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REPORT ID: **14331.02.T32.RP3**

Adelaide Wind Energy Centre – Turbine T32
IEC 61400-11 Edition 3.0 Measurement Report

Prepared for:

Kerwood Wind LP
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Revision History

Revision Number	Description	Date
1	Issued Edition 2.1 test report	13/02/2015
2	Minor Revisions to Table 3	17/12/2015
3	Issued Edition 3.0 test report	20/11/2017
4	Updates to Appendix F	13/06/2019

This report in its entirety, including appendices contains 113 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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This Statement of Qualifications and Limitations is attached to and forms part of this report.

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1 Introduction

Aercoustics Engineering Limited (Aercoustics) was retained by Kerwood Wind LP ("Kerwood") to conduct an acoustic measurement of turbine T32 at the Adelaide Wind Energy Centre. The purpose of the measurement was to provide verification of the maximum noise emission of the turbine. The measurement was carried out 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 Turbine T32.

2 Wind Turbine Information

2.1 Wind turbine equipment specific information

Wind turbine specific equipment information for turbine T32 was provided by Kerwood and is summarized in Tables 1 – 5.

Table 1 - Wind Turbine Details

Wind Turbine Details	
Manufacturer	GE
Model Number	1.6-100
Turbine ID	WAD-032 (Adelaide 032)

Table 2 - Operating Details

Operating Details	
Vertical or Horizontal axis wind turbine	HAWT
Upwind or downwind rotor	Upwind
Hub height	80m
Horizontal distance from rotor centre to tower axis	4100mm
Diameter of rotor	100m
Tower type (lattice or tube)	Tube
Passive stall, active stall, or pitch controlled turbine	Pitch Controlled
Constant or variable speed	Variable
Power curve	See Figure B.01
Rotational speed at each integer standardised wind speed	See Figure B.02
Rated power output	1.62 MW
Control software version	V.04.07.02C

Table 3 - Rotor Details

Rotor Details	
Rotor control devices	Electric Motor
Presence of vortex generators, stall strips, serrated trailing edges	Yes
Blade type	GE 48.7 Glass- TPI
Serial number	S/N:60249 GE ID # D21907-101-03790-W860 S/N:20275 GE ID # D21907-101-03791-W860 S/N:40262 GE ID # D21907-101-03792-W860
Number of blades	3

Table 4 - Gearbox Details

Gearbox Details	
Manufacturer	Winergy
Model number	PEAB4431
Serial number	4851646-110-7

Table 5 - Generator Details

Generator Details	
Manufacturer	Hitachi
Model number	HIG-3669J00 GE ID Tag # 1-6-HEAD-31457-P
Serial number	530437-4

2.2 Wind Turbine Location

Turbine T32 is located in the municipality of Adelaide Metcalfe, approximately 720m South of Mullifarry Drive, and 760m West of Kerwood Road. The area surrounding T32 is flat and consists primarily of farmland.

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

A summary of acoustic equipment utilized by Aercoustics for the measurement of turbine T32 is summarized in Table 6.

Table 6 - Acoustic Measurement Equipment

Equipment	Manufacturer Name & Model	Serial Number
Acoustic Data acquisition system	LMS SCADA Mobile	5310922
Microphone	B&K 4189	2622169
Pre-amplifier	B&K 2671	2614900
Acoustic calibrator	B&K 4231	2513184

Calibration of the measurement setup was carried out before and after Aercoustics set of measurements.

3.1.2 Meteorological Equipment

Wind speed for Turbine ON was derived from the power curve (as per procedures outlined in IEC 61400-11). Wind direction for turbine ON measurements was utilized from the yaw position from turbine T32. Data for background measurements was obtained from a 10m high anemometer, which was placed as per guidelines outlined in IEC-61400-11 Edition 2.1.

The meteorological equipment is summarized in Table 7

Table 7 – Meteorological Measurement Equipment

Equipment	Manufacturer Name & Model	Serial Number
Anemometer	VAISALA WXT520	K242001
Serial to Analog Converter	NOKEVAL 7470	A165152

3.2 Measurement Setup

3.2.1 Microphone Placement

The measurement microphone was setup 130m from the base of the turbine in ‘Position 1’, (i.e. downwind of the turbine, as per IEC 61400-11) at an elevation of 0m relative to the base of T32. The microphone was placed in the centre of a circular, acoustically reflective board.

During the measurement period only data points for which the microphone was within 15 degrees of downwind from the turbine were used. The microphone position relative to downwind of the turbine was monitoring via the yaw angle output provided from the turbine

system (discussed further in Section 3.5). During placement of the microphone the turbine was parked and the reference yaw angle for that measurement logged.

When measurements of T32 were taken, the surrounding land was covered with harvested corn stalks. The stalks were short and as such the influence on the measurement was considered negligible. There were no nearby reflecting surfaces (houses, barns etc.); as such the influence from reflecting surfaces was considered to be 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 Schedule

Table 8 provides a summary of the test date and times. Data was logged in 10 second intervals for post-processing (as per the measurement standard).

Table 8 - Measurement Schedule Summary

Date	Test Type	Start Time	Finish time
December 1, 2014	Turbine ON	11:00 am	12:03 pm
	Background	12:07 pm	1:31 pm
	Turbine ON	1:46 pm	2:04 pm
	Turbine ON	2:20 pm	2:45 pm
	Background	2:55 pm	5:03 pm

3.4 Meteorological Conditions

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

As previously mentioned, wind speed for Turbine ON was derived from T32's power curve (as per the standard), while wind direction was provided by T32's nacelle anemometer (located at hub height). Background data was obtained from an anemometer located 10m above ground level near T32.

Temperature and pressure readings during the measurement period were provided by the 10m anemometer, located near turbine T32 for the duration of Aercoustics measurements.

3.5 Turbine operational information

Output data from the turbine (Power, yaw, RPM, pitch angle, and nacelle wind speed) were obtained as analog output signals that were simultaneously acquired with the acoustic and anemometer measurement data using Aercoustics data acquisition system.

4 Measurement Results

4.1 Deviations from IEC-61400-11 Edition 3.0

Originally, the test contract required measurements in accordance to edition 2.1 of the standard (61400-11) which requires the anemometer to be placed upwind of the turbine. This test report is a reprocessing of the originally acquired data and as such during the test, the anemometer position was erected in an upwind (Ed 2.1), rather than crosswind (Ed 3.0) position relative to the test turbine.

Based on the review of the signal to noise ratio during the test, and the trend of the background sound levels, it was determined that the background sound levels have a reasonably strong dependence on measured wind speed. This is likely due to the corn stalks near the microphone. As such, the Background wind speed for this test was derived from the nacelle anemometer. This method is in accordance with recommendations made by the convenor of the IEC 61400-11 working group and is detailed in Note N6.023.17 and provided in Appendix F.

4.2 Special Notes & Considerations

T31 is located approximately 350m West of T32. T31 was parked for the duration of the test.

4.3 Analysis Details

The following section outlines analysis of the measurement data acquired for T32. The data presented is exclusive of transient events such as vehicle traffic, wildlife, air traffic etc. The site has been assessed to have a roughness length of 0.05m, representative of farmland with some vegetation.

4.3.1 Double Windscreen Adjustment

As previously mentioned, no double wind screen was used, as such the measurement data did not require adjustment.

4.3.2 Wind Speed Correction

The wind speed for each measurement data point for Turbine ON was derived through the power curve (as per Section 8.2.1.1 of IEC-61400-11). For data points during Turbine ON that were outside the allowed range of the power curve, the wind speed was derived from the nacelle anemometer wind speed (as specified in Section 8.2.1.2 of IEC-61400-11).

Background wind speed was derived utilizing data acquired with the nacelle anemometer and normalizing the wind speed.

4.4 Type B uncertainties

Type B uncertainties were obtained through interpretation of information provided in Annex C of IEC-61400-11, and instrument uncertainties obtained from the calibration

certificate. A summary of Type B uncertainties is provided in Table 9, while detailed information (including data in 1/3 octave) is provided in Appendix C.

Table 9 - 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

Sound pressure level measurements are summarized in Table 10. Detailed 1/3 Octave band spectrum data, respective uncertainties, and analysis plots are provided in Appendix C. A copy of the measurement data used for analysis is provided in Appendix E and includes meteorological and turbine operational data.

Table 10 - 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	50.5	67	47.1	104	49.1*
7.5	51.7	66	47.1	105	50.6*
8	53.0	62	47.6	110	52.0*
8.5	53.8	41	47.5	101	52.9
9	54.3	43	48.2	103	53.4
9.5	55.0	70	48.5	101	54.1
10	55.3	50	48.7	52	54.4
10.5	55.2	35	48.6	41	54.4
11	55.5	16	48.7	24	54.6

Values marked with an asterisk * denote 3 to 6 dB difference between Turbine ON and Background

4.6 Sound Power Level of Turbine

The calculated sound power level of the turbine T32 (as per IEC 61400-11) is summarized in Table 11 (hub height) and Table 12 (10m height). Detailed 1/3 Octave band spectrum data and respective uncertainties are provided in Appendix C.

Table 11 - $L_{WA,\,K}$ at each integer wind speed

Wind Speed (m/s)	Apparent L_{WA}, (dBA)	Uncertainty (dB)
7	98.0*	1.0
7.5	99.4*	1.0
8	100.8*	0.9
8.5	101.8*	0.9
9	102.3	0.9
9.5	103.0	0.9
10	103.3	0.9
10.5	103.2	0.9
11	103.5	1.1

Values marked with an asterisk * denote 3 to 6 dB difference between Turbine ON and Background

Table 12 - $L_{WA\ 10m,\,K}$ at each integer wind speed

Wind Speed (m/s)	Apparent L_{WA}, (dBA)	Uncertainty (dB)
5	98.1*	1.0
6	101.4*	0.9
7	103.1	0.9
8	103.4	0.9

Values marked with an asterisk * denote 3 to 6 dB difference between Turbine ON and Background

4.7 Tonality Analysis

The tonality analysis for Turbine T32 is summarized in Table 13, while plots of narrow band spectra at each wind speed are provided in Appendix D. The ΔL_{tn} and ΔL_a values reported represent the energy average of all data points with an identified tone that falls within the same frequency origin (as specified in Section 9.5.8 in IEC-61400-11).

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 13 - 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	103	-4.0	-2.0	40	67	60%
7.5	111	-3.1	-1.1	58	66	88%
8	96	-2.9	-0.9	13	62	21%
8	516	-3.6	-1.3	36	62	58%
8	1706	-5.8	-2.4	44	62	71%
8.5	123	-4.5	-2.5	34	41	83%
8.5	381	-3.7	-1.5	17	41	41%
8.5	523	-0.4	1.9	32	41	78%
8.5	1724	-5.1	-1.7	24	41	59%
9	126	-3.1	-1.1	43	43	100%
9	537	1.3	3.7	40	43	93%
9.5	130	-1.7	0.3	70	70	100%
9.5	546	3.0	5.4	19	70	27%
9.5	566	0.8	3.2	45	70	64%
10	130	-1.5	0.5	48	50	96%
10	556	1.9	4.2	42	50	84%
10.5	130	-2.2	-0.2	34	35	97%
10.5	558	1.1	3.4	30	35	86%
11	131	-2.1	-0.1	15	16	94%
11	558	3.0	5.4	13	16	81%

5 Closure

Measurements and analysis were carried on Turbine T32 of the Adelaide Wind Energy Centre, located in the Adelaide Metcalfe as per International Standard IEC 61400-11 (Edition 3.0, released 2012-11), "Wind turbine generator systems – Part 11: Acoustic noise measurement techniques".

Should you have any questions or comments please do not hesitate to contact the authors of this report.

6 References

1. International Standard IEC 61400-11 (Edition 3.0, released 2012-11), "Wind turbine generator systems – Part 11: Acoustic noise measurement techniques".

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Appendix A
Site Details

Legend

Project Components

- Turbine (38)
- Proposed Transmission 115 kV Line
- Collector System
- Access Road
- Substation
- Laydown Area
- Project Location
- 120m Boundary
- 300m Boundary
- Closest Point to Waterbodies

Significant Natural Features

- Woodland
- Wetland
- Valleyland
- Carey's Sedge
- Yellow Stargrass
- Amphibian Breeding Habitat
- Bat Maternity Area
- Raptor Wintering Area

Cultural Heritage

- Structure Locations A
- Structure Locations B

Other Components

- 1 Storey Receptor
- 2 Storey Receptor
- 3 Storey Receptor
- Vacant Lot Receptor
- Existing 500 kV Line
- Existing Transmission Line
- Railway
- Freeway
- Arterial Road
- Local Road / Street
- Race Track
- Pipeline
- Permanent Watercourse
- Intermittent Watercourse
- Runway
- Transformer Station
- Park / Sports Field
- Residential Area
- Cemetery
- Pit or Quarry
- Waterbody
- Wetland
- Napier Turbine

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14331.00.T32.RP4

Scale: NTS
Drawn by: AM
Reviewed by: PA
Date: Nov 1, 2017
Revision: 1

Project Name

Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0

Figure Title

Site Plan

Figure A.01

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14331.00.T32.RP4	**Project Name**
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	Figure Title Site Photos

Figure A.02

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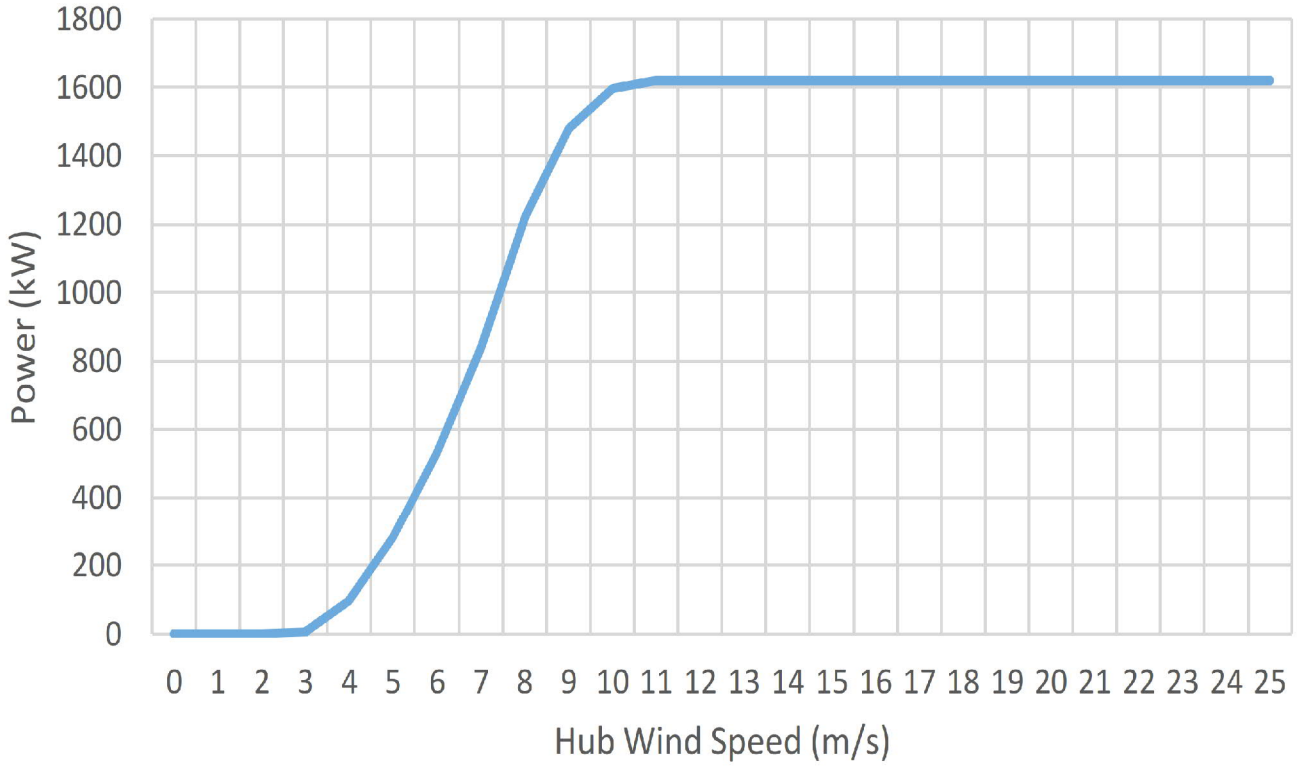
Appendix B
Turbine Information



Power Curve	
Hub Wind Speed (m/s)	Power [kW]
0	0
1	0
2	0
3	4
4	97
5	281
6	528
7	838
8	1219
9	1478
10	1597
11	1620
12	1620
13	1620
14	1620
15	1620
16	1620
17	1620
18	1620
19	1620
20	1620
21	1620
22	1620
23	1620
24	1620
25	1620

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Date: Nov 1, 2017
Revision: 1

Project Name

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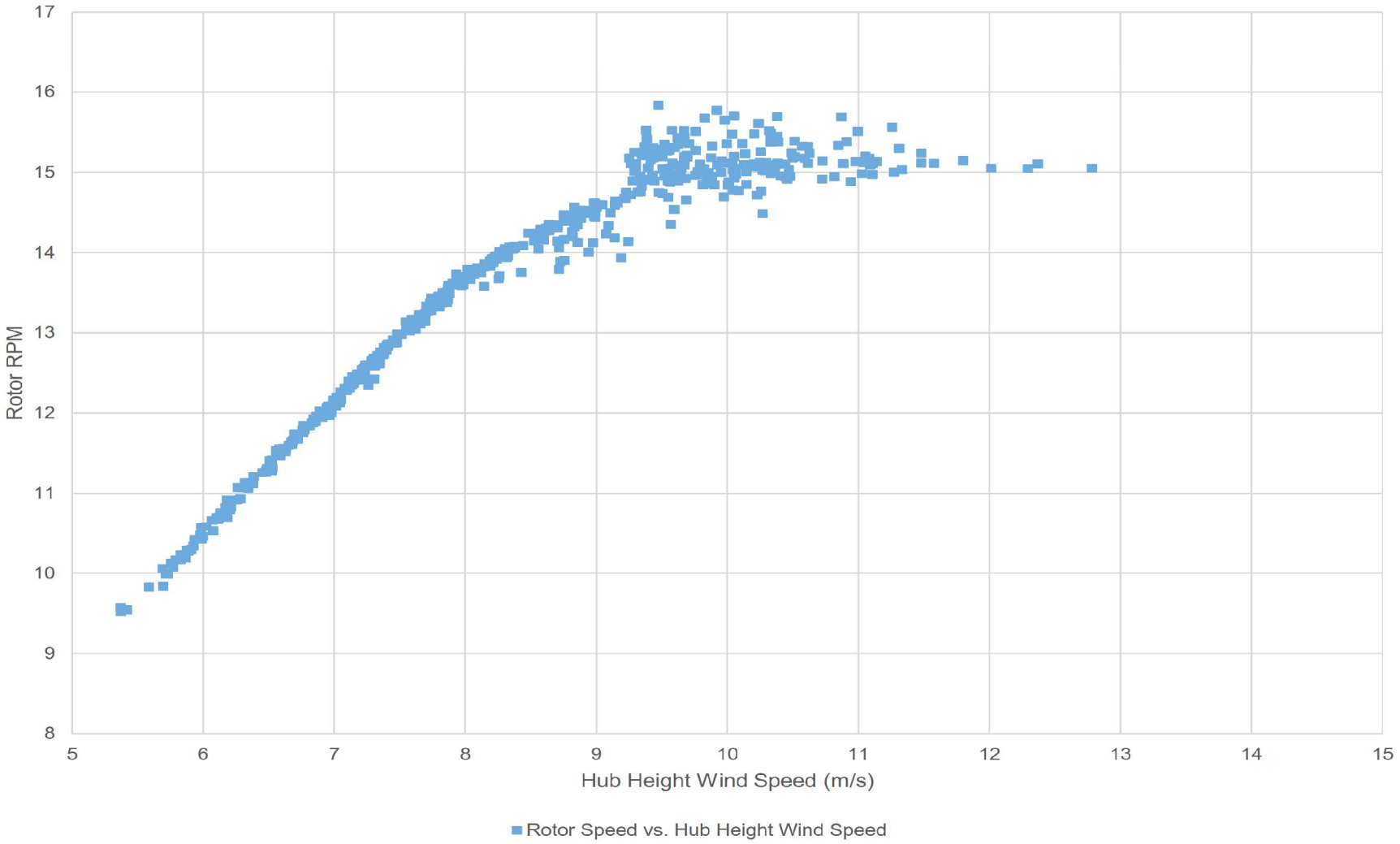
Figure Title

Power Curve

Figure B.01



aercoustics	14331.02.T32.RP4 Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	**Project Name** Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0 **Figure Title** Rotor RPM vs. wind speed

Figure B.02

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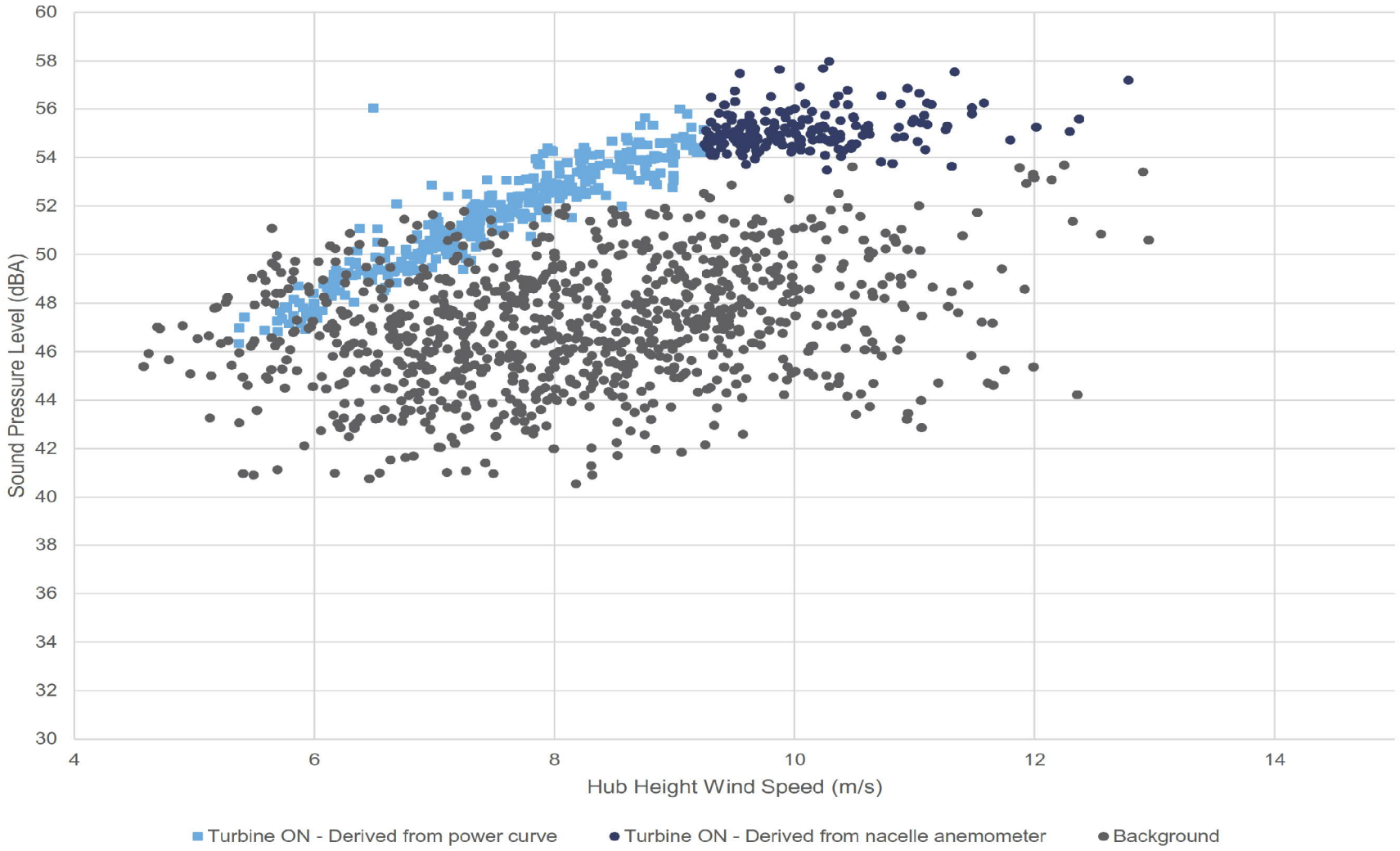
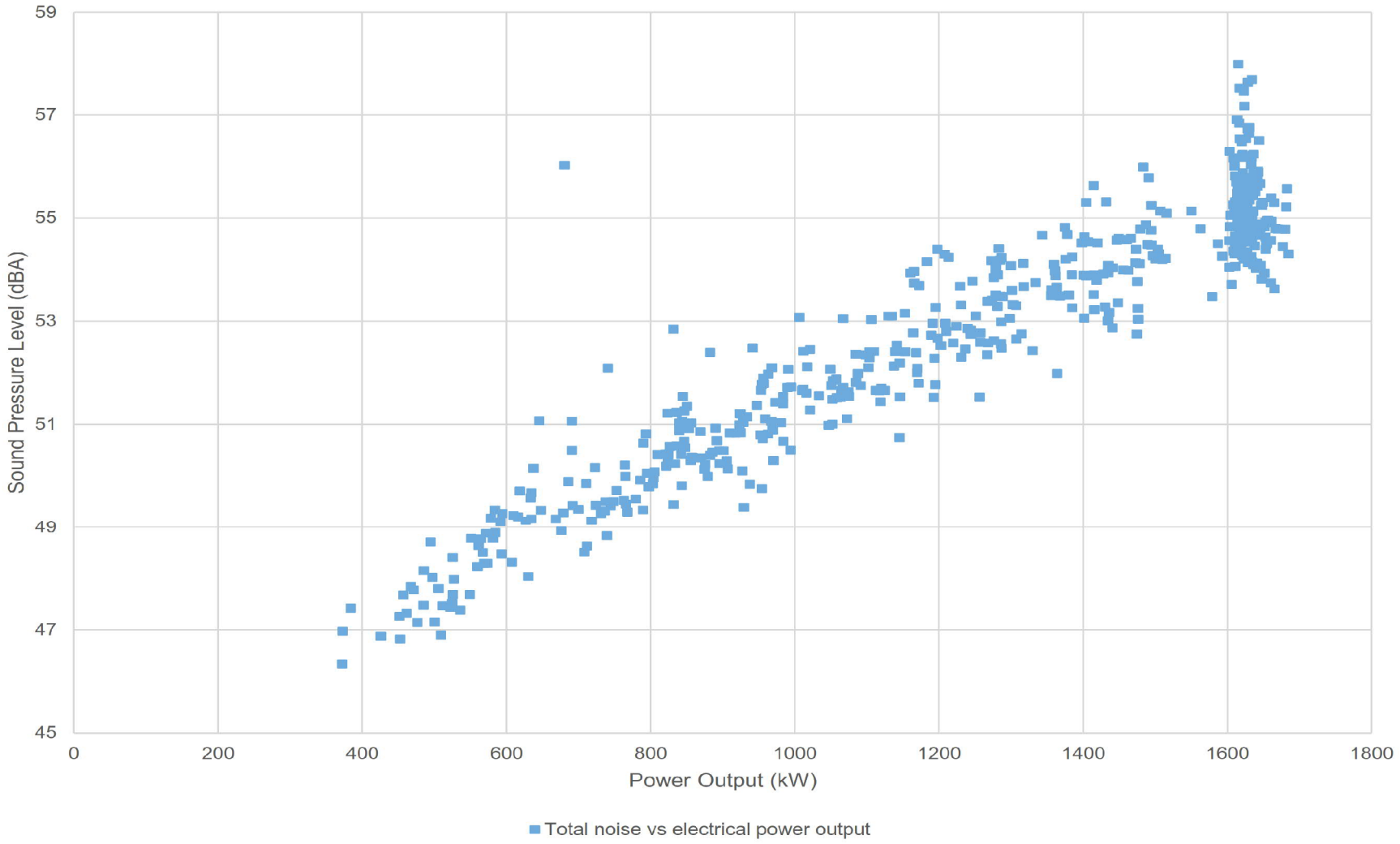
Appendix C
Apparent Sound Power Level



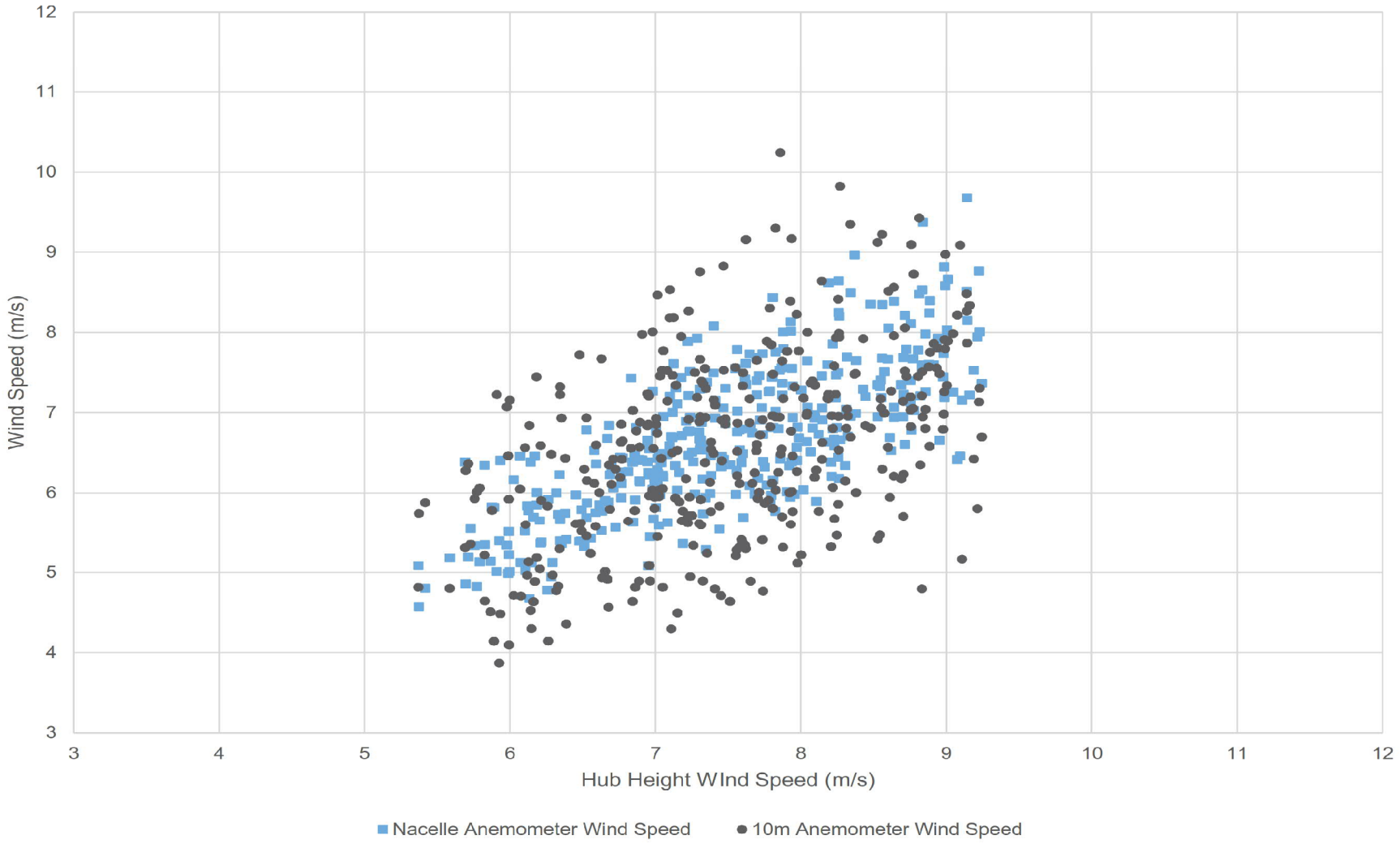
aercoustics	14331.02.T32.RP4 Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	**Project Name** Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0 **Figure Title** Plot of overall measurement data pairs at Position 1 (Turbine ON & Background)

Figure C.01



aercoustics	14331.02.T32.RP4 Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	**Project Name** Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0 **Figure Title** Plot of measured total noise vs electrical power output

Figure C.02



aercoustics	14331.02.T32.RP4 Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	**Project Name** Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0 **Figure Title** Plot of power curve relative to nacelle anemometer and 10m anemometer

Figure C.03

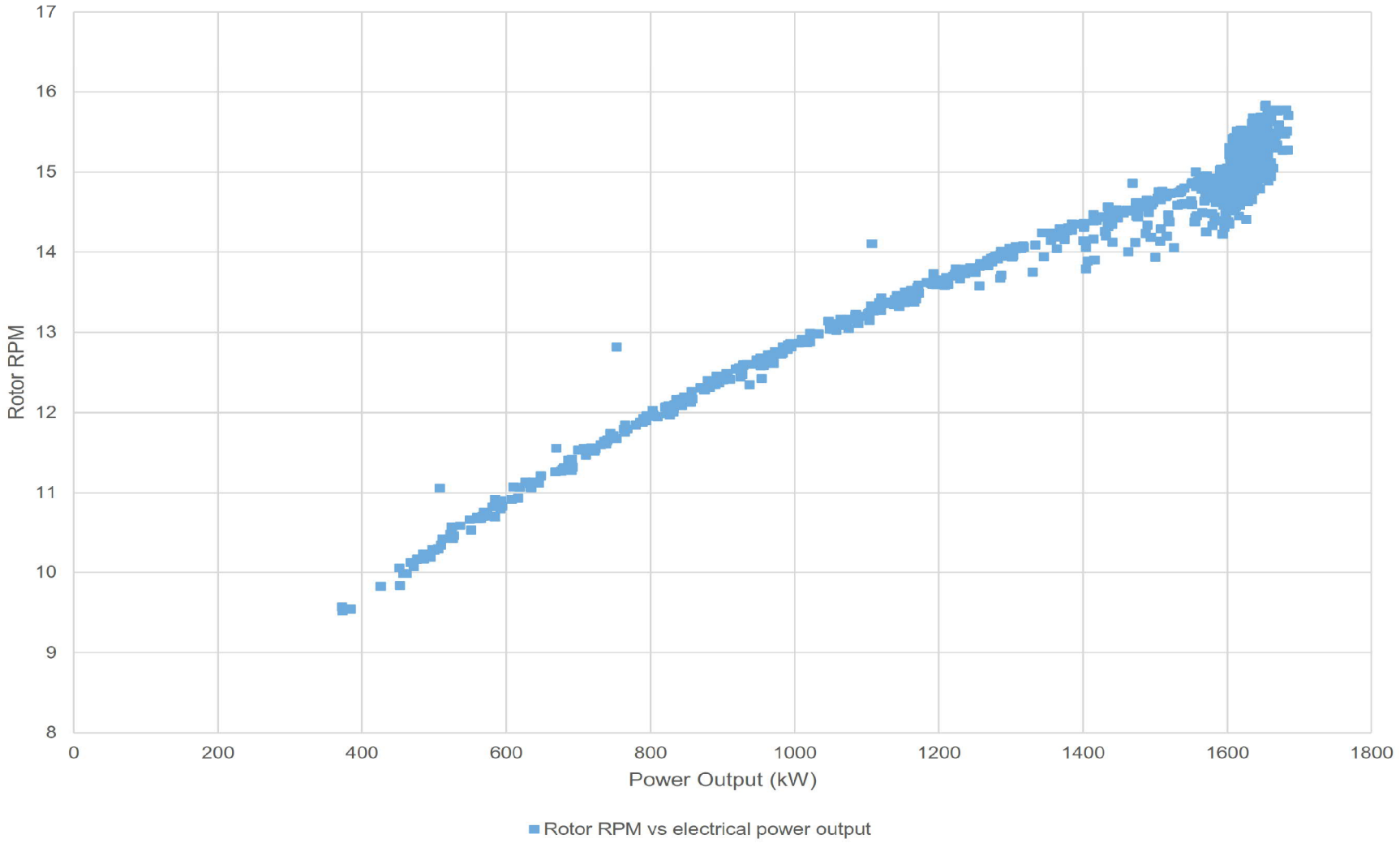


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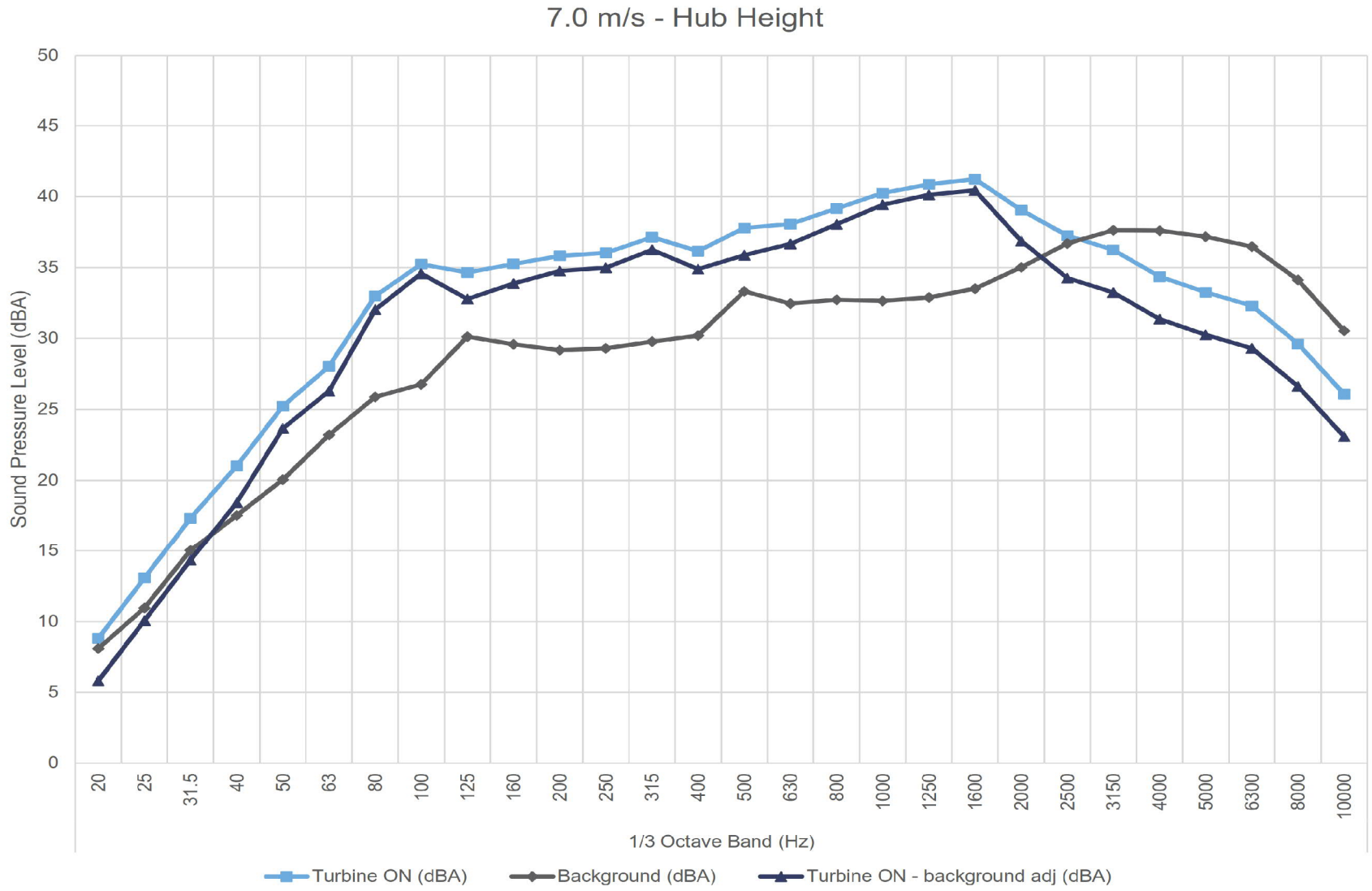
Figure C.04



aercoustics	14331.02.T32.RP4 Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	**Project Name** Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0 **Figure Title** Plot of sound pressure spectrum in 1/3 Octave at 7 m/s

