4	58
785	9.3	38.6	0.2	6.6	13	98655.4	58
786	10.1	39.7	0.3	7.2	13	98655.6	59
787	11.9	41.0	0.3	8.5	13	98658.0	59
788	11.3	38.7	0.3	8.1	13	98657.7	59
789	8.5	38.9	0.3	6.1	13	98658.4	59
790	9.3	41.0	0.4	6.7	13	98658.1	59
791	9.9	39.0	0.3	7.1	13	98632.1	58
792	10.9	39.2	0.3	7.8	13	98633.0	58
793	9.8	39.4	0.3	7.0	13	98633.3	58
794	11.1	42.6	0.3	7.9	13	98634.4	58
795	8.9	43.7	0.4	6.4	13	98635.4	58
796	9.1	39.6	0.3	6.6	13	98641.1	58
797	7.7	38.9	0.4	5.5	13	98662.0	59
798	7.9	38.1	0.4	5.6	13	98662.2	59
799	8.7	38.5	0.4	6.2	13	98662.0	59
800	6.9	41.7	0.5	4.9	13	98662.4	59
801	8.3	39.2	0.5	5.9	13	98662.7	59
802	7.6	38.0	0.4	5.4	13	98662.8	59
803	10.0	40.3	0.4	7.2	13	98662.9	60
804	9.0	40.0	0.4	6.5	13	98663.1	60
805	8.5	39.8	0.5	6.1	13	98663.3	60
806	9.9	40.1	0.6	7.1	13	98663.3	60
807	9.6	39.2	0.6	6.9	13	98663.2	60
808	8.5	39.6	0.5	6.1	13	98663.4	60
809	7.8	39.3	0.3	5.6	13	98663.3	59
810	7.3	38.7	0.2	5.2	13	98663.2	59
811	6.1	38.1	0.4	4.4	13	98663.1	59
812	10.9	38.4	0.7	7.8	13	98663.4	59
813	7.7	38.7	0.7	5.5	13	98663.5	59
814	7.5	39.9	0.7	5.3	13	98663.5	60
815	8.3	41.1	0.6	5.9	13	98663.8	60
816	8.8	40.7	0.5	6.3	13	98663.8	60
817	9.5	42.6	0.6	6.8	13	98663.8	60
818			0.7	5.6	13	98663.5	60
819	9.5	39.8	0.5	6.8	13	98663.5	60
820	12.2	43.0	0.6	8.8	13	98663.5	60
821	8.7	43.8	0.7	6.2	14	98663.7	58
822	8.9	42.2	0.5	6.4	14	98663.8	58
823	10.4	42.3	0.5	7.4	14	98663.9	58
824	11.1	40.9	0.6	7.9	14	98663.9	58
825	11.9	40.1	0.4	8.6	14	98664.1	58
826	10.5	38.8	0.3	7.5	14	98664.0	58
827	10.1	41.9	0.4	7.2	14	98663.8	58
828	9.8	40.1	0.5	7.0	14	98663.8	58
829	13.1	38.9	0.4	9.4	14	98663.7	58
830	9.7	40.4	0.4	6.9	14	98663.7	58

***Blank data denotes values that were omitted in the analysis due to an extraneous event during recording

Data Point #	Standardized Wind Speed	LAeq	Rotor RPM	10m Anemometer Wind Speed (m/s)	Air Temperature (C)	Pressure (kPa)	Relative Humidity (%)
831	8.9	42.3	0.4	6.4	14	98664.1	58
832	8.1	39.2	0.3	5.8	13	98664.1	59
833	9.3	39.5	0.3	6.7	13	98663.9	59
834	8.2	39.6	0.6	5.8	13	98664.2	59
835	7.1	39.4	0.6	5.1	13	98664.3	59
836	8.6	39.5	0.6	6.1	13	98664.2	59
837	8.4	42.6	0.6	6.1	13	98664.5	59
838	9.3	44.2	0.6	6.7	13	98664.6	60
839	10.8	38.9	0.6	7.7	13	98664.7	60
840			0.6	8.5	13	98664.6	60
841	10.6	40.3	0.5	7.6	13	98664.6	60
842	9.1	41.1	0.5	6.5	13	98664.4	60
843			0.4	4.8	13	98664.3	60
844	10.3	39.5	0.4	7.4	13	98664.5	60
845	10.3	40.2	0.3	7.3	13	98664.2	60
846	9.0	40.3	0.4	6.5	13	98664.3	60
847	9.6	41.6	0.4	6.9	13	98664.3	60
848	9.9	39.6	0.4	7.1	13	98664.4	60
849			0.4	7.1	13	98664.5	60
850			0.5	7.1	14	98664.4	59
851	10.5	38.7	0.5	7.5	14	98664.3	58
852	8.8	38.7	0.4	6.3	14	98664.3	58
853	7.7	37.8	0.5	5.5	14	98664.2	58
854	7.8	38.0	0.4	5.6	14	98664.2	58
855	6.9	41.5	0.3	5.0	14	98664.1	58
856	7.1	39.2	0.5	5.1	13	98648.1	59
857	6.9	41.4	0.4	5.0	13	98638.6	60
858	6.8	39.8	0.4	4.9	13	98638.6	60
859	8.7	40.6	0.4	6.2	13	98638.9	60
860	9.2	40.1	0.5	6.6	13	98638.9	60
861	8.1	40.9	0.4	5.8	13	98638.9	60
862			0.3	7.2	14	98638.9	60
863			0.3	8.6	14	98639.0	59
864			0.5	7.4	14	98638.9	59
865			0.5	8.3	14	98638.8	59
866	10.9	39.4	0.3	7.8	14	98638.9	59
867	9.4	40.5	0.2	6.8	14	98638.8	59
868	10.8	41.6	0.4	7.8	14	98639.0	59
869	10.0	40.2	0.5	7.2	14	98638.8	58
870	10.2	38.5	0.4	7.3	14	98638.8	58
871	10.3	40.5	0.5	7.4	14	98638.7	58
872	9.9	37.3	0.5	7.1	14	98638.7	58
873	9.8	37.6	0.4	7.1	14	98638.3	58
874	12.1	37.1	0.4	8.7	14	98638.4	58
875	11.6	37.8	0.4	8.3	14	98638.5	58
876	11.0	38.3	0.5	7.9	14	98638.6	58
877	10.7	40.2	0.5	7.6	14	98638.5	58
878	11.6	40.9	0.6	8.3	14	98638.6	58
879	12.0	38.8	0.5	8.6	14	98638.9	58
880	10.1	37.2	0.4	7.2	13	98638.8	57
881	9.2	38.7	0.5	6.6	13	98638.8	57
882	9.1	38.3	0.5	6.5	13	98638.6	57
883	8.9	39.6	0.5	6.4	13	98638.6	57
884	9.0	39.0	0.5	6.4	13	98638.5	57
885	8.9	40.6	0.6	6.4	13	98638.5	58
886	10.8	41.6	0.6	7.7	13	98638.5	59

aercoustics

Aercoustics Engineering Ltd.
1004 Middlegate Road, Suite 1100
Mississauga, ON L4Y 0G1

Tel: 416-249-3361
Fax 416-249-3613
aercoustics.com

Appendix F
Supplementary Information for the Regulator

aercoustics

Aercoustics Engineering Ltd.
1004 Middlegate Road, Suite 1100
Mississauga, ON L4Y 0G1

Tel: 416-249-3361
Fax 416-249-3613
aercoustics.com

Appendix F.01
Calibration Certificates

ISO17025

As Left RECALIBRATION CERTIFICATE

Sales Region:	Americas
Account:	Aercoustics Engineering Limited
Instrument:	LMS SCADAS
Manufacturer:	Siemens Industry Software B.V.
Type:	SCR202
Serial number(s):	22143211
Calibration method:	Two calibrated external standards (DC voltage and frequency) are used to calibrate the internal LMS SCADAS references: time/frequency accuracy of the internal system clock and amplitude accuracy of the internal signal sources. All input channels are calibrated against the internal references.
Ambient conditions:	The calibrations have been carried out in a controlled environment, at an ambient temperature of 22.9°C ± 0.3°C and a relative humidity of 42% ± 5%.
Calibration date:	June 22, 2018
Results:	The calibration results, together with their associated uncertainties, are included in this calibration certificate. Calibration results within specification.
Uncertainty:	The reported expanded uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%. The standard uncertainty of measurement has been determined in accordance with publication EA-4/02.
Traceability:	The measurements have been executed using methods for which the traceability to international standards has been demonstrated towards the Raad voor Accreditatie.