Figure C.05

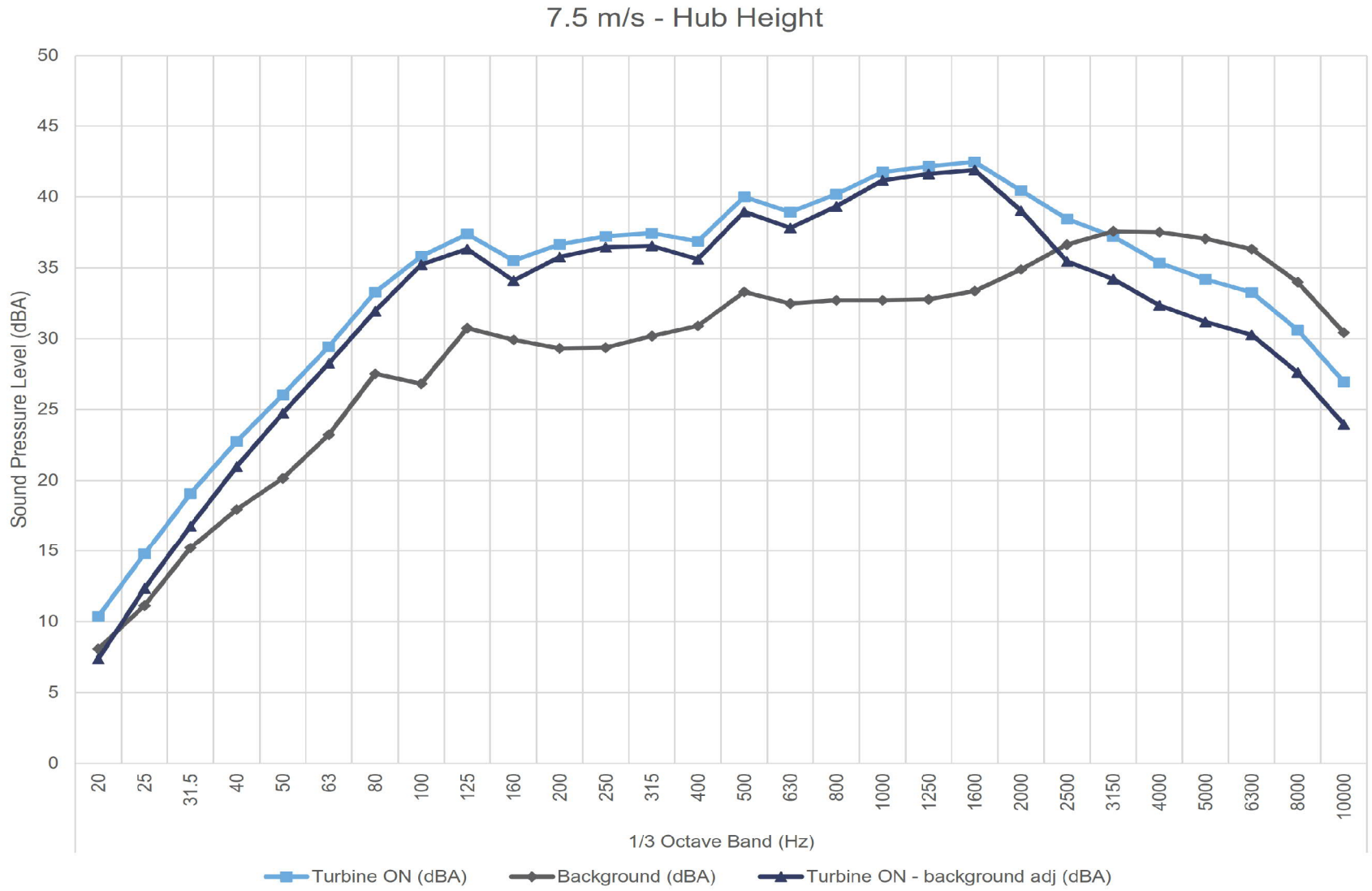


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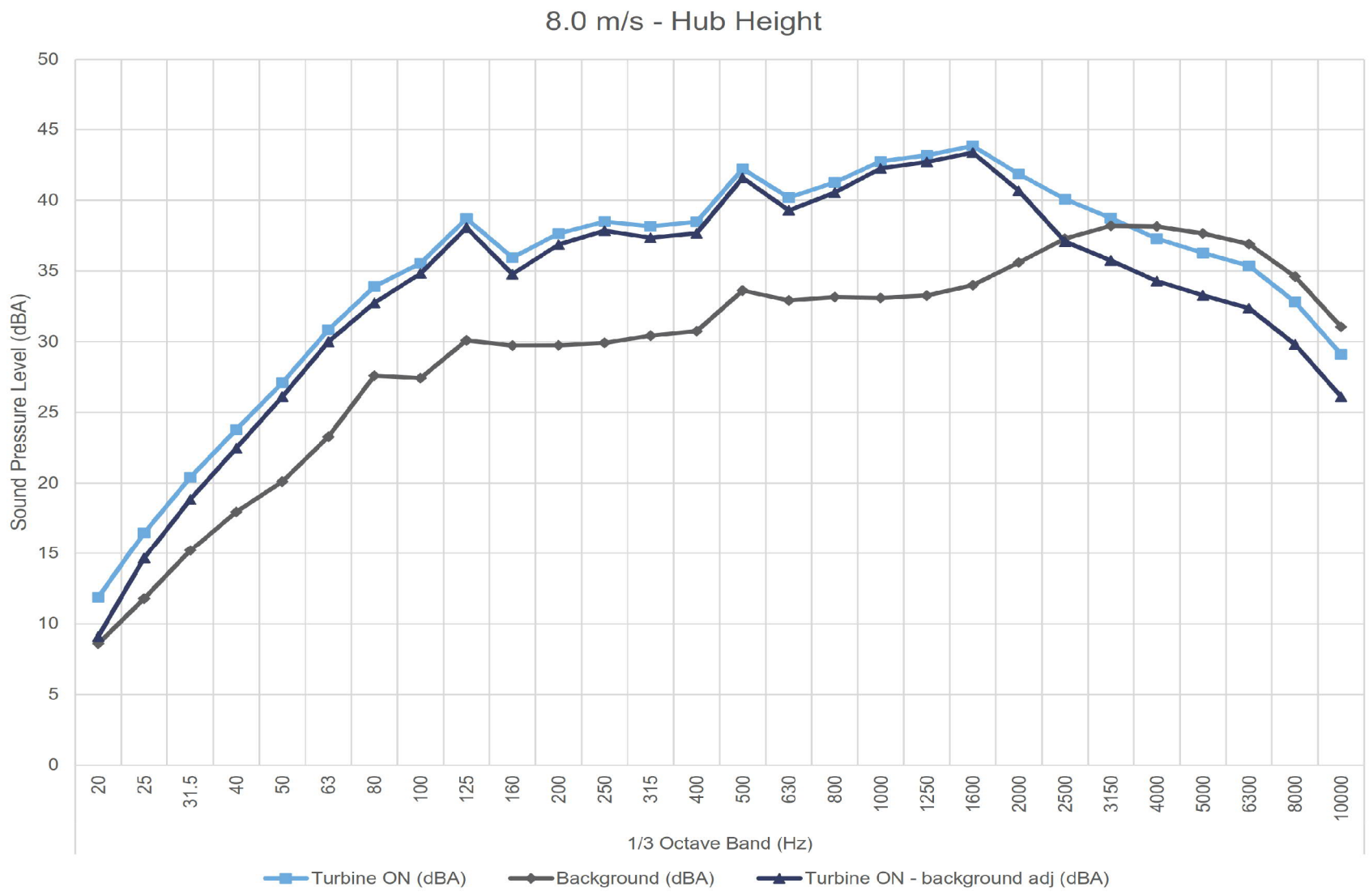
Figure C.06



aercoustics	14331.02.T32.RP4 Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	**Project Name** Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0 **Figure Title** Plot of sound pressure spectrum in 1/3 Octave at 8 m/s

Figure C.07

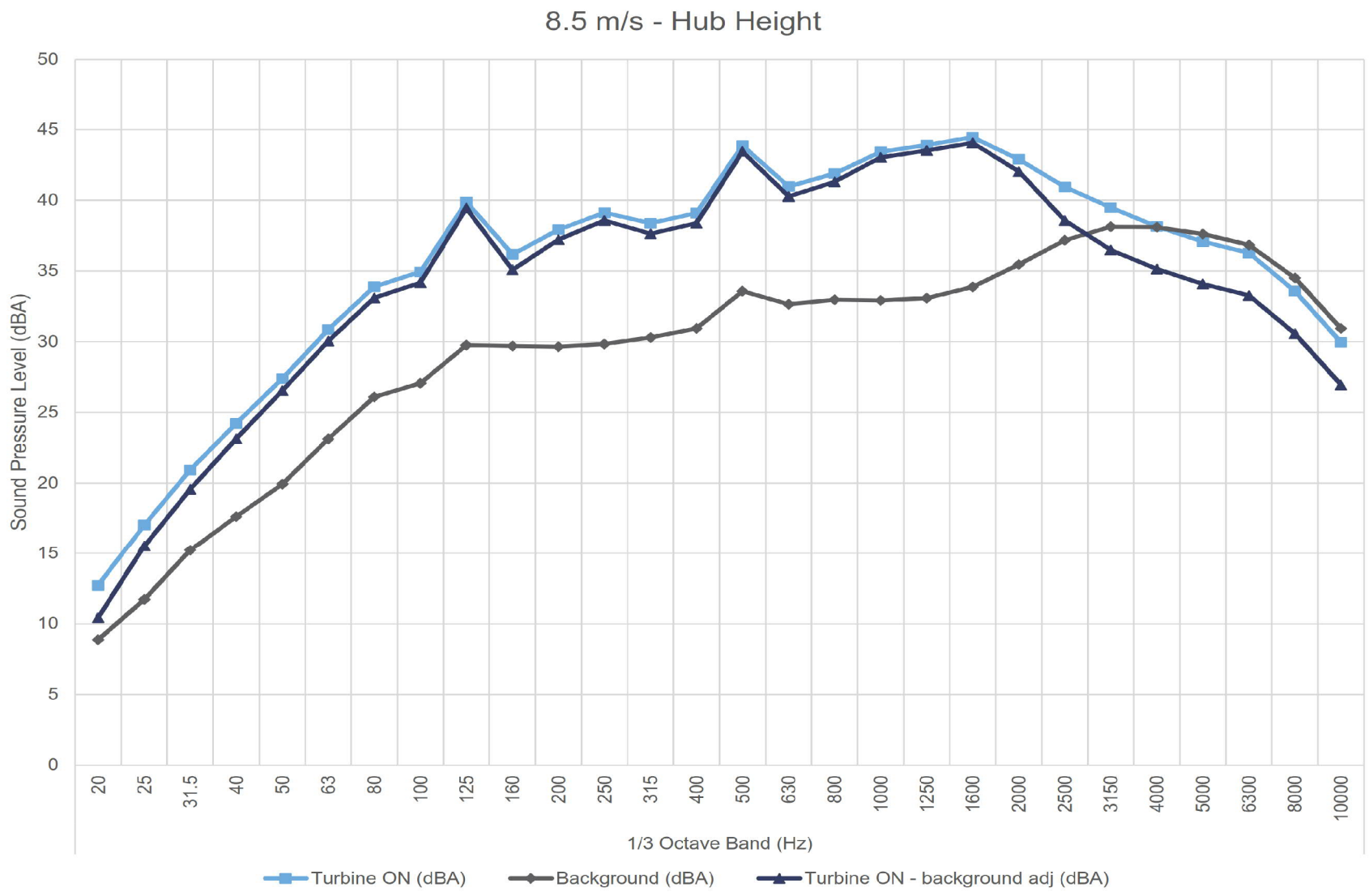


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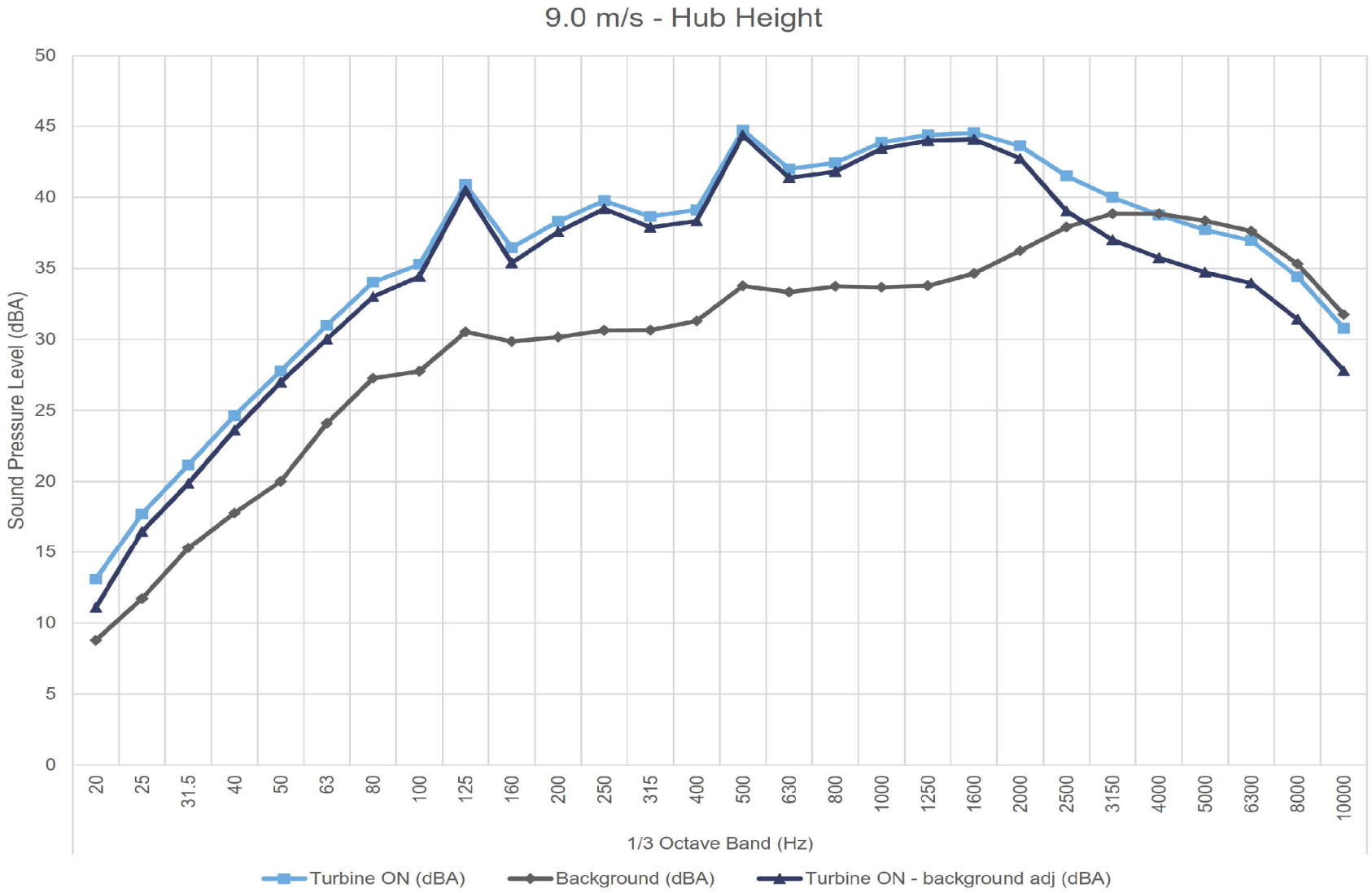
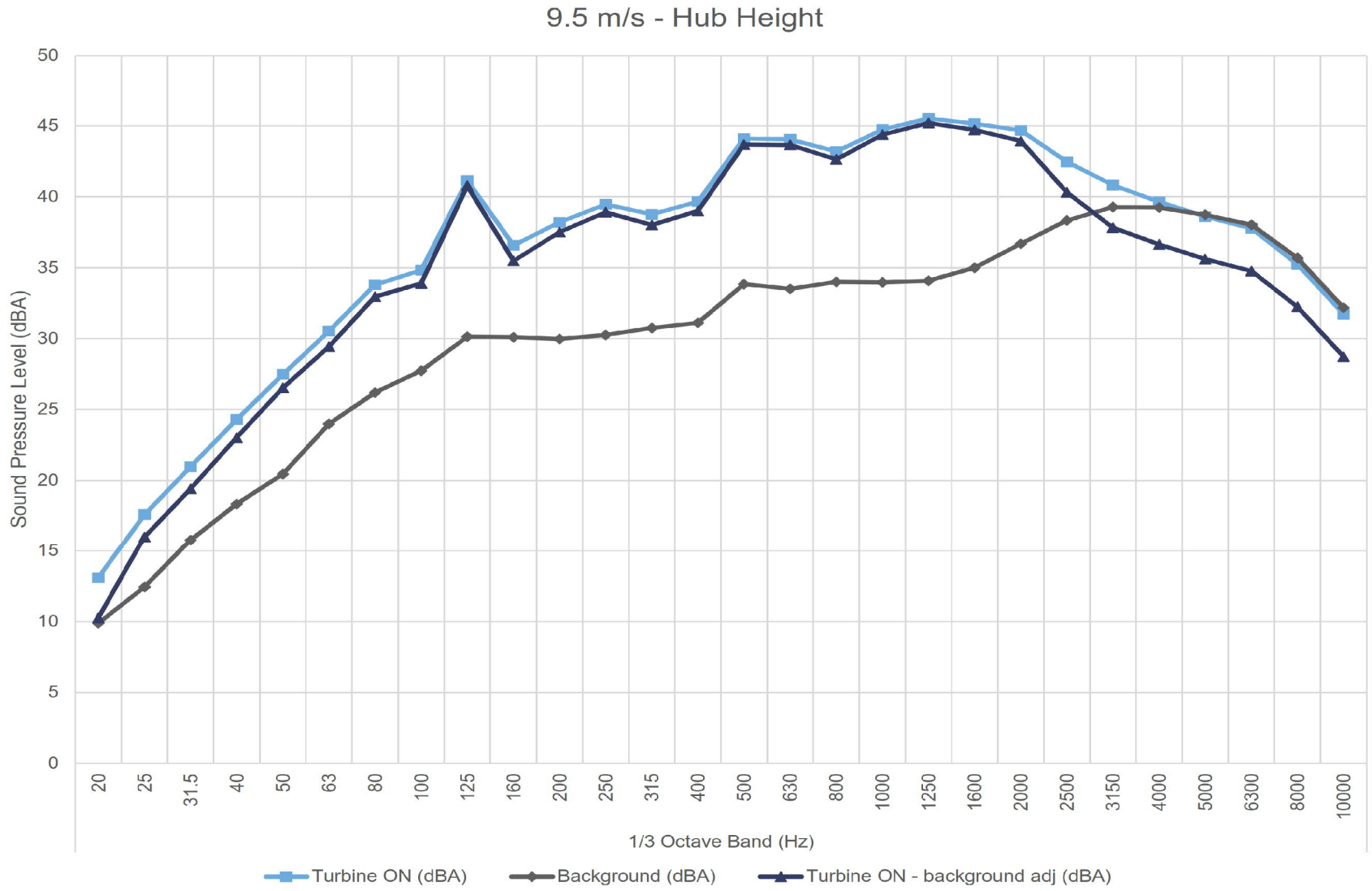
Figure C.08



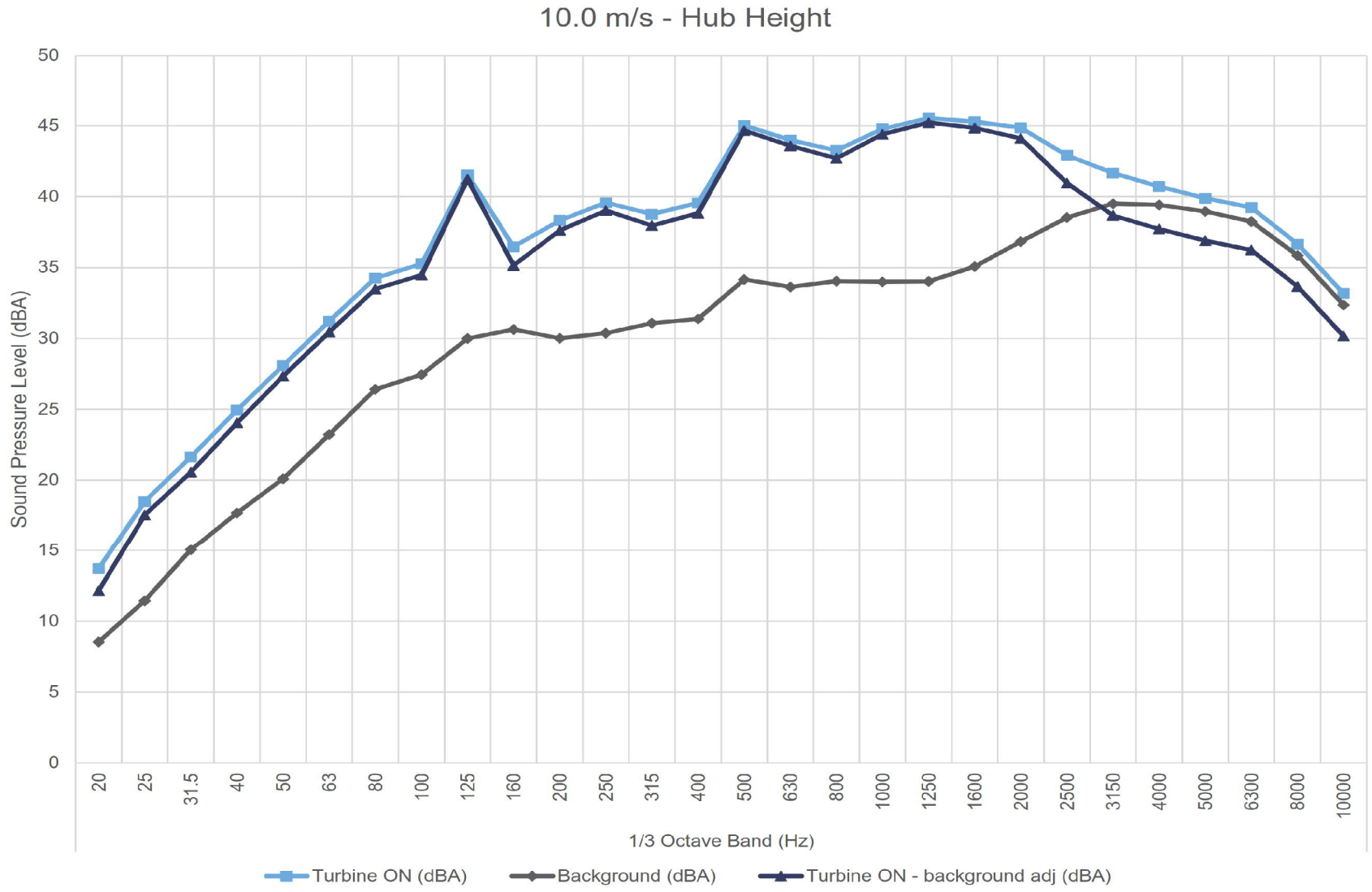
aercoustics	14331.02.T32.RP4 Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	**Project Name** Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0 **Figure Title** Plot of sound pressure spectrum in 1/3 Octave at 9 m/s

Figure C.09



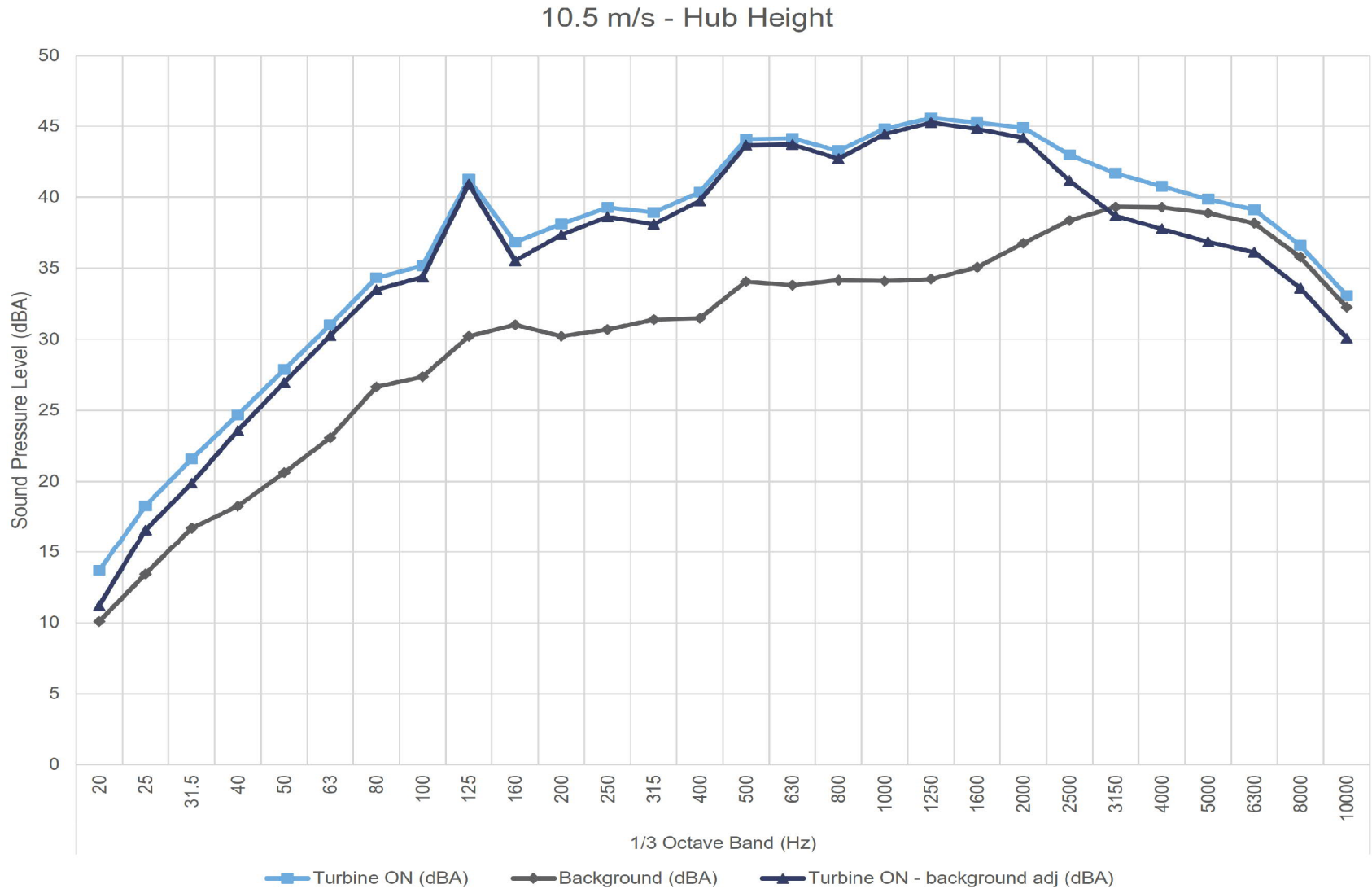
aercoustics	14331.02.T32.RP4 Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	**Project Name** Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0 **Figure Title** Plot of sound pressure spectrum in 1/3 Octave at 9.5 m/s

Figure C.10



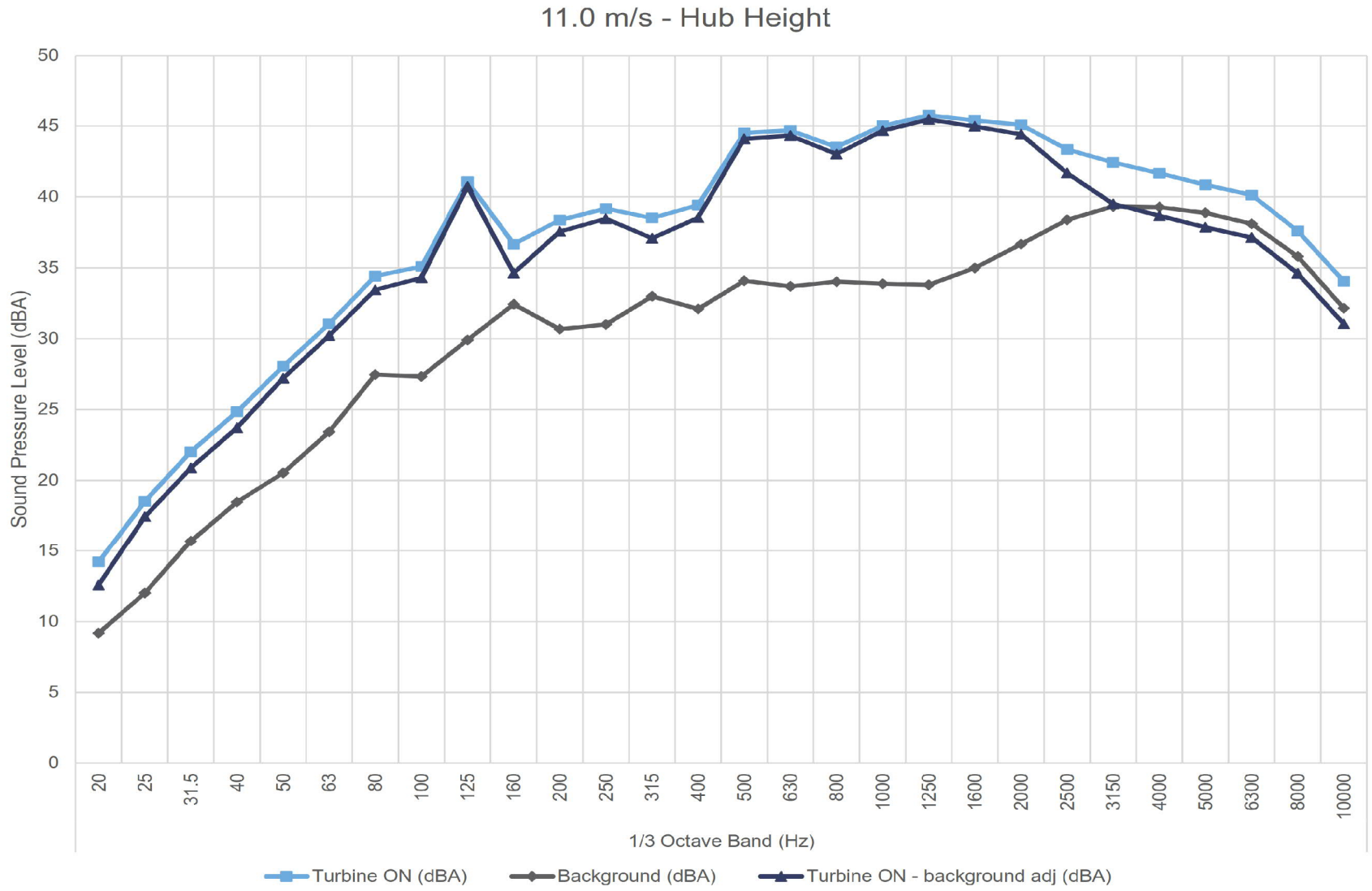
aercoustics	14331.02.T32.RP4 Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	**Project Name** Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0 **Figure Title** Plot of sound pressure spectrum in 1/3 Octave at 10 m/s

Figure C.11



aercoustics	14331.02.T32.RP4 Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	**Project Name** Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0 **Figure Title** Plot of sound pressure spectrum in 1/3 Octave at 10.5 m/s

Figure C.12



aercoustics	14331.02.T32.RP4 Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	**Project Name** Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0 **Figure Title** Plot of sound pressure spectrum in 1/3 Octave at 11 m/s