Breda, June 22, 2018

Calibration performed by:

A.v.Aalst Customer Support Engineer

Certificate approved by:

F.Lemmens, Production Manager

Siemens Industry Software B.V.
Weidehek 53
4824 AT Breda
The Netherlands
Phone: +31 76 573 6363

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

MICROPHONE UNIT

Manufactured by:	**BRUEL & KJAER**
Model No:	**4189-2671**
Serial No:	**2625416-2369794**
Calibration Recall No:	**28047**

Submitted By:

Customer:

Company: **Aercoustics Engineering LTD**
Address:

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. **4189-2671 BRUE**

Upon receipt for Calibration, the instrument was found to be:

Within **(X)**

tolerance of the indicated specification. See attached Report of Calibration.

West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2008 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Approved by: FC

Calibration Date: **20-Sep-17**

Felix Christopher (QA Mgr.)

Certificate No: **28047 - 2**

ISO/IEC 17025:2005

ACCREDITED

Calibration Lab. Cert. # 1533.01

uncompromised calibration **West Caldwell Calibration Laboratories, Inc.**
1575 State Route 96, Victor, NY 14564, U.S.A.

ISO/IEC 17025: 2005

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration

ACCREDITED
Calibration Lab. Cert. # 1533.01

1575 State Route 96, Victor NY 14564

REPORT OF CALIBRATION

for

Brüel & Kjær Microphone Unit
Model No.: 4189&2671 Serial No.: 2625416-2369794
Mic. Model No.: 4189 Serial No.: 2625416
Preamp Model No.: 2671 Serial No.: 2369794
Company: Aercoustics Engineering LTD I. D. No.: XXXX

Calibration results:

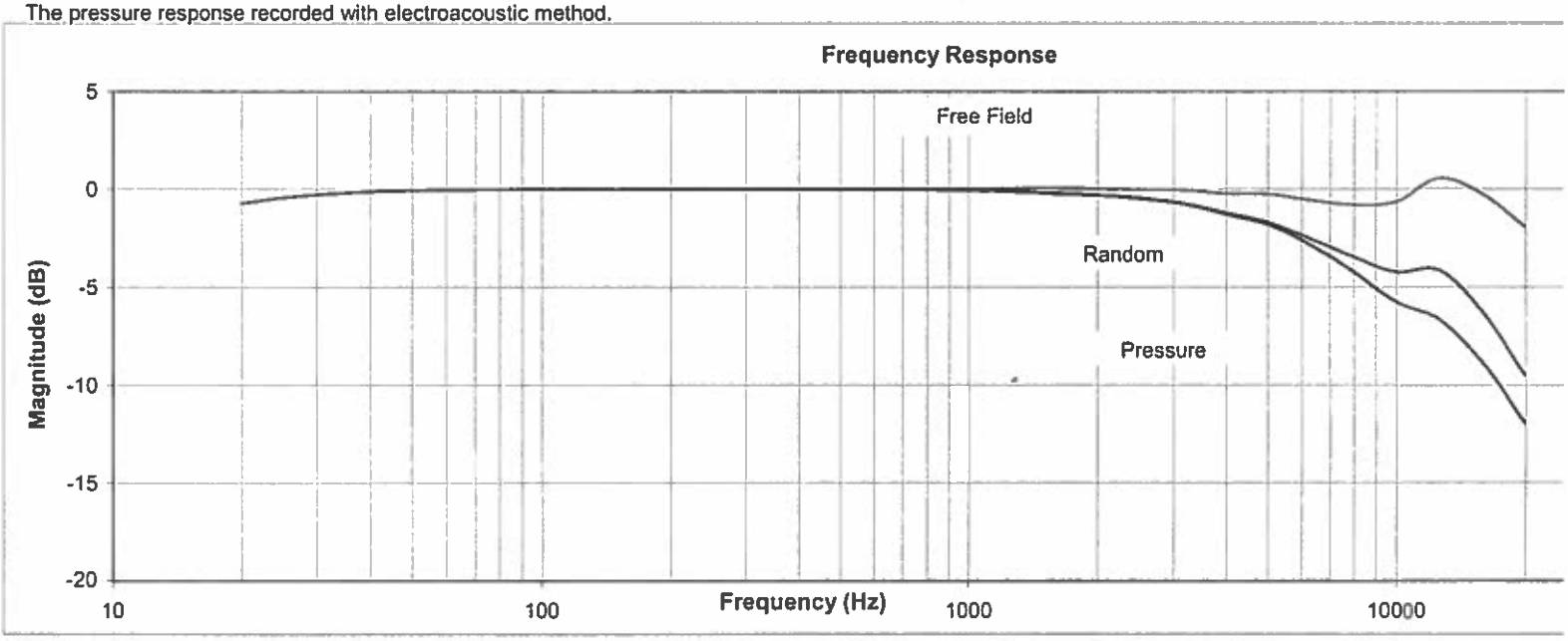
Before & after data same: ...X...

Combined Sensitivity @ 250 Hz and pressure of 99.456 kPa
(Sens. with mic. and preamp.) 0 Volts Polarization voltage (External):
-26.39 dB re.1V/Pascal
47.91 mV/Pascal
0.39 Ko (- dB re 50 mV/Pascal)
Sensitivity: Pass
Freq. Response: Pass
All tests: Pass

Ambient Temperature:	21.6	°C
Ambient Humidity:	53.6	% RH
Ambient Pressure:	99.456	kPa
Calibration Date:	20-Sep-2017	
Re-calibration Due:	20-Sep-2018	
Report Number:	28047	-2
Control Number:	28047	

The above listed instrument meets or exceeds the tested manufacturer's specifications.
The IEC 651:1979 & 1993 Type 1 and ANSI S1.4 1983 Type 2 specification passed.
This Calibration is traceable through NIST test numbers: 683/284413-14
The expanded uncertainty of calibration: 0.079dB at 95% confidence level with a coverage factor of k=2.

The pressure response recorded with electroacoustic method.



The above listed instrument was checked using calibration procedure documented in West Caldwell Calibration Laboratories Inc. procedure : **Rev. 7.0 Jan. 24, 2014 Doc. # 1038 P4189&2671B&K**

Calibration was performed by West Caldwell Calibration Laboratories Inc. under Operating Procedures intended to implement the requirements of ISO10012-1, IEC Guide 25, ANSI/NCSL Z540-1, (MIL-STD-45662A) and ISO 9001:2008, ISO 17025

Measurements performed by: .....
James Zhu

Calibrated on WCCL system type 9700

West Caldwell Calibration Laboratories Inc.
1575 State Route 96, Victor NY 14564
Tel. (585) 586-3900 FAX (585) 586-4327

Calibration Data Record

for

Brüel & Kjær Microphone Unit — Model No.: 4189&2671 — Serial No.: 2625416-2369794
Company: Aercoustics Engineering LTD — I. D. No.: XXXX

Frequency Response (Reference = 0 dB @ 250Hz)

Frequency [Hz]	Pressure [dB]	Free Field (dB)	Random (dB)
19.95	-0.71	-0.71	-0.71
25.12	-0.42	-0.42	-0.42
31.62	-0.23	-0.23	-0.23
39.81	-0.12	-0.12	-0.12
50.12	-0.06	-0.06	-0.06
63.10	-0.03	-0.03	-0.03
79.43	-0.01	-0.01	-0.01
100.00	0.00	0.00	0.00
125.89	0.00	0.00	0.00
158.49	0.00	0.00	0.00
199.53	0.00	0.00	0.00
251.19	0.00	0.00	0.00
316.23	0.00	0.00	0.00
398.11	0.00	0.01	0.00
501.19	-0.01	0.02	-0.01
630.96	-0.01	0.02	-0.01
794.33	-0.03	0.03	-0.03
1000.00	-0.07	0.03	-0.09
1258.93	-0.10	0.05	-0.13
1584.89	-0.18	0.04	-0.23
1995.26	-0.31	0.02	-0.31
2511.89	-0.48	-0.01	-0.45
3162.28	-0.75	-0.04	-0.72
3981.07	-1.28	-0.22	-1.19
5011.87	-1.83	-0.26	-1.69
6309.57	-2.85	-0.57	-2.54
7943.28	-4.18	-0.80	-3.43
10000.00	-5.76	-0.64	-4.23
12589.25	-6.64	0.56	-4.13
15848.93	-8.84	-0.25	-6.26
19952.62	-11.98	-1.93	-9.50

Freq. response: Expanded Uncertainty (dB) with coverage factor K = 2
20 to 63Hz 0.1dB, 63 to 12.5kHz 0.094dB, 12.5k to 16kHz 0.10dB, 16k to 20kHz 0.5dB.

Instruments used for calibration:			Date of Cal.	Traceability No.	Re-cal. Due Date
Brüel & Kjær	4226	S/N 1445428	3-Nov-2016	683/284413-14	3-Nov-2017
Brüel & Kjær	3560	S/N 2202374	3-Nov-2016	683/284413-14	3-Nov-2017
HP	33120A	S/N 36043716	1-Oct-2016	,287708	1-Oct-2017
HP	34401A	S/N 36064102	1-Oct-2016	,287708	1-Oct-2017

Cal. Date: 20-Sep-2017 — Tested by: James Zhu

Calibrated on WCCL system type 9700

West Caldwell Calibration Laboratories Inc.

Certificate of Calibration

for

ACOUSTICAL CALIBRATOR

Manufactured by:	BRUEL & KJAER
Model No:	4231
Serial No:	3012378
Calibration Recall No:	28460

Submitted By:

Customer:

Company: Aercoustics Engineering Ltd.

Address:

The subject instrument was calibrated to the indicated specification using standards traceable to the National Institute of Standards and Technology or to accepted values of natural physical constants. This document certifies that the instrument met the following specification upon its return to the submitter.

West Caldwell Calibration Laboratories Procedure No. 4231 BRUE

Upon receipt for Calibration, the instrument was found to be:

Within (X)

tolerance of the indicated specification. See attached Report of Calibration.
The information supplied relates to the calibrated item listed above.
West Caldwell Calibration Laboratories' calibration control system meets the requirements, ISO 10012-1 MIL-STD-45662A, ANSI/NCSL Z540-1, IEC Guide 25, ISO 9001:2008 and ISO 17025.

Note: With this Certificate, Report of Calibration is included.

Approved by: FC

Felix Christopher (QA Mgr.)

Calibration Date: 30-Jan-18

Certificate No: 28460 - 1

ISO/IEC 17025:2005

ACCREDITED

Calibration Lab. Cert. # 1533.01

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor, NY 14564, U.S.A.

West Caldwell Calibration Laboratories, Inc.
uncompromised calibration
1575 State Route 96, Victor NY 14564

ISO/IEC 17025: 2005
ACCREDITED
Calibration Lab. Cert. # 1533.01

REPORT OF CALIBRATION

for

Brüel & Kjær Acoustical Calibrator **Model No.: 4231** **Serial No.: 3012378**
Company: Aercoustics Engineering Ltd. **ID No.: XXXX**

Calibration results:

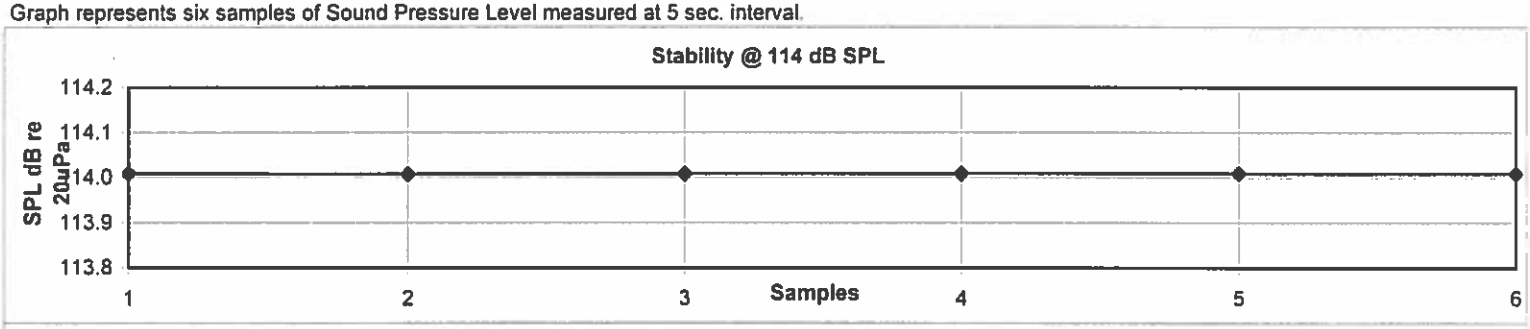
Before data: ..... **After data:** .....
Before & after data same: ...X...
Sound Pressure Level at 1000.0 Hz and pressure of 1013 hPa (mbar)
was 114.01 dB re 20 µPa
(Calibrator tested with ½" adaptor UC 0210)
IEC 1094-4 Type WS 2 P Microphone was used for measurement.

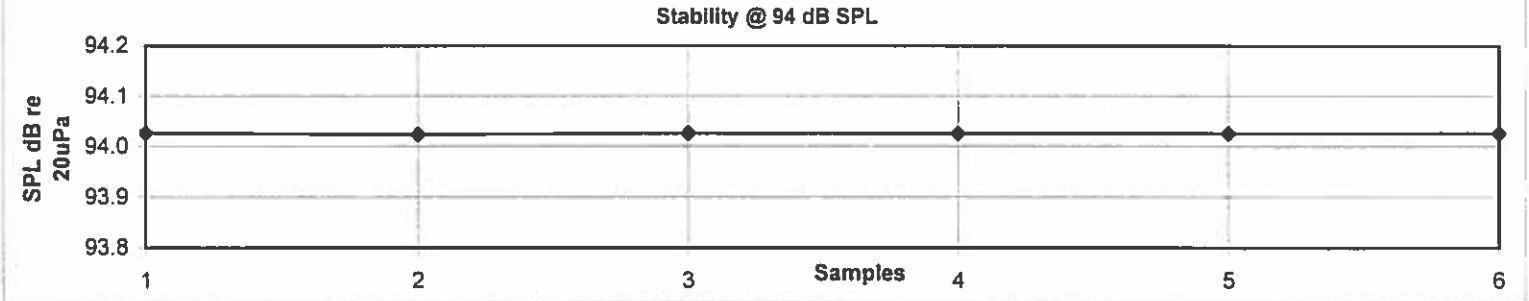
	114 dB	94 dB
Sound Pressure Level:	Pass	Pass
Frequency:	Pass	Pass
Distortion:	Pass	Pass
Stability:	Pass	Pass
All tested parameters:		Pass

Laboratory Environment:		
Ambient Temperature:	22.0	°C
Ambient Humidity:	30.9	% RH
Ambient Pressure:	99.768	kPa
Calibration Date:	30-Jan-2018	
Calibration Due:	30-Jan-2019	
Report Number:	28460 -1	
Control Number:	28460	

The above listed instrument meets or exceeds the tested manufacturer's specifications
The IEC 942:1988 Class 1 specifications, passed.
The ANSI S1.4-1984 specifications, passed.
This Calibration is traceable through NIST test numbers: 822/275722-14
The expanded uncertainty of calibration: 0.11 dB at 95% confidence level with a coverage factor of k=2.