Figure C.13

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

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

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)	8.8	13.1	17.3	21.0	25.2	28.0	33.0	35.2	34.7	35.3	35.8	36.0	37.1	36.2	37.8	38.1	39.2	40.3	40.9	41.2	39.1	37.3	36.2	34.4	33.3	32.3	29.6	26.1	50.5
	Background (dBA)	8.1	10.9	15.0	17.5	20.1	23.2	25.9	26.8	30.1	29.6	29.2	29.3	29.8	30.2	33.3	32.5	32.7	32.7	32.9	33.5	35.0	36.7	37.6	37.6	37.2	36.5	34.1	30.5	47.1
	Turbine ON - background adj (dBA)	[5.8]	[10.1]	[14.3]	18.4	23.7	26.3	32.0	34.6	32.8	33.9	34.8	35.0	36.3	34.9	35.9	36.7	38.1	39.4	40.1	40.4	36.9	[34.3]	[33.2]	[31.4]	[30.3]	[29.3]	[26.6]	[23.1]	49.1*
	Signal to noise (dB)	0.7	2.1	2.3	3.5	5.2	4.8	7.1	8.5	4.5	5.7	6.6	6.7	7.4	5.9	4.5	5.6	6.4	7.6	8.0	7.7	4.0	0.6	-1.4	-3.2	-3.9	-4.2	-4.5	-4.4	3.4
	Uncertainty (dB)	2.3	2.3	1.8	1.6	1.2	1.2	1.0	0.9	1.3	1.1	0.9	0.9	0.9	0.9	1.1	1.0	0.9	0.8	0.8	0.8	1.2	1.8	1.8	1.9	2.0	2.0	2.0	3.3	1.0
	PWL (dBA)	[54.7]	[58.9]	[63.2]	67.3	72.5	75.2	80.9	83.4	81.6	82.7	83.6	83.9	85.1	83.8	84.7	85.5	86.9	88.3	89.0	89.3	85.7	[83.1]	[82.1]	[80.2]	[79.1]	[78.2]	[75.5]	[72]	98*
7.5	Turbine ON (dBA)	10.4	14.8	19.1	22.7	26.0	29.4	33.3	35.8	37.4	35.5	36.7	37.2	37.4	36.9	40.0	38.9	40.2	41.7	42.1	42.5	40.5	38.4	37.2	35.4	34.2	33.3	30.6	27.0	51.7
	Background (dBA)	8.1	11.1	15.2	18.0	20.2	23.2	27.5	26.8	30.7	29.9	29.3	29.4	30.2	30.9	33.3	32.5	32.7	32.7	32.8	33.4	34.9	36.6	37.6	37.5	37.1	36.3	34.0	30.4	47.1
	Turbine ON - background adj (dBA)	[7.4]	12.3	16.8	21.0	24.7	28.3	31.9	35.2	36.3	34.1	35.8	36.4	36.5	35.6	39.0	37.8	39.3	41.2	41.6	41.9	39.0	[35.4]	[34.2]	[32.4]	[31.2]	[30.3]	[27.6]	[24]	50.6*
	Signal to noise (dB)	2.3	3.6	3.9	4.8	5.9	6.2	5.8	9.0	6.6	5.6	7.3	7.9	7.3	6.0	6.7	6.4	7.5	9.0	9.4	9.1	5.6	1.8	-0.4	-2.2	-2.9	-3.1	-3.4	-3.5	4.6
	Uncertainty (dB)	2.3	2.0	1.5	1.3	1.1	1.1	1.2	0.9	1.1	1.2	0.9	0.8	0.9	1.0	0.9	0.9	0.9	0.8	0.8	0.8	1.0	1.8	1.8	1.9	2.0	2.0	2.0	3.3	1.0
	PWL (dBA)	[56.2]	61.2	65.6	69.9	73.6	77.1	80.8	84.1	85.2	83.0	84.6	85.3	85.4	84.5	87.8	86.7	88.2	90.0	90.5	90.8	87.9	[84.3]	[83.1]	[81.2]	[80]	[79.1]	[76.5]	[72.8]	99.4*
8.0	Turbine ON (dBA)	11.9	16.5	20.4	23.8	27.1	30.8	33.9	35.5	38.7	36.0	37.6	38.5	38.1	38.5	42.2	40.2	41.3	42.8	43.2	43.8	41.9	40.1	38.7	37.3	36.3	35.4	32.8	29.1	53.0
	Background (dBA)	8.6	11.8	15.2	18.0	20.1	23.3	27.6	27.4	30.1	29.7	29.7	29.9	30.4	30.7	33.6	32.9	33.2	33.1	33.3	34.0	35.6	37.3	38.2	38.1	37.7	36.9	34.6	31.0	47.6
	Turbine ON - background adj (dBA)	9.1	14.7	18.8	22.5	26.1	30.0	32.8	34.8	38.1	34.8	36.9	37.8	37.3	37.7	41.6	39.3	40.5	42.3	42.7	43.4	40.7	[37.1]	[35.7]	[34.3]	[33.3]	[32.4]	[29.8]	[26.1]	52*
	Signal to noise (dB)	3.3	4.7	5.2	5.8	7.0	7.5	6.3	8.1	8.6	6.2	7.9	8.6	7.7	7.7	8.6	7.3	8.1	9.7	9.9	9.8	6.3	2.8	0.6	-0.9	-1.4	-1.5	-1.8	-1.9	5.4
	Uncertainty (dB)	2.1	1.6	1.2	1.1	1.0	1.0	1.1	1.0	0.9	1.1	0.8	0.8	0.8	0.9	0.8	0.9	0.8	0.8	0.8	0.8	0.9	1.8	1.8	1.9	2.0	2.0	2.1	3.3	0.9
	PWL (dBA)	58.0	63.5	67.7	71.3	75.0	78.9	81.6	83.7	86.9	83.6	85.7	86.7	86.2	86.5	90.4	88.2	89.4	91.1	91.6	92.2	89.5	[85.9]	[84.6]	[83.1]	[82.1]	[81.2]	[78.7]	[75]	100.8*
8.5	Turbine ON (dBA)	12.7	17.0	20.9	24.2	27.4	30.9	33.9	34.9	39.9	36.2	37.9	39.1	38.4	39.1	43.9	41.0	41.9	43.4	43.9	44.5	42.9	40.9	39.5	38.1	37.1	36.3	33.6	29.9	53.8
	Background (dBA)	8.9	11.7	15.2	17.6	19.9	23.1	26.1	27.1	29.8	29.7	29.6	29.8	30.3	30.9	33.6	32.7	33.0	32.9	33.1	33.9	35.5	37.2	38.1	38.1	37.6	36.8	34.5	30.9	47.5
	Turbine ON - background adj (dBA)	10.4	15.5	19.6	23.1	26.5	30.1	33.1	34.2	39.4	35.1	37.2	38.6	37.6	38.4	43.5	40.3	41.3	43.0	43.5	44.1	42.0	38.6	[36.5]	[35.1]	[34.1]	[33.3]	[30.6]	[26.9]	52.9
	Signal to noise (dB)	3.9	5.3	5.7	6.6	7.5	7.7	7.8	7.9	10.1	6.5	8.3	9.3	8.1	8.2	10.3	8.3	8.9	10.5	10.8	10.6	7.4	3.8	1.4	0.0	-0.5	-0.6	-0.9	-1.0	6.3
	Uncertainty (dB)	1.9	1.5	1.2	1.1	1.0	1.0	1.0	1.0	0.9	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.9	1.5	1.9	2.0	2.1	2.2	2.2	3.4	0.9
	PWL (dBA)	59.3	64.4	68.4	72.0	75.4	78.9	82.0	83.0	88.3	83.9	86.1	87.4	86.5	87.2	92.3	89.1	90.2	91.9	92.4	92.9	90.9	87.4	[85.4]	[84]	[82.9]	[82.1]	[79.4]	[75.8]	101.8
9.0	Turbine ON (dBA)	13.1	17.7	21.2	24.6	27.8	31.0	34.0	35.3	40.9	36.5	38.3	39.8	38.6	39.1	44.7	42.0	42.4	43.9	44.4	44.5	43.6	41.5	40.0	38.8	37.7	36.9	34.4	30.8	54.3
	Background (dBA)	8.8	11.7	15.3	17.8	20.0	24.1	27.3	27.8	30.5	29.9	30.2	30.6	30.7	31.3	33.8	33.3	33.7	33.7	33.8	34.6	36.2	37.9	38.8	38.8	38.4	37.6	35.3	31.8	48.2
	Turbine ON - background adj (dBA)	11.1	16.5	19.9	23.6	27.0	30.0	33.0	34.4	40.5	35.4	37.6	39.2	37.9	38.3	44.4	41.4	41.8	43.4	44.0	44.1	42.7	39.0	[37]	[35.8]	[34.7]	[33.9]	[31.4]	[27.8]	53.4
	Signal to noise (dB)	4.3	6.0	5.9	6.8	7.8	6.9	6.7	7.5	10.4	6.6	8.1	9.1	8.0	7.8	11.0	8.7	8.7	10.2	10.6	9.9	7.4	3.6	1.1	-0.1	-0.6	-0.7	-0.9	-1.0	6.1
	Uncertainty (dB)	1.7	1.4	1.1	1.0	0.9	1.0	1.0	0.9	0.9	1.0	0.8	0.8	0.8	0.8	0.7	0.8	0.8	0.7	0.7	0.7	0.8	1.5	1.8	1.9	2.0	2.2	2.2	3.4	0.9
	PWL (dBA)	59.9	65.3	68.7	72.5	75.8	78.9	81.9	83.3	89.3	84.2	86.4	88.0	86.8	87.2	93.2	90.2	90.7	92.3	92.8	92.9	91.6	87.9	[85.9]	[84.6]	[83.6]	[82.8]	[80.3]	[76.7]	102.3
9.5	Turbine ON (dBA)	13.1	17.6	21.0	24.3	27.5	30.5	33.8	34.8	41.1	36.6	38.2	39.5	38.8	39.7	44.1	44.1	43.2	44.8	45.5	45.2	44.7	42.5	40.8	39.6	38.6	37.8	35.2	31.7	55.0
	Background (dBA)	9.9	12.4	15.8	18.3	20.4	24.0	26.2	27.7	30.1	30.1	30.0	30.3	30.7	31.1	33.9	33.5	34.0	34.0	34.1	35.0	36.7	38.3	39.3	39.2	38.7	38.0	35.7	32.2	48.5
	Turbine ON - background adj (dBA)	10.3	16.0	19.4	23.0	26.5	29.4	33.0	33.9	40.8	35.5	37.5	38.9	38.0	39.0	43.7	43.7	42.6	44.4	45.2	44.7	43.9	40.3	[37.8]	[36.6]	[35.6]	[34.8]	[32.2]	[28.7]	54.1
	Signal to noise (dB)	3.2	5.1	5.2	5.9	7.0	6.5	7.6	7.1	11.0	6.5	8.2	9.2	8.0	8.5	10.3	10.5	9.2	10.8	11.4	10.1	8.0	4.1	1.6	0.4	-0.1	-0.3	-0.4	-0.4	6.5
	Uncertainty (dB)	2.2	1.5	1.2	1.1	1.0	1.1	1.0	1.0	0.9	1.1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.8	0.8	1.4	1.8	1.9	2.0	2.0	2.0	3.3	0.9
	PWL (dBA)	59.1	64.9	68.3	71.9	75.4	78.3	81.8	82.8	89.6	84.3	86.4	87.8	86.9	87.9	92.5	92.5	91.5	93.2	94.1	93.6	92.8	89.2	[86.7]	[85.5]	[84.5]	[83.6]	[81.1]	[77.6]	103.0
10.0	Turbine ON (dBA)	13.7	18.5	21.6	25.0	28.1	31.2	34.3	35.3	41.5	36.5	38.3	39.6	38.8	39.6	45.0	44.0	43.3	44.8	45.6	45.3	44.9	42.9	41.7	40.7	39.9	39.2	36.7	33.2	55.3
	Background (dBA)	8.5	11.4	15.0	17.7	20.1	23.2	26.4	27.4	30.0	30.6	30.0	30.4	31.1	31.4	34.1	33.6	34.0	34.0	34.0	35.1	36.8	38.5	39.5	39.4	39.0	38.2	35.9	32.4	48.7
	Turbine ON - background adj (dBA)	12.1	17.5	20.6	24.1	27.3	30.5	33.5	34.5	41.2	35.1	37.6	39.0	38.0	38.8	44.7	43.6	42.7	44.4	45.2	44.8	44.1	41.0	[38.7]	[37.7]	[36.9]	[36.2]	[33.7]	[30.2]	54.4
	Signal to noise (dB)	5.2	7.1	6.6	7.3	8.0	8.0	7.8	7.8	11.6	5.8	8.3	9.2	7.7	8.2	10.9	10.4	9.2	10.8	11.5	10.2	8.0	4.4	2.2	1.3	0.9	1.0	0.8	0.8	6.6
	Uncertainty (dB)	1.5	1.3	1.1	1.0	1.0	1.0	1.0	1.0	0.9	1.1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.8	0.8	1.3	1.9	2.0	2.1	2.2	2.3	3.4	0.9
	PWL (dBA)	61.0	66.4	69.4	72.9	76.2	79.3	82.3	83.3	90.1	84.0	86.5	87.9	86.8	87.7	93.5	92.4	91.6	93.3	94.1	93.7	93.0	89.8	[87.5]	[86.6]	[85.8]	[85.1]	[82.5]	[79]	103.3
10.5	Turbine ON (dBA)	13.7	18.3	21.6	24.7	27.9	31.0	34.3	35.2	41.3	36.8	38.1	39.3	38.9	40.4	44.1	44.1	43.3	44.8	45.6	45.2	44.9	43.0	41.7	40.8	39.9	39.1	36.6	33.1	55.2
	Background (dBA)	10.1	13.4	16.7	18.3	20.6	23.1	26.7	27.4	30.2	31.0	30.2	30.7	31.4	31.5	34.1	33.8	34.2	34.1	34.2	35.1	36.8	38.4	39.3	39.3	38.9	38.2	35.8	32.3	48.6
	Turbine ON - background adj (dBA)	11.2	16.6	19.9	23.6	27.0	30.3	33.5	34.4	40.9	35.5	37.3	38.6	38.1	39.7	43.6	43.7	42.7	44.4	45.2	44.8	44.2	41.2	[38.7]	[37.8]	[36.9]	[36.1]	[33.6]	[30.1]	54.4
	Signal to noise (dB)	3.6	4.9	4.9	6.4	7.2	7.9	7.7	7.8	11.1	5.8	7.9	8.6	7.6	8.9	10.0	10.3	9.1	10.7	11.3	10.2	8.1	4.6	2.4	1.5	1.0	0.9	0.8	0.8	6.6
	Uncertainty (dB)	1.9	1.5	1.2	1.0	1.0	0.9	0.9	0.9	0.8	1.1	0.8	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.8	1.2	1.9	2.0	2.2	2.3	2.4	3.4	0.9
	PWL (dBA)	60.1	65.4	68.7	72.4	75.8	79.1	82.4	83.2	89.8	84.4	86.2	87.5	87.0	88.6	92.5	92.6	91.6	93.3	94.1	93.7	93.0	90.0	[87.5]	[86.6]	[85.7]	[85]	[82.5]	[78.9]	103.2

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

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

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	
11.0	Turbine ON (dBA)	14.2	18.5	22.0	24.8	28.0	31.0	34.4	35.1	41.1	36.7	38.4	39.2	38.5	39.4	44.5	44.7	43.5	45.0	45.7	45.4	45.1	43.3	42.4	41.7	40.8	40.1	37.6	34.0	55.5
	Background (dBA)	9.2	12.0	15.7	18.5	20.5	23.4	27.4	27.3	29.9	32.4	30.7	31.0	33.0	32.1	34.1	33.7	34.0	33.9	33.8	35.0	36.7	38.4	39.3	39.3	38.9	38.1	35.8	32.1	48.7
	Turbine ON - background adj (dBA)	12.6	17.4	20.9	23.7	27.2	30.2	33.4	34.3	40.7	34.6	37.6	38.5	37.1	38.5	44.1	44.3	43.0	44.7	45.5	45.0	44.4	41.7	39.5	[38.7]	[37.8]	[37.1]	[34.6]	[31]	54.6
	Signal to noise (dB)	5.0	6.5	6.3	6.4	7.5	7.6	7.0	7.8	11.2	4.2	7.7	8.2	5.5	7.3	10.4	11.0	9.5	11.1	11.9	10.4	8.4	5.0	3.1	2.4	2.0	2.0	1.8	1.9	6.9
	Uncertainty (dB)	1.7	1.4	1.2	1.2	1.2	1.1	1.1	1.1	0.9	1.5	0.9	0.8	1.0	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.9	1.4	2.2	2.6	3.0	3.2	3.4	4.2	1.1
	PWL (dBA)	61.4	66.3	69.7	72.6	76.1	79.1	82.3	83.1	89.6	83.5	86.4	87.3	85.9	87.4	92.9	93.2	91.9	93.5	94.3	93.8	93.3	90.5	88.4	[87.5]	[86.7]	[86]	[83.5]	[79.9]	103.5

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

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

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	
5.0	Turbine ON (dBA)	8.8	13.1	17.5	21.1	24.9	28.4	33.2	35.4	35.7	36.7	35.9	36.3	37.4	36.3	38.1	38.0	39.1	40.3	41.0	41.2	39.0	37.1	35.9	34.1	32.9	32.0	29.3	25.8		50.6
	Background (dBA)	7.8	10.9	15.0	17.7	20.0	23.1	27.0	27.0	30.3	29.6	29.3	29.3	29.9	30.5	33.2	32.3	32.6	32.6	32.8	33.4	34.9	36.6	37.5	37.5	37.0	36.3	34.0	30.4		47.0
	Turbine ON - background adj (dBA)	[5.8]	[10.1]	[14.5]	18.6	23.1	26.9	32.0	34.7	34.1	35.8	34.9	35.3	36.5	35.0	36.4	36.6	38.0	39.5	40.2	40.4	36.8	[34.1]	[32.9]	[31.1]	[29.9]	[29]	[26.3]	[22.8]		49.3*
	Signal to noise (dB)	1.0	2.2	2.4	3.5	4.9	5.3	6.2	8.4	5.3	7.1	6.7	6.9	7.5	5.9	4.9	5.7	6.5	7.7	8.2	7.8	4.1	0.5	-1.6	-3.4	-4.2	-4.4	-4.7	-4.6		3.5
	Uncertainty (dB)	2.1	2.1	1.7	1.5	1.2	1.1	1.0	0.9	1.1	1.0	0.8	0.8	0.8	0.9	1.0	0.9	0.8	0.8	0.8	0.8	1.1	1.7	1.7	1.7	1.8	1.8	1.8	3.0		1.0
	PWL (dBA)	[54.7]	[59]	[63.3]	67.4	72.0	75.7	80.9	83.6	83.0	84.6	83.8	84.1	85.4	83.9	85.2	85.5	86.9	88.3	89.1	89.2	85.7	[82.9]	[81.8]	[79.9]	[78.7]	[77.8]	[75.2]	[71.6]		98.1*
6.0	Turbine ON (dBA)	12.3	16.8	20.6	24.0	27.3	30.8	33.8	35.2	39.5	36.1	37.8	38.9	38.3	38.7	43.2	40.8	41.7	43.2	43.6	44.1	42.5	40.6	39.2	37.9	36.8	36.0	33.4	29.7		53.5
	Background (dBA)	8.7	11.7	15.2	17.8	20.1	23.5	27.1	27.4	29.9	29.8	29.8	30.1	30.4	30.9	33.6	32.9	33.2	33.1	33.2	34.0	35.6	37.2	38.2	38.1	37.7	36.9	34.6	31.1		47.6
	Turbine ON - background adj (dBA)	9.8	15.2	19.1	22.8	26.3	29.9	32.7	34.4	39.0	34.9	37.0	38.3	37.5	37.9	42.7	40.0	41.0	42.7	43.2	43.7	41.5	37.9	[36.2]	[34.9]	[33.8]	[33]	[30.4]	[26.7]		52.5*
	Signal to noise (dB)	3.6	5.1	5.3	6.2	7.2	7.3	6.7	7.9	9.6	6.2	8.0	8.8	7.8	7.7	9.6	7.9	8.5	10.1	10.4	10.1	7.0	3.4	1.1	-0.3	-0.8	-0.9	-1.2	-1.3		5.8
	Uncertainty (dB)	2.0	1.5	1.2	1.1	1.0	1.0	1.0	0.9	0.9	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.9	1.6	1.8	1.8	1.8	1.9	1.9	3.2		0.9
	PWL (dBA)	58.6	64.1	68.0	71.7	75.2	78.7	81.6	83.3	87.9	83.7	85.9	87.1	86.3	86.7	91.5	88.9	89.9	91.6	92.1	92.5	90.4	86.8	[85.1]	[83.7]	[82.7]	[81.8]	[79.2]	[75.6]		101.4*
7.0	Turbine ON (dBA)	13.5	18.1	21.4	24.7	27.8	30.9	34.1	35.1	41.4	36.6	38.3	39.6	38.8	39.6	44.6	43.9	43.2	44.7	45.5	45.2	44.7	42.6	41.2	40.1	39.2	38.5	35.9	32.4		55.1
	Background (dBA)	9.5	12.3	15.6	18.1	20.3	23.9	26.4	27.6	30.4	30.2	30.0	30.3	30.8	31.1	33.9	33.6	34.0	34.0	34.1	35.0	36.7	38.4	39.3	39.3	38.8	38.1	35.7	32.2		48.6
	Turbine ON - background adj (dBA)	11.3	16.8	20.1	23.6	27.0	30.0	33.3	34.3	41.0	35.5	37.6	39.0	38.1	39.0	44.2	43.5	42.6	44.3	45.1	44.7	44.0	40.6	[38.2]	[37.1]	[36.2]	[35.5]	[32.9]	[29.4]		54.3
	Signal to noise (dB)	4.0	5.9	5.8	6.6	7.6	7.1	7.8	7.5	11.0	6.4	8.3	9.3	8.1	8.5	10.7	10.4	9.2	10.7	11.3	10.1	8.0	4.2	1.9	0.9	0.4	0.4	0.2	0.2		6.5
	Uncertainty (dB)	1.8	1.4	1.1	1.1	1.0	1.0	1.0	1.0	0.9	1.1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.8	0.8	1.4	1.8	1.8	1.9	1.9	1.9	3.3		0.9
	PWL (dBA)	60.1	65.7	69.0	72.5	75.8	78.8	82.2	83.1	89.8	84.3	86.5	87.9	87.0	87.8	93.1	92.4	91.5	93.2	94.0	93.6	92.8	89.4	[87.1]	[86]	[85.1]	[84.3]	[81.8]	[78.3]		103.1
8.0	Turbine ON (dBA)	14.0	18.7	22.4	24.9	28.1	31.0	34.2	35.1	41.1	36.8	38.1	39.2	38.7	40.2	44.2	44.5	43.6	45.1	45.8	45.4	45.0	43.2	42.3	41.5	40.6	39.9	37.4	33.8		55.5
	Background (dBA)	9.2	12.3	16.0	18.4	20.5	23.2	26.7	27.4	30.1	31.8	30.5	30.8	32.3	32.2	34.0	33.6	33.9	33.8	33.9	34.9	36.6	38.3	39.2	39.2	38.8	38.1	35.7	32.1		48.6
	Turbine ON - background adj (dBA)	12.3	17.6	21.2	23.8	27.2	30.2	33.3	34.2	40.8	35.1	37.3	38.5	37.5	39.4	43.7	44.2	43.1	44.7	45.5	44.9	44.4	41.6	39.2	[38.5]	[37.6]	[36.9]	[34.4]	[30.8]		54.6
	Signal to noise (dB)	4.9	6.4	6.3	6.6	7.6	7.8	7.5	7.7	11.0	5.0	7.7	8.4	6.3	8.0	10.1	10.9	9.7	11.3	11.9	10.5	8.4	4.9	3.0	2.3	1.8	1.9	1.7	1.7		6.9
	Uncertainty (dB)	1.8	1.4	1.1	1.0	0.9	0.9	0.9	0.9	0.8	1.1	0.7	0.7	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	1.2	2.2	1.9	2.1	2.2	2.2	3.2		0.9
	PWL (dBA)	61.2	66.5	70.1	72.7	76.1	79.1	82.2	83.1	89.6	84.0	86.2	87.3	86.4	88.3	92.6	93.0	91.9	93.6	94.3	93.8	93.2	90.4	88.1	[87.3]	[86.5]	[85.8]	[83.3]	[79.7]		103.4

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	1 dB
25	0.8 dB	1 dB
31.5	0.5 dB	0.8 dB
40	0.5 dB	0.8 dB
50	0.5 dB	0.8 dB
63	0.5 dB	0.8 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	0.7 dB
1250	0.3 dB	0.7 dB
1600	0.3 dB	0.7 dB
2000	0.3 dB	0.7 dB
2500	0.5 dB	0.8 dB
3150	0.5 dB	0.8 dB
4000	0.5 dB	0.8 dB
5000	0.5 dB	0.8 dB
6300	0.5 dB	0.8 dB
8000	0.5 dB	0.8 dB
10000	1.3 dB	1.4 dB

Table C.04 Detailed measurement uncertainty at hub height

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 144331.02.T32.RP4

Created on: 11/20/2017

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	7.02	67	Average (dBA)	8.9	13.1	17.4	21.1	25.3	28.0	32.9	35.3	34.6	35.1	35.8	36.0	37.1	36.2	37.9	38.1	39.2	40.3	40.9	41.3	39.1	37.3	36.3	34.5	33.4	32.4	29.7	26.2	50.5
				Uncertainty A (dB)	0.3	0.3	0.3	0.2	0.3	0.2	0.3	0.1	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.5	0.5	0.5	0.5		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.1	1.1	0.8	0.8	0.9	0.8	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.9	1.5		
	Background	7.01	104	Average (dBA)	8.1	11.0	15.0	17.5	20.1	23.2	25.9	26.8	30.1	29.6	29.2	29.3	29.8	30.2	33.3	32.5	32.7	32.7	32.9	33.5	35.0	36.7	37.6	37.6	37.2	36.5	34.1	30.5	47.1
				Uncertainty A (dB)	0.4	0.2	0.2	0.1	0.1	0.1	0.2	0.1	0.2	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.1	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.9	0.9	1.5		
7.5	Turbine ON	7.49	66	Average (dBA)	10.3	14.8	19.1	22.7	26.0	29.4	33.3	35.8	37.4	35.5	36.6	37.2	37.4	36.9	40.0	38.9	40.2	41.7	42.1	42.4	40.4	38.4	37.2	35.3	34.2	33.2	30.6	26.9	51.7
				Uncertainty A (dB)	0.2	0.3	0.2	0.2	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	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.5	0.5	0.4		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.9	1.5		
	Background	7.51	105	Average (dBA)	8.1	11.1	15.2	18.0	20.2	23.2	27.6	26.8	30.8	29.9	29.3	29.4	30.2	30.9	33.3	32.5	32.7	32.7	32.8	33.4	34.9	36.6	37.6	37.5	37.0	36.3	34.0	30.4	47.1
				Uncertainty A (dB)	0.3	0.3	0.2	0.2	0.2	0.2	0.3	0.1	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.1	1.0	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.9	0.9	0.9	0.9	0.9	0.9	1.5		
8.0	Turbine ON	7.99	62	Average (dBA)	11.8	16.5	20.4	23.8	27.1	30.8	33.9	35.6	38.7	35.9	37.6	38.5	38.1	38.5	42.2	40.2	41.2	42.7	43.2	43.8	41.8	40.1	38.7	37.3	36.3	35.3	32.8	29.1	53.0
				Uncertainty A (dB)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.3	0.4	0.5	0.5	0.5		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.9	1.0	1.5		
	Background	7.99	110	Average (dBA)	8.6	11.8	15.2	18.0	20.1	23.3	27.6	27.4	30.1	29.7	29.7	29.9	30.4	30.7	33.6	32.9	33.2	33.1	33.3	34.0	35.6	37.3	38.2	38.1	37.7	36.9	34.6	31.0	47.6
				Uncertainty A (dB)	0.3	0.3	0.2	0.2	0.1	0.2	0.3	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.1	1.1	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.9	0.9	0.9	0.9	0.9	0.9	1.5		
8.5	Turbine ON	8.49	41	Average (dBA)	12.7	17.0	20.9	24.2	27.4	30.8	33.9	34.9	39.9	36.2	37.9	39.1	38.4	39.1	43.9	40.9	41.9	43.4	43.9	44.5	42.9	40.9	39.5	38.1	37.1	36.3	33.5	29.9	53.7
				Uncertainty A (dB)	0.4	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.3	0.4	0.6	0.6	0.7	0.7		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.1	1.1	0.9	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	1.0	1.0	1.0	1.6		
	Background	8.49	101	Average (dBA)	8.9	11.7	15.2	17.6	19.9	23.1	26.1	27.0	29.7	29.7	29.6	29.8	30.3	30.9	33.6	32.6	32.9	32.9	33.1	33.9	35.4	37.2	38.1	38.1	37.6	36.8	34.5	30.9	47.5
				Uncertainty A (dB)	0.4	0.3	0.2	0.2	0.1	0.1	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.1	1.1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.9	0.9	1.5		
9.0	Turbine ON	8.96	43	Average (dBA)	13.1	17.7	21.2	24.7	27.8	31.0	34.0	35.3	40.9	36.4	38.3	39.8	38.6	39.1	44.8	41.8	42.4	43.8	44.3	44.5	43.5	41.4	39.9	38.7	37.7	36.9	34.3	30.7	54.3
				Uncertainty A (dB)	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.6	0.7	0.8	0.8		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.1	1.1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	1.0	1.1	1.1	1.6		
	Background	8.99	103	Average (dBA)	8.7	11.7	15.3	17.8	20.0	24.1	27.3	27.8	30.5	29.9	30.2	30.6	30.7	31.3	33.8	33.3	33.7	33.7	33.8	34.6	36.2	37.9	38.8	38.8	38.3	37.6	35.3	31.7	48.2
				Uncertainty A (dB)	0.4	0.3	0.2	0.2	0.1	0.2	0.3	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.1	1.1	0.8	0.8	0.8	0.8	0.9	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.9	0.9	0.9	0.9	0.9	0.9	1.5		
9.5	Turbine ON	9.50	70	Average (dBA)	13.1	17.6	21.0	24.3	27.5	30.5	33.8	34.8	41.1	36.6	38.2	39.5	38.8	39.7	44.1	44.1	43.2	44.8	45.5	45.2	44.7	42.5	40.8	39.6	38.6	37.8	35.2	31.7	55.0
				Uncertainty A (dB)	0.3	0.2	0.2	0.2	0.2	0.2	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	0.2	0.3	0.4	0.5	0.5	0.5		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.1	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.9	1.5		
	Background	9.47	101	Average (dBA)	10.0	12.5	15.8	18.4	20.5	24.0	26.2	27.8	30.1	30.1	30.0	30.3	30.7	31.1	33.8	33.5	34.0	34.0	34.1	35.0	36.7	38.3	39.3	39.2	38.7	38.0	35.7	32.2	48.5
				Uncertainty A (dB)	0.4	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.1	1.1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.9	0.8	1.5		
10.0	Turbine ON	9.99	50	Average (dBA)	13.7	18.5	21.6	25.0	28.1	31.2	34.3	35.3	41.6	36.4	38.3	39.6	38.8	39.5	45.1	44.0	43.3	44.8	45.6	45.3	44.9	42.9	41.7	40.7	39.9	39.2	36.7	33.2	55.3
				Uncertainty A (dB)	0.3	0.3	0.2	0.3	0.3	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.2	0.4	0.5	0.6	0.7	0.7	0.7		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.1	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.9	0.9	1.0	1.1	1.1	1.6		
	Background	9.97	52	Average (dBA)	8.5	11.3	15.0	17.6	20.1	23.2	26.4	27.5	30.0	30.6	30.0	30.4	31.1	31.4	34.2	33.6	34.0	34.0	34.0	35.1	36.8	38.5	39.5	39.4	39.0	38.3	35.9	32.4	48.7
				Uncertainty A (dB)	0.4	0.3	0.2	0.2	0.2	0.2	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.4		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.1	1.1	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.9	0.9	0.9	0.9	0.9	1.5		

Table C.04 Detailed measurement uncertainty at hub height

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 144331.02.T32.RP4

Created on: 11/20/2017

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	
10.5	Turbine ON	10.43	35	Average (dBA)	13.6	18.3	21.5	24.7	27.8	31.0	34.3	35.2	41.3	36.9	38.1	39.3	39.0	40.5	44.0	44.1	43.2	44.8	45.6	45.2	44.9	42.9	41.6	40.6	39.7	39.0	36.5	33.0	55.2
				Uncertainty A (dB)	0.4	0.3	0.3	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.1	0.2	0.2	0.3	0.3	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.4	0.6	0.8	0.9	0.9	0.9		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.1	1.1	0.9	0.8	0.9	0.8	0.8	0.8	0.9	0.8	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.9	1.0	1.1	1.2	1.2	1.7		
	Background	10.50	41	Average (dBA)	10.1	13.4	16.7	18.3	20.6	23.1	26.7	27.4	30.2	31.0	30.2	30.7	31.4	31.5	34.1	33.8	34.2	34.1	34.2	35.1	36.8	38.4	39.3	39.3	38.9	38.2	35.8	32.3	48.6
				Uncertainty A (dB)	0.7	0.6	0.5	0.3	0.3	0.2	0.3	0.2	0.2	0.4	0.2	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.5	0.5	0.5	0.6	0.6	0.6	0.6	0.6	0.6		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.2	1.2	0.9	0.9	0.9	0.8	0.9	0.8	0.8	0.9	0.7	0.8	0.8	0.8	0.7	0.8	0.8	0.8	0.8	0.8	0.9	1.0	1.0	1.0	1.0	1.0	1.0	1.6		
11.0	Turbine ON	10.99	16	Average (dBA)	14.2	18.5	22.0	24.8	28.0	31.0	34.4	35.1	41.1	36.7	38.4	39.2	38.5	39.4	44.5	44.7	43.5	45.0	45.7	45.4	45.1	43.3	42.4	41.6	40.8	40.1	37.6	34.0	55.5
				Uncertainty A (dB)	0.4	0.3	0.4	0.5	0.5	0.4	0.4	0.4	0.3	0.3	0.2	0.2	0.2	0.1	0.3	0.3	0.2	0.2	0.2	0.1	0.2	0.4	0.7	0.9	1.2	1.3	1.4	1.4		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.1	1.1	0.9	0.9	1.0	0.9	0.9	0.9	0.8	0.9	0.7	0.7	0.7	0.7	0.7	0.8	0.7	0.7	0.7	0.7	0.7	0.9	1.0	1.2	1.4	1.6	1.6	2.0		
	Background	10.93	24	Average (dBA)	9.4	12.2	15.8	18.5	20.5	23.4	27.6	27.3	30.0	32.8	30.7	31.1	33.1	31.9	34.1	33.7	34.0	33.9	33.8	35.0	36.7	38.4	39.4	39.3	38.9	38.1	35.8	32.2	48.7
				Uncertainty A (dB)	0.8	0.6	0.4	0.3	0.3	0.4	0.6	0.2	0.3	0.7	0.3	0.4	0.8	0.5	0.4	0.4	0.5	0.5	0.5	0.6	0.6	0.7	0.7	0.7	0.8	0.8	0.7	0.7		
				Uncertainty B (dB)	1.0	1.0	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.8	0.8	0.8	0.8	0.8	0.8	1.4		
				Combined Uncertainty (dB)	1.3	1.2	0.9	0.9	0.9	0.9	1.0	0.8	0.8	1.1	0.8	0.8	1.0	0.8	0.8	0.8	0.8	0.8	0.9	0.9	0.9	1.0	1.1	1.1	1.1	1.1	1.1	1.6		