Graph represents six samples of Sound Pressure Level measured at 5 sec. interval.





The above listed instrument was checked using calibration procedure documented in West Caldwell Calibration Laboratories Inc. procedure : **Rev. 7.0 Jan. 24, 2014 Doc. # 1038 4231B&K**

Calibration was performed by West Caldwell Calibration Laboratories Inc. under Operating Procedures intended to implement the requirements of ISO10012-1, IEC Guide 25, ANSI/NCSL Z540-1, (MIL-STD-45662A) and ISO 9001:2008, ISO 17025

Cal. Date: 30-Jan-2018 Measurements performed by: .....
Calibrated on WCCL system type 9700 **James Zhu**

West Caldwell Calibration Laboratories Inc.
1575 State Route 96, Victor NY 14564
Tel. (585) 586-3900 FAX (585) 586-4327

Calibration Data Record

for

Brüel & Kjær Acoustical Calibrator **Model No.: 4231** **Serial No.: 3012378**
Company: Aercoustics Engineering Ltd.

All tested parameters: Pass

Measured Sound Pressure Level (Six samples measured at 5 sec. interval)

Sample	1	114.01 dB re 20 µPa	94.03 dB re 20 µPa	
	2	114.01	94.02	
	3	114.01	94.03	
	4	114.01	94.03	
	5	114.01	94.03	
	6	114.01	94.03	
	Average	**114.01** Spec. 114dB ± 0.2dB	**94.03**	Spec. 94 dB ± 0.2 dB

Frequency measured (Three samples at 30 sec. Interval)

Sample	1	999.99 Hz	1000.00 Hz	
	2	999.99	999.99	
	3	999.99	1000.00	
	Average	**999.99**	**1000.00**	Spec. 1000 Hz ±0.1%

The Frequency expanded uncertainty of calibration:45 µHz/Hz at 95% confidence level with a coverage factor of k=2.

Distortion measured	-54.9 dB	-53.8 dB	Spec. ≤-40 dB

Instruments used for calibration:			Date of Cal.	Traceability No.	Re-cal. Due Date
Brüel & Kjær	4231	S/N 2308998	1-Aug-2017	822/275722-14	1-Aug-2018
Brüel & Kjær	4134	S/N 854464	1-Aug-2017	822/275722-14	1-Aug-2018
Brüel & Kjær	2669	S/N 2148476	1-Aug-2017	683/281764-14	1-Aug-2018
HP	34401A	S/N US360980	1-Aug-2017	,205342	1-Aug-2018
Brüel & Kjær	2636	S/N 1323964	1-Aug-2017	822/275722-14	1-Aug-2018
HP	33120A	S/N US360458	1-Aug-2017	,205342	1-Aug-2018

Cal. Date: 30-Jan-2018 **Tested by: James Zhu**

Calibrated on WCCL system type 9700

SOH Wind Engineering LLC
141 Leroy Road · Williston, VT 05495 · USA
Tel 802.316.4368 · Fax 802.735.9106 · www.sohwind.com

CERTIFICATE FOR CALIBRATION OF SONIC ANEMOMETER

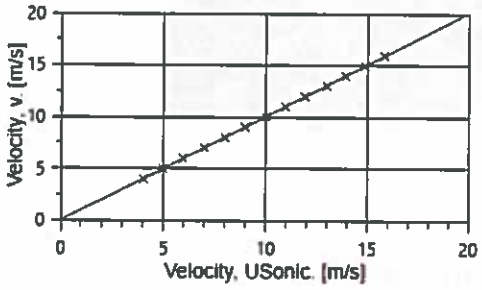
Certificate number: 18.US1.02882 **Date of issue:** July 02, 2018
Type: Vaisala Weather Transmitter, WXT520 **Serial number:** K2420011
Manufacturer: Vaisala, Oyj, Pl 26, FIN-00421 Helsinki, Finland
Client: Aercoustics Engineering Ltd., 1004 Middlegate RD, Suite 1100, S.Tower, Mississauga, ON L4Y 1M4, Canada

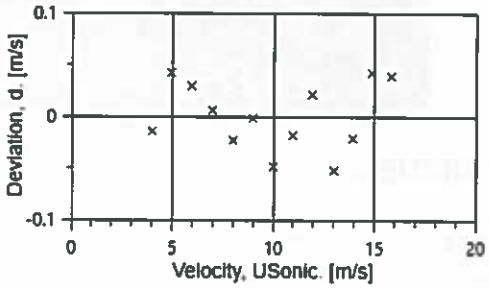
Anemometer received: June 29, 2018 **Anemometer calibrated:** June 29, 2018
Calibrated by: MEJ **Procedure:** MEASNET, IEC 61400-12-1:2017 Annex F
Certificate prepared by: EJF **Approved by:** Calibration engineer, EJF

Calibration equation obtained: v [m/s] = 1.00630 · f [m/s] + -0.03633

Standard uncertainty, slope: 0.00256 **Standard uncertainty, offset:** -0.75225
Covariance: -0.0000659 (m/s)²/m/s **Coefficient of correlation:** ρ = 0.999964
Absolute maximum deviation: -0.052 m/s at 12.990 m/s
Barometric pressure: 999.8 hPa **Relative humidity:** 51.4%

Succession	Velocity pressure, q. [Pa]	Temperature in wind tunnel [°C]	Temperature in d.p. box [°C]	Wind velocity, v. [m/s]	Anemometer Output, f. [m/s]	Deviation, d. [m/s]	Uncertainty u_c (k=2) [m/s]
2	9.08	27.6	27.5	3.974	4.0000	-0.015	0.021
4	14.29	27.6	27.5	4.985	4.9483	0.042	0.023
6	20.56	27.6	27.5	5.980	5.9500	0.029	0.026
8	28.15	27.6	27.5	6.997	6.9833	0.006	0.029
10	36.71	27.6	27.5	7.991	8.0000	-0.023	0.033
12	46.59	27.6	27.5	9.002	8.9833	-0.002	0.037
13-last	57.24	27.6	27.5	9.978	10.0000	-0.049	0.041
11	69.32	27.6	27.5	10.981	10.9667	-0.018	0.045
9	82.45	27.6	27.5	11.976	11.9167	0.021	0.049
7	96.99	27.6	27.5	12.990	12.9967	-0.052	0.053
5	112.02	27.6	27.5	13.960	13.9300	-0.021	0.057
3	128.74	27.6	27.5	14.966	14.8667	0.042	0.061
1-first	146.05	27.5	27.5	15.939	15.8367	0.039	0.065





AC-1746

EQUIPMENT USED

Serial Number	Description
Njord1	Wind tunnel, blockage factor = 1.0035
2254	Control cup anemometer
-	Mounting tube, D = 19 mm
TT002	Summit Electronics, 1XPT100, 0-10V Output, wind tunnel temp.
TP001	PR Electronics 5102, 0-10V Output, differential pressure box temp.
DP005	Setra Model 239, 0-1inWC, differential pressure transducer
HY003	Dwyer RHP-2D20, 0-10V Output, humidity transmitter
BP003	Setra M278, 0-5VDC Output, barometer
PL8	Pitot tube
XB002	Computer Board. 16 bit A/D data acquisition board
9PRZRW1	PC dedicated to data acquisition

Traceable calibrations of the equipment are carried out by external accredited institutions: Atlantic Scale, Essco Calibration Labs & Furness Controls. A real-time analysis module within the data acquisition software detects pulse frequency.

Photo of the wind tunnel setup. The cross-sectional area is 2.5m x 2.5m.

UNCERTAINTIES

The documented uncertainty is the total combined uncertainty at 95% confidence level (k=2) in accordance with EA-4/02. The uncertainty at 10 m/s comply with the requirements in the IEC 61400-12-1:2005 procedure. See Document US.12.01.004 for further details.

COMMENTS

This sensor was calibrated at 0°.

Certificate number: 18.US1.02882

SOH Wind Engineering LLC
141 Leroy Road · Williston, VT 05495 · USA
Tel 802.316.4368 · Fax 802.735.9106 · www.sohwind.com

CERTIFICATE FOR CALIBRATION OF SONIC ANEMOMETER

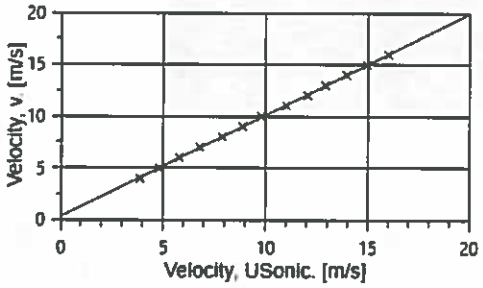
Certificate number: 18.US1.02885 **Date of issue:** July 02, 2018
Type: Vaisala Weather Transmitter, WXT520 **Serial number:** K2420011
Manufacturer: Vaisala, Oyj, Pl 26, FIN-00421 Helsinki, Finland
Client: Aercoustics Engineering Ltd., 1004 Middlegate RD, Suite 1100, S.Tower, Mississauga, ON L4Y 1M4, Canada

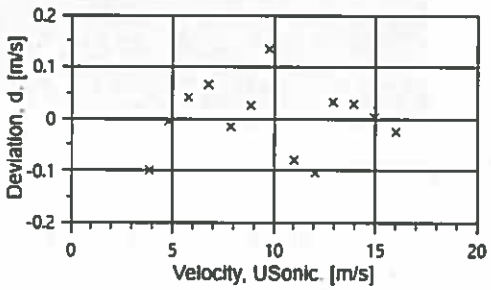
Anemometer received: June 29, 2018 **Anemometer calibrated:** July 02, 2018
Calibrated by: MEJ **Procedure:** MEASNET, IEC 61400-12-1:2017 Annex F
Certificate prepared by: EJF **Approved by:** Calibration engineer, EJF

Calibration equation obtained: v [m/s] = 0.98052 · f [m/s] + 0.27919

Standard uncertainty, slope: 0.00524 **Standard uncertainty, offset:** 0.19513
Covariance: -0.0002612 $(m/s)^2/m/s$ **Coefficient of correlation:** $\rho = 0.999849$
Absolute maximum deviation: 0.135 m/s at 9.993 m/s
Barometric pressure: 1003.0 hPa **Relative humidity:** 54.2%

Succession	Velocity pressure, q. [Pa]	Temperature in wind tunnel [°C]	d.p. box [°C]	Wind velocity, v. [m/s]	Anemometer Output, f. [m/s]	Deviation, d. [m/s]	Uncertainty u_c (k=2) [m/s]
2	9.07	28.3	28.1	3.971	3.8667	-0.100	0.021
4	14.27	28.3	28.1	4.981	4.8000	-0.005	0.023
6	20.64	28.3	28.1	5.991	5.7833	0.041	0.026
8	28.17	28.3	28.1	6.999	6.7867	0.066	0.029
10	36.71	28.3	28.1	7.990	7.8800	-0.016	0.033
12	46.53	28.3	28.1	8.995	8.8633	0.025	0.037
13-last	57.42	28.3	28.1	9.993	9.7690	0.135	0.041
11	69.47	28.3	28.1	10.992	11.0067	-0.080	0.045
9	82.65	28.3	28.1	11.990	12.0500	-0.104	0.049
7	96.85	28.3	28.1	12.980	12.9200	0.032	0.053
5	112.44	28.3	28.1	13.986	13.9500	0.028	0.057
3	128.54	28.3	28.1	14.954	14.9633	0.003	0.061
1-first	146.43	28.2	28.1	15.959	16.0167	-0.025	0.065





AC-1746

EQUIPMENT USED

Serial Number	Description
Njord1	Wind tunnel, blockage factor = 1.0035
2254	Control cup anemometer
-	Mounting tube, D = 19 mm
TT002	Summit Electronics, 1XPT100, 0-10V Output, wind tunnel temp.
TP001	PR Electronics 5102, 0-10V Output, differential pressure box temp.
DP005	Setra Model 239, 0-1inWC, differential pressure transducer
HY003	Dwyer RHP-2D20, 0-10V Output, humidity transmitter
BP003	Setra M278, 0-5VDC Output, barometer
PL8	Pitot tube
XB002	Computer Board. 16 bit A/D data acquisition board
9PRZRW1	PC dedicated to data acquisition

Traceable calibrations of the equipment are carried out by external accredited institutions: Atlantic Scale, Essco Calibration Labs & Furness Controls. A real-time analysis module within the data acquisition software detects pulse frequency.

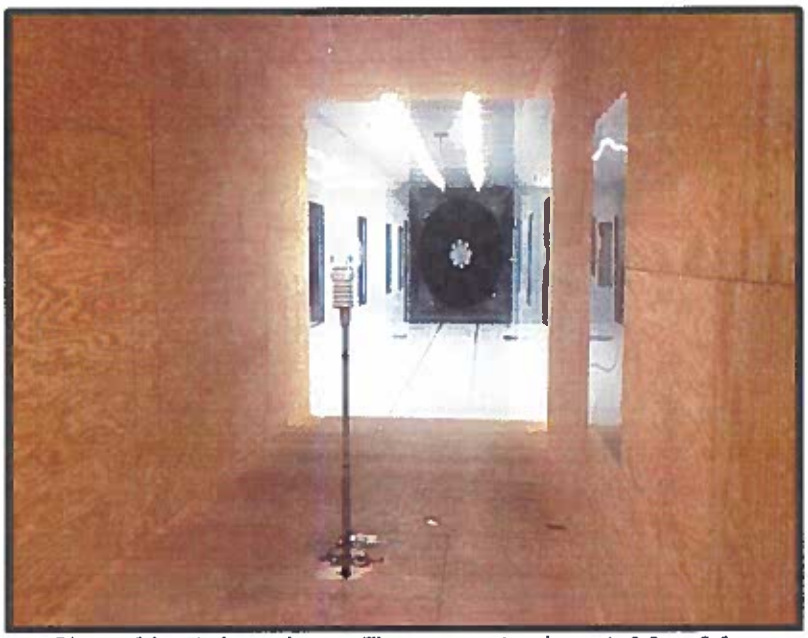


Photo of the wind tunnel setup. The cross-sectional area is 2.5m x 2.5m.