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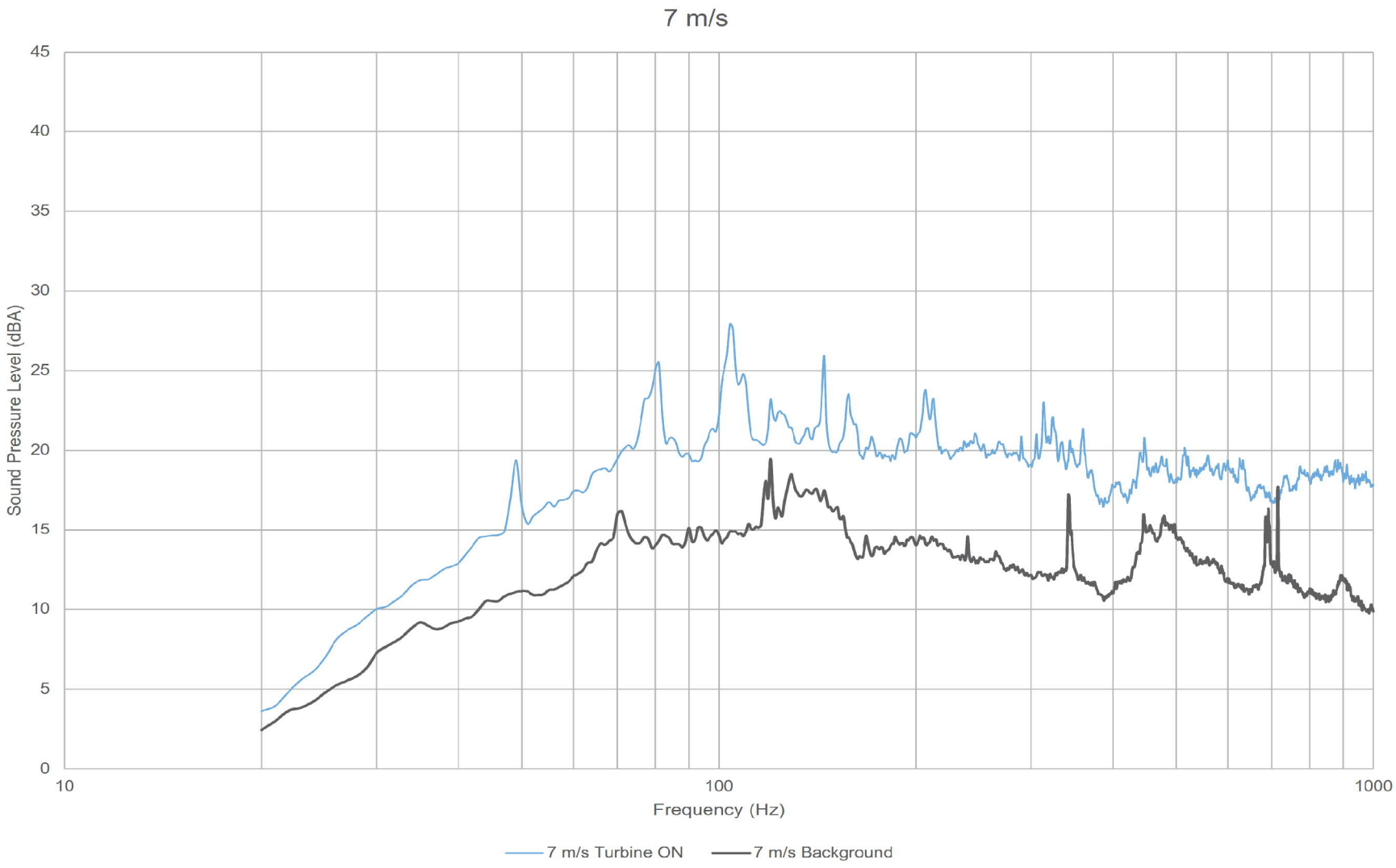
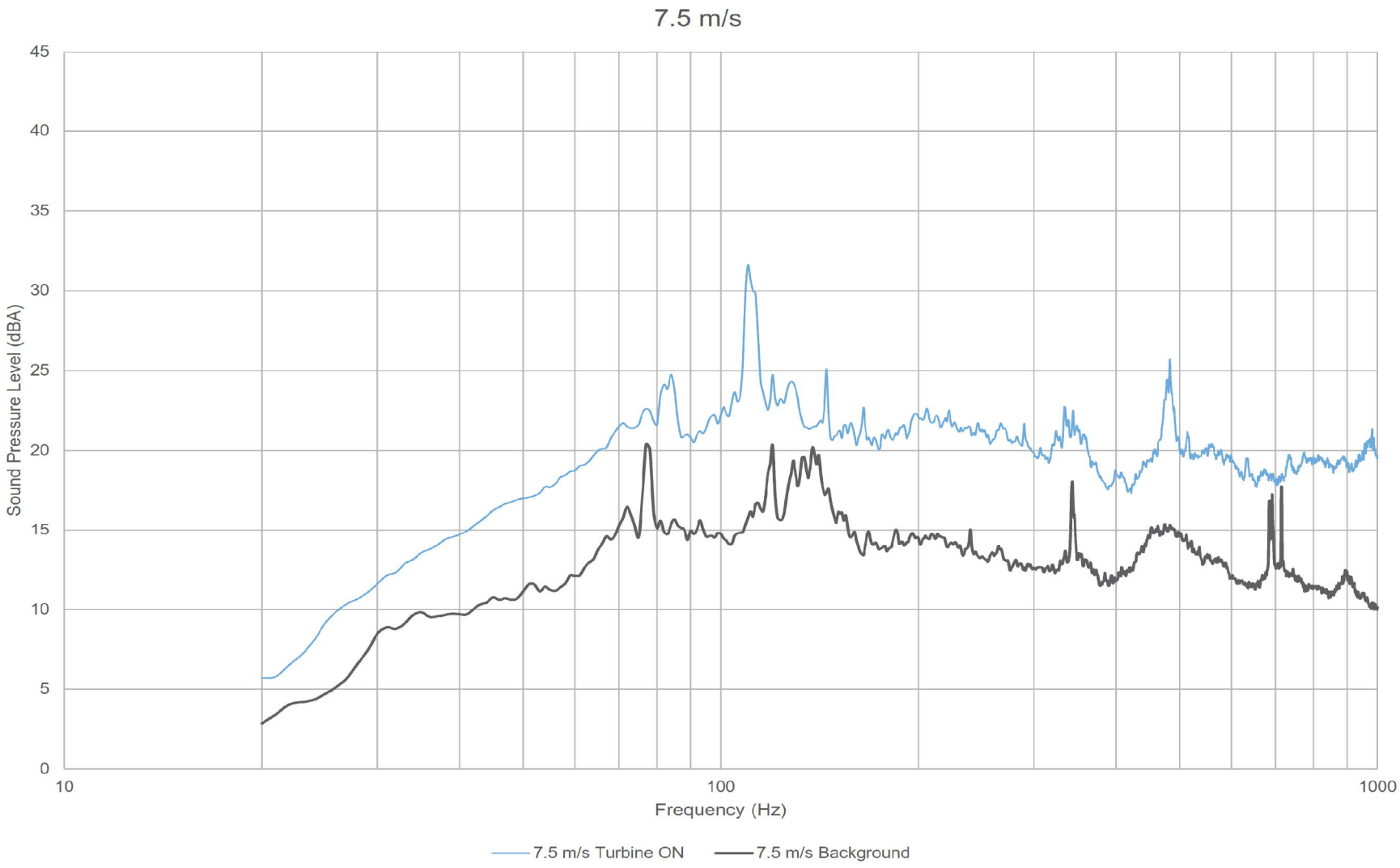
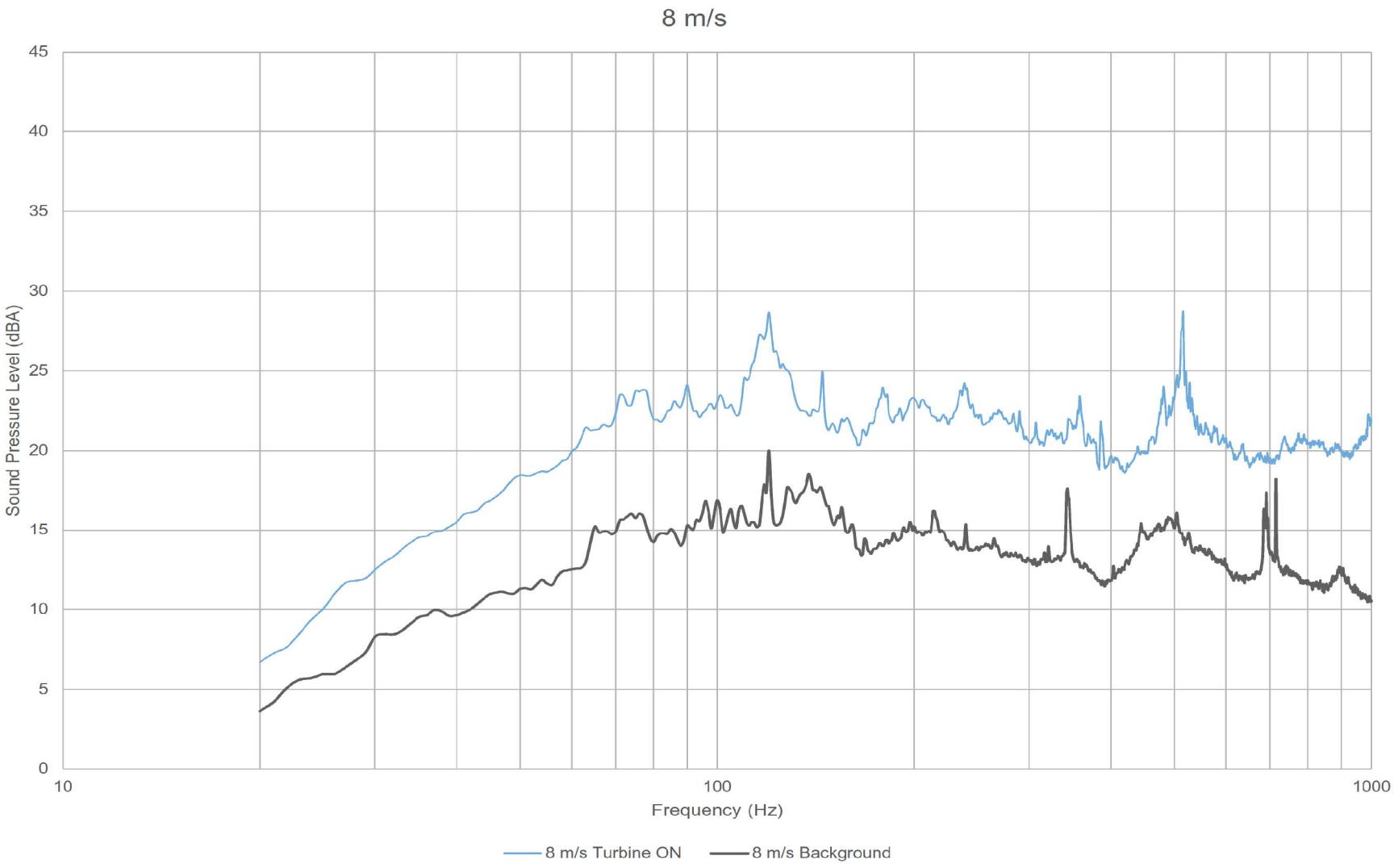
Appendix D
Tonality Assessment



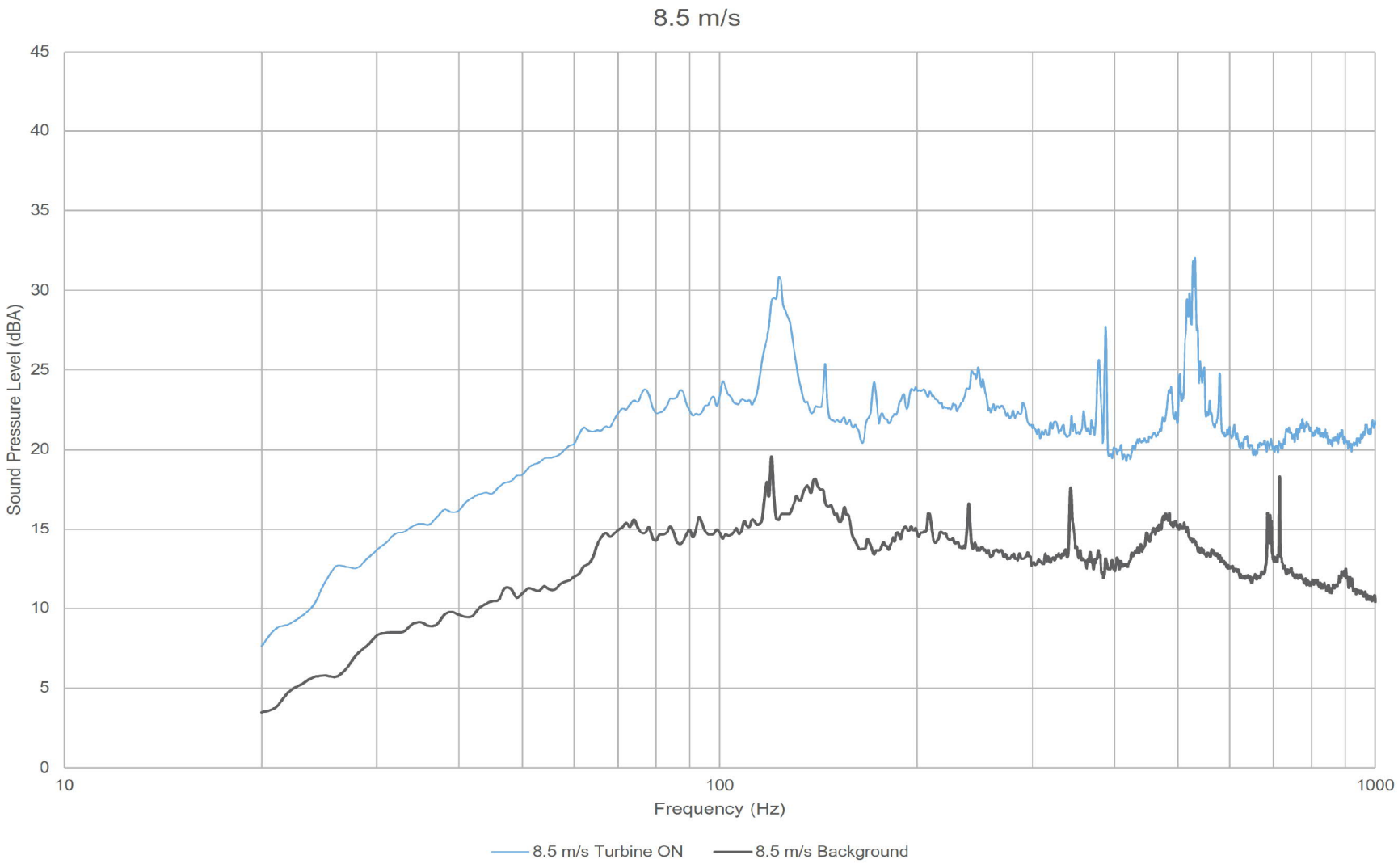
aercoustics	14331.02.T32.RP4	**Project Name**
	Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0
		Figure Title Plot of narrow band spectra – Turbine ON vs. Background at 7 m/s
		Figure D.01



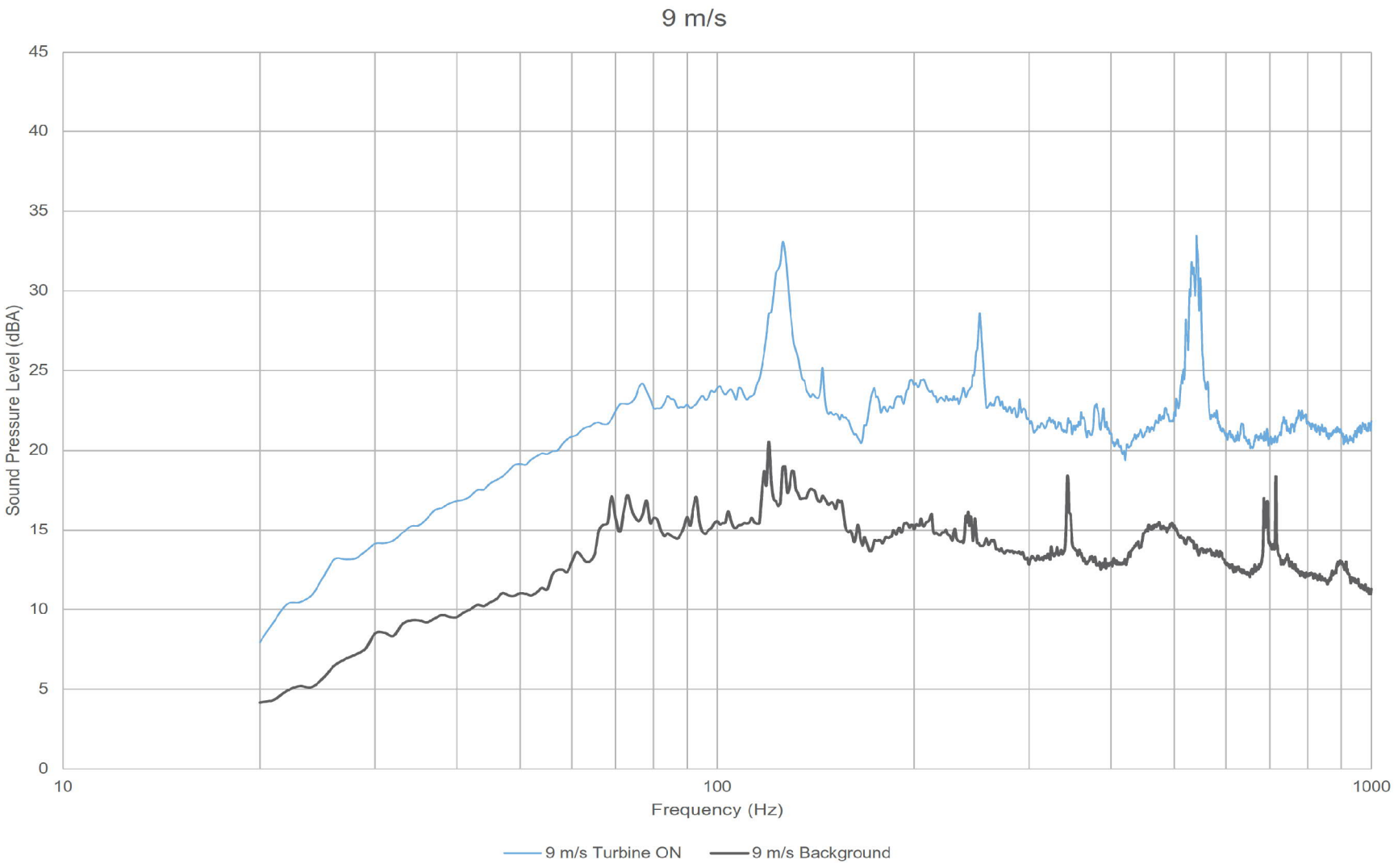
aercoustics	14331.02.T32.RP4	**Project Name**
	Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0
		Figure Title Plot of narrow band spectra – Turbine ON vs. Background at 7.5 m/s
		Figure D.02



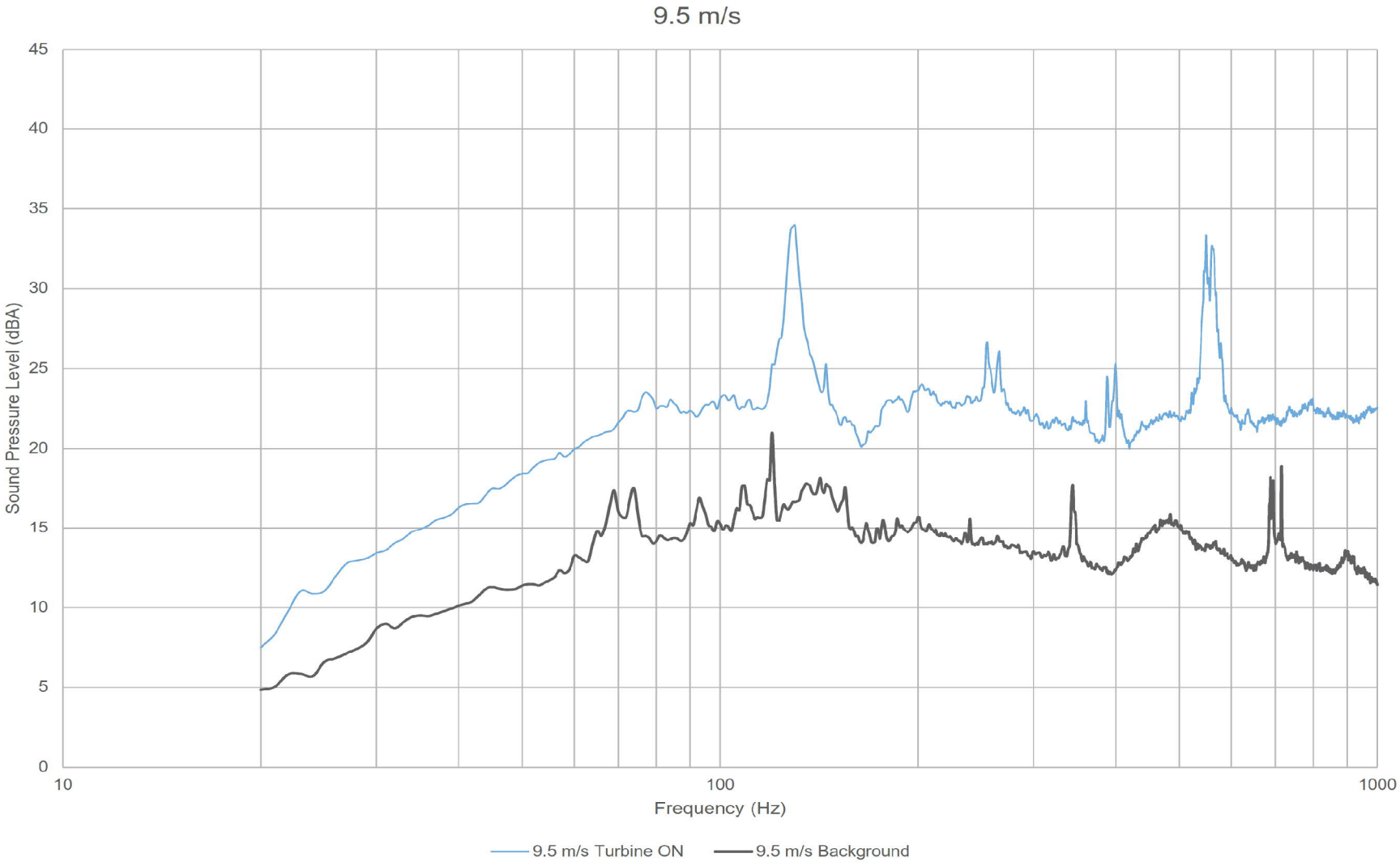
aercoustics	14331.02.T32.RP4	**Project Name**
	Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0
		Figure Title Plot of narrow band spectra – Turbine ON vs. Background at 8 m/s
		Figure D.03



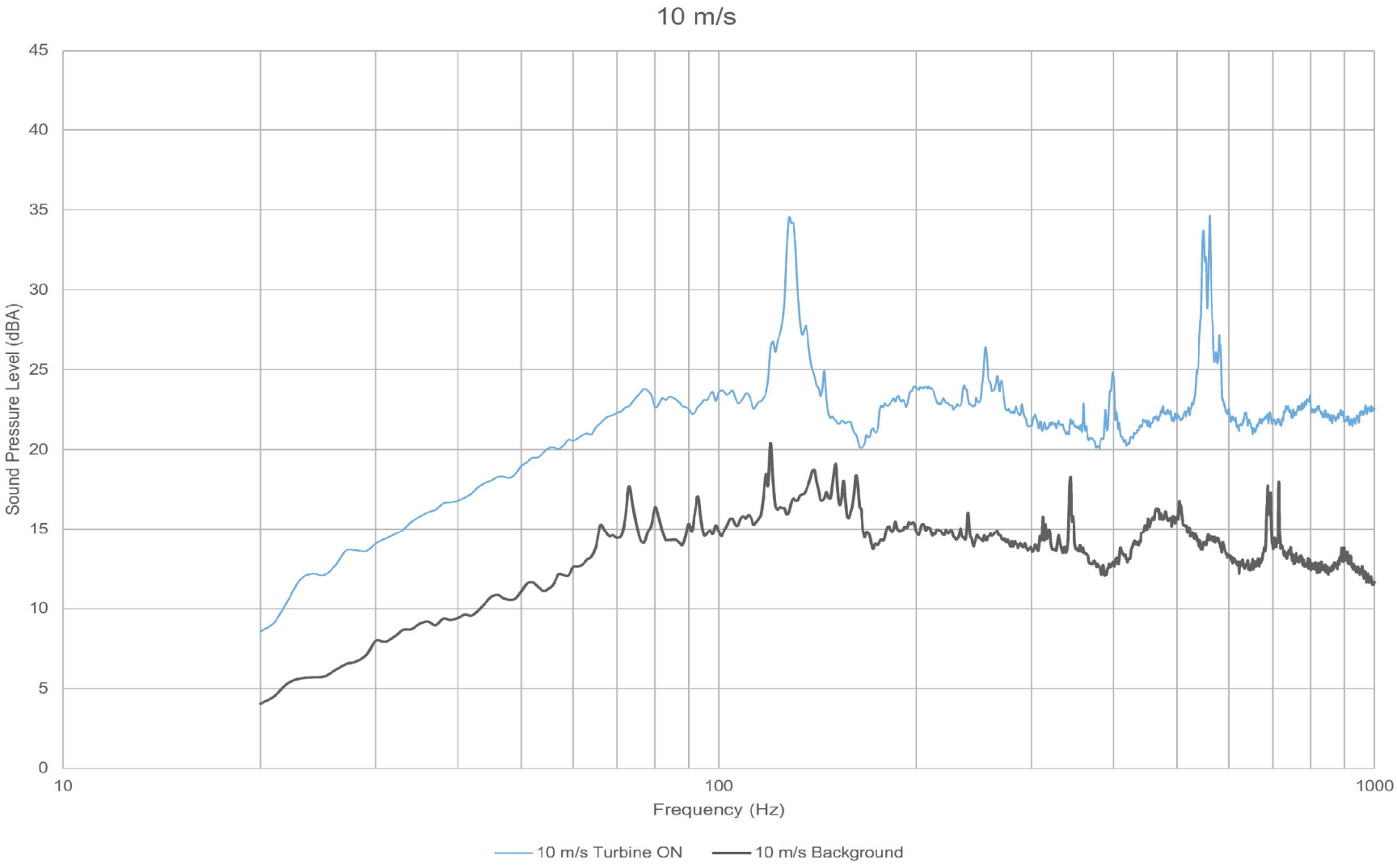
aercoustics	14331.02.T32.RP4	**Project Name**
	Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0
		Figure Title Plot of narrow band spectra – Turbine ON vs. Background at 8.5 m/s
		Figure D.04



aercoustics	14331.02.T32.RP4	**Project Name**
	Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0
		Figure Title Plot of narrow band spectra – Turbine ON vs. Background at 9 m/s
		Figure D.05

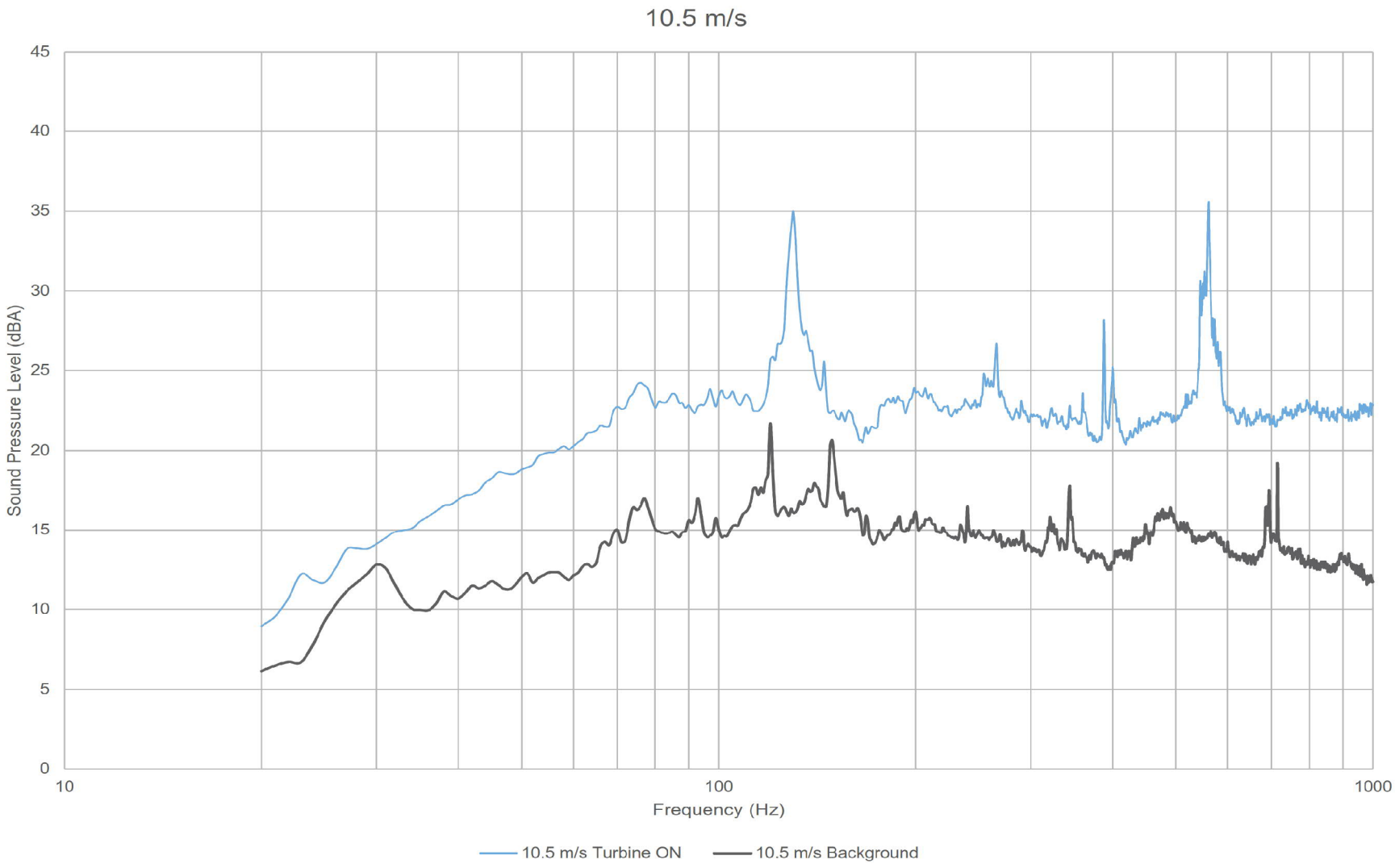


aercoustics	14331.02.T32.RP4	**Project Name**
	Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0
		Figure Title Plot of narrow band spectra – Turbine ON vs. Background at 9.5 m/s
		Figure D.06



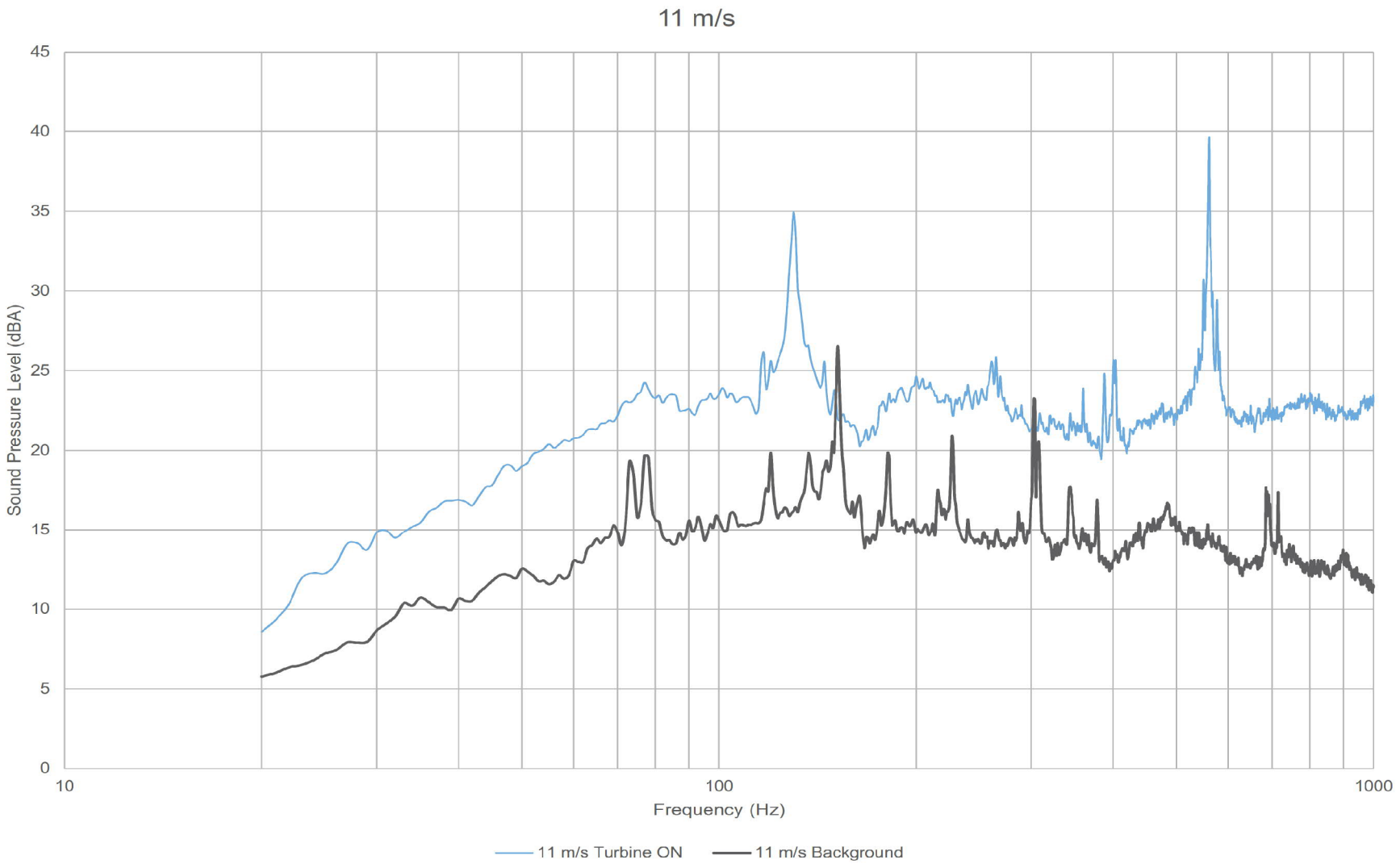
aercoustics	14331.02.T32.RP4 Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	**Project Name** Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra – Turbine ON vs. Background at 10 m/s

Figure D.07



aercoustics	14331.02.T32.RP4 Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	**Project Name** Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0 **Figure Title** Plot of narrow band spectra – Turbine ON vs. Background at 10.5 m/s

Figure D.08



aercoustics	14331.02.T32.RP4	**Project Name**
	Scale: NTS Drawn by: AM Reviewed by: PA Date: Nov 1, 2017 Revision: 1	Adelaide Wind Energy Centre - Turbine T32 - IEC61400-11 Edition 3.0
		Figure Title Plot of narrow band spectra – Turbine ON vs. Background at 11 m/s
		Figure D.09

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

Project: Adelaide Wind Energy Centre- Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
653	81			20.0	38.2	45.3	7.1	-2.0	9.1
517	99			21.3	39.6	31.0	-8.7	-2.0	-6.6
219	101			19.8	38.1	31.3	-6.8	-2.0	-4.8
465	101			19.1	37.4	32.7	-4.7	-2.0	-2.7
203	101			21.0	39.3	29.3	-10.0	-2.0	-8.0
413	102			18.5	36.8	34.2	-2.6	-2.0	-0.6
5	102			19.4	37.7	31.8	-5.8	-2.0	-3.8
412	102			18.8	37.0	33.0	-4.1	-2.0	-2.0
411	102			18.8	37.1	31.9	-5.1	-2.0	-3.1
6	102			20.6	38.8	34.2	-4.6	-2.0	-2.6
227	103			20.5	38.8	28.5	-10.3	-2.0	-8.3
192	103			20.1	38.4	32.0	-6.4	-2.0	-4.4
193	103			20.1	38.4	33.4	-5.0	-2.0	-3.0
220	104			20.2	38.5	29.6	-8.9	-2.0	-6.9
512	104			22.0	40.2	35.9	-4.4	-2.0	-2.4
447	104			19.4	37.7	34.4	-3.3	-2.0	-1.3
452	104			19.5	37.7	34.0	-3.7	-2.0	-1.7
169	104			20.2	38.5	30.7	-7.8	-2.0	-5.8
212	104			20.4	38.7	31.0	-7.6	-2.0	-5.6
448	104			19.6	37.8	35.2	-2.6	-2.0	-0.6
455	104			19.4	37.7	34.4	-3.3	-2.0	-1.3
323	104			21.2	39.5	29.0	-10.5	-2.0	-8.5
446	104			19.6	37.9	35.5	-2.3	-2.0	-0.3
451	104			20.2	38.4	34.3	-4.2	-2.0	-2.2
474	105			20.1	38.4	33.0	-5.3	-2.0	-3.3
476	105			20.6	38.9	33.6	-5.3	-2.0	-3.3
408	105			19.2	37.5	33.5	-4.0	-2.0	-2.0
501	105			20.6	38.9	34.2	-4.7	-2.0	-2.7
464	105			19.5	37.8	32.6	-5.2	-2.0	-3.2
4	105			20.2	38.5	26.8	-11.7	-2.0	-9.7
508	105			21.7	40.0	34.4	-5.6	-2.0	-3.6
524	105			21.7	39.9	34.4	-5.5	-2.0	-3.5
511	105			21.4	39.7	34.3	-5.3	-2.0	-3.3
3	105			20.4	38.7	27.0	-11.7	-2.0	-9.6
445	105			19.5	37.7	33.7	-4.0	-2.0	-2.0
449	105			19.9	38.1	32.9	-5.3	-2.0	-3.2
503	106			21.1	39.4	29.6	-9.8	-2.0	-7.8
504	106			21.2	39.5	31.6	-7.9	-2.0	-5.9
510	106			21.5	39.8	30.9	-8.9	-2.0	-6.9
450	106			20.1	38.3	30.1	-8.2	-2.0	-6.2
Average	103						-4.0	-2.0	-2.0