UNCERTAINTIES

The documented uncertainty is the total combined uncertainty at 95% confidence level (k=2) in accordance with EA-4/02. The uncertainty at 10 m/s comply with the requirements in the IEC 61400-12-1:2005 procedure. See Document US.12.01.004 for further details.

COMMENTS

This sensor was calibrated at 90°.

Certificate number: 18.US1.02885

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SCC Lab No 827

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Certificate/SO Number: 33-Q0Z0I-20-1 Revision 0

Manufacturer: Nokeval
Model Number: 7470
Description: Serial to Analog Converter
Serial Number: A165152
ID: NONE

As-Found: In Tolerance
As-Left: In Tolerance

Calibration Date: Jun 19, 2018
Due Date: Jun 19, 2020

Calibrated To: Manufacturer Specification
Calibration Procedure: 1-AC58014-0

Transcat Calibration Laboratories have been audited and found in compliance with ISO/IEC 17025:2005. Accredited calibrations performed within the Lab's Scope of Accreditation are indicated by the presence of the Accrediting Body's Logo and Certificate Number. Any measurements on an accredited calibration not covered by that Lab's Scope of Accreditation are listed in the notes section of the certificate. SCC, NRC, CLAS or ANAB do not guarantee the accuracy of an individual calibration by accredited laboratories.

Transcat calibrations, as applicable, are performed in compliance with the requirements of the Transcat Quality Manual QAC-P01-000 Revision 1.0, the customer's Purchase Order and/or Quality Agreement requirements, ISO 9001:2008, ANSI/NCSL Z540.1-1994 (R2002). Complete records of work performed are maintained by Transcat and are available for inspection. Laboratory standards used in the performance of this calibration are listed below.

Transcat documents the traceability of measurements to the SI units through the National Institute of Standards and Technology (NIST), or the National Research Council of Canada (NRC), or other national measurement institutes (NMI) that are signatories to the CIPM Mutual Recognition Arrangement, or accepted fundamental and/or natural physical constants, or by the use of specified methods, consensus standards or ratio type measurements. Documentation supporting traceability information is available for review upon written request at a Transcat facility. The measured quantity and the measurement uncertainty are required for further dissemination of traceability.

Uncertainties are reported with a coverage factor k=2, providing a level of confidence of approximately 95%. All calibrations have been performed using processes having a TUR of 4:1 or better (3:1 for mass calibrations), unless otherwise noted. The Test Uncertainty Ratio (TUR) is calculated in accordance with NCSL International RP-18. For mass calibrations: Conventional mass referenced to 8.0 g/cm³.

The results in this report relate only to the item calibrated or tested. Recorded calibration data is valid at the time of calibration within the stated uncertainties at the environmental conditions noted. The determination of compliance to the specification is specific to the model/serial no./ID no. referenced above based on the tolerances shown; these tolerances are either the original equipment manufacturers (OEM's) warranted specifications or the client's requested specifications. This certificate may not be reproduced except in full, without the written approval of Transcat. Additional information, if applicable may be included on separate report(s).

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Certificate/SO Number: 33-Q0Z0I-20-1 Revision 0

As Found/As Left Data

Description	Setpoints	Accuracy	Low Limit	High Limit	As Found / As Left	OOT	Cal Process Uncertainty (k=2; ±)	Measurement Uncertainty (k=2; ±)	Units	TUR
DC Current % Source - 4-20mA Ch #1										
4 - 20mA	0%	±(0.1% Span)	3.984	4.016	4.002 mA		1.6e-004	1.9e-003	mA	100.0 : 1
	25%	±(0.1% Span)	7.984	8.016	7.999 mA		2.7e-004	1.9e-003	mA	59.3 : 1
	50%	±(0.1% Span)	11.984	12.016	12.003 mA		1.1e-003	2.2e-003	mA	14.5 : 1
	75%	±(0.1% Span)	15.984	16.016	16.001 mA		1.3e-003	2.3e-003	mA	12.3 : 1
	100%	±(0.1% Span)	19.984	20.016	20.001 mA		1.4e-003	2.3e-003	mA	11.4 : 1
DC Current % Source - 4-20mA Ch #2										
4 - 20mA	0%	±(0.1% Span)	3.984	4.016	3.998 mA		1.6e-004	1.9e-003	mA	100.0 : 1
	25%	±(0.1% Span)	7.984	8.016	7.998 mA		2.7e-004	1.9e-003	mA	59.3 : 1
	50%	±(0.1% Span)	11.984	12.016	11.999 mA		1.1e-003	2.2e-003	mA	14.5 : 1
	75%	±(0.1% Span)	15.984	16.016	16.004 mA		1.3e-003	2.3e-003	mA	12.3 : 1
	100%	±(0.1% Span)	19.984	20.016	20.002 mA		1.4e-003	2.3e-003	mA	11.4 : 1
DC Current % Source - 4-20mA Ch #3										
4 - 20mA	0%	±(0.1% Span)	3.984	4.016	3.998 mA		1.6e-004	1.9e-003	mA	100.0 : 1
	25%	±(0.1% Span)	7.984	8.016	8.002 mA		2.7e-004	1.9e-003	mA	59.3 : 1
	50%	±(0.1% Span)	11.984	12.016	12.001 mA		1.1e-003	2.2e-003	mA	14.5 : 1
	75%	±(0.1% Span)	15.984	16.016	16.000 mA		1.3e-003	2.3e-003	mA	12.3 : 1
	100%	±(0.1% Span)	19.984	20.016	20.001 mA		1.4e-003	2.3e-003	mA	11.4 : 1
DC Current % Source - 4-20mA Ch #4										
4 - 20mA	0%	±(0.1% Span)	3.984	4.016	4.004 mA		1.6e-004	1.9e-003	mA	100.0 : 1
	25%	±(0.1% Span)	7.984	8.016	8.002 mA		2.7e-004	1.9e-003	mA	59.3 : 1
	50%	±(0.1% Span)	11.984	12.016	12.001 mA		1.1e-003	2.2e-003	mA	14.5 : 1
	75%	±(0.1% Span)	15.984	16.016	16.005 mA		1.3e-003	2.3e-003	mA	12.3 : 1
	100%	±(0.1% Span)	19.984	20.016	20.001 mA		1.4e-003	2.3e-003	mA	11.4 : 1

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SCC Lab No 827
CLAS NRC·CNRC CLAS CLAS 2016-02
ilac-MRA