Table D.02 Tonality Assessment Table - 7.5 m/s

Project: Adelaide Wind Energy Centre- Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
652	84			20.3	38.5	44.2	5.6	-2.0	7.6
606	109			23.1	41.4	34.5	-6.9	-2.0	-4.9
462	109			20.2	38.5	31.8	-6.7	-2.0	-4.7
406	109			20.3	38.6	35.0	-3.6	-2.0	-1.5
500	109			21.1	39.4	35.5	-3.9	-2.0	-1.9
69	109			22.1	40.4	39.1	-1.2	-2.0	0.8
60	109			21.2	39.5	38.8	-0.7	-2.0	1.3
221	110			21.4	39.6	37.5	-2.1	-2.0	-0.1
327	110			22.1	40.3	39.9	-0.5	-2.0	1.5
71	110			22.5	40.7	37.7	-3.1	-2.0	-1.0
222	110			21.2	39.5	37.6	-1.9	-2.0	0.1
59	110			22.4	40.7	39.1	-1.6	-2.0	0.4
65	110			21.9	40.1	38.0	-2.1	-2.0	-0.1
473	110			21.5	39.7	35.3	-4.4	-2.0	-2.4
167	110			20.4	38.7	39.2	0.5	-2.0	2.5
321	110			22.6	40.9	37.2	-3.7	-2.0	-1.6
605	110			22.4	40.6	33.5	-7.1	-2.0	-5.1
202	110			21.6	39.9	37.6	-2.3	-2.0	-0.3
174	110			21.4	39.7	35.8	-3.9	-2.0	-1.8
330	110			22.0	40.3	33.7	-6.5	-2.0	-4.5
129	110			22.0	40.3	39.2	-1.1	-2.0	0.9
70	110			22.1	40.3	37.7	-2.6	-2.0	-0.6
443	110			20.6	38.9	37.5	-1.4	-2.0	0.6
128	110			21.1	39.4	38.1	-1.3	-2.0	0.7
228	110			22.4	40.7	29.1	-11.6	-2.0	-9.6
405	110			20.7	39.0	34.9	-4.1	-2.0	-2.1
225	111			22.0	40.3	39.7	-0.6	-2.0	1.4
457	111			20.8	39.1	31.7	-7.3	-2.0	-5.3
61	111			21.0	39.3	38.4	-0.8	-2.0	1.2
191	111			21.6	39.9	36.6	-3.3	-2.0	-1.2
226	111			21.1	39.4	39.9	0.5	-2.0	2.5
329	111			22.5	40.8	34.8	-6.0	-2.0	-3.9
72	111			22.0	40.3	36.5	-3.7	-2.0	-1.7
403	112			21.8	40.0	33.6	-6.4	-2.0	-4.4
460	112			21.1	39.4	32.1	-7.3	-2.0	-5.3
404	112			21.2	39.5	32.8	-6.7	-2.0	-4.7
461	112			20.9	39.2	32.9	-6.2	-2.0	-4.2
10	112			22.0	40.3	35.6	-4.7	-2.0	-2.7
604	112			23.4	41.7	29.5	-12.2	-2.0	-10.2
308	113			22.0	40.3	34.4	-5.8	-2.0	-3.8
309	113			22.2	40.5	31.3	-9.2	-2.0	-7.2
62	113			21.0	39.3	34.7	-4.6	-2.0	-2.6
320	113			22.7	41.0	31.7	-9.3	-2.0	-7.3
459	113			21.2	39.5	28.1	-11.4	-2.0	-9.3
165	113			21.0	39.3	35.7	-3.6	-2.0	-1.6
328	113			22.9	41.1	37.5	-3.7	-2.0	-1.6
166	113			21.5	39.8	33.0	-6.8	-2.0	-4.8
164	113			20.9	39.1	36.9	-2.2	-2.0	-0.2
201	113			21.5	39.8	34.0	-5.8	-2.0	-3.8
45	113			22.5	40.7	37.1	-3.7	-2.0	-1.7
127	113			21.6	39.9	38.0	-1.8	-2.0	0.2
326	113			22.5	40.8	37.6	-3.1	-2.0	-1.1
190	113			23.0	41.2	36.6	-4.6	-2.0	-2.6
325	113			22.9	41.2	35.4	-5.9	-2.0	-3.9
458	113			21.0	39.2	34.1	-5.2	-2.0	-3.2
551	114			21.8	40.1	28.4	-11.7	-2.0	-9.7
113	114			23.2	41.5	36.1	-5.4	-2.0	-3.4
112	128			21.4	39.6	33.1	-6.6	-2.0	-4.6
Average	111						-3.1	-2.0	-1.1

Table D.03 Tonality Assessment Table - 8 m/s

Project: Adelaide Wind Energy Centre- Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
188	67			21.7	39.9	38.8	-1.1	-2.0	0.9
189	71			22.3	40.5	39.9	-0.7	-2.0	1.3
521	77			20.5	38.8	34.5	-4.3	-2.0	-2.3
522	78			20.3	38.5	36.3	-2.2	-2.0	-0.2
651	86			21.6	39.9	37.9	-2.0	-2.0	0.1
650	90			20.3	38.6	41.4	2.8	-2.0	4.8
195	110			22.9	41.2	37.0	-4.3	-2.0	-2.2
47	110			22.5	40.7	32.5	-8.3	-2.0	-6.3
170	110			23.4	41.6	36.5	-5.2	-2.0	-3.2
825	112			21.7	40.0	34.3	-5.7	-2.0	-3.7
499	113			22.2	40.4	32.0	-8.4	-2.0	-6.4
9	113			23.0	41.2	31.1	-10.1	-2.0	-8.1
46	113			22.8	41.1	30.2	-10.9	-2.0	-8.8
Average	96						-2.9	-2.0	-0.9

Table D.03 Tonality Assessment Table - 8 m/s

Project: Adelaide Wind Energy Centre- Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
14	505			21.8	40.7	31.0	-9.7	-2.3	-7.4
520	505			21.4	40.3	33.3	-7.1	-2.3	-4.8
603	506			21.6	40.5	34.5	-6.0	-2.3	-3.7
146	508			21.6	40.5	37.9	-2.6	-2.3	-0.3
188	508			22.1	41.0	34.9	-6.1	-2.3	-3.8
80	508			22.8	41.7	29.7	-12.0	-2.3	-9.7
46	509			21.3	40.3	28.6	-11.7	-2.3	-9.4
179	511			21.4	40.3	37.5	-2.8	-2.3	-0.5
49	512			21.3	40.2	33.9	-6.4	-2.3	-4.1
402	512			20.8	39.8	35.3	-4.5	-2.3	-2.2
41	512			21.7	40.6	39.3	-1.4	-2.3	0.9
398	513			20.8	39.8	39.2	-0.6	-2.3	1.7
498	513			22.3	41.3	38.7	-2.6	-2.3	-0.3
393	514			21.5	40.5	40.0	-0.4	-2.3	1.9
44	514			21.7	40.7	34.3	-6.4	-2.3	-4.1
548	514			21.1	40.1	39.3	-0.8	-2.3	1.5
114	515			22.6	41.6	39.1	-2.4	-2.3	-0.1
472	515			23.1	42.1	39.4	-2.7	-2.3	-0.3
549	515			21.6	40.6	39.1	-1.5	-2.3	0.8
130	515			21.6	40.5	38.3	-2.3	-2.3	0.1
547	515			22.0	40.9	39.2	-1.7	-2.3	0.6
8	516			21.8	40.8	35.8	-5.0	-2.3	-2.7
42	516			21.5	40.4	39.1	-1.4	-2.3	0.9
187	516			21.8	40.8	39.5	-1.3	-2.3	1.0
43	516			21.5	40.5	39.6	-0.9	-2.3	1.4
173	516			21.5	40.5	40.1	-0.4	-2.3	1.9
111	516			22.8	41.8	34.2	-7.5	-2.3	-5.2
170	519			22.3	41.3	32.8	-8.5	-2.3	-6.1
125	521			22.8	41.8	34.1	-7.7	-2.3	-5.4
650	521			23.3	42.2	29.4	-12.9	-2.3	-10.5
64	522			21.9	40.9	37.1	-3.9	-2.3	-1.5
852	528			22.5	41.5	33.9	-7.6	-2.3	-5.2
313	528			22.0	41.0	38.7	-2.3	-2.3	0.0
826	531			23.3	42.3	38.0	-4.3	-2.3	-2.0
195	532			22.9	41.9	36.5	-5.4	-2.3	-3.1
163	534			22.6	41.6	30.8	-10.8	-2.3	-8.5
Average	516						-3.6	-2.3	-1.3

Table D.03 Tonality Assessment Table - 8 m/s

Project: Adelaide Wind Energy Centre- Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
519	1682			18.6	40.8	26.6	-14.3	-3.3	-10.9
398	1683			18.6	40.8	38.1	-2.7	-3.3	0.7
393	1683			19.6	41.8	39.3	-2.5	-3.3	0.8
58	1683			18.0	40.3	35.0	-5.2	-3.3	-1.9
522	1684			18.6	40.9	34.9	-5.9	-3.3	-2.6
651	1686			18.1	40.3	37.0	-3.3	-3.3	0.0
64	1687			19.5	41.7	27.3	-14.5	-3.3	-11.1
197	1688			19.5	41.8	32.4	-9.4	-3.3	-6.0
343	1688			18.4	40.7	37.9	-2.7	-3.3	0.6
314	1689			18.4	40.6	35.1	-5.6	-3.3	-2.2
200	1689			18.6	40.8	35.8	-5.0	-3.3	-1.7
15	1691			18.3	40.6	39.1	-1.4	-3.3	1.9
852	1692			20.4	42.7	28.1	-14.5	-3.3	-11.2
114	1695			20.1	42.4	35.9	-6.5	-3.3	-3.1
14	1695			18.2	40.4	41.4	0.9	-3.3	4.3
80	1696			19.1	41.4	38.6	-2.8	-3.3	0.6
650	1697			19.2	41.5	28.8	-12.7	-3.3	-9.3
125	1698			18.9	41.2	33.7	-7.5	-3.3	-4.2
548	1700			19.1	41.4	31.6	-9.8	-3.3	-6.5
146	1701			18.9	41.2	35.8	-5.3	-3.3	-2.0
111	1703			19.5	41.8	30.5	-11.4	-3.3	-8.0
188	1703			19.2	41.5	30.6	-11.0	-3.3	-7.6
851	1704			19.1	41.4	29.8	-11.5	-3.3	-8.2
603	1705			19.0	41.3	31.0	-10.3	-3.3	-7.0
46	1706			18.8	41.1	40.8	-0.3	-3.3	3.1
44	1706			18.6	40.9	29.5	-11.4	-3.3	-8.0
189	1707			19.3	41.6	28.0	-13.7	-3.3	-10.3
173	1708			19.0	41.3	31.0	-10.3	-3.3	-6.9
9	1708			18.4	40.7	28.4	-12.3	-3.3	-9.0
130	1709			18.2	40.5	29.8	-10.7	-3.3	-7.3
179	1710			18.7	41.0	33.1	-7.9	-3.4	-4.5
49	1713			18.3	40.7	37.0	-3.7	-3.4	-0.3
547	1714			19.3	41.6	30.6	-11.0	-3.4	-7.7
163	1714			19.1	41.4	30.4	-11.1	-3.4	-7.7
549	1719			18.7	41.0	24.8	-16.2	-3.4	-12.9
42	1727			18.5	40.9	37.6	-3.3	-3.4	0.0
43	1727			18.0	40.3	37.0	-3.3	-3.4	0.0
8	1728			19.6	42.0	32.9	-9.1	-3.4	-5.8
198	1732			19.1	41.5	37.7	-3.8	-3.4	-0.5
187	1737			19.1	41.4	35.3	-6.2	-3.4	-2.8
313	1738			18.6	41.0	24.7	-16.2	-3.4	-12.9
498	1744			19.3	41.7	26.0	-15.7	-3.4	-12.3
402	1747			18.9	41.3	37.4	-3.9	-3.4	-0.5
472	1760			19.2	41.6	35.4	-6.2	-3.4	-2.8
Average	1706						-5.8	-3.3	-2.4

Table D.04 Tonality Assessment Table - 8.5 m/s

Project: Adelaide Wind Energy Centre- Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
339	120			22.6	40.9	29.3	-11.6	-2.0	-9.6
492	120			23.5	41.8	37.5	-4.3	-2.0	-2.3
779	120			24.0	42.2	38.2	-4.1	-2.0	-2.0
319	120			23.0	41.3	34.3	-7.0	-2.0	-5.0
838	120			22.9	41.2	34.9	-6.3	-2.0	-4.3
40	120			21.9	40.2	36.8	-3.4	-2.0	-1.4
180	121			22.6	40.8	32.2	-8.7	-2.0	-6.7
199	121			22.3	40.5	35.7	-4.9	-2.0	-2.9
50	121			22.0	40.3	35.2	-5.1	-2.0	-3.1
797	121			23.9	42.2	35.1	-7.1	-2.0	-5.1
397	121			21.6	39.9	32.7	-7.2	-2.0	-5.2
63	122			22.5	40.7	36.8	-3.9	-2.0	-1.9
395	123			22.1	40.4	36.1	-4.3	-2.0	-2.3
184	123			22.3	40.6	34.9	-5.7	-2.0	-3.7
186	123			23.3	41.6	36.3	-5.3	-2.0	-3.3
79	123			23.5	41.8	36.9	-4.9	-2.0	-2.9
312	123			23.4	41.7	36.3	-5.3	-2.0	-3.3
546	123			22.9	41.2	39.3	-1.9	-2.0	0.1
185	123			23.4	41.7	35.4	-6.3	-2.0	-4.3
115	123			22.6	40.9	40.0	-1.0	-2.0	1.0
497	123			24.4	42.6	35.8	-6.9	-2.0	-4.9
344	124			24.4	42.7	31.2	-11.5	-2.0	-9.5
310	124			23.4	41.7	33.2	-8.5	-2.0	-6.5
311	124			23.8	42.1	37.6	-4.5	-2.0	-2.5
824	124			23.4	41.7	37.9	-3.8	-2.0	-1.8
394	124			23.0	41.3	36.9	-4.4	-2.0	-2.3
307	125			22.8	41.1	33.2	-7.9	-2.0	-5.9
401	125			23.3	41.6	38.1	-3.5	-2.0	-1.5
147	126			22.7	41.0	38.9	-2.1	-2.0	-0.1
172	126			22.2	40.5	36.4	-4.1	-2.0	-2.1
145	128			22.7	41.0	39.9	-1.0	-2.0	1.0
73	128			22.5	40.8	37.6	-3.2	-2.0	-1.2
11	128			24.9	43.2	31.9	-11.3	-2.0	-9.2
57	129			21.8	40.1	39.7	-0.4	-2.0	1.6
Average	123						-4.5	-2.0	-2.5

Table D.04 Tonality Assessment Table - 8.5 m/s

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
396	375			21.3	40.0	32.2	-7.8	-2.2	-5.6
115	377			20.2	38.9	31.4	-7.5	-2.2	-5.3
63	377			19.9	38.5	28.2	-10.3	-2.2	-8.1
341	378			20.6	39.3	31.8	-7.5	-2.2	-5.3
342	378			20.6	39.2	30.8	-8.4	-2.2	-6.2
400	378			21.4	40.0	32.8	-7.2	-2.2	-5.1
497	379			22.3	40.9	36.8	-4.1	-2.2	-1.9
395	379			21.3	40.0	36.2	-3.8	-2.2	-1.6
394	379			21.6	40.3	35.1	-5.2	-2.2	-3.1
312	380			20.1	38.8	30.3	-8.5	-2.2	-6.3
401	380			21.1	39.7	34.7	-5.0	-2.2	-2.8
546	380			22.2	40.8	33.6	-7.3	-2.2	-5.1
311	383			20.6	39.3	30.3	-9.0	-2.2	-6.8
339	388			20.5	39.2	42.8	3.6	-2.2	5.8
583	388			22.5	41.2	36.3	-4.9	-2.2	-2.7
185	388			20.7	39.4	37.3	-2.1	-2.2	0.1
186	389			20.9	39.6	40.3	0.8	-2.2	2.9
Average	381						-3.7	-2.2	-1.5

Table D.04 Tonality Assessment Table - 8.5 m/s

Project: Adelaide Wind Energy Centre- Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
583	503			23.2	42.2	42.4	0.2	-2.3	2.5
838	504			22.0	40.9	36.3	-4.7	-2.3	-2.4
492	513			23.0	41.9	41.5	-0.4	-2.3	1.9
344	514			23.1	42.0	38.1	-4.0	-2.3	-1.6
341	516			23.0	42.0	42.3	0.4	-2.3	2.7
779	516			22.8	41.7	41.2	-0.5	-2.3	1.8
397	517			21.4	40.3	42.9	2.5	-2.3	4.9
50	519			21.6	40.6	38.2	-2.4	-2.3	0.0
180	519			21.9	40.9	38.2	-2.7	-2.3	-0.4
172	520			23.1	42.1	39.1	-3.0	-2.3	-0.7
184	521			22.1	41.1	40.6	-0.5	-2.3	1.8
199	521			22.5	41.5	38.9	-2.6	-2.3	-0.2
57	521			22.2	41.2	36.0	-5.2	-2.3	-2.9
396	521			22.7	41.6	42.7	1.1	-2.3	3.4
79	521			22.3	41.3	40.1	-1.3	-2.3	1.0
13	522			22.4	41.3	34.6	-6.8	-2.3	-4.4
63	523			22.2	41.2	37.7	-3.4	-2.3	-1.1
342	525			23.0	42.0	39.3	-2.6	-2.3	-0.3
497	526			22.7	41.7	41.0	-0.7	-2.3	1.6
401	527			22.0	41.0	42.7	1.6	-2.3	4.0
797	527			22.0	41.0	42.4	1.4	-2.3	3.8
185	527			23.0	42.0	40.9	-1.1	-2.3	1.2
400	527			22.1	41.1	40.1	-1.0	-2.3	1.3
546	528			22.8	41.8	41.6	-0.3	-2.3	2.1
312	528			22.7	41.7	43.2	1.5	-2.3	3.9
310	528			22.7	41.7	37.0	-4.7	-2.3	-2.3
186	530			22.3	41.4	42.6	1.2	-2.3	3.5
394	531			22.9	41.9	43.2	1.3	-2.3	3.6
115	531			22.8	41.8	43.6	1.8	-2.3	4.1
311	531			22.6	41.6	41.3	-0.4	-2.3	2.0
395	531			22.9	41.9	45.1	3.2	-2.3	5.5
824	532			22.9	41.9	41.9	0.0	-2.3	2.3
Average	523						-0.4	-2.3	1.9

Table D.04 Tonality Assessment Table - 8.5 m/s

Project: Adelaide Wind Energy Centre- Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
57	1670			19.5	41.7	28.9	-12.8	-3.3	-9.5
583	1687			20.8	43.0	35.1	-7.9	-3.3	-4.6
838	1687			19.6	41.8	30.8	-11.0	-3.3	-7.7
339	1697			19.2	41.5	32.7	-8.7	-3.3	-5.4
13	1698			19.1	41.4	31.7	-9.7	-3.3	-6.4
63	1700			19.6	41.9	37.3	-4.6	-3.3	-1.2
400	1707			20.0	42.3	37.5	-4.8	-3.3	-1.4
344	1710			19.0	41.3	35.1	-6.3	-3.4	-2.9
492	1718			19.9	42.2	32.1	-10.1	-3.4	-6.7
779	1723			19.8	42.1	30.8	-11.3	-3.4	-8.0
40	1726			19.0	41.4	27.8	-13.5	-3.4	-10.2
397	1728			18.4	40.8	38.9	-1.9	-3.4	1.5
50	1737			18.4	40.8	37.7	-3.1	-3.4	0.3
797	1738			19.5	41.9	34.9	-7.0	-3.4	-3.6
79	1740			18.9	41.3	28.6	-12.6	-3.4	-9.3
199	1741			18.8	41.2	39.4	-1.8	-3.4	1.5
396	1743			18.8	41.2	41.4	0.2	-3.4	3.6
341	1745			19.0	41.4	35.0	-6.3	-3.4	-3.0
184	1745			19.1	41.5	37.2	-4.3	-3.4	-0.9
497	1745			18.7	41.1	36.2	-5.0	-3.4	-1.6
401	1747			19.1	41.5	36.1	-5.5	-3.4	-2.1
395	1748			19.2	41.6	42.3	0.7	-3.4	4.0
342	1749			19.5	41.9	30.4	-11.5	-3.4	-8.1
180	1750			18.7	41.1	35.3	-5.8	-3.4	-2.4
Average	1724						-5.1	-3.4	-1.7

Table D.05 Tonality Assessment Table - 9 m/s

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
847	120			23.6	41.9	35.7	-6.2	-2.0	-4.1
297	120			22.6	40.9	33.5	-7.4	-2.0	-5.4
795	121			23.7	42.0	36.5	-5.5	-2.0	-3.5
823	123			23.3	41.5	36.2	-5.4	-2.0	-3.3
285	123			23.7	41.9	35.8	-6.2	-2.0	-4.2
158	123			22.0	40.3	37.5	-2.7	-2.0	-0.7
181	123			22.6	40.9	37.2	-3.7	-2.0	-1.7
582	123			23.8	42.1	37.1	-5.0	-2.0	-3.0
830	124			23.0	41.3	38.9	-2.5	-2.0	-0.4
478	124			24.8	43.1	40.2	-2.9	-2.0	-0.9
798	124			24.9	43.2	36.6	-6.6	-2.0	-4.6
273	124			23.9	42.2	36.7	-5.5	-2.0	-3.5
558	124			24.7	43.0	38.6	-4.4	-2.0	-2.4
159	125			21.5	39.8	38.3	-1.5	-2.0	0.6
853	125			25.4	43.7	37.8	-5.9	-2.0	-3.9
272	125			22.8	41.1	35.9	-5.2	-2.0	-3.2
781	125			24.7	43.0	37.7	-5.3	-2.0	-3.3
39	126			22.1	40.4	40.0	-0.4	-2.0	1.6
28	126			22.4	40.7	38.8	-1.9	-2.0	0.1
496	126			24.3	42.6	39.2	-3.4	-2.0	-1.4
76	126			21.4	39.7	39.5	-0.2	-2.0	1.8
782	126			24.6	42.9	37.4	-5.4	-2.0	-3.4
600	126			24.4	42.6	40.0	-2.6	-2.0	-0.6
38	126			21.7	40.0	39.5	-0.5	-2.0	1.5
471	126			23.9	42.2	39.5	-2.7	-2.0	-0.7
796	126			24.4	42.7	39.0	-3.8	-2.0	-1.7
196	126			23.3	41.6	37.4	-4.1	-2.0	-2.1
78	127			22.1	40.4	39.8	-0.6	-2.0	1.4
183	127			22.0	40.3	38.7	-1.6	-2.0	0.4
495	127			24.5	42.8	41.2	-1.6	-2.0	0.4
182	127			23.3	41.6	39.5	-2.1	-2.0	-0.1
51	127			23.4	41.7	40.3	-1.3	-2.0	0.7
850	127			24.8	43.1	39.4	-3.7	-2.0	-1.7
131	127			23.3	41.6	39.5	-2.1	-2.0	-0.1
75	128			21.7	40.0	39.3	-0.7	-2.0	1.3
124	128			22.2	40.5	38.5	-2.0	-2.0	0.0
555	128			24.9	43.2	39.2	-4.0	-2.0	-2.0
110	128			22.7	41.0	38.9	-2.2	-2.0	-0.1
286	128			24.6	42.9	36.9	-6.0	-2.0	-4.0
16	128			23.1	41.4	34.1	-7.3	-2.0	-5.3
12	128			24.1	42.3	37.1	-5.3	-2.0	-3.2
315	129			22.8	41.1	37.6	-3.5	-2.0	-1.5
81	129			22.5	40.8	38.0	-2.8	-2.0	-0.8
Average	126						-3.1	-2.0	-1.1

Table D.05 Tonality Assessment Table - 9 m/s

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
795	521			22.3	41.3	41.8	0.5	-2.3	2.8
124	521			22.5	41.5	43.3	1.8	-2.3	4.2
297	521			21.5	40.5	38.2	-2.3	-2.3	0.0
158	521			22.7	41.7	42.1	0.4	-2.3	2.8
823	527			22.5	41.5	44.8	3.2	-2.3	5.6
847	528			22.2	41.2	41.5	0.3	-2.3	2.6
76	529			22.5	41.5	42.1	0.7	-2.3	3.0
285	529			21.9	41.0	41.0	0.1	-2.3	2.4
110	530			23.4	42.4	43.7	1.3	-2.3	3.6
830	530			22.4	41.4	45.0	3.6	-2.3	5.9
558	531			22.5	41.5	46.0	4.5	-2.3	6.8
159	531			22.1	41.2	41.8	0.6	-2.3	2.9
286	532			23.0	42.0	42.2	0.2	-2.3	2.5
78	532			23.1	42.1	45.2	3.1	-2.3	5.4
582	533			23.3	42.3	42.6	0.3	-2.3	2.7
181	533			22.5	41.5	42.2	0.7	-2.3	3.0
272	535			21.9	40.9	41.8	0.9	-2.3	3.2
798	535			22.8	41.8	41.0	-0.8	-2.3	1.5
781	537			22.7	41.7	39.0	-2.7	-2.3	-0.4
38	538			22.2	41.2	40.2	-1.0	-2.3	1.3
555	538			23.9	42.9	41.2	-1.7	-2.3	0.6
796	539			22.8	41.9	42.8	0.9	-2.3	3.3
600	540			23.3	42.4	43.0	0.6	-2.3	2.9
496	541			23.2	42.2	44.4	2.2	-2.3	4.5
782	541			22.6	41.7	44.3	2.6	-2.3	5.0
853	541			22.4	41.5	42.7	1.2	-2.3	3.6
315	541			24.6	43.6	41.3	-2.3	-2.3	0.0
196	541			22.0	41.0	43.4	2.4	-2.3	4.7
495	541			23.4	42.4	47.7	5.3	-2.3	7.6
131	542			23.2	42.2	44.4	2.2	-2.3	4.5
273	542			21.9	41.0	40.9	0.0	-2.3	2.3
39	543			22.5	41.6	41.3	-0.3	-2.3	2.0
471	543			23.3	42.3	46.7	4.4	-2.3	6.7
183	546			22.5	41.6	42.4	0.9	-2.3	3.2
182	547			22.4	41.4	41.4	-0.1	-2.4	2.3
16	548			23.9	43.0	39.9	-3.1	-2.4	-0.7
28	548			22.2	41.2	44.8	3.5	-2.4	5.9
12	548			22.3	41.3	39.6	-1.7	-2.4	0.7
75	549			22.9	41.9	41.7	-0.2	-2.4	2.1
478	550			23.4	42.5	45.2	2.7	-2.4	5.1
Average	537						1.3	-2.3	3.7

Table D.06 Tonality Assessment Table - 9.5 m/s

Project: Adelaide Wind Energy Centre- Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
23	126			22.1	40.4	41.5	1.0	-2.0	3.0
494	127			24.5	42.8	42.1	-0.7	-2.0	1.3
539	127			24.5	42.8	39.8	-3.0	-2.0	-1.0
305	127			22.7	40.9	41.2	0.3	-2.0	2.3
365	127			21.4	39.7	42.1	2.4	-2.0	4.4
819	128			22.4	40.6	41.6	0.9	-2.0	3.0
493	128			24.5	42.8	41.0	-1.7	-2.0	0.3
814	128			22.6	40.8	41.1	0.2	-2.0	2.2
138	128			22.3	40.6	40.7	0.1	-2.0	2.1
538	128			23.3	41.6	40.7	-1.0	-2.0	1.0
763	128			23.8	42.1	39.7	-2.4	-2.0	-0.4
599	128			24.7	43.0	42.7	-0.3	-2.0	1.7
92	128			22.6	40.8	39.5	-1.3	-2.0	0.7
815	128			22.5	40.7	42.0	1.2	-2.0	3.2
727	128			22.8	41.1	40.3	-0.8	-2.0	1.2
366	128			22.2	40.5	42.5	2.0	-2.0	4.1
832	129			23.4	41.6	38.1	-3.6	-2.0	-1.5
592	129			24.9	43.2	41.6	-1.6	-2.0	0.4
644	129			22.3	40.6	38.7	-1.9	-2.0	0.1
729	129			23.5	41.8	39.8	-2.0	-2.0	0.0
144	129			23.3	41.6	40.5	-1.2	-2.0	0.9
816	129			22.2	40.5	41.4	1.0	-2.0	3.0
136	129			21.3	39.6	39.7	0.2	-2.0	2.2
787	129			22.6	40.9	37.1	-3.8	-2.0	-1.8
77	129			23.3	41.6	38.8	-2.7	-2.0	-0.7
593	129			24.9	43.2	41.4	-1.9	-2.0	0.2
831	129			23.5	41.8	38.6	-3.3	-2.0	-1.2
537	129			23.7	42.0	40.2	-1.9	-2.0	0.2
232	129			23.0	41.2	40.0	-1.3	-2.0	0.7
236	129			21.7	40.0	41.4	1.4	-2.0	3.4
643	130			22.6	40.9	40.5	-0.4	-2.0	1.6
264	130			21.5	39.8	39.5	-0.3	-2.0	1.7
242	130			22.7	40.9	41.6	0.6	-2.0	2.6
282	130			23.2	41.5	38.9	-2.6	-2.0	-0.6
804	130			22.5	40.8	37.7	-3.0	-2.0	-1.0
719	130			24.0	42.3	39.6	-2.7	-2.0	-0.7
805	130			22.7	41.0	39.6	-1.4	-2.0	0.6
368	130			21.8	40.1	40.2	0.1	-2.0	2.1
21	130			21.0	39.3	39.3	0.0	-2.0	2.0
835	130			24.4	42.7	40.7	-1.9	-2.0	0.1
148	130			23.8	42.1	39.3	-2.8	-2.0	-0.8
766	130			23.9	42.2	38.3	-3.9	-2.0	-1.9
595	131			23.8	42.1	40.3	-1.8	-2.0	0.2
542	131			22.9	41.2	39.4	-1.8	-2.0	0.2
640	131			22.6	40.9	37.8	-3.0	-2.0	-1.0
102	131			21.0	39.3	38.4	-0.9	-2.0	1.1
82	131			22.3	40.6	40.9	0.3	-2.0	2.3
103	131			20.9	39.2	40.0	0.8	-2.0	2.9
240	131			22.2	40.5	38.5	-2.0	-2.0	0.0
807	131			22.2	40.5	37.2	-3.3	-2.0	-1.3
585	132			25.5	43.8	37.4	-6.4	-2.0	-4.4
316	132			23.6	41.9	33.7	-8.2	-2.0	-6.2
251	132			21.4	39.7	35.5	-4.2	-2.0	-2.2
249	132			21.2	39.5	36.6	-2.9	-2.0	-0.8
580	132			24.8	43.1	38.3	-4.8	-2.0	-2.7
135	132			22.2	40.5	38.4	-2.1	-2.0	-0.1
300	133			20.1	38.4	35.1	-3.3	-2.0	-1.3
121	133			23.2	41.4	38.9	-2.6	-2.0	-0.6
588	133			23.9	42.2	31.9	-10.4	-2.0	-8.3
101	133			21.4	39.7	36.4	-3.3	-2.0	-1.3
20	133			22.4	40.7	35.9	-4.8	-2.0	-2.8
94	133			22.6	40.9	37.8	-3.1	-2.0	-1.1
489	133			24.1	42.4	38.1	-4.3	-2.0	-2.3
488	133			24.4	42.7	38.5	-4.3	-2.0	-2.2
351	133			23.9	42.2	30.6	-11.6	-2.0	-9.6
259	134			22.3	40.6	32.3	-8.3	-2.0	-6.3
802	135			22.5	40.8	28.8	-12.0	-2.0	-9.9

Table D.06 Tonality Assessment Table - 9.5 m/s

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
767	136			23.2	41.5	32.9	-8.6	-2.0	-6.6
784	136			24.4	42.7	33.2	-9.5	-2.0	-7.5
803	148			22.7	41.0	31.6	-9.4	-2.0	-7.4
Average	130						-1.7	-2.0	0.3

Table D.06 Tonality Assessment Table - 9.5 m/s

Project: Adelaide Wind Energy Centre- Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
763	522			22.4	41.4	45.0	3.6	-2.3	5.9
23	538			22.3	41.3	43.1	1.8	-2.3	4.1
539	541			22.8	41.9	45.4	3.5	-2.3	5.8
365	542			22.7	41.7	43.0	1.3	-2.3	3.7
305	543			22.3	41.3	44.6	3.3	-2.3	5.7
494	545			23.7	42.8	47.4	4.7	-2.3	7.0
599	547			23.9	42.9	46.6	3.6	-2.4	6.0
538	547			22.3	41.4	45.2	3.9	-2.4	6.2
493	548			23.5	42.5	46.0	3.5	-2.4	5.8
366	548			22.5	41.6	43.8	2.2	-2.4	4.6
815	548			22.9	41.9	45.7	3.7	-2.4	6.1
727	549			22.7	41.8	45.3	3.5	-2.4	5.9
593	549			23.8	42.8	48.0	5.1	-2.4	7.5
819	549			22.8	41.9	40.6	-1.2	-2.4	1.1
138	550			23.5	42.6	47.7	5.1	-2.4	7.5
814	550			22.3	41.4	43.3	1.9	-2.4	4.2
537	551			23.5	42.5	44.1	1.5	-2.4	3.9
592	551			23.6	42.6	43.2	0.6	-2.4	2.9
136	551			23.4	42.4	42.0	-0.4	-2.4	1.9
Average	546						3.0	-2.3	5.4

Table D.06 Tonality Assessment Table - 9.5 m/s

Project: Adelaide Wind Energy Centre- Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
368	557			22.4	41.5	39.9	-1.6	-2.4	0.8
643	558			22.8	41.9	43.2	1.3	-2.4	3.7
242	558			22.1	41.2	40.3	-0.9	-2.4	1.4
719	559			22.2	41.3	43.8	2.5	-2.4	4.8
264	559			22.8	41.9	41.3	-0.6	-2.4	1.8
148	559			22.6	41.7	42.2	0.5	-2.4	2.9
103	560			23.0	42.1	41.6	-0.6	-2.4	1.8
282	560			22.3	41.4	42.8	1.4	-2.4	3.8
82	560			22.6	41.6	41.7	0.1	-2.4	2.4
835	561			22.3	41.4	45.4	4.0	-2.4	6.4
832	561			22.6	41.7	43.4	1.7	-2.4	4.1
102	561			22.9	42.0	41.5	-0.4	-2.4	2.0
21	561			22.9	42.0	43.4	1.4	-2.4	3.7
805	561			23.2	42.3	46.0	3.8	-2.4	6.1
766	562			22.9	41.9	44.3	2.4	-2.4	4.7
640	562			23.3	42.4	44.3	1.9	-2.4	4.3
585	563			24.4	43.4	42.4	-1.1	-2.4	1.3
831	563			22.6	41.7	44.0	2.3	-2.4	4.7
807	563			23.6	42.7	45.1	2.4	-2.4	4.7
240	563			22.8	41.9	46.5	4.7	-2.4	7.0
251	563			23.2	42.2	43.4	1.1	-2.4	3.5
20	564			22.9	42.0	41.7	-0.2	-2.4	2.1
729	564			23.0	42.1	44.2	2.2	-2.4	4.6
316	564			23.0	42.1	43.3	1.2	-2.4	3.6
804	564			23.7	42.8	45.7	3.0	-2.4	5.4
121	564			22.8	41.9	42.2	0.3	-2.4	2.6
595	565			23.7	42.8	43.2	0.3	-2.4	2.7
249	565			22.9	42.0	42.6	0.6	-2.4	3.0
135	565			23.5	42.6	42.8	0.2	-2.4	2.6
542	566			22.7	41.8	40.6	-1.2	-2.4	1.1
580	566			23.2	42.3	41.8	-0.5	-2.4	1.9
94	568			23.8	42.9	42.9	0.0	-2.4	2.4
803	569			23.8	42.9	42.2	-0.6	-2.4	1.7
101	569			22.9	42.0	40.6	-1.4	-2.4	1.0
488	569			23.6	42.7	42.5	-0.3	-2.4	2.1
802	569			23.4	42.5	38.0	-4.5	-2.4	-2.1
300	571			23.3	42.5	40.3	-2.2	-2.4	0.2
588	573			23.7	42.8	39.8	-3.0	-2.4	-0.7
787	573			22.7	41.8	43.7	1.9	-2.4	4.3
351	573			23.9	43.0	43.7	0.7	-2.4	3.1
259	574			22.3	41.5	40.2	-1.2	-2.4	1.2
489	578			23.8	42.9	42.4	-0.5	-2.4	1.9
92	578			23.7	42.8	46.0	3.2	-2.4	5.6
767	582			22.9	42.1	40.1	-1.9	-2.4	0.5
784	587			23.0	42.2	33.3	-8.9	-2.4	-6.5
Average	566						0.8	-2.4	3.2

Table D.07 Tonality Assessment Table - 10 m/s

Project: Adelaide Wind Energy Centre- Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
722	121			22.2	40.5	42.9	2.4	-2.0	4.4
349	126			25.2	43.5	39.1	-4.4	-2.0	-2.4
530	127			23.9	42.2	42.2	0.0	-2.0	2.0
243	127			23.0	41.3	42.0	0.7	-2.0	2.7
171	127			24.0	42.3	38.9	-3.4	-2.0	-1.4
479	128			24.7	43.0	42.0	-1.0	-2.0	1.0
363	128			21.7	40.0	41.6	1.6	-2.0	3.6
758	128			23.4	41.7	40.3	-1.4	-2.0	0.6
559	128			24.5	42.8	41.2	-1.5	-2.0	0.5
790	128			23.8	42.1	39.2	-2.9	-2.0	-0.9
844	128			23.6	41.9	40.7	-1.2	-2.0	0.8
142	128			23.8	42.1	40.2	-1.9	-2.0	0.1
789	128			23.2	41.5	40.9	-0.6	-2.0	1.4
827	128			24.5	42.8	36.0	-6.9	-2.0	-4.9
268	128			23.3	41.6	40.0	-1.6	-2.0	0.4
362	128			20.3	38.6	42.6	4.0	-2.0	6.0
731	128			22.9	41.2	41.5	0.3	-2.0	2.3
107	128			22.5	40.8	40.4	-0.4	-2.0	1.6
577	129			24.3	42.6	40.1	-2.5	-2.0	-0.5
137	129			23.4	41.7	40.2	-1.5	-2.0	0.5
367	129			22.0	40.3	40.6	0.3	-2.0	2.3
842	129			24.0	42.3	39.4	-2.8	-2.0	-0.8
97	130			21.8	40.1	39.9	-0.2	-2.0	1.8
252	130			21.7	40.0	39.4	-0.6	-2.0	1.4
642	130			22.9	41.2	40.8	-0.4	-2.0	1.6
234	130			22.8	41.1	40.5	-0.7	-2.0	1.4
371	130			23.5	41.8	39.8	-1.9	-2.0	0.1
641	130			22.8	41.1	40.2	-0.9	-2.0	1.1
116	130			21.8	40.0	40.4	0.3	-2.0	2.4
139	130			22.3	40.6	39.3	-1.3	-2.0	0.7
99	130			21.9	40.2	40.3	0.1	-2.0	2.1
487	130			24.5	42.8	41.8	-1.0	-2.0	1.0
591	130			24.6	42.9	42.2	-0.8	-2.0	1.3
370	130			22.7	41.0	40.0	-1.0	-2.0	1.0
717	130			24.1	42.4	38.3	-4.1	-2.0	-2.1
248	131			22.7	41.0	37.8	-3.2	-2.0	-1.2
255	131			22.1	40.4	39.9	-0.5	-2.0	1.5
540	131			23.8	42.1	39.2	-2.9	-2.0	-0.9
806	131			22.1	40.3	37.5	-2.8	-2.0	-0.8
301	132			21.9	40.2	35.5	-4.7	-2.0	-2.6
299	132			22.2	40.5	36.0	-4.5	-2.0	-2.5
250	133			22.5	40.8	33.6	-7.2	-2.0	-5.2
801	135			22.5	40.8	31.5	-9.3	-2.0	-7.3
768	136			22.6	40.9	34.8	-6.0	-2.0	-4.0
17	136			23.4	41.7	33.2	-8.5	-2.0	-6.5
785	136			23.6	41.9	29.6	-12.2	-2.0	-10.2
587	136			24.5	42.8	35.6	-7.2	-2.0	-5.2
52	136			23.0	41.3	29.9	-11.4	-2.0	-9.4
Average	130						-1.5	-2.0	0.5

Table D.07 Tonality Assessment Table - 10 m/s

Project: Adelaide Wind Energy Centre- Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
349	540			24.8	43.8	44.4	0.6	-2.3	2.9
559	542			23.3	42.3	42.0	-0.3	-2.3	2.1
243	544			22.1	41.2	42.1	0.9	-2.3	3.2
530	546			24.4	43.4	47.1	3.6	-2.3	6.0
171	547			22.6	41.6	44.8	3.2	-2.4	5.5
362	547			23.3	42.4	44.9	2.5	-2.4	4.9
731	547			22.7	41.7	45.1	3.4	-2.4	5.7
116	548			22.5	41.5	45.7	4.2	-2.4	6.5
789	549			22.7	41.8	45.7	3.9	-2.4	6.2
268	550			22.4	41.5	43.4	1.9	-2.4	4.3
142	550			22.9	42.0	46.2	4.2	-2.4	6.5
479	551			24.4	43.5	47.9	4.4	-2.4	6.8
577	552			23.6	42.6	41.7	-0.9	-2.4	1.5
367	553			22.6	41.7	43.2	1.6	-2.4	3.9
370	553			22.4	41.4	41.2	-0.3	-2.4	2.1
137	553			23.3	42.3	43.6	1.3	-2.4	3.6
641	553			23.0	42.1	41.3	-0.8	-2.4	1.6
371	554			22.5	41.5	42.0	0.4	-2.4	2.8
642	554			22.6	41.7	43.0	1.3	-2.4	3.7
717	554			23.0	42.1	42.2	0.1	-2.4	2.5
591	558			23.4	42.5	41.5	-1.0	-2.4	1.3
97	559			23.2	42.2	42.2	0.0	-2.4	2.4
139	560			23.6	42.7	44.1	1.4	-2.4	3.8
17	560			23.9	42.9	38.8	-4.2	-2.4	-1.8
234	560			22.5	41.6	44.8	3.2	-2.4	5.6
844	560			21.7	40.8	43.6	2.8	-2.4	5.2
255	561			22.5	41.6	43.7	2.1	-2.4	4.5
363	561			22.7	41.8	43.3	1.5	-2.4	3.9
722	561			23.4	42.4	43.9	1.5	-2.4	3.9
806	561			23.7	42.8	45.8	3.0	-2.4	5.4
827	561			23.8	42.9	43.2	0.3	-2.4	2.7
107	561			22.1	41.2	44.1	2.9	-2.4	5.3
842	561			21.5	40.6	43.1	2.5	-2.4	4.9
487	561			23.7	42.8	43.1	0.3	-2.4	2.7
758	561			22.6	41.7	45.7	4.0	-2.4	6.4
252	563			22.5	41.6	44.0	2.3	-2.4	4.7
299	563			24.0	43.1	40.2	-2.9	-2.4	-0.5
790	564			22.5	41.6	46.2	4.6	-2.4	7.0
248	565			22.6	41.7	44.0	2.3	-2.4	4.7
99	565			22.7	41.8	44.2	2.3	-2.4	4.7
250	568			22.6	41.7	39.6	-2.2	-2.4	0.2
301	568			23.9	43.0	37.4	-5.6	-2.4	-3.2
Average	556						1.9	-2.4	4.2

Table D.08 Tonality Assessment Table - 10.5 m/s

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
292	127			23.8	42.1	38.6	-3.5	-2.0	-1.5
486	127			25.1	43.3	43.6	0.2	-2.0	2.2
480	128			24.3	42.6	36.3	-6.3	-2.0	-4.3
730	128			23.5	41.8	38.6	-3.2	-2.0	-1.2
372	129			24.5	42.8	36.3	-6.5	-2.0	-4.4
843	129			24.0	42.3	40.0	-2.3	-2.0	-0.3
755	129			23.1	41.4	37.4	-3.9	-2.0	-1.9
783	129			25.6	43.9	31.8	-12.1	-2.0	-10.1
811	129			21.3	39.6	41.0	1.4	-2.0	3.4
364	129			21.8	40.1	39.0	-1.0	-2.0	1.0
265	129			21.4	39.7	38.2	-1.5	-2.0	0.5
536	129			23.9	42.2	41.0	-1.3	-2.0	0.8
723	130			21.9	40.2	41.1	1.0	-2.0	3.0
535	130			23.6	41.9	41.3	-0.6	-2.0	1.4
808	130			21.6	39.9	40.7	0.8	-2.0	2.8
373	130			23.9	42.2	40.4	-1.7	-2.0	0.3
534	130			25.1	43.4	41.6	-1.8	-2.0	0.2
733	130			22.8	41.1	38.5	-2.6	-2.0	-0.6
598	130			24.4	42.7	43.1	0.4	-2.0	2.4
253	130			21.0	39.3	40.1	0.7	-2.0	2.8
718	130			23.6	41.9	33.9	-8.0	-2.0	-6.0
725	130			22.2	40.5	37.9	-2.6	-2.0	-0.6
238	131			20.9	39.2	40.3	1.1	-2.0	3.1
589	131			24.5	42.8	38.9	-3.9	-2.0	-1.9
302	131			21.9	40.2	37.7	-2.5	-2.0	-0.5
369	131			22.6	40.9	37.2	-3.7	-2.0	-1.7
590	131			24.2	42.5	37.0	-5.5	-2.0	-3.5
229	131			23.7	42.0	35.1	-6.9	-2.0	-4.9
791	131			23.5	41.8	38.6	-3.2	-2.0	-1.2
532	132			25.1	43.4	39.0	-4.5	-2.0	-2.4
260	132			22.3	40.6	33.8	-6.8	-2.0	-4.8
639	132			22.7	41.0	35.6	-5.3	-2.0	-3.3
132	135			23.9	42.2	33.7	-8.5	-2.0	-6.4
586	136			24.3	42.6	37.3	-5.3	-2.0	-3.3
Average	130						-2.2	-2.0	-0.2

Table D.08 Tonality Assessment Table - 10.5 m/s

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
292	541			23.6	42.6	42.0	-0.7	-2.3	1.7
486	545			24.1	43.1	48.5	5.4	-2.3	7.8
783	549			24.3	43.3	41.2	-2.2	-2.4	0.2
730	549			23.8	42.9	45.0	2.1	-2.4	4.4
265	550			23.1	42.1	41.7	-0.4	-2.4	1.9
843	550			22.2	41.3	43.9	2.6	-2.4	5.0
364	550			22.6	41.6	41.3	-0.4	-2.4	2.0
536	553			23.8	42.8	41.4	-1.4	-2.4	1.0
811	553			23.8	42.9	43.2	0.3	-2.4	2.7
534	555			23.0	42.1	39.8	-2.3	-2.4	0.1
253	557			22.7	41.8	39.0	-2.9	-2.4	-0.5
598	559			24.2	43.3	44.0	0.7	-2.4	3.1
589	560			24.0	43.1	42.2	-0.9	-2.4	1.5
373	560			23.2	42.3	43.2	0.8	-2.4	3.2
808	560			23.6	42.6	44.9	2.2	-2.4	4.6
725	560			23.7	42.8	45.5	2.8	-2.4	5.1
755	560			22.9	42.0	42.4	0.4	-2.4	2.8
535	560			23.6	42.7	41.0	-1.6	-2.4	0.7
723	561			23.6	42.7	45.0	2.3	-2.4	4.7
302	561			22.4	41.5	39.2	-2.3	-2.4	0.0
791	561			22.4	41.5	47.4	5.9	-2.4	8.3
733	561			22.9	42.0	45.9	3.9	-2.4	6.3
718	561			23.3	42.4	39.4	-2.9	-2.4	-0.5
639	563			23.5	42.6	43.3	0.7	-2.4	3.0
238	563			22.5	41.5	45.3	3.8	-2.4	6.2
590	564			23.5	42.5	43.0	0.4	-2.4	2.8
532	565			23.7	42.7	39.3	-3.4	-2.4	-1.1
260	565			22.7	41.8	41.3	-0.6	-2.4	1.8
369	565			22.4	41.5	41.2	-0.3	-2.4	2.1
372	570			22.3	41.4	38.4	-3.0	-2.4	-0.7
Average	558						1.1	-2.4	3.4

Table D.09 Tonality Assessment Table - 11 m/s

Project: Adelaide Wind Energy Centre- Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
361	128			21.1	39.4	40.2	0.9	-2.0	2.9
813	130			22.2	40.5	39.3	-1.2	-2.0	0.8
812	130			21.8	40.1	39.6	-0.5	-2.0	1.5
356	130			23.3	41.6	40.2	-1.4	-2.0	0.6
721	130			22.8	41.1	40.4	-0.7	-2.0	1.3
732	130			23.5	41.8	40.2	-1.6	-2.0	0.4
533	130			25.0	43.3	31.1	-12.2	-2.0	-10.2
841	130			24.9	43.2	38.7	-4.4	-2.0	-2.4
734	130			22.2	40.5	39.5	-1.0	-2.0	1.0
809	130			21.6	39.8	39.9	0.0	-2.0	2.0
724	131			21.5	39.8	38.3	-1.5	-2.0	0.5
352	131			24.1	42.4	36.7	-5.7	-2.0	-3.7
528	132			25.2	43.5	40.0	-3.5	-2.0	-1.5
100	133			22.0	40.3	35.5	-4.8	-2.0	-2.7
350	135			23.6	41.9	29.8	-12.1	-2.0	-10.1
Average	131						-2.1	-2.0	-0.1

Table D.09 Tonality Assessment Table - 11 m/s

Project: Adelaide Wind Energy Centre- Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

Measurement #	Centre frequency (Hz)	Energy average of all masking lines (dB)	Background (dB)	Background adjusted criterion level (dB)	Masking level (dB)	Tone level (dB)	Determination of tonality (dB)	Frequency dependent audibility criterion (dB)	Tonal Audibility (dB)
528	540			25.6	44.7	42.2	-2.4	-2.3	-0.1
361	550			24.1	43.2	42.8	-0.3	-2.4	2.0
356	555			23.5	42.5	41.4	-1.1	-2.4	1.2
732	557			22.6	41.7	43.3	1.6	-2.4	4.0
809	560			22.9	42.0	47.3	5.3	-2.4	7.7
813	560			23.1	42.2	44.6	2.4	-2.4	4.8
721	560			23.2	42.2	46.1	3.8	-2.4	6.2
734	561			23.6	42.7	46.8	4.1	-2.4	6.5
812	561			22.7	41.8	47.6	5.8	-2.4	8.2
841	561			21.9	41.0	46.3	5.3	-2.4	7.7
724	561			23.5	42.6	45.4	2.8	-2.4	5.2
352	564			23.9	43.0	45.5	2.5	-2.4	4.9
100	568			22.8	41.9	42.5	0.7	-2.4	3.0
Average	558						3.0	-2.4	5.4

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Appendix E
Measurement Data

Table E.01 Measurement data - Turbine ON

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

***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	7.1	52.4	883	331.0	331.4	5.0	12.3	6.7	6.5	-1	100.1	58
2	7.0	51.5	845	331.0	331.4	5.0	12.1	6.2	6.0	-1	100.1	58
3	7.0	50.7	847	331.0	331.4	5.0	12.2	5.6	6.0	-1	100.1	58
4	7.0	51.2	836	331.0	331.4	5.0	12.2	6.2	5.8	-1	100.1	58
5	6.9	50.8	794	331.0	331.4	5.0	11.9	6.5	5.8	-1	100.1	59
6	6.8	49.5	780	331.0	331.4	5.0	11.8	6.3	5.6	-1	100.1	60
7	7.2	50.1	927	331.0	331.4	5.0	12.5	6.8	5.9	-1	100.1	60
8	7.9	51.5	1193	331.0	331.4	5.0	13.7	8.1	5.6	-1	100.1	60
9	7.8	52.4	1144	331.0	331.4	5.0	13.4	7.4	6.1	-1	100.1	60
10	7.6	51.5	1075	331.0	331.4	5.0	13.0	7.4	9.2	-1	100.1	60
11	8.6	53.3	1385	331.0	331.4	5.0	14.3	8.4	8.6	-1	100.1	60
12	9.2	54.3	1505	331.0	331.4	5.0	14.8	8.0	7.3	-1	100.1	58
13	8.3	53.3	1303	331.0	331.4	5.0	14.0	6.7	7.0	-1	100.1	58
14	8.0	52.5	1203	331.0	331.4	5.0	13.6	6.0	7.3	-1	100.1	58
15	7.9	53.0	1192	331.0	331.4	5.0	13.6	5.9	8.4	-1	100.1	58
16	8.8	53.3	1430	331.0	331.4	5.0	14.3	8.5	9.4	-1	100.1	58
17	10.0	54.8	1680	331.0	331.4	5.0	15.5	8.9	8.6	-1	100.1	57
18			1639	331.0	331.4	5.0	15.5	8.2	8.3	-1	100.1	55
19			1626	331.0	331.4	5.0	15.4	7.7	8.9	-1	100.1	55
20	9.4	54.9	1619	331.0	331.4	5.0	15.3	8.4	8.8	-1	100.1	55
21	9.6	54.4	1611	331.0	331.4	5.0	15.1	8.5	7.7	-1	100.1	55
22			1593	331.0	331.4	5.0	14.7	7.8	8.2	-1	100.1	55
23	9.6	53.7	1606	331.0	331.4	5.0	14.5	8.5	8.7	-1	100.1	55
24			1519	331.0	331.4	5.0	14.4	8.1	7.4	-1	100.1	55
25			1521	331.0	331.4	5.0	14.7	7.9	6.8	-1	100.1	55
26			1577	331.0	331.4	5.0	14.9	7.8	7.2	-1	100.1	55
27			1573	331.0	331.4	5.0	14.9	7.2	6.5	-1	100.1	55
28	9.2	54.4	1504	331.0	331.4	5.0	14.7	7.9	5.8	-1	100.1	55
29			1604	331.0	331.4	5.0	14.9	8.0	5.8	-1	100.1	56
30			1647	331.0	331.4	5.0	15.3	7.9	6.9	-1	100.1	56
31			1581	331.0	331.4	5.0	14.9	7.5	7.6	-1	100.1	56
32			1601	331.0	331.4	5.0	14.7	7.0	6.6	-1	100.1	56
33			1508	331.0	331.4	5.0	14.6	7.0	5.6	-1	100.1	56
34			1516	331.0	331.4	5.0	14.7	7.0	6.2	-1	100.1	56
35			1537	331.0	331.4	5.0	14.8	8.0	7.4	-1	100.1	56
36			1597	331.0	331.4	5.0	15.0	7.3	6.2	-1	100.1	56
37			1541	331.0	331.4	5.0	14.8	8.2	6.9	-1	100.1	56
38	9.0	54.1	1479	331.0	331.4	5.0	14.6	8.0	7.3	-1	100.1	56
39	9.0	53.8	1475	331.0	331.4	5.0	14.6	7.2	7.9	-1	100.1	56
40	8.4	53.7	1334	331.0	331.4	5.0	14.1	7.2	6.8	-1	100.1	56
41	8.1	52.6	1257	331.0	331.4	5.0	13.8	7.1	6.4	-1	100.1	56
42	8.2	52.6	1276	331.0	331.4	5.0	13.9	6.8	6.8	-1	100.1	56
43	8.2	53.3	1281	331.0	331.4	5.0	13.9	7.2	7.2	-1	100.1	56
44	7.9	52.7	1198	331.0	331.4	5.0	13.7	7.3	6.5	-1	100.1	56
45	7.7	52.0	1088	331.0	331.4	5.0	13.1	6.8	4.9	-1	100.1	56
46	7.9	51.8	1172	331.0	331.4	5.0	13.6	8.0	5.3	-1	100.1	56
47	7.8	52.4	1139	331.0	331.4	5.0	13.4	5.9	6.8	-1	100.1	58
48	7.8	52.1	1138	331.0	331.4	5.0	13.3	7.3	8.3	-1	100.1	60
49	8.0	52.3	1231	331.0	331.4	5.0	13.8	7.1	8.0	-1	100.1	60
50	8.3	52.5	1287	331.0	331.4	5.0	13.9	8.2	7.9	-1	100.1	60
51	9.0	52.7	1475	331.0	331.4	5.0	14.4	8.8	7.3	-1	100.1	60
52	10.1	54.3	1685	331.0	331.4	5.0	15.7	9.0	7.6	-1	100.1	60
53			1626	331.0	331.4	5.0	15.5	7.9	8.9	-1	100.1	59
54			1615	331.0	331.4	5.0	15.3	7.1	8.1	-1	100.1	56
55			1612	331.0	331.4	5.0	15.1	7.2	7.8	-1	100.1	56
56			1580	331.0	331.4	5.0	14.7	7.3	7.9	-1	100.1	56
57	8.7	55.3	1404	331.0	331.4	5.0	13.8	6.6	8.1	-1	100.1	56
58	7.8	52.5	1142	331.0	331.4	5.0	13.5	6.0	7.8	-1	100.1	56
59	7.5	52.1	1017	331.0	331.4	5.0	12.9	6.4	7.5	-1	100.1	56
60	7.3	51.8	955	331.0	331.4	5.0	12.6	6.5	7.7	-1	100.1	56
61	7.4	51.7	995	331.0	331.4	5.0	12.8	7.2	7.1	-1	100.1	56
62	7.7	52.1	1102	331.0	331.4	5.0	13.2	7.7	6.5	-1	100.1	56
63	8.3	53.0	1287	331.0	331.4	5.0	14.0	8.2	6.5	-1	100.1	56
64	8.0	53.3	1231	331.0	331.4	5.0	13.8	7.6	7.0	-1	100.1	56
65	7.5	52.5	1021	331.0	331.4	5.0	12.9	6.9	6.9	-1	100.1	56
66	7.0	51.3	850	331.0	331.4	5.0	12.1	6.0	7.5	-1	100.1	58
67	7.0	49.4	832	331.0	331.4	5.0	12.0	7.3	8.0	-1	100.1	58
68	7.2	50.3	906	331.0	331.4	5.0	12.5	7.4	7.9	-1	100.1	58
69	7.3	51.4	947	331.0	331.4	5.0	12.7	7.9	7.2	-1	100.1	58
70	7.3	51.1	959	331.0	331.4	5.0	12.7	6.9	7.4	-1	100.1	58
71	7.3	51.1	968	331.0	331.4	5.0	12.7	6.6	6.4	-1	100.1	58
72	7.6	51.5	1053	331.0	331.4	5.0	13.1	7.8	6.5	-1	100.1	59
73	8.6	52.0	1364	331.0	331.4	5.0	14.0	8.3	6.3	-1	100.1	59
74			1638	331.0	331.4	5.0	15.0	7.8	8.0	-1	100.1	59
75	9.0	54.8	1480	331.0	331.4	5.0	14.6	8.7	7.9	-1	100.1	59
76	8.9	53.4	1448	331.0	331.4	5.0	14.4	8.2	6.6	-1	100.1	59
77	9.7	54.3	1593	331.0	331.4	5.0	14.9	8.6	6.5	-1	100.1	58
78	8.9	54.6	1461	331.0	331.4	5.0	14.5	7.8	7.6	-1	100.1	57
79	8.4	54.1	1317	331.0	331.4	5.0	14.0	7.0	7.5	-1	100.1	57
80	8.0	54.2	1214	331.0	331.4	5.0	13.6	6.7	7.8	-1	100.1	57
81	9.0	53.2	1476	331.0	331.4	5.0	14.4	7.9	7.8	-1	100.1	57
82	9.3	54.1	1641	331.0	331.4	5.0	15.1	8.3	7.5	-1	100.1	57
83			1599	331.0	331.4	5.0	14.9	7.6	7.3	-1	100.1	57
84			1646	331.0	331.4	5.0	15.2	8.2	7.0	-1	100.1	57
85			1642	331.0	331.4	5.0	15.5	7.7	6.8	-1	100.1	57
86			1552	331.0	331.4	5.0	14.9	7.4	7.5	-1	100.1	57
87			1516	331.0	331.4	5.0	14.2	7.4	6.5	-1	100.1	57
88			1625	331.0	331.4	5.0	14.8	7.7	6.9	-1	100.1	57

***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			1657	331.0	331.4	5.0	15.3	8.1	7.4	-1	100.1	57
90			1602	331.0	331.4	5.0	15.0	8.0	6.3	-1	100.1	57
91			1632	331.0	331.4	5.0	15.1	8.1	7.7	-1	100.1	57
92	9.5	54.8	1636	331.0	331.2	5.0	15.3	8.5	8.2	-1	100.1	57
93			1627	331.0	328.4	0.4	15.2	8.0	6.7	-1	100.1	57
94	9.4	54.9	1632	331.0	328.4	3.7	15.3	8.3	5.9	-1	100.1	57
95			1622	331.0	328.4	3.7	15.2	7.7	7.4	-1	100.1	58
96			1625	331.0	328.4	4.1	15.2	7.4	7.7	-1	100.1	58
97	9.9	54.6	1611	331.0	328.4	3.6	15.0	8.8	7.0	-1	100.1	58
98			1609	331.0	328.4	2.6	14.8	8.1	8.2	-1	100.1	58
99	10.1	54.7	1642	331.0	328.4	2.9	15.0	9.0	9.9	-1	100.1	58
100	10.8	54.8	1646	331.0	328.4	4.5	15.3	9.7	9.8	-1	100.1	58
101	9.5	54.7	1636	331.0	328.4	4.9	15.3	8.5	8.1	-1	100.1	58
102	9.3	54.7	1618	331.0	328.4	5.2	15.2	8.3	7.8	-1	100.1	57
103	9.3	54.4	1620	331.0	328.4	4.7	15.1	8.3	8.5	-1	100.1	57
104			1617	331.0	328.4	4.8	15.0	7.6	7.7	-1	100.1	57
105			1595	331.0	328.4	3.0	14.6	7.2	7.1	-1	100.1	57
106			1618	331.0	328.4	1.9	14.6	8.2	7.9	-1	100.1	57
107	9.8	54.6	1653	331.0	328.4	2.4	15.0	8.7	8.4	-1	100.1	57
108			1624	331.0	328.4	2.4	14.9	7.8	7.5	-1	100.1	57
109			1611	331.0	328.4	1.5	14.8	8.1	7.5	-1	100.1	57
110	8.8	55.3	1432	331.0	328.4	0.3	14.2	7.2	6.3	-1	100.1	57
111	7.9	54.4	1198	331.0	328.4	0.4	13.6	6.9	5.8	-1	100.1	57
112	7.7	52.4	1110	331.0	328.4	0.2	13.3	7.5	6.0	-1	100.1	57
113	7.7	52.3	1098	331.0	328.4	0.2	13.2	6.0	6.3	-1	100.1	58
114	8.1	52.7	1244	331.0	328.4	0.4	13.8	6.9	7.3	-1	100.1	60
115	8.6	53.9	1362	331.0	328.4	0.2	14.2	7.2	7.1	-1	100.1	60
116	9.9	54.5	1587	331.0	328.4	0.3	14.8	8.8	5.9	-1	100.1	60
117			1613	331.0	328.4	0.2	15.0	7.8	7.2	-1	100.1	60
118			1608	331.0	328.4	0.6	15.0	7.9	9.3	-1	100.1	60
119			1660	331.0	328.4	1.5	15.4	7.9	8.8	-1	100.1	58
120			1631	331.0	328.4	3.3	15.5	7.8	8.5	-1	100.1	56
121	9.5	55.0	1616	331.0	328.4	3.1	15.3	8.5	8.2	-1	100.1	56
122			1586	331.0	328.4	2.5	14.9	7.9	7.7	-1	100.1	56
123			1556	331.0	328.4	1.3	14.4	7.1	7.6	-1	100.1	56
124	8.8	53.5	1414	331.0	328.4	0.1	14.2	7.4	7.2	-1	100.1	56
125	8.2	53.8	1276	331.0	328.4	0.6	13.9	7.9	6.1	-1	100.1	56
126	7.8	52.4	1154	331.0	328.4	0.4	13.4	7.0	6.0	-1	100.1	57
127	7.6	51.5	1059	331.0	328.4	0.3	13.1	6.5	6.1	-1	100.1	57
128	7.3	51.7	954	331.0	328.4	0.4	12.6	6.7	6.9	-1	100.1	57
129	7.5	51.6	1017	331.0	328.4	0.0	12.9	7.1	8.8	-1	100.1	57
130	7.9	51.8	1195	331.0	328.4	0.0	13.6	6.4	9.2	-1	100.1	57
131	9.0	53.0	1476	331.0	328.4	0.4	14.5	8.6	9.0	-1	100.1	57
132	10.3	54.8	1670	331.0	328.4	2.2	15.5	9.2	8.3	-1	100.1	57
133			1633	331.0	328.4	3.6	15.5	8.0	7.6	-1	100.1	57
134			1591	331.0	328.4	2.8	15.0	7.3	7.1	-1	100.1	57
135	9.7	54.7	1628	331.0	328.4	3.1	15.2	8.6	7.6	-1	100.1	57
136	9.3	54.1	1611	331.0	328.4	2.9	15.0	8.3	7.5	-1	100.1	57
137	10.1	54.5	1620	331.0	328.4	2.2	14.9	9.0	6.1	-1	100.1	58
138	9.6	55.7	1624	331.0	328.4	2.1	14.9	8.6	7.2	-1	100.1	59
139	10.2	54.8	1636	331.0	328.4	2.5	15.1	9.1	6.5	-1	100.1	59
140			1568	331.0	328.4	1.6	14.6	8.2	6.3	-1	100.1	59
141			1621	331.0	328.4	0.6	14.7	8.0	6.6	-1	100.1	59
142	9.8	55.0	1635	331.0	328.4	1.0	14.8	8.7	6.9	-1	100.1	59
143			1635	331.0	328.4	1.0	14.9	7.8	8.0	-1	100.1	58
144	9.5	54.6	1623	331.0	328.4	0.4	15.0	8.5	7.4	-1	100.1	58
145	8.7	54.6	1402	331.0	328.4	0.6	14.3	7.2	6.2	-1	100.1	58
146	8.1	53.1	1251	331.0	328.4	0.4	13.7	6.7	5.8	-1	100.1	58
147	8.7	53.1	1402	331.0	328.4	0.5	14.3	7.7	5.7	-1	100.1	58
148	9.3	54.3	1624	331.0	328.4	0.3	15.0	8.3	8.1	-1	100.1	58
149			1611	331.0	328.4	0.7	15.0	7.7	7.1	-1	100.1	58
150			1533	331.0	328.4	0.5	14.7	7.6	6.1	-1	100.1	57
151			1522	331.0	328.4	0.1	14.7	7.3	5.7	-1	100.1	57
152			1591	331.0	328.4	0.1	14.9	7.7	6.6	-1	100.1	57
153			1656	331.0	328.4	2.2	15.6	7.7	6.1	-1	100.1	57
154			1557	331.0	328.4	2.7	15.0	7.0	6.5	-1	100.1	57
155			1614	331.0	328.4	1.9	14.9	7.9	7.5	-1	100.1	58
156			1631	331.0	328.4	2.5	15.1	7.3	7.6	-1	100.1	58
157			1570	331.0	328.4	1.8	14.7	7.0	6.7	-1	100.1	58
158	8.9	54.0	1441	331.0	328.4	0.1	14.1	7.3	7.0	-1	100.1	58
159	8.8	53.8	1419	331.0	328.4	0.1	14.4	7.7	7.1	-1	100.1	58
160			1603	331.0	328.4	0.0	14.9	8.0	7.8	-1	100.1	58
161			1634	331.0	328.4	1.0	15.2	8.1	6.9	-1	100.1	58
162			1571	331.0	328.4	0.6	15.0	7.7	6.0	-1	100.1	58
163	8.1	53.8	1247	331.0	328.4	0.7	13.7	5.9	6.3	-1	100.1	58
164	7.6	51.9	1058	331.0	328.4	0.3	13.0	6.8	5.3	-1	96.1	58
165	7.6	51.6	1075	331.0	328.4	0.0	13.2	7.6	5.3	-1	100.1	59
166	7.6	51.8	1085	331.0	328.4	0.0	13.2	7.7	7.2	-1	100.1	59
167	7.4	51.7	990	331.0	328.4	0.3	12.8	7.5	6.5	-1	100.1	59
168	7.1	50.9	890	331.0	328.4	0.3	12.4	6.3	5.9	-1	100.1	59
169	7.0	50.3	856	331.0	328.4	0.2	12.1	6.5	7.5	-1	100.1	59
170	7.8	50.7	1145	331.0	328.4	0.4	13.3	8.4	7.0	-1	100.1	59
171	10.0	54.2	1514	331.0	328.4	0.5	14.7	8.9	6.1	-1	100.1	59
172	8.6	53.9	1385	331.0	328.4	1.5	14.3	6.9	6.2	-1	100.1	59
173	8.1	52.8	1257	331.0	328.4	0.5	13.9	6.9	6.6	-1	100.1	59
174	7.6	51.7	1067	331.0	328.4	0.4	13.1	6.5	7.3	-1	100.1	59
175	7.2	50.8	925	331.0	328.4	0.4	12.4	6.5	8.3	-1	100.1	59
176			996	331.0	328.4	0.1	12.8	7.7	7.7	-1	100.1	59