Certificate/SO Number: 33-Q0Z0I-20-1 Revision 0

As Found/As Left Data

Description	Setpoints	Accuracy	Low Limit	High Limit	As Found / As Left	OOT	Cal Process Uncertainty (k=2; ±)	Measurement Uncertainty (k=2; ±)	Units	TUR
DC Current % Source - 0-20mA Ch #1										
0 - 20mA	0%	±(0.1% Span)	-0.020	0.020	0.004 mA		9.2e-007	2.3e-003	mA	100.0 : 1
	25%	±(0.1% Span)	4.980	5.020	5.001 mA		1.9e-004	2.3e-003	mA	100.0 : 1
	50%	±(0.1% Span)	9.980	10.020	10.002 mA		3.2e-004	2.3e-003	mA	62.5 : 1
	75%	±(0.1% Span)	14.980	15.020	15.001 mA		1.2e-003	2.6e-003	mA	16.7 : 1
	100%	±(0.1% Span)	19.980	20.020	20.002 mA		1.4e-003	2.7e-003	mA	14.3 : 1
DC Current % Source - 0-20mA Ch #2										
0 - 20mA	0%	±(0.1% Span)	-0.020	0.020	0.004 mA		9.2e-007	2.3e-003	mA	100.0 : 1
	25%	±(0.1% Span)	4.980	5.020	5.000 mA		1.9e-004	2.3e-003	mA	100.0 : 1
	50%	±(0.1% Span)	9.980	10.020	9.998 mA		3.2e-004	2.3e-003	mA	62.5 : 1
	75%	±(0.1% Span)	14.980	15.020	15.002 mA		1.2e-003	2.6e-003	mA	16.7 : 1
	100%	±(0.1% Span)	19.980	20.020	20.002 mA		1.4e-003	2.7e-003	mA	14.3 : 1
DC Current % Source - 0-20mA Ch #3										
0 - 20mA	0%	±(0.1% Span)	-0.020	0.020	0.000 mA		9.2e-007	2.3e-003	mA	100.0 : 1
	25%	±(0.1% Span)	4.980	5.020	4.999 mA		1.9e-004	2.3e-003	mA	100.0 : 1
	50%	±(0.1% Span)	9.980	10.020	10.002 mA		3.2e-004	2.3e-003	mA	62.5 : 1
	75%	±(0.1% Span)	14.980	15.020	15.003 mA		1.2e-003	2.6e-003	mA	16.7 : 1
	100%	±(0.1% Span)	19.980	20.020	20.001 mA		1.4e-003	2.7e-003	mA	14.3 : 1
DC Current % Source - 0-20mA Ch #4										
0 - 20mA	0%	±(0.1% Span)	-0.020	0.020	0.000 mA		9.2e-007	2.3e-003	mA	100.0 : 1
	25%	±(0.1% Span)	4.980	5.020	5.001 mA		1.9e-004	2.3e-003	mA	100.0 : 1
	50%	±(0.1% Span)	9.980	10.020	10.004 mA		3.2e-004	2.3e-003	mA	62.5 : 1
	75%	±(0.1% Span)	14.980	15.020	15.002 mA		1.2e-003	2.6e-003	mA	16.7 : 1
	100%	±(0.1% Span)	19.980	20.020	20.002 mA		1.4e-003	2.7e-003	mA	14.3 : 1

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SCC Lab No 827

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Certificate/SO Number: 33-Q0Z0I-20-1 Revision 0

As Found/As Left Data

Description	Setpoints	Accuracy	Low Limit	High Limit	As Found / As Left	OOT	Cal Process Uncertainty (k=2; ±)	Measurement Uncertainty (k=2; ±)	Units	TUR
DC Voltage % Source - 0-5V Ch#1										
0 -5V	0%	±(0.1% Span)	-0.0050	0.0050	0.0011 V		5.0e-007	5.8e-004	V	100.0 : 1
	20%	±(0.1% Span)	0.9950	1.0050	1.0003 V		5.5e-006	5.8e-004	V	100.0 : 1
	40%	±(0.1% Span)	1.9950	2.0050	1.9994 V		1.1e-005	5.8e-004	V	100.0 : 1
	60%	±(0.1% Span)	2.9950	3.0050	3.0016 V		1.6e-005	5.8e-004	V	100.0 : 1
	80%	±(0.1% Span)	3.9950	4.0050	4.0014 V		2.1e-005	5.8e-004	V	100.0 : 1
	100%	±(0.1% Span)	4.9950	5.0050	5.0011 V		2.6e-005	5.8e-004	V	100.0 : 1
DC Voltage % Source - 0-5V Ch#2										
0 -5V	0%	±(0.1% Span)	-0.0050	0.0050	0.0002 V		5.0e-007	5.8e-004	V	100.0 : 1
	20%	±(0.1% Span)	0.9950	1.0050	1.0008 V		5.5e-006	5.8e-004	V	100.0 : 1
	40%	±(0.1% Span)	1.9950	2.0050	2.0000 V		1.1e-005	5.8e-004	V	100.0 : 1
	60%	±(0.1% Span)	2.9950	3.0050	3.0016 V		1.6e-005	5.8e-004	V	100.0 : 1
	80%	±(0.1% Span)	3.9950	4.0050	4.0009 V		2.1e-005	5.8e-004	V	100.0 : 1
	100%	±(0.1% Span)	4.9950	5.0050	5.0004 V		2.6e-005	5.8e-004	V	100.0 : 1
DC Voltage % Source - 0-5V Ch#3										
0 -5V	0%	±(0.1% Span)	-0.0050	0.0050	0.0020 V		5.0e-007	5.8e-004	V	100.0 : 1
	20%	±(0.1% Span)	0.9950	1.0050	1.0000 V		5.5e-006	5.8e-004	V	100.0 : 1
	40%	±(0.1% Span)	1.9950	2.0050	2.0001 V		1.1e-005	5.8e-004	V	100.0 : 1
	60%	±(0.1% Span)	2.9950	3.0050	3.0006 V		1.6e-005	5.8e-004	V	100.0 : 1
	80%	±(0.1% Span)	3.9950	4.0050	4.0014 V		2.1e-005	5.8e-004	V	100.0 : 1
	100%	±(0.1% Span)	4.9950	5.0050	5.0019 V		2.6e-005	5.8e-004	V	100.0 : 1

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As Found/As Left Data

Description	Setpoints	Accuracy	Low Limit	High Limit	As Found / As Left	OOT	Cal Process Uncertainty (k=2; ±)	Measurement Uncertainty (k=2; ±)	Units	TUR
DC Voltage % Source - 0-5V Ch#4										
0 -5V	0%	±(0.1% Span)	-0.0050	0.0050	0.0006 V		5.0e-007	5.8e-004	V	100.0 : 1
	20%	±(0.1% Span)	0.9950	1.0050	1.0021 V		5.5e-006	5.8e-004	V	100.0 : 1
	40%	±(0.1% Span)	1.9950	2.0050	2.0011 V		1.1e-005	5.8e-004	V	100.0 : 1
	60%	±(0.1% Span)	2.9950	3.0050	3.0007 V		1.6e-005	5.8e-004	V	100.0 : 1
	80%	±(0.1% Span)	3.9950	4.0050	4.0007 V		2.1e-005	5.8e-004	V	100.0 : 1
	100%	±(0.1% Span)	4.9950	5.0050	5.0004 V		2.6e-005	5.8e-004	V	100.0 : 1
DC Voltage % Source - 0-10V Ch#1										
0 - 10V	0%	±(0.1% Span)	-0.010	0.010	0.001 V		5.0e-007	1.2e-003	V	100.0 : 1
	20%	±(0.1% Span)	1.990	2.010	1.999 V		1.1e-005	1.2e-003	V	100.0 : 1
	40%	±(0.1% Span)	3.990	4.010	4.001 V		2.1e-005	1.2e-003	V	100.0 : 1
	60%	±(0.1% Span)	5.990	6.010	6.001 V		3.1e-005	1.2e-003	V	100.0 : 1
	80%	±(0.1% Span)	7.990	8.010	8.002 V		4.1e-005	1.2e-003	V	100.0 : 1
	100%	±(0.1% Span)	9.990	10.010	10.000 V		5.2e-005	1.2e-003	V	100.0 : 1
DC Voltage % Source - 0-10V Ch#2										
0 - 10V	0%	±(0.1% Span)	-0.010	0.010	0.002 V		5.0e-007	1.2e-003	V	100.0 : 1
	20%	±(0.1% Span)	1.990	2.010	2.000 V		1.1e-005	1.2e-003	V	100.0 : 1
	40%	±(0.1% Span)	3.990	4.010	4.001 V		2.1e-005	1.2e-003	V	100.0 : 1
	60%	±(0.1% Span)	5.990	6.010	6.002 V		3.1e-005	1.2e-003	V	100.0 : 1
	80%	±(0.1% Span)	7.990	8.010	8.001 V		4.1e-005	1.2e-003	V	100.0 : 1
	100%	±(0.1% Span)	9.990	10.010	10.000 V		5.2e-005	1.2e-003	V	100.0 : 1