Table E.01 Measurement data - Turbine ON

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

***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			1162	331.0	328.4	0.0	13.5	7.2	6.7	-1	100.1	59
178			1222	331.0	328.4	0.4	13.7	6.8	6.7	-1	100.1	59
179	8.2	52.3	1267	331.0	328.4	0.3	13.9	7.6	7.2	-1	100.1	59
180	8.4	52.8	1315	331.0	328.4	0.2	14.0	9.0	7.5	-1	100.1	59
181	8.8	53.9	1415	331.0	328.4	0.1	14.4	8.1	6.8	-1	100.1	59
182	9.2	54.2	1505	331.0	328.4	0.0	14.7	8.8	7.1	-1	100.1	60
183	9.0	54.4	1474	331.0	328.4	0.7	14.6	7.7	7.0	-1	100.1	60
184	8.5	53.5	1356	331.0	328.4	0.4	14.1	7.3	9.1	-1	100.1	60
185	8.6	53.7	1364	331.0	331.1	0.1	14.2	7.7	9.2	-1	100.1	60
186	8.6	54.2	1376	331.0	337.7	0.2	14.3	8.1	8.5	-1	100.1	60
187	8.2	53.9	1282	331.0	340.5	0.6	13.9	7.5	7.9	-1	100.1	60
188	8.1	52.9	1240	331.0	340.5	0.1	13.8	6.8	7.4	-1	100.1	60
189	7.9	54.2	1184	331.0	340.5	0.1	13.6	6.0	7.8	-1	100.1	59
190	7.6	53.0	1067	331.0	340.4	0.3	13.1	5.7	7.5	-1	100.1	59
191	7.3	52.5	942	331.0	340.4	0.3	12.6	6.0	7.5	-1	100.1	59
192	7.0	51.2	824	331.0	340.5	0.3	12.0	5.1	6.9	-1	100.1	59
193	6.9	50.0	804	331.0	340.5	0.3	12.0	6.2	6.6	-1	100.1	59
194	7.1	50.1	875	331.0	340.4	0.0	12.3	6.6	8.2	-1	100.1	60
195	7.9	53.7	1173	331.0	340.4	0.4	13.5	7.8	7.2	-1	100.1	61
196	8.8	53.9	1435	331.0	340.5	0.3	14.6	7.5	7.2	-1	100.1	61
197	8.2	53.4	1274	331.0	340.4	1.1	13.9	6.2	7.0	-1	100.1	61
198	8.1	52.8	1244	331.0	340.4	0.1	13.7	7.0	6.2	-1	100.1	61
199	8.3	53.1	1298	331.0	340.4	0.2	14.0	6.3	6.1	-1	100.1	61
200	7.9	53.3	1196	331.0	340.4	0.5	13.6	7.6	6.0	-1	100.1	62
201	7.6	52.4	1085	331.0	340.4	0.3	13.2	6.1	6.9	-1	100.1	62
202	7.3	51.9	957	331.0	340.4	0.4	12.6	6.7	5.9	-1	100.1	62
203	6.9	50.4	810	331.0	340.5	0.4	11.9	6.4	8.0	-1	100.1	62
204	6.5	48.9	676	331.0	340.5	0.4	11.3	5.4	7.7	-1	100.1	62
205	6.2	49.3	585	331.0	340.5	0.3	10.7	5.8	7.4	-1	100.1	62
206	6.1	48.3	569	331.0	340.5	0.1	10.8	4.7	6.8	-1	100.1	60
207	6.3	48.3	608	331.0	340.5	0.1	10.9	4.8	5.8	-1	100.1	60
208	6.6	48.5	708	331.0	340.5	0.1	11.6	6.5	6.1	-1	100.1	60
209	7.0	50.6	837	331.0	340.4	0.1	12.1	6.1	5.9	-1	100.1	60
210	7.2	51.0	923	331.0	340.4	0.0	12.6	7.9	5.6	-1	100.1	60
211	7.2	51.0	929	331.0	340.4	0.1	12.6	7.5	5.7	-1	100.1	60
212	7.0	51.3	847	331.0	340.4	0.4	12.2	6.5	5.9	-1	100.1	61
213	6.5	50.5	691	331.0	340.5	0.6	11.3	5.7	5.5	-1	100.1	61
214	6.1	48.8	551	331.0	340.5	0.4	10.5	5.1	4.7	-1	100.1	61
215	5.9	48.7	495	331.0	340.5	0.3	10.2	5.1	4.5	-1	100.1	61
216	5.8	48.1	486	331.0	340.5	0.1	10.2	5.3	4.6	-1	100.1	61
217	6.2	48.9	585	331.0	340.5	0.1	10.9	6.0	5.2	-1	100.1	61
218	6.6	49.3	700	331.0	340.5	0.0	11.5	5.4	5.2	-1	100.1	62
219	6.8	49.3	768	331.0	340.5	0.1	11.8	6.4	6.6	-1	100.1	62
220	7.0	50.5	848	331.0	340.4	0.1	12.2	6.0	6.0	-1	100.1	62
221	7.4	51.4	973	331.0	340.4	0.1	12.8	7.4	5.2	-1	100.1	62
222	7.4	51.4	984	331.0	340.4	0.2	12.8	6.5	5.8	-1	100.1	62
223	7.2	50.8	910	331.0	340.4	0.3	12.4	5.4	5.8	-1	100.1	62
224	7.2	51.2	925	331.0	340.4	0.2	12.5	7.2	6.9	-1	100.1	62
225	7.4	52.1	991	331.0	340.4	0.2	12.8	8.1	7.2	-1	100.1	62
226	7.3	52.0	963	331.0	340.4	0.2	12.7	5.7	7.4	-1	100.1	62
227	7.0	51.1	844	331.0	340.4	0.4	12.1	6.4	8.5	-1	100.1	62
228	7.3	49.7	955	331.0	340.4	0.0	12.4	7.3	8.8	-1	100.1	62
229	10.7	53.8	1648	331.0	340.4	1.6	14.9	9.5	8.1	-1	100.1	62
230			1632	331.0	340.4	5.5	15.1	7.5	8.8	-1	100.1	60
231	10.2	55.2	1648	331.0	340.4	6.5	15.5	9.1	8.4	-1	100.1	60
232	9.5	56.3	1603	331.0	340.4	5.7	15.0	8.5	8.1	-1	100.1	60
233			1631	331.0	340.4	6.1	15.2	8.2	8.5	-1	100.1	60
234	9.8	55.3	1608	331.0	340.4	6.0	15.0	8.8	7.3	-1	100.1	60
235			1621	331.0	340.4	5.1	14.9	7.9	6.9	-1	100.1	60
236	9.6	54.3	1627	331.0	339.9	5.2	15.0	8.5	8.5	-1	100.1	60
237			1626	331.0	334.4	4.7	14.9	7.4	8.2	-1	100.1	60
238	10.5	55.6	1642	331.0	331.4	5.4	15.2	9.3	9.0	-1	100.1	60
239			1618	331.0	331.4	5.4	15.0	7.9	8.5	-1	100.1	60
240	9.7	54.8	1638	331.0	331.4	5.4	15.2	8.6	8.0	-1	100.1	60
241			1624	331.0	331.4	5.6	15.1	8.2	7.4	-1	100.1	60
242	9.5	54.9	1620	331.0	331.4	5.2	15.0	8.5	7.2	-1	100.1	60
243	10.2	54.8	1604	331.0	331.4	3.9	14.7	9.1	7.5	-1	100.1	60
244			1631	331.0	331.4	3.5	14.9	7.8	7.7	-1	100.1	60
245			1630	331.0	331.4	3.5	14.9	7.4	8.2	-1	100.1	60
246			1620	331.0	331.4	2.4	14.8	7.3	8.1	-1	100.1	60
247			1646	331.0	331.4	2.9	15.1	7.5	8.1	-1	100.1	60
248	10.1	54.8	1640	331.0	331.4	3.7	15.2	9.0	7.5	-1	100.1	59
249	9.6	54.6	1635	331.0	331.4	4.1	15.3	8.5	8.0	-1	100.1	59
250	10.1	55.6	1637	331.0	331.4	4.8	15.4	9.0	8.1	-1	100.1	59
251	9.5	55.5	1622	331.0	331.4	5.7	15.3	8.4	7.7	-1	100.1	59
252	10.2	55.1	1613	331.0	331.4	5.2	15.1	9.1	7.4	-1	100.1	59
253	10.3	54.7	1619	331.0	331.4	4.8	15.0	9.1	7.1	-1	100.1	59
254			1619	331.0	331.4	4.4	14.9	8.2	7.6	-1	100.1	59
255	10.0	55.3	1628	331.0	331.4	4.7	15.0	8.9	7.9	-1	100.1	59
256			1611	331.0	331.4	3.4	14.8	8.1	7.8	-1	100.1	59
257			1624	331.0	331.4	2.7	14.8	7.9	7.5	-1	100.1	59
258			1649	331.0	331.4	3.4	15.1	8.2	9.0	-1	100.1	59
259	9.4	54.4	1653	331.0	331.4	4.9	15.4	8.4	7.8	-1	100.1	59
260	10.3	54.6	1629	331.0	331.4	5.7	15.4	9.2	7.4	-1	100.1	58
261			1615	331.0	331.4	5.4	15.2	7.2	7.6	-1	100.1	58
262			1613	331.0	331.4	4.9	15.0	8.1	8.2	-1	100.1	58
263			1626	331.0	331.4	5.0	15.0	8.0	8.3	-1	100.1	58
264	9.6	54.7	1626	331.0	331.4	5.1	15.0	8.6	8.2	-1	100.1	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 (%)
265	10.5	54.4	1617	331.0	331.4	4.3	14.9	9.3	8.4	-1	100.1	58
266			1616	331.0	331.4	3.3	14.8	8.1	7.7	-1	100.1	58
267			1622	331.0	331.4	2.5	14.7	8.2	7.1	-1	100.1	58
268	10.0	55.0	1635	331.0	331.4	2.3	14.9	8.9	7.0	-1	100.1	58
269			1626	331.0	331.4	1.9	14.9	7.3	6.9	-1	100.1	58
270			1620	331.0	331.4	1.1	14.7	7.6	7.7	-1	100.1	58
271			1551	331.0	331.4	0.3	14.6	6.9	6.9	-1	100.1	58
272	8.8	53.9	1428	331.0	331.4	0.2	14.4	7.8	7.5	-1	100.1	59
273	8.9	54.0	1456	331.0	331.4	0.0	14.5	7.6	7.9	-1	100.1	59
274			1509	331.0	331.4	0.1	14.7	7.4	8.8	-1	100.1	59
275			1633	331.0	331.4	0.6	15.0	7.9	8.2	-1	100.1	59
276			1634	331.0	331.4	1.6	15.2	7.8	7.8	-1	100.1	59
277			1653	331.0	331.4	2.8	15.5	7.9	7.3	-1	100.1	59
278			1616	331.0	331.4	3.3	15.3	8.1	7.6	-1	100.1	59
279			1646	331.0	331.4	4.8	15.6	8.0	9.7	-1	100.1	58
280			1608	331.0	331.4	5.3	15.3	7.6	8.3	-1	100.1	58
281			1616	331.0	331.4	4.7	15.2	7.6	7.5	-1	100.1	58
282	9.6	54.9	1615	331.0	331.4	5.3	15.1	8.6	7.6	-1	100.1	58
283			1597	331.0	331.4	3.6	14.7	7.7	7.9	-1	100.1	58
284			1599	331.0	331.4	1.8	14.5	7.9	8.2	-1	100.1	57
285	9.1	54.8	1495	331.0	331.4	0.3	14.2	8.5	8.5	-1	100.1	57
286	9.1	54.5	1495	331.0	331.4	0.1	14.6	9.7	8.3	-1	100.1	57
287	9.9	55.2	1682	331.0	331.4	4.1	15.8	8.8	8.6	-1	100.1	57
288			1608	331.0	331.4	5.0	15.4	7.0	9.1	-1	100.1	57
289			1608	331.0	331.4	4.1	15.2	6.2	9.0	-1	100.1	57
290			1572	331.0	331.4	2.9	14.7	7.7	7.9	-1	100.1	57
291			1526	331.0	331.4	1.0	14.1	7.8	8.1	-1	100.1	57
292	10.3	53.5	1579	331.0	331.4	0.6	14.5	9.1	6.8	-1	100.1	57
293			1672	331.0	331.4	3.1	15.6	8.1	6.9	-1	100.1	57
294			1630	331.0	331.4	3.8	15.4	7.7	5.2	-1	100.1	57
295			1615	331.0	331.4	3.4	15.2	7.2	6.0	-1	100.1	57
296			1541	331.0	331.4	2.0	14.6	7.4	6.9	-1	100.1	57
297	8.8	53.2	1416	331.0	331.4	0.3	13.9	6.8	9.1	-1	100.1	57
298	11.3	53.6	1665	331.0	331.4	2.2	15.3	10.1	9.3	-1	100.1	57
299	10.0	55.1	1618	331.0	331.4	5.5	15.4	8.9	8.8	-1	100.1	57
300	9.7	54.2	1629	331.0	331.4	5.1	15.4	8.6	7.3	-1	100.1	57
301	9.9	55.9	1622	331.0	331.4	6.1	15.3	8.8	7.8	-1	100.1	57
302	10.6	55.3	1611	331.0	331.4	5.8	15.1	9.5	8.2	-1	100.1	56
303			1589	331.0	331.4	3.8	14.6	7.8	7.5	-1	100.1	55
304			1601	331.0	331.4	1.9	14.4	8.2	7.1	-1	100.1	55
305	9.7	54.1	1635	331.0	335.5	1.5	14.7	8.6	6.3	-1	100.1	55
306			1521	331.0	337.4	0.8	14.4	8.1	5.9	-1	100.1	55
307	8.5	54.7	1344	331.0	337.4	0.4	14.2	8.4	6.8	-1	100.1	55
308	7.7	52.3	1104	331.0	337.4	0.6	13.1	7.4	7.7	-1	100.1	56
309	7.7	51.4	1119	331.0	337.4	0.0	13.3	7.7	6.9	-1	100.1	57
310	8.3	52.6	1308	331.0	337.4	0.5	14.0	8.5	6.7	-1	100.1	57
311	8.7	54.5	1398	331.0	337.5	0.3	14.3	7.3	6.2	-1	100.1	57
312	8.6	54.7	1378	331.0	337.4	0.5	14.3	6.7	5.9	-1	100.1	57
313	8.2	54.0	1279	331.0	337.4	0.5	14.0	6.6	5.7	-1	100.1	57
314	7.9	52.4	1169	331.0	337.4	0.3	13.4	7.6	6.5	-1	100.1	57
315	8.9	52.9	1441	331.0	337.4	0.5	14.3	8.0	6.8	-1	100.1	57
316	9.6	54.6	1660	331.0	337.5	1.7	15.3	8.6	7.1	-1	100.1	57
317			1557	331.0	337.5	1.9	14.8	7.2	8.1	-1	100.1	57
318			1519	331.0	337.5	0.1	14.5	8.1	7.3	-1	100.1	57
319	8.3	54.1	1300	331.0	337.5	0.1	14.0	7.0	6.8	-1	100.1	57
320	7.7	52.4	1104	331.0	337.4	0.4	13.2	7.2	6.6	-1	100.1	54
321	7.4	51.5	984	331.0	337.4	0.3	12.7	6.5	6.5	-1	100.1	53
322	7.2	50.5	896	331.0	337.4	0.2	12.4	6.0	6.5	-1	100.1	53
323	7.0	51.0	840	331.0	337.5	0.2	12.1	5.8	6.9	-1	100.1	53
324	7.2	50.5	901	331.0	337.4	0.1	12.4	6.3	5.9	-1	100.1	53
325	7.6	51.5	1064	331.0	337.4	0.1	13.2	6.4	5.4	-1	100.1	53
326	7.6	51.0	1053	331.0	337.4	0.3	13.1	6.8	6.2	-1	100.1	53
327	7.4	51.0	981	331.0	337.4	0.3	12.7	6.0	6.1	-1	100.1	53
328	7.5	51.3	1022	331.0	337.4	0.1	13.0	7.3	6.9	-1	100.1	53
329	7.3	50.9	969	331.0	337.4	0.3	12.7	5.9	6.9	-1	100.1	53
330	7.3	50.3	971	331.0	337.4	0.2	12.6	5.3	7.3	-1	100.1	53
331	7.8	51.5	1146	331.0	337.4	0.1	13.5	6.2	7.5	-1	100.1	53
332			1537	331.0	337.5	0.4	14.6	7.7	7.4	-1	100.1	53
333			1657	331.0	337.5	1.3	15.2	8.1	8.1	-1	100.1	52
334			1647	331.0	337.5	2.9	15.4	7.1	7.7	-1	100.1	52
335			1648	331.0	337.5	4.1	15.6	7.9	6.9	-1	100.1	52
336			1610	331.0	337.5	4.3	15.3	7.5	7.2	-1	100.1	52
337			1595	331.0	337.5	3.0	14.9	7.4	7.7	-1	100.1	52
338			1566	331.0	337.4	1.4	14.5	7.1	8.1	-1	100.1	50
339	8.3	54.2	1285	331.0	333.9	0.1	13.7	6.4	8.4	-1	100.1	49
340	7.9	54.0	1165	331.0	328.7	0.1	13.4	6.4	10.2	-1	100.1	49
341	8.3	53.3	1307	331.0	328.4	0.4	14.1	7.0	9.3	-1	100.1	49
342	8.3	53.5	1289	331.0	328.4	0.1	14.0	6.7	9.8	-1	100.1	49
343	8.0	54.3	1209	331.0	328.4	0.2	13.6	6.6	8.2	-1	100.1	49
344	8.3	53.6	1302	331.0	328.4	0.2	13.9	7.7	7.0	-1	100.1	46
345	11.0	55.6	1683	331.0	328.4	2.6	15.5	9.8	8.3	-1	100.1	45
346			1603	331.0	328.4	5.9	15.3	7.2	8.1	-1	100.1	45
347			1596	331.0	328.4	4.0	15.0	6.8	7.6	-1	100.1	45
348			1580	331.0	328.4	2.2	14.5	7.1	8.6	-1	100.1	45
349	10.0	55.4	1661	331.0	328.4	3.2	15.1	8.9	8.5	-1	100.1	45
350	10.9	55.2	1647	331.0	328.4	8.2	15.7	9.7	8.4	-1	100.1	46
351	9.6	55.5	1620	331.0	328.4	8.5	15.4	8.6	8.3	-1	100.1	46
352	11.1	55.4	1615	331.0	328.4	8.7	15.2	9.8	7.9	-1	100.1	46

Table E.01 Measurement data - Turbine ON

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

***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	11.8	54.7	1620	331.0	328.4	9.0	15.1	10.5	8.1	-1	100.1	46
354	12.3	55.1	1623	331.0	328.4	8.7	15.0	10.9	7.7	-1	100.1	46
355	12.4	55.6	1627	331.0	328.4	9.0	15.1	11.0	10.1	-1	100.1	46
356	11.0	54.6	1621	331.0	328.4	8.4	15.0	9.8	10.0	-1	100.1	44
357	11.5	55.8	1634	331.0	328.4	8.6	15.1	10.2	10.1	-1	100.1	43
358	11.5	56.0	1633	331.0	328.4	10.2	15.2	10.2	11.6	-1	100.1	43
359	11.6	56.2	1621	331.0	328.4	10.3	15.1	10.3	10.9	-1	100.1	43
360	12.8	57.2	1624	331.0	328.4	9.9	15.0	11.4	9.8	-1	100.1	43
361	10.9	56.8	1617	331.0	328.4	8.6	14.9	9.7	8.8	-1	100.1	43
362	10.1	56.2	1620	331.0	328.4	7.0	14.8	9.0	8.8	-1	100.1	44
363	10.1	55.9	1643	331.0	328.4	6.9	15.0	9.0	9.8	-1	100.1	45
364	10.4	56.2	1621	331.0	328.4	7.0	14.9	9.3	8.1	-1	100.1	45
365	9.5	55.7	1613	331.0	328.4	5.7	14.7	8.4	7.0	-1	100.1	45
366	9.5	55.1	1624	331.0	328.4	4.6	14.7	8.5	8.0	-1	100.1	45
367	9.9	54.7	1639	331.0	329.6	4.4	14.9	8.8	7.9	-1	100.1	45
368	9.3	54.1	1636	331.0	334.2	4.5	15.0	8.3	7.6	-2	100.1	46
369	10.3	54.1	1646	331.0	334.4	5.5	15.3	9.1	7.6	-2	100.1	46
370	9.8	55.2	1614	331.0	334.4	5.0	15.0	8.7	8.4	-2	100.1	46
371	10.1	54.3	1633	331.0	334.4	4.9	15.1	9.0	8.2	-2	100.1	46
372	10.4	54.0	1639	331.0	334.4	6.7	15.4	9.3	7.1	-2	100.1	46
373	10.3	54.6	1615	331.0	334.4	6.4	15.1	9.2	8.7	-2	100.1	46
374	5.7	47.3	452	313.0	319.4	0.5	10.1	6.4	5.3	-1	99.0	73
375	5.9	48.0	498	313.0	319.4	0.6	10.3	5.8	5.8	-1	99.0	73
376	6.0	47.4	536	313.0	319.4	0.5	10.6	6.2	4.7	-1	99.0	73
377	6.1	48.2	560	313.0	319.4	0.7	10.7	5.5	6.6	-1	99.0	73
378	6.0	48.0	528	313.0	319.4	0.7	10.5	5.0	7.2	-1	99.0	73
379	5.9	47.8	506	313.0	319.4	0.7	10.3	5.0	7.2	-1	99.0	73
380	6.0	47.4	523	313.0	319.4	0.5	10.5	5.3	7.1	-1	99.0	73
381	6.1	47.7	550	313.0	319.4	0.6	10.7	6.5	6.0	-1	99.0	73
382	6.0	48.4	526	313.0	319.4	0.9	10.4	5.5	5.9	-1	99.0	72
383	5.8	47.8	472	313.0	319.4	0.7	10.1	4.8	6.0	-1	99.0	72
384	5.7	47.7	457	313.0	319.4	0.7	10.0	5.2	6.4	-1	99.0	72
385	5.8	47.8	468	313.0	319.4	0.6	10.1	5.3	5.9	-1	99.0	72
386	5.8	47.1	477	313.0	319.4	0.7	10.2	5.1	6.1	-1	99.0	72
387	5.7	47.3	462	313.0	319.4	0.7	10.0	5.5	5.4	-1	99.0	72
388	5.8	47.5	485	313.0	319.4	0.5	10.2	6.3	5.2	-1	99.0	74
389	6.3	48.0	631	313.0	319.4	0.3	11.1	5.7	4.8	-1	99.0	74
390	7.2	49.4	930	313.0	319.4	0.2	12.6	6.9	4.9	-1	99.0	74
391	7.7	51.7	1120	313.0	319.4	0.6	13.4	6.4	4.8	-1	99.0	74
392	7.8	52.2	1146	313.0	319.4	0.7	13.4	6.8	5.8	-1	99.0	74
393	8.0	52.6	1220	313.0	319.4	0.7	13.7	7.3	5.2	-1	99.0	74
394	8.5	53.6	1356	313.0	319.4	0.4	14.2	6.9	5.4	-1	99.0	74
395	8.5	54.1	1360	313.0	319.4	0.5	14.2	7.3	5.5	-1	99.0	74
396	8.4	53.7	1318	313.0	319.4	0.5	14.1	7.6	6.0	-1	99.0	74
397	8.3	53.5	1286	313.0	319.4	0.1	14.0	7.5	5.9	-1	99.0	74
398	8.0	52.8	1210	313.0	319.4	0.4	13.7	6.8	5.1	-1	99.0	74
399	7.9	52.0	1170	313.0	319.4	0.2	13.5	7.4	5.7	-1	99.0	74
400	8.3	52.6	1286	313.0	319.4	0.1	14.0	8.6	7.0	-1	99.0	74
401	8.6	53.5	1368	313.0	319.4	0.1	14.3	7.5	7.0	-1	99.0	74
402	8.0	53.0	1209	313.0	319.4	0.8	13.7	6.4	6.3	-1	99.0	74
403	7.6	51.8	1053	313.0	319.4	0.4	13.0	7.0	6.9	-1	99.0	74
404	7.5	51.7	1012	313.0	319.4	0.2	12.9	6.3	6.9	-1	99.0	74
405	7.4	50.7	984	313.0	319.4	0.2	12.8	6.2	6.6	-1	99.0	74
406	7.3	50.7	956	313.0	319.4	0.2	12.7	6.6	7.0	-1	99.0	73
407	7.2	50.8	919	313.0	319.4	0.2	12.5	6.9	6.2	-1	99.0	73
408	6.9	50.1	806	313.0	319.4	0.2	12.0	6.1	6.9	-1	99.0	73
409	6.5	49.4	692	313.0	319.4	0.4	11.3	5.9	6.2	-1	99.0	73
410	6.6	48.6	712	313.0	319.4	0.0	11.5	6.4	6.6	-1	99.0	73
411	6.8	50.0	765	313.0	319.4	0.1	11.8	5.9	6.9	-1	99.0	73
412	6.8	49.5	766	313.0	319.4	0.2	11.8	6.1	6.4	-1	99.0	73
413	6.8	49.5	763	313.0	319.4	0.2	11.8	6.4	6.2	-1	99.0	73
414	6.7	49.5	749	313.0	319.4	0.2	11.7	6.1	6.4	-1	99.0	73
415	6.7	48.8	740	313.0	319.4	0.2	11.6	6.8	6.3	-1	99.0	73
416	6.7	49.4	745	313.0	319.4	0.2	11.7	6.3	6.1	-1	99.0	73
417	6.5	49.3	679	313.0	319.4	0.4	11.3	5.4	5.6	-1	99.0	73
418	6.2	49.1	592	313.0	319.4	0.4	10.8	5.7	5.0	-1	99.0	73
419	6.1	48.5	567	313.0	319.4	0.2	10.7	5.8	5.1	-1	99.0	73
420	6.2	48.8	582	313.0	319.4	0.2	10.8	6.5	4.9	-1	99.0	73
421	6.1	48.9	572	313.0	319.4	0.2	10.7	6.4	4.5	-1	99.0	73
422	6.1	48.3	574	313.0	319.4	0.1	10.7	5.1	4.3	-1	99.0	73
423	6.3	49.2	610	313.0	319.4	0.1	11.1	5.9	4.1	-1	99.0	73
424	6.2	49.2	579	313.0	319.4	0.4	10.7	5.7	4.6	-1	99.0	75
425	6.0	47.7	526	313.0	319.4	0.3	10.4	5.2	4.1	-1	99.0	75
426	5.9	46.9	510	313.0	319.4	0.2	10.3	5.4	3.9	-1	99.0	75
427	5.9	47.5	512	313.0	319.4	0.2	10.4	6.4	4.5	-1	99.0	75
428	5.9	47.2	501	313.0	319.4	0.3	10.3	5.8	4.1	-1	99.0	75
429	5.6	46.9	426	313.0	319.4	0.4	9.8	5.2	4.8	-1	99.0	75
430	5.4	46.3	373	313.0	319.4	0.4	9.6	5.1	4.8	-1	99.0	75
431	5.4	47.4	384	313.0	319.4	0.3	9.5	4.8	5.9	-1	99.0	75
432	5.4	47.0	373	313.0	319.4	0.3	9.5	4.6	5.7	-1	99.0	75
433	5.7	46.8	453	313.0	319.4	0.1	9.8	4.9	6.3	-1	99.0	75
434	6.0	47.5	525	313.0	319.4	0.0	10.6	5.0	6.5	-1	99.0	75
435	6.2	48.5	593	313.0	319.4	0.1	10.9	5.4	6.6	-1	99.0	75
436	6.3	49.7	619	313.0	319.4	0.1	11.1	5.1	5.0	-1	99.0	74
437	6.2	49.3	594	313.0	319.4	0.3	10.8	5.4	5.9	-1	99.0	74
438	6.1	48.6	562	313.0	319.4	0.3	10.7	5.0	5.6	-1	99.0	74
439	6.1	48.8	565	313.0	319.4	0.2	10.7	5.8	5.0	-1	99.0	74
440	6.3	49.1	627	313.0	319.4	0.0	11.1	6.0	4.8	-1	99.0	74

***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	6.7	49.3	736	313.0	319.4	0.0	11.6	6.7	4.9	-1	99.0	74
442	7.1	50.0	880	313.0	319.4	0.0	12.4	6.7	4.3	-1	99.0	75
443	7.3	50.8	953	313.0	319.4	0.1	12.7	6.8	5.6	-1	99.0	75
444	7.2	51.2	924	313.0	319.4	0.2	12.5	6.8	5.7	-1	99.0	75
445	7.0	51.0	856	313.0	319.4	0.3	12.2	6.2	6.1	-1	99.0	75
446	7.0	50.4	825	313.0	319.4	0.2	12.1	6.6	6.0	-1	99.0	75
447	6.9	50.2	822	313.0	319.4	0.2	12.1	6.7	7.2	-1	99.0	75
448	6.9	50.4	821	313.0	319.4	0.2	12.1	6.4	6.8	-1	99.0	74
449	7.0	49.8	843	313.0	319.4	0.2	12.2	6.2	5.4	-1	99.0	74
450	7.1	50.4	858	313.0	319.4	0.2	12.3	6.2	4.8	-1	99.0	74
451	7.0	50.4	825	313.0	319.4	0.2	12.0	6.2	5.1	-1	99.0	74
452	6.9	50.0	795	313.0	319.4	0.2	12.0	5.9	4.8	-1	99.0	74
453	6.7	49.5	738	313.0	319.4	0.2	11.6	5.9	4.6	-1	99.0	75
454	6.7	49.3	731	313.0	319.4	0.2	11.6	5.9	5.0	-1	99.0	76
455	6.9	49.8	803	313.0	319.4	0.2	12.0	6.4	4.9	-1	99.0	76
456	7.2	50.2	896	313.0	319.4	0.2	12.4	7.1	4.5	-1	99.0	76
457	7.4	50.5	995	313.0	319.4	0.2	12.9	6.9	4.8	-1	99.0	76
458	7.6	51.8	1051	313.0	319.4	0.2	13.1	6.3	5.3	-1	99.0	76
459	7.6	51.7	1065	313.0	319.4	0.2	13.2	6.8	5.4	-1	99.0	76
460	7.5	51.6	1034	313.0	319.4	0.2	13.0	6.3	4.6	-1	99.0	76
461	7.5	51.7	1011	313.0	319.4	0.2	12.9	6.3	4.7	-1	99.0	76
462	7.3	50.8	963	313.0	319.4	0.2	12.7	6.2	4.9	-1	99.0	76
463	7.2	50.1	907	313.0	319.4	0.2	12.5	6.7	5.6	-1	99.0	76
464	7.0	50.2	834	313.0	319.4	0.2	12.1	5.7	6.6	-1	99.0	76
465	6.8	50.2	765	313.0	319.4	0.2	11.8	6.3	6.6	-1	99.0	76
466	6.6	49.1	718	313.0	319.4	0.2	11.6	5.8	6.0	-1	99.0	75
467	6.5	49.2	669	313.0	319.4	0.2	11.3	6.0	5.6	-1	99.0	75
468	6.3	49.6	634	313.0	319.4	0.2	11.1	6.2	5.3	-1	99.0	75
469	6.4	49.3	648	313.0	319.4	0.1	11.2	5.4	4.4	-1	99.0	75
470			1600	313.0	313.3	1.2	15.0	7.9	6.0	-1	99.1	76
471	9.1	55.8	1491	313.0	313.3	0.7	14.5	7.2	5.2	-1	99.1	76
472	8.2	54.2	1273	313.0	313.3	0.2	13.9	6.4	5.3	-1	99.1	76
473	7.6	52.1	1049	313.0	313.3	0.3	13.0	6.0	5.2	-1	99.1	76
474	7.0	50.6	827	313.0	313.3	0.5	12.0	5.4	4.9	-1	99.1	76
475	6.6	49.4	724	313.0	313.3	0.3	11.6	5.8	4.9	-1	99.1	76
476	6.8	49.3	790	313.0	313.3	0.1	11.9	6.4	4.6	-1	99.1	76
477	7.6	51.1	1073	313.0	313.3	0.2	13.1	7.4	5.3	-1	99.1	77
478	8.8	53.2	1436	313.0	313.3	0.1	14.5	9.4	6.9	-1	99.1	77
479	10.1	55.1	1550	313.0	313.3	0.9	14.8	9.0	7.4	-1	99.1	77
480	10.5	55.3	1665	313.0	313.3	2.0	15.4	9.4	8.3	-1	99.1	77
481			1640	313.0	313.3	4.6	15.6	8.2	6.4	-1	99.1	77
482			1613	313.0	313.3	3.7	15.3	6.9	6.2	-1	99.1	77
483			1605	313.0	313.3	3.8	15.1	7.8	6.7	-1	99.1	75
484			1585	313.0	313.3	2.1	14.6	7.2	7.8	-1	99.1	75
485			1612	313.0	313.3	1.2	14.6	7.6	7.9	-1	99.1	75
486	10.3	55.7	1637	313.0	313.3	0.9	14.8	9.1	8.2	-1	99.1	75
487	10.2	55.3	1649	313.0	313.3	1.6	15.1	9.1	8.5	-1	99.1	75
488	9.6	54.8	1651	313.0	313.3	2.3	15.3	8.5	7.9	-1	99.1	75
489	9.4	54.7	1645	313.0	313.3	4.0	15.5	8.4	8.0	-1	99.1	74
490			1592	313.0	313.3	2.9	15.0	7.1	8.0	-1	99.1	74
491			1508	313.0	313.3	1.5	14.3	7.5	8.6	-1	99.1	74
492	8.7	53.9	1404	313.0	313.3	0.1	14.1	8.2	7.5	-1	99.1	74
493	9.3	54.2	1510	313.0	313.3	0.0	14.8	8.3	8.7	-1	99.1	74
494	9.3	55.1	1516	313.0	313.3	0.8	14.7	8.2	8.2	-1	99.1	74
495	9.1	55.2	1495	313.0	313.4	0.1	14.6	8.2	7.9	-1	99.1	74
496	8.9	54.6	1447	313.0	313.4	0.4	14.5	7.6	7.6	-1	99.1	74
497	8.5	54.0	1361	313.0	313.4	0.4	14.2	7.4	7.2	-1	99.1	74
498	8.2	53.4	1268	313.0	313.4	0.3	13.9	6.6	7.2	-1	99.1	74
499	7.8	53.1	1130	313.0	313.3	0.3	13.4	6.1	7.9	-1	99.1	74
500	7.3	52.1	968	313.0	313.4	0.4	12.7	6.5	7.5	-1	99.1	74
501	7.1	50.4	859	313.0	313.4	0.4	12.2	6.9	7.8	-1	99.1	74
502	7.1	50.4	883	313.0	313.4	0.1	12.4	7.0	7.5	-1	99.1	74
503	7.1	50.5	886	313.0	313.4	0.2	12.4	7.6	8.2	-1	99.1	74
504	7.1	50.2	876	313.0	313.4	0.2	12.3	7.2	8.5	-1	99.1	74
505	7.1	50.7	892	313.0	313.4	0.2	12.5	7.3	7.3	-1	99.1	74
506	7.0	50.3	824	313.0	313.4	0.4	12.0	6.3	7.2	-1	99.1	74
507	6.9	49.8	798	313.0	313.4	0.2	12.0	6.8	6.8	-1	99.1	74
508	7.0	50.9	840	313.0	313.4	0.1	12.2	6.8	6.9	-1	99.1	74
509	7.1	50.9	869	313.0	313.4	0.1	12.3	6.5	7.5	-1	99.1	74
510	7.1	50.4	870	313.0	313.4	0.1	12.3	5.6	7.1	-1	99.1	74
511	7.0	50.4	843	313.0	313.4	0.1	12.1	6.3	6.7	-1	99.1	74
512	6.8	50.6	790	313.0	313.4	0.2	11.9	5.6	7.0	-1	99.1	74
513	6.6	50.2	723	313.0	313.4	0.3	11.5	5.5	7.7	-1	99.1	75
514	6.5	49.9	686	313.0	313.4	0.2	11.4	5.3	6.3	-1	99.1	75
515	6.3	49.2	635	313.0	313.4	0.3	11.1	5.4	7.3	-1	99.1	75
516	6.3	49.2	616	313.0	313.4	0.2	10.9	4.9	6.5	-1	99.1	75
517	6.8	49.9	786	313.0	313.4	0.2	11.9	7.4	6.6	-1	99.1	75
518	7.5	51.0	1047	313.0	313.4	0.1	13.1	7.5	7.6	-1	99.1	75
519	7.9	52.1	1170	313.0	313.3	0.2	13.6	7.2	7.6	-1	99.1	75
520	7.9	52.3	1194	313.0	314.1	0.3	13.6	8.0	6.8	-1	99.1	75
521	7.9	52.8	1164	313.0	316.4	0.3	13.5	7.5	6.9	-1	99.1	75
522	7.8	52.4	1153	313.0	316.4	0.2	13.5	7.8	6.9	-1	99.1	75
523	7.5	52.4	1012	313.0	316.4	0.5	12.9	6.5	6.4	-1	99.1	75
524	7.0	50.9	853	313.0	316.4	0.4	12.2	6.4	6.4	-1	99.1	75
525	6.7	49.7	753	313.0	316.4	0.3	11.7	5.6	6.3	-1	99.1	75
526	6.6	49.9	711	313.0	316.4	0.3	11.5	5.8	5.6	-1	99.1	75
527	7.3	49.8	938	313.0	316.4	0.1	12.3	6.4	5.3	-1	99.1	75
528	10.8	53.7	1661	313.0	316.4	1.9	14.9	9.6	5.4	-1	99.1	75

Table E.01 Measurement data - Turbine ON

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

***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			1591	313.0	316.3	4.5	14.8	7.7	6.1	-1	99.1	75
530	9.8	55.9	1637	313.0	316.4	3.3	15.0	8.7	5.9	-1	99.1	75
531			1650	313.0	316.4	5.2	15.4	8.2	7.2	-1	99.1	75
532	10.6	54.9	1633	313.0	316.4	6.1	15.3	9.4	8.3	-1	99.1	75
533	10.9	54.8	1625	313.0	316.4	7.1	15.4	9.7	8.3	-1	99.1	75
534	10.5	54.4	1609	313.0	316.4	6.0	15.0	9.3	7.6	-1	99.1	75
535	10.4	54.3	1622	313.0	316.4	6.3	15.1	9.2	8.0	-1	99.1	75
536	10.5	54.6	1617	313.0	316.4	6.0	14.9	9.3	9.0	-1	99.1	75
537	9.4	54.6	1620	313.0	316.4	5.4	14.9	8.4	8.9	-1	99.1	74
538	9.3	54.7	1617	313.0	316.4	4.4	14.8	8.3	8.8	-1	99.1	74
539	9.5	54.2	1623	313.0	319.0	3.2	14.7	8.5	8.1	-1	99.1	74
540	10.1	55.0	1655	313.0	324.7	4.8	15.2	9.0	9.3	-1	99.1	74
541			1630	313.0	325.4	4.6	15.1	7.7	8.2	-1	99.1	74
542	9.4	54.1	1629	313.0	325.4	5.0	15.2	8.4	7.4	-1	99.1	74
543			1602	313.0	325.4	3.7	14.8	8.0	6.5	-1	99.1	73
544			1606	313.0	325.4	2.1	14.6	7.5	6.4	-1	99.1	73
545			1591	313.0	325.4	0.8	14.4	7.5	7.1	-1	99.1	73
546	8.6	53.5	1380	313.0	325.4	0.4	14.3	6.5	7.3	-1	99.1	73
547	8.2	53.5	1279	313.0	325.4	0.7	13.9	6.7	7.6	-1	99.1	73
548	8.1	52.5	1237	313.0	325.4	0.3	13.7	6.5	7.4	-1	99.1	73
549	8.0	52.9	1224	313.0	325.4	0.1	13.8	6.0	7.2	-1	99.1	74
550	7.7	51.7	1113	313.0	325.4	0.3	13.3	6.9	6.7	-1	99.1	74
551	7.7	51.7	1092	313.0	325.4	0.2	13.2	6.7	6.1	-1	99.1	74
552	7.8	51.7	1125	313.0	325.4	0.1	13.4	6.3	5.9	-1	99.1	74
553	7.7	51.7	1118	313.0	325.4	0.2	13.4	7.1	5.4	-1	99.1	74
554	7.7	51.7	1120	313.0	325.4	0.2	13.3	6.7	5.4	-1	99.1	74
555	8.8	53.0	1435	313.0	325.4	0.8	14.3	7.6	4.8	-1	99.1	75
556			1645	313.0	325.4	0.7	15.1	8.0	5.3	-1	99.1	75
557			1508	313.0	325.4	0.8	14.7	7.7	5.1	-1	99.1	75
558	8.8	54.1	1435	313.0	325.4	0.1	14.4	8.5	7.5	-1	99.1	75
559	9.8	54.8	1563	313.0	325.4	0.4	14.9	8.8	8.3	-1	99.1	75
560			1653	313.0	325.4	1.9	15.5	7.3	7.0	-1	99.1	75
561			1562	313.0	325.4	2.0	14.9	6.6	7.0	-1	99.1	74
562			1620	313.0	325.4	1.5	15.0	8.0	6.7	-1	99.1	74
563			1646	313.0	325.4	3.4	15.4	7.8	5.9	-1	99.1	74
564			1627	313.0	325.4	3.6	15.2	7.3	7.5	-1	99.1	74
565			1615	313.0	325.4	3.8	15.2	7.1	7.0	-1	99.1	74
566			1610	313.0	325.4	2.8	14.9	7.9	6.5	-1	99.1	74
567			1627	313.0	325.4	3.1	15.0	7.2	6.1	-1	99.1	74
568			1611	313.0	325.4	2.3	14.8	7.2	6.6	-1	99.1	74
569			1634	313.0	325.4	1.9	14.9	7.7	6.6	-1	99.1	74
570			1638	313.0	325.4	2.7	15.1	7.2	5.4	-1	99.1	74
571			1631	313.0	325.4	2.5	15.1	7.1	7.0	-1	99.1	74
572			1640	313.0	325.4	3.5	15.3	6.9	7.2	-1	99.1	74
573			1633	313.0	325.4	3.7	15.3	7.8	7.1	-1	99.1	73
574			1628	313.0	325.4	4.4	15.3	7.6	8.2	-1	99.1	73
575			1608	313.0	325.4	3.6	15.0	6.7	6.7	-1	99.1	73
576			1619	313.0	325.4	3.7	15.0	7.3	6.9	-1	99.1	73
577	10.0	54.7	1637	313.0	325.4	3.7	15.1	8.9	7.8	-1	99.1	73
578			1639	313.0	325.4	5.5	15.4	8.0	7.1	-1	99.1	73
579			1628	313.0	325.4	5.7	15.3	8.2	6.4	-1	99.1	73
580	9.5	55.2	1625	313.0	325.4	6.1	15.3	8.5	6.4	-1	99.1	73
581			1592	313.0	325.4	4.8	14.8	7.6	7.6	-1	99.1	73
582	9.2	54.2	1501	313.0	325.4	1.9	13.9	7.5	6.4	-1	99.1	73
583	8.7	54.5	1407	313.0	325.4	0.2	13.9	7.8	7.5	-1	99.1	73
584			1560	313.0	320.6	0.3	14.9	7.4	6.9	-1	99.1	73
585	9.4	55.8	1642	313.0	316.3	1.7	15.2	8.4	5.8	-1	99.1	73
586	10.4	54.9	1661	313.0	316.3	3.5	15.7	9.2	7.6	-1	99.1	73
587	9.8	55.4	1636	313.0	316.3	5.0	15.7	8.8	8.0	-1	99.1	73
588	9.7	55.2	1610	313.0	316.3	5.3	15.4	8.6	7.7	-1	99.1	73
589	10.5	54.6	1611	313.0	316.3	5.0	15.2	9.4	8.8	-1	99.1	73
590	10.6	54.9	1620	313.0	316.3	5.9	15.2	9.5	8.3	-1	99.1	73
591	9.8	54.9	1614	313.0	316.3	5.6	15.0	8.7	8.0	-1	99.1	72
592	9.6	54.8	1617	313.0	316.3	5.1	15.0	8.5	7.5	-1	99.1	72
593	9.3	54.7	1618	313.0	316.3	4.5	14.9	8.3	8.3	-1	99.1	72
594			1628	313.0	316.3	3.7	14.9	7.6	8.1	-1	99.1	72
595	9.7	54.9	1642	313.0	316.3	5.1	15.2	8.6	7.7	-1	99.1	72
596			1628	313.0	316.3	5.0	15.1	7.8	7.1	-1	99.1	72
597			1615	313.0	316.3	4.3	14.9	7.9	7.0	-1	99.1	73
598	10.4	54.8	1628	313.0	316.3	4.0	15.0	9.2	7.4	-1	99.1	73
599	9.6	55.4	1616	313.0	316.3	3.8	14.9	8.5	7.4	-1	99.1	73
600	9.2	55.1	1507	313.0	316.3	1.6	14.1	7.4	6.7	-1	99.1	73
601	7.9	53.7	1166	313.0	316.3	0.0	13.4	6.4	6.5	-1	99.1	73
602	7.8	53.1	1135	313.0	316.3	0.1	13.4	7.3	5.9	-1	99.1	74
603	7.9	52.7	1190	313.0	316.3	0.1	13.6	6.3	6.0	-1	99.1	74
604	7.7	53.0	1107	313.0	316.3	0.3	13.3	6.2	5.9	-1	99.1	74
605	7.3	51.8	957	313.0	316.3	0.3	12.6	6.5	5.6	-1	99.1	74
606	7.3	51.1	934	313.0	316.3	0.1	12.6	6.5	5.7	-1	99.1	74
607			508	331.0	346.6	13.9	11.1	9.1	8.5	-2	100.2	52
608			670	331.0	346.6	12.2	11.6	8.8	10.2	-2	100.2	52
609			753	331.0	346.5	11.6	12.8	9.3	10.5	-2	100.2	52
610			1107	331.0	346.5	10.3	14.1	10.5	10.4	-2	100.2	52
611			1469	331.0	346.6	9.3	14.9	10.2	10.9	-2	100.2	51
612			1636	331.0	346.5	8.5	15.0	9.4	9.7	-2	100.2	50
613			1620	331.0	346.5	7.2	14.8	10.2	9.1	-2	100.2	50
614			1637	331.0	346.5	8.2	15.1	11.6	10.0	-2	100.2	50
615			1632	331.0	346.5	8.3	15.1	10.7	10.6	-2	100.2	50
616			1621	331.0	346.5	8.9	15.1	10.5	10.5	-2	100.2	50