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Certificate/SO Number: 33-Q0Z0I-20-1 Revision 0

As Found/As Left Data

Description	Setpoints	Accuracy	Low Limit	High Limit	As Found / As Left	OOT	Cal Process Uncertainty (k=2; ±)	Measurement Uncertainty (k=2; ±)	Units	TUR
DC Voltage % Source - 0-10V Ch#3										
0 - 10V	0%	±(0.1% Span)	-0.010	0.010	0.002 V		5.0e-007	1.2e-003	V	100.0 : 1
	20%	±(0.1% Span)	1.990	2.010	2.000 V		1.1e-005	1.2e-003	V	100.0 : 1
	40%	±(0.1% Span)	3.990	4.010	4.001 V		2.1e-005	1.2e-003	V	100.0 : 1
	60%	±(0.1% Span)	5.990	6.010	6.003 V		3.1e-005	1.2e-003	V	100.0 : 1
	80%	±(0.1% Span)	7.990	8.010	8.001 V		4.1e-005	1.2e-003	V	100.0 : 1
	100%	±(0.1% Span)	9.990	10.010	10.001 V		5.2e-005	1.2e-003	V	100.0 : 1
DC Voltage % Source - 0-10V Ch#4										
0 - 10V	0%	±(0.1% Span)	-0.010	0.010	0.000 V		5.0e-007	1.2e-003	V	100.0 : 1
	20%	±(0.1% Span)	1.990	2.010	2.001 V		1.1e-005	1.2e-003	V	100.0 : 1
	40%	±(0.1% Span)	3.990	4.010	4.001 V		2.1e-005	1.2e-003	V	100.0 : 1
	60%	±(0.1% Span)	5.990	6.010	6.000 V		3.1e-005	1.2e-003	V	100.0 : 1
	80%	±(0.1% Span)	7.990	8.010	8.002 V		4.1e-005	1.2e-003	V	100.0 : 1
	100%	±(0.1% Span)	9.990	10.010	10.000 V		5.2e-005	1.2e-003	V	100.0 : 1

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CLAS — CLAS 2016-02
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Certificate/SO Number: 33-Q0Z0I-20-1 Revision 0

Traceable Standards

Asset	Manufacturer	Model Number	Description	Cal Date	Due Date	Traceability Number	Use
N0351	Agilent	3458A Opt 002	Multimeter, Digital	22-Jun-17	30-Jun-18	5-&N0351-21-1	AF/AL
N0390	Fluke Corporation	5520A	Multifunction Calibrator	19-Dec-17	31-Dec-18	5-&N0390-18-1	AF/AL

The use of the standard is defined as: AF - used for as-found readings, AL - used for as-left readings.

Environmental Data

Temperature	Relative Humidity	Temp/ RH Asset
70.99°F /21.66°C	36.80%	N0457

Calibrated At:
4043 Carling Avenue
Ottawa, ON K2K 2A4

Facility Responsible:
4043 Carling Avenue
Ottawa, ON K2K 2A4
800-828-1470

Unit Barcode: 901B0165859

Date Received: June 12, 2018
Service Level : R9

Calibrated By:
Electronically Signed By: Mark King
Mark King — Jun 19, 2018 14:24:03 -04:00
Calibration Technician

Reviewed By:
Electronically Signed By: Francis Kane
Francis Kane — Jun 19, 2018 15:06:27 -04:00
Lab Manager

Customer Number: 9-322110-000

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Appendix F.02
Summary of Measurement Results

Summary of Measurement Results

1.1 Sound Power Levels

From Table 12 of IEC test report 17095.01.T40.RP1:

Wind Speed (m/s)	Apparent L_{WA}, (dBA)	Maximum Sound Power Level (dBA)* REA # 2765-A4ER2P
7	100.5	101.5
7.5	101.5	101.5
8	101.2	101.5
8.5	101.1	101.5
9	101.0	101.5
9.5	100.8	101.5
10	100.9	101.5
10.5	101.0	101.5
11	100.9	101.5
11.5	101.3	101.5
12	101.2	101.5

*Includes +0.5 dB, per Section E3.1 of the MOECC Compliance Protocol for Wind Turbine Noise

1.2 Tonal Audibility Values

From Table 14 of IEC test report 17095.01.T40.RP1:

Wind Speed (m/s)	Frequency (Hz)	Tonal audibility, ΔL_a (dB)	Tonal Audibility from AAR* (dB)
7	61	-2.7	3
9	62	-3.0	
11.5	62	-2.1	

*Belle River Wind Project Noise Impact Assessment Report (November 27, 2015)

1.3 Statement of Compliance

Based on the results in Table 12 of the IEC 61400-11 test report to which this statement is attached, the maximum apparent sound power level of the test turbine complies with the sound level in REA # 2765-A4ER2P and Section E3.1 of the MOECC Compliance Protocol for Wind Turbine Noise.

Based on the results in Table 14 of the IEC 61400-11 to which this statement is attached, the tonal audibility of the test turbine complies with the maximum tonal audibility of 3 dB as indicated in the statement from the manufacturer dated July 15, 2015, found in Appendix E of the Noise Impact Assessment Report dated November 27, 2015.

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Appendix F.03
E-Audit Checklist

Appendix F.03 - (2017 Compliance Protocol Appendix F6): E-Audit checklist for IEC 61400-11:2013

Wind Energy Project – Screening Document – Acoustic Audit Report – Emission IEC61400-11:2013 Standard

Information Required in the Acoustic Audit Report – Emission

Item #	Description	Complete?	Comment
1	Characterization of the wind turbine Items 1 to 26; IEC61400-11:2013, Section 10.2	✓	Report Section 2.1
2	Physical environment Items 27 to 33; IEC61400-11:2013, Section 10.3, Physical Environment	✓	Report Section 2.2, 3.2, 4.2, Appendix A
3	Measurement instrumentation Items 34 to 39; IEC61400-11:2013, Section 10.4, Instrumentation	✓	Report Section 3, Appendix F.01
4	Acoustic data Items 40 to 52; IEC61400-11:2013, Section 10.5, Acoustic Data	✓	Report Section 4, 3.3, Appendix C, Appendix D,
5	Non-acoustic data Items 50 to 53, and 56; IEC61400-11:2003 Section 10.6, Non-Acoustic Data Items 59 and 60; NPC-233, Section 12.3, Acoustic Audit – Acoustical Data, bullet point number 8, All necessary and supporting calculations	✓	Report Section 3, Appendix E
6	Uncertainty the apparent sound power level at integer wind speeds one-third octave band spectrum of the noise at the reference position at each integer wind speed the Tonality of the sound emissions of the wind turbine measured at the reference position	✓	Report Section 4, Appendix C
7	Additional information Item 60; NPC-233, Section 10, Report Format, bullet point number 4, Conclusions and Recommendations Item 61; NPC-233, Section 12.3, Acoustic Audit – Acoustical Data, bullet point number 8, All necessary and supporting calculations Item 62; NPC-233, Section 12.3, Acoustic Audit – Acoustical Data, bullet point number 3, Details of measurement procedure	✓	Report Section 3, Appendix F, data in Excel provided separately
8	Items 68 to 72; IEC61400-11:2013, Section 10.5, Acoustic Data	⦸	Optional information, not provided in this report
9	Non-acoustic data Items 73 to 74 are from IEC61400-11:2013, Section 10.6, Non-Acoustic Data	⦸	Optional information, not provided in this report

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End of Report