***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			1626	331.0	346.5	8.3	15.0	9.3	9.6	-2	100.2	50
618			1617	331.0	346.5	7.9	14.9	10.2	9.5	-2	100.2	50
619			1617	331.0	346.5	6.3	14.8	8.4	9.7	-2	100.2	50
620			1624	331.0	346.5	5.5	14.8	9.0	10.0	-2	100.2	50
621			1654	331.0	346.5	6.2	15.1	9.0	9.3	-2	100.2	50
622			1626	331.0	346.5	7.3	15.1	9.6	10.4	-2	100.2	50
623			1627	331.0	346.5	7.1	15.2	10.2	9.0	-2	100.2	50
624			1634	331.0	346.5	8.1	15.3	10.5	9.2	-2	100.2	50
625			1609	331.0	346.5	8.0	15.0	9.6	9.2	-2	100.2	50
626			1610	331.0	346.5	5.8	14.7	8.3	9.2	-2	100.2	50
627			1628	331.0	346.5	6.0	14.8	8.0	8.5	-2	100.2	50
628			1618	331.0	346.5	4.7	14.7	7.4	8.1	-2	100.2	50
629			1635	331.0	346.5	4.5	14.9	7.3	8.4	-2	100.2	53
630			1633	331.0	346.5	4.6	15.0	6.1	10.6	-2	100.2	54
631			1660	331.0	346.5	5.8	15.4	7.9	8.6	-2	100.2	54
632			1650	331.0	346.5	8.4	15.6	10.3	8.3	-2	100.2	54
633			1621	331.0	346.5	9.8	15.4	10.6	8.7	-2	100.2	54
634			1606	331.0	346.5	8.4	14.9	8.7	10.5	-2	100.2	54
635			1626	331.0	346.5	7.7	15.0	7.1	10.2	-2	100.2	53
636			1625	331.0	346.5	7.3	15.0	8.0	9.0	-2	100.2	52
637			1619	331.0	346.5	6.4	14.8	8.0	8.3	-2	100.2	52
638			1635	331.0	343.7	6.0	14.9	8.1	8.9	-2	100.2	52
639	10.5	55.7	1646	331.0	337.0	7.1	15.2	9.3	10.3	-2	100.2	52
640	9.7	55.1	1629	331.0	334.5	7.6	15.2	8.6	9.1	-2	100.2	52
641	10.1	55.6	1615	331.0	334.5	7.0	15.0	9.0	8.5	-2	100.2	52
642	10.0	55.0	1624	331.0	334.5	6.6	15.0	8.9	9.5	-2	100.2	52
643	9.4	55.0	1630	331.0	334.5	6.7	15.1	8.4	9.2	-2	100.2	52
644	9.6	55.4	1620	331.0	334.5	6.5	15.0	8.6	8.6	-2	100.2	52
645			1611	331.0	334.5	5.0	14.7	7.9	7.0	-2	100.2	52
646			1610	331.0	334.5	3.3	14.5	8.0	8.7	-2	100.2	52
647			1616	331.0	334.5	1.7	14.4	7.7	7.7	-2	100.2	51
648			1646	331.0	334.5	1.8	14.8	8.0	6.9	-2	100.2	50
649			1558	331.0	334.5	0.8	14.5	7.7	6.0	-2	100.2	50
650	8.2	54.4	1283	331.0	334.5	0.3	14.0	6.8	5.5	-2	100.2	50
651	7.8	53.9	1160	331.0	334.5	0.3	13.5	6.8	6.3	-2	100.2	50
652	7.4	53.1	1006	331.0	334.5	0.3	12.9	5.5	5.8	-2	100.2	50
653	7.0	52.8	832	331.0	334.5	0.4	12.0	6.0	6.0	-2	100.2	53
654	6.7	52.1	741	331.0	334.5	0.4	11.7	6.2	5.8	-2	100.2	54
655	6.5	56.0	681	331.0	334.5	0.3	11.3	5.8	5.5	-2	100.2	54
656	6.4	51.1	646	331.0	334.5	0.2	11.1	5.7	6.4	-2	100.2	54
657	6.4	50.1	638	331.0	334.5	0.1	11.1	5.4	6.9	-2	100.2	54
658	6.3	49.7	635	331.0	335.2	0.1	11.1	5.7	7.2	-2	100.2	54
659	6.5	51.1	691	331.0	340.9	0.0	11.4	6.8	6.9	-2	100.2	53
660			848	331.0	346.2	0.1	12.2	7.1	6.9	-2	100.2	53
661			1164	331.0	346.5	0.4	13.5	7.5	7.3	-2	100.2	53
662			1613	331.0	346.5	0.1	15.0	7.3	8.2	-2	100.2	53
663			1594	331.0	346.5	1.8	15.0	7.0	7.8	-2	100.2	53
664			1635	331.0	346.5	1.6	15.1	6.9	9.4	-2	100.2	53
665			1618	331.0	346.5	3.2	15.3	7.8	8.7	-2	100.2	55
666			1583	331.0	346.5	2.1	14.8	7.1	6.8	-2	100.2	55
667			1581	331.0	346.5	1.2	14.7	9.4	6.9	-2	100.2	55
668			1346	331.0	346.5	0.3	13.9	7.9	7.7	-2	100.2	55
669			1401	331.0	346.5	0.1	14.4	8.6	8.1	-2	100.2	55
670			1488	331.0	346.5	0.1	14.6	8.2	7.6	-2	100.2	55
671			1564	331.0	346.5	0.4	14.8	7.4	9.1	-2	100.2	58
672			1646	331.0	346.5	1.4	15.4	7.3	8.5	-2	100.2	59
673			1633	331.0	346.5	2.1	15.3	7.5	8.5	-2	100.2	59
674			1656	331.0	346.5	3.9	15.7	8.3	9.7	-2	100.2	59
675			1619	331.0	346.5	5.4	15.5	8.1	10.0	-2	100.2	59
676			1611	331.0	346.5	5.2	15.3	9.4	10.1	-2	100.2	59
677			1611	331.0	346.5	5.2	15.2	8.5	10.3	-2	100.2	54
678			1604	331.0	346.5	4.3	14.9	8.2	10.1	-2	100.2	53
679			1625	331.0	349.6	3.7	14.9	8.5	10.5	-2	100.2	53
680			1654	331.0	353.5	5.8	15.4	9.9	11.1	-2	100.2	53
681			1636	331.0	353.5	6.8	15.4	9.3	10.7	-2	100.2	53
682			1625	331.0	353.5	7.2	15.3	9.3	10.6	-2	100.2	53
683			1616	331.0	353.5	7.1	15.1	9.7	10.3	-2	100.2	53
684			1627	331.0	353.5	8.1	15.3	10.6	9.3	-2	100.2	53
685			1613	331.0	353.5	7.5	15.0	9.0	8.6	-2	100.2	53
686			1633	331.0	353.5	8.0	15.2	9.5	8.4	-2	100.2	53
687			1616	331.0	353.5	7.6	15.0	10.2	8.7	-2	100.2	53
688			1611	331.0	353.5	6.2	14.8	8.5	8.2	-2	100.2	53
689			1627	331.0	353.5	5.2	14.8	8.9	10.5	-2	100.2	52
690			1644	331.0	353.5	5.9	15.1	7.7	10.4	-2	100.2	51
691			1634	331.0	353.5	6.5	15.1	9.5	9.8	-2	100.2	51
692			1633	331.0	353.5	6.9	15.2	9.7	8.3	-2	100.2	51
693			1590	331.0	353.5	5.3	14.7	7.7	8.6	-2	100.2	51
694			1605	331.0	353.5	3.2	14.5	7.5	8.8	-2	100.2	51
695			1594	331.0	353.5	1.6	14.2	8.6	9.0	-2	100.2	52
696			1684	331.0	353.5	3.7	15.3	9.8	8.3	-2	100.2	52
697			1623	331.0	353.5	4.5	15.1	8.7	8.0	-2	100.2	52
698			1659	331.0	353.5	6.6	15.6	8.5	10.0	-2	100.2	52
699			1635	331.0	353.5	8.2	15.6	9.7	9.7	-2	100.2	52
700			1613	331.0	353.5	8.8	15.3	9.0	9.9	-2	100.2	52
701			1617	331.0	353.5	8.8	15.1	9.7	10.2	-2	100.2	44
702			1625	331.0	353.5	9.3	15.1	10.4	10.7	-2	100.2	42
703			1627	331.0	353.5	9.4	15.1	10.3	10.9	-2	100.2	42
704			1623	331.0	353.5	9.7	15.1	10.4	10.8	-2	100.2	42

Table E.01 Measurement data - Turbine ON

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

***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			1631	331.0	353.5	9.9	15.1	9.5	10.0	-2	100.2	42
706			1620	331.0	353.5	9.8	15.0	10.9	10.0	-2	100.2	42
707			1616	331.0	353.5	8.1	14.8	10.2	9.1	-2	100.2	42
708			1630	331.0	353.5	7.0	14.9	10.0	8.8	-2	100.2	42
709			1619	331.0	353.5	6.0	14.7	9.0	8.5	-2	100.2	42
710			1634	331.0	353.5	5.4	14.9	7.2	7.9	-2	100.2	42
711			1617	331.0	353.5	5.2	14.8	7.6	7.6	-2	100.2	42
712			1580	331.0	349.0	2.8	14.3	5.7	9.1	-2	100.2	42
713			1669	331.0	346.5	5.6	15.3	8.7	9.0	-2	100.2	39
714			1623	331.0	340.5	4.2	15.1	7.8	7.2	-2	100.2	52
715			1642	331.0	340.5	5.2	15.3	7.7	7.8	-2	100.2	52
716	11.3	55.1	1635	331.0	340.5	7.5	15.6	10.0	8.0	-2	100.2	53
717	9.8	55.1	1604	331.0	340.5	6.7	15.1	8.7	9.2	-2	100.2	53
718	10.6	55.1	1622	331.0	340.5	8.4	15.3	9.5	8.5	-2	100.2	53
719	9.4	55.3	1611	331.0	340.5	7.4	15.0	8.4	9.4	-2	100.2	53
720	12.0	55.2	1623	331.0	340.5	7.5	15.0	10.7	10.5	-2	100.2	53
721	11.1	55.3	1630	331.0	340.5	7.8	15.1	9.9	10.6	-2	100.2	53
722	9.9	55.6	1624	331.0	340.5	8.0	15.1	8.8	11.4	-2	100.2	52
723	10.4	56.8	1630	331.0	340.5	7.9	15.1	9.3	10.1	-2	100.2	51
724	11.1	55.7	1630	331.0	340.5	8.7	15.2	9.9	9.0	-2	100.2	51
725	10.7	56.5	1626	331.0	340.5	8.9	15.1	9.6	9.9	-2	100.2	51
726	11.3	57.5	1617	331.0	340.5	8.8	15.0	10.1	10.3	-2	100.2	51
727	9.5	57.5	1623	331.0	340.5	7.3	14.9	8.5	10.6	-2	100.2	51
728	11.3	55.3	1627	331.0	340.5	7.6	15.0	10.0	9.6	-2	100.2	52
729	9.6	55.1	1636	331.0	340.5	7.4	15.1	8.6	9.5	-2	100.2	52
730	10.3	58.0	1615	331.0	340.5	7.9	15.0	9.2	8.6	-2	100.2	52
731	10.0	56.9	1614	331.0	340.5	6.0	14.8	8.9	8.6	-2	100.2	52
732	11.1	56.2	1637	331.0	340.5	6.0	15.0	9.9	9.1	-2	100.2	52
733	10.4	55.5	1639	331.0	340.5	6.7	15.1	9.2	9.9	-2	100.2	52
734	11.0	56.6	1630	331.0	341.5	6.8	15.1	9.8	9.2	-2	100.3	53
735			1630	331.0	346.2	7.5	15.2	9.1	9.1	-2	100.3	54
736			1627	331.0	346.5	8.1	15.2	9.7	11.2	-2	100.3	54
737			1617	331.0	346.5	7.3	15.0	8.7	10.1	-2	100.3	54
738			1619	331.0	346.5	6.5	14.9	8.1	9.5	-2	100.3	54
739			1639	331.0	346.5	7.3	15.1	9.0	10.2	-2	100.3	54
740			1621	331.0	346.5	7.4	15.1	8.8	9.2	-3	100.3	54
741			1609	331.0	346.5	5.7	14.8	8.6	9.1	-3	100.3	54
742			1626	331.0	346.5	5.1	14.8	8.4	8.9	-3	100.3	54
743			1609	331.0	346.5	3.8	14.6	7.9	8.7	-3	100.3	54
744			1629	331.0	346.5	2.4	14.6	8.3	8.8	-3	100.3	54
745			1642	331.0	346.5	2.5	14.8	8.6	7.7	-3	100.3	54
746			1641	331.0	346.5	3.2	15.1	7.0	7.0	-3	100.3	56
747			1584	331.0	346.5	1.8	14.6	6.9	7.8	-3	100.3	58
748			1638	331.0	346.5	1.3	14.9	7.2	8.0	-3	100.3	58
749			1668	331.0	346.5	6.3	15.8	8.0	8.5	-3	100.3	58
750			1620	331.0	346.5	7.0	15.5	8.8	8.2	-3	100.3	58
751			1593	331.0	346.5	5.3	14.9	7.9	8.9	-3	100.3	58
752			1626	331.0	346.5	5.9	15.1	7.7	9.5	-3	100.3	53
753			1624	331.0	346.5	6.4	15.1	8.7	9.1	-2	100.3	50
754			1626	331.0	345.6	6.1	15.1	8.2	9.4	-2	100.3	50
755	10.6	55.2	1623	331.0	340.9	6.9	15.2	9.4	9.3	-2	100.3	50
756			1598	331.0	340.5	5.2	14.7	7.7	8.7	-2	100.3	50
757			1623	331.0	340.5	4.2	14.8	7.0	8.1	-2	100.3	50
758	9.8	56.5	1644	331.0	340.5	4.6	15.0	8.7	7.7	-2	100.3	52
759			1643	331.0	340.5	5.4	15.2	6.8	7.8	-2	100.3	52
760			1618	331.0	340.5	5.2	15.0	7.1	7.3	-2	100.3	52
761			1605	331.0	340.5	3.5	14.7	8.1	7.5	-2	100.3	52
762			1582	331.0	340.5	2.0	14.4	7.6	7.6	-2	100.3	52
763	9.6	54.0	1603	331.0	340.5	0.7	14.4	8.5	8.0	-2	100.3	52
764			1664	331.0	340.5	2.1	15.0	8.0	7.2	-2	100.3	53
765			1625	331.0	340.5	2.0	14.9	7.1	7.8	-2	100.3	53
766	9.3	54.9	1653	331.0	340.5	2.4	15.2	8.3	7.9	-2	100.3	53
767	9.7	54.5	1654	331.0	340.5	4.3	15.5	8.6	10.1	-2	100.3	53
768	10.0	54.5	1638	331.0	340.5	6.2	15.6	8.9	9.5	-2	100.3	53
769			1615	331.0	340.5	6.3	15.4	7.7	9.2	-2	100.3	53
770			1607	331.0	340.5	5.9	15.1	8.0	8.0	-2	100.3	52
771			1612	331.0	340.5	5.7	15.0	7.9	8.3	-2	100.3	51
772			1625	331.0	340.5	5.3	15.0	8.1	8.6	-2	100.3	51
773			1638	331.0	340.5	6.1	15.2	7.9	8.7	-2	100.3	51
774			1615	331.0	340.5	5.6	15.0	8.1	8.4	-2	100.3	51
775			1618	331.0	340.5	4.7	14.9	7.1	8.5	-2	100.3	51
776			1607	331.0	340.5	3.4	14.6	7.7	8.6	-2	100.3	51
777			1627	331.0	340.5	2.4	14.7	7.3	7.2	-2	100.3	50
778			1555	331.0	340.5	1.4	14.4	7.1	6.0	-2	100.3	50
779	8.7	53.9	1401	331.0	340.5	0.1	14.1	6.9	7.1	-2	100.3	50
780			1535	331.0	340.5	0.1	14.8	7.4	7.8	-2	100.3	50
781	9.0	54.6	1466	331.0	340.5	0.6	14.5	6.7	7.5	-2	100.3	50
782	9.2	54.3	1497	331.0	340.5	0.1	14.6	7.2	8.3	-2	100.3	50
783	10.4	54.8	1667	331.0	340.5	1.5	15.4	9.2	8.6	-2	100.3	49
784	9.5	54.9	1654	331.0	340.5	5.4	15.8	8.4	8.8	-2	100.3	49
785	9.8	55.5	1614	331.0	340.5	5.8	15.5	8.7	7.7	-2	100.3	49
786	10.3	55.1	1622	331.0	340.5	6.5	15.5	9.2	8.9	-2	100.3	49
787	9.4	54.6	1603	331.0	340.5	6.9	15.2	8.4	8.6	-2	100.3	49
788			1609	331.0	340.5	6.2	15.0	8.1	9.6	-2	100.3	51
789	10.0	56.0	1610	331.0	340.5	5.5	14.8	8.9	9.2	-2	100.3	51
790	10.0	55.9	1642	331.0	340.5	6.2	15.1	8.9	8.8	-2	100.3	51
791	10.3	55.2	1625	331.0	340.5	6.8	15.1	9.1	7.9	-2	100.3	51
792			1597	331.0	341.8	4.8	14.7	8.2	7.3	-2	100.3	51

***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			1613	331.0	343.5	3.9	14.7	7.5	7.4	-2	100.3	51
794			1597	331.0	343.5	1.8	14.3	7.4	7.1	-2	100.3	54
795	9.0	54.1	1473	331.0	343.5	0.0	14.1	7.4	6.8	-2	100.3	56
796	8.8	55.6	1415	331.0	343.5	0.3	14.5	7.1	7.0	-2	100.3	56
797	8.6	54.8	1375	331.0	343.5	0.6	14.2	7.7	6.6	-2	100.3	56
798	8.8	54.5	1420	331.0	343.5	0.1	14.4	7.0	8.7	-2	100.3	56
799			1623	331.0	343.5	0.7	15.0	8.0	9.8	-2	100.3	56
800			1670	331.0	343.5	3.9	15.8	7.9	9.4	-2	100.3	53
801	10.2	57.7	1635	331.0	343.5	5.1	15.6	9.1	8.7	-2	100.3	52
802	9.6	55.3	1621	331.0	343.5	6.0	15.5	8.5	8.9	-2	100.3	52
803	9.6	55.2	1617	331.0	343.5	6.2	15.4	8.6	8.6	-2	100.3	52
804	9.4	56.2	1609	331.0	343.5	6.3	15.2	8.4	8.3	-2	100.3	52
805	9.3	56.5	1620	331.0	343.5	6.0	15.1	8.3	9.4	-2	100.3	52
806	9.9	57.6	1629	331.0	343.5	6.9	15.2	8.8	9.3	-2	100.3	52
807	9.5	56.7	1628	331.0	343.5	7.3	15.2	8.5	8.6	-2	100.3	52
808	10.4	56.5	1618	331.0	343.5	7.0	15.1	9.2	8.9	-2	100.3	52
809	10.9	56.2	1629	331.0	343.5	7.0	15.1	9.7	9.1	-2	100.3	52
810			1621	331.0	343.5	7.0	15.0	8.1	9.3	-2	100.3	52
811	10.3	56.2	1624	331.0	343.5	6.4	15.0	9.2	9.4	-2	100.3	52
812	11.1	56.2	1634	331.0	343.5	7.0	15.1	9.9	8.8	-3	100.3	52
813	11.0	55.4	1629	331.0	343.5	7.3	15.1	9.8	8.4	-3	100.3	52
814	9.4	55.8	1611	331.0	343.5	6.5	14.9	8.3	8.7	-3	100.3	52
815	9.3	55.2	1621	331.0	343.5	5.3	14.8	8.3	7.7	-3	100.3	52
816	9.3	55.5	1623	331.0	343.5	5.2	14.9	8.3	7.3	-3	100.3	52
817			1571	331.0	343.5	2.8	14.3	6.6	7.5	-3	100.3	52
818			1626	331.0	343.5	1.0	14.4	8.1	8.5	-3	100.3	53
819	9.4	55.0	1657	331.0	343.5	2.0	14.9	8.4	8.6	-3	100.3	53
820			1638	331.0	343.5	2.0	14.9	7.3	8.4	-3	100.3	53
821			1644	331.0	343.5	1.9	15.1	8.1	8.7	-3	100.3	53
822			1574	331.0	343.5	1.7	14.8	6.3	8.5	-3	100.3	53
823	9.1	54.9	1487	331.0	343.5	0.1	14.2	6.4	8.2	-3	100.3	53
824	8.6	54.2	1385	331.0	343.5	0.4	14.4	7.1	8.0	-3	100.3	52
825	7.8	53.1	1153	331.0	343.5	0.8	13.4	5.8	9.3	-3	100.3	52
826	8.1	51.5	1256	331.0	343.5	0.5	13.6	7.5	8.6	-3	100.3	52
827	9.8	54.4	1677	331.0	343.5	0.2	15.3	8.7	8.1	-3	100.3	52
828			1647	331.0	343.5	3.7	15.5	7.9	8.1	-3	100.3	52
829			1604	331.0	343.5	3.0	15.2	7.4	8.4	-3	100.3	52
830	9.1	54.5	1489	331.0	343.5	1.6	14.3	6.5	9.1	-3	100.3	53
831	9.7	53.9	1651	331.0	343.5	3.1	15.1	8.6	8.5	-3	100.3	54
832	9.3	54.5	1632	331.0	343.5	4.4	15.2	8.2	7.7	-3	100.3	54
833			1591	331.0	343.5	2.7	14.7	7.3	8.2	-3	100.3	54
834			1598	331.0	343.5	1.0	14.5	6.8	7.9	-3	100.3	54
835	9.6	54.5	1656	331.0	343.5	2.4	15.0	8.5	7.2	-3	100.3	54
836			1639	331.0	343.5	3.0	15.1	7.4	6.5	-3	100.3	55
837			1550	331.0	343.5	1.8	14.6	6.7	6.8	-3	100.3	55
838	8.3	54.2	1287	331.0	343.5	0.2	13.7	6.2	8.0	-3	100.3	55
839			1532	331.0	343.5	0.9	14.6	7.8	9.7	-3	100.3	55
840			1616	331.0	343.5	6.3	15.4	7.7	8.4	-3	100.3	55
841	11.1	54.3	1611	331.0	343.5	5.6	15.1	9.9	7.9	-3	100.3	55
842	10.2	54.7	1618	331.0	343.5	4.9	15.1	9.0	8.1	-3	100.3	54
843	10.4	54.3	1621	331.0	343.5	4.8	15.0	9.3	7.5	-3	100.3	53
844	9.9	54.9	1619	331.0	343.5	4.8	14.9	8.8	6.9	-3	100.3	53
845			1618	331.0	343.5	3.7	14.8	8.0	8.6	-3	100.3	53
846			1629	331.0	343.5	3.6	14.9	7.6	9.4	-3	100.3	53
847	8.9	54.0	1463	331.0	343.5	1.9	14.0	7.9	7.8	-3	100.3	53
848	8.4	52.4	1330	331.0	343.5	0.4	13.8	7.3	7.9	-3	100.3	54
849			1642	331.0	343.5	0.0	15.0	7.7	8.8	-3	100.3	54
850	9.0	56.0	1484	331.0	343.5	1.2	14.6	7.3	8.0	-3	100.3	54
851	8.0	53.7	1230	331.0	343.5	0.8	13.7	6.6	7.0	-3	100.3	54
852	8.2	52.6	1269	331.0	343.5	0.6	13.8	8.6	7.2	-3	100.3	54
853	8.9	54.6	1449	331.0	344.2	0.7	14.5	8.4	7.8	-3	100.3	54
854			1627	331.0	350.2	1.1	15.1	8.7	6.6	-3	100.3	56
855			1656	331.0	357.4	2.7	15.5	9.4	6.6	-3	100.3	57
856			1606	331.0	359.5	3.0	15.2	7.8	7.8	-3	100.3	57
857			1653	331.0	359.5	6.2	15.8	8.4	8.4	-3	100.3	57
858			1608	331.0	359.5	7.0	15.4	8.6	8.0	-3	100.3	57
859			1608	331.0	359.5	7.1	15.3	9.7	8.3	-3	100.3	57
860			1617	331.0	359.5	7.1	15.1	9.9	8.6	-3	100.3	57
861			1623	331.0	359.5	7.5	15.1	9.6	8.5	-3	100.3	58
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Table E.02 Measurement data - Background

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

***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	7.6	46.6	0.3	5.8	-2	100.1	48
2	6.0	46.6	0.2	7.0	-2	100.1	48
3	6.5	44.5	0.0	7.7	-2	100.1	48
4	5.8	44.5	0.0	7.1	-2	100.1	49
5	5.0	45.1	0.0	6.8	-2	100.1	49
6	6.4	43.3	0.0	6.4	-2	100.1	49
7	5.4	43.1	0.0	6.4	-2	100.1	49
8	6.2	43.3	0.0	6.5	-2	100.1	49
9	6.9	44.3	0.0	7.8	-2	100.1	49
10	7.1	47.7	0.0	8.5	-2	100.1	49
11	7.3	45.4	0.0	10.7	-2	100.1	49
12	7.5	46.3	0.0	10.1	-2	100.1	49
13	7.8	46.9	0.0	8.6	-2	100.1	49
14	9.2	46.9	0.0	6.8	-2	100.1	49
15	8.2	48.2	0.0	7.9	-2	100.1	49
16	6.6	48.6	0.0	6.8	-2	100.1	48
17	6.8	46.4	0.0	6.7	-2	100.1	48
18	7.3	47.5	0.0	7.4	-2	100.1	48
19	6.5	47.8	0.0	7.9	-2	100.1	48
20	7.3	45.3	0.0	10.2	-2	100.1	48
21	7.9	44.0	0.0	8.8	-2	100.1	48
22	7.1	41.0	0.0	8.0	-2	100.1	48
23			0.0	7.6	-2	100.1	49
24			0.0	8.2	-2	100.1	49
25			0.0	9.1	-2	100.1	49
26			0.0	8.4	-2	100.1	49
27			0.0	8.7	-2	100.1	49
28			0.0	9.0	-2	100.1	48
29			0.0	9.3	-2	100.1	48
30			0.0	9.5	-2	100.1	48
31	9.5	46.7	0.0	9.3	-2	100.1	48
32	8.5	45.6	0.0	9.0	-2	100.1	48
33	8.0	48.3	0.0	8.7	-2	100.1	48
34	10.6	50.1	0.0	8.4	-2	100.1	48
35	8.5	51.3	0.0	9.4	-2	100.1	48
36	8.8	49.0	0.0	8.9	-2	100.1	48
37	7.6	49.0	0.0	8.3	-2	100.1	48
38	9.4	49.4	0.0	7.3	-2	100.1	48
39	9.4	49.3	0.0	7.7	-2	100.1	48
40	9.6	48.9	0.0	9.6	-2	100.1	49
41	7.3	46.8	0.0	9.2	-2	100.1	50
42	6.9	45.4	0.0	8.4	-2	100.1	50
43	8.0	45.7	0.0	9.4	-2	100.1	50
44	9.1	50.2	0.0	10.0	-2	100.1	50
45	8.3	51.4	0.0	9.9	-2	100.1	50
46	8.3	48.1	0.0	9.0	-2	100.1	49
47	8.4	46.4	0.0	8.4	-2	100.1	49
48	8.0	51.7	0.0	9.0	-2	100.1	49
49			0.0	8.2	-2	100.1	49
50			0.0	7.8	-2	100.1	49
51	6.8	50.6	0.0	8.3	-2	100.1	49
52	6.8	46.5	0.0	8.8	-2	100.1	50
53	6.8	43.6	0.0	8.2	-2	100.1	50
54	8.0	46.7	0.0	7.8	-2	100.1	50
55	8.2	46.5	0.0	6.9	-2	100.1	50
56	6.7	47.2	0.0	8.2	-2	100.1	50
57	5.5	49.0	0.0	8.6	-2	100.1	50
58	5.8	45.6	0.0	7.9	-2	100.1	50
59	6.8	47.9	0.0	7.3	-2	100.1	50
60	5.6	45.0	0.0	6.9	-2	100.1	50
61	7.4	47.9	0.0	5.9	-2	100.1	50
62	5.2	47.8	0.0	7.4	-2	100.1	50
63	6.5	45.9	0.0	8.3	-2	100.1	50
64	7.8	42.6	0.0	9.1	-2	100.1	51
65	9.3	43.0	0.0	8.3	-2	100.1	51
66	9.0	43.7	0.0	8.6	-2	100.1	51
67	7.6	48.6	0.0	9.3	-2	100.1	51
68	5.3	48.0	0.0	9.2	-2	100.1	51
69	5.4	44.6	0.0	8.7	-2	100.1	51
70	6.9	49.1	0.0	7.4	-2	100.1	52
71	6.5	48.8	0.0	7.1	-2	100.1	52
72	6.6	49.5	0.0	7.0	-2	100.1	52
73	6.9	48.7	0.0	7.0	-2	100.1	52
74	6.4	46.0	0.0	7.4	-2	100.1	52
75	6.6	44.5	0.0	7.2	-2	100.1	52
76	6.3	45.1	0.0	6.2	-2	100.1	54
77	7.8	43.3	0.0	6.8	-2	100.1	54
78	8.0	49.4	0.0	6.8	-2	100.1	54
79			0.0	6.6	-2	100.1	54
80	9.8	49.2	0.0	9.3	-2	100.1	54
81	7.3	48.4	0.0	8.8	-2	100.1	54
82	7.2	46.8	0.0	8.1	-2	100.1	53
83	8.2	46.6	0.0	9.5	-2	100.1	52

***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	7.1	47.8	0.0	10.3	-2	100.1	52
85	7.3	47.1	0.0	10.9	-2	100.1	52
86	8.0	46.9	0.0	10.0	-2	100.1	52
87	8.8	51.7	0.0	10.0	-2	100.1	52
88	9.9	50.6	0.0	9.1	-2	100.1	51
89			0.0	9.9	-2	100.1	50
90	7.5	50.9	0.0	9.8	-2	100.1	50
91	5.6	51.1	0.0	9.5	-2	100.1	50
92	6.9	49.4	0.0	9.4	-2	100.1	50
93	8.9	50.0	0.0	9.0	-2	100.1	50
94	8.5	51.6	0.0	8.7	-2	100.1	50
95	8.1	51.6	0.0	8.0	-2	100.1	50
96			0.0	6.6	-2	100.1	50
97	10.6	49.9	0.0	8.5	-2	100.1	50
98	7.2	50.7	0.0	9.2	-2	100.1	50
99	7.0	51.6	0.0	9.7	-2	100.1	50
100	7.8	51.2	0.0	8.4	-2	100.1	49
101	8.4	50.2	0.0	7.3	-2	100.1	49
102			0.0	6.6	-2	100.1	49
103	8.4	50.3	0.0	7.7	-2	100.1	49
104	8.7	50.4	0.0	8.7	-2	100.1	49
105	9.4	47.8	0.0	8.8	-2	100.1	49
106	9.0	47.0	0.0	8.7	-2	100.1	48
107	8.5	44.7	0.0	8.0	-2	100.1	48
108	6.6	50.5	0.0	7.7	-2	100.1	48
109	8.0	49.9	0.0	8.3	-2	100.1	48
110	9.1	48.7	0.0	8.2	-2	100.1	48
111	9.1	49.1	0.0	8.0	-2	100.1	48
112	8.4	50.2	0.0	8.1	-2	100.1	49
113	6.4	45.2	0.0	7.8	-2	100.1	49
114	7.4	48.9	0.0	8.0	-2	100.1	49
115	8.8	51.6	0.0	8.6	-2	100.1	49
116	8.6	51.3	0.0	10.0	-2	100.1	49
117	11.4	48.7	0.0	12.2	-2	100.1	49
118	11.2	48.6	0.0	10.8	-2	100.1	42
119	10.7	45.8	0.0	9.4	-2	100.1	37
120			0.0	9.0	-2	100.1	37
121			0.0	7.2	-2	100.1	37
122			0.0	6.3	-2	100.1	37
123	6.3	50.1	0.0	8.5	-2	100.1	37
124	7.7	48.1	0.0	7.0	-2	100.1	37
125	8.1	49.6	0.0	6.8	-2	100.1	38
126	7.3	46.1	0.0	8.8	-2	100.1	38
127	6.7	46.6	0.0	7.4	-2	100.1	38
128	7.6	46.3	0.0	7.0	-2	100.1	38
129			0.0	6.8	-2	100.1	38
130			0.0	7.0	-2	100.1	39
131	6.3	48.8	0.0	7.5	-2	100.1	40
132	5.8	46.8	0.0	9.5	-2	100.1	40
133	6.3	46.1	0.0	9.1	-2	100.1	40
134	6.2	46.7	0.0	8.1	-2	100.1	40
135	7.6	47.7	0.0	8.3	-2	100.1	40
136	7.1	46.1	0.0	8.7	-2	100.1	39
137	9.6	44.1	0.0	8.3	-1	100.1	39
138	11.4	47.6	0.0	10.0	-1	100.1	39
139	10.6	48.4	0.0	10.6	-1	100.1	39
140	12.0	53.2	0.0	10.2	-1	100.1	39
141	12.9	53.4	0.0	10.0	-1	100.1	39
142	10.6	50.6	0.0	9.9	-2	100.1	39
143	9.8	49.3	0.0	8.8	-2	100.1	38
144	8.9	47.5	0.0	8.5	-2	100.1	38
145	11.9	52.9	0.0	9.7	-2	100.1	38
146	10.4	52.5	0.0	10.0	-2	100.1	38
147	12.0	53.2	0.0	10.1	-2	100.1	38
148	11.9	53.6	0.0	9.4	-2	100.1	39
149	12.1	53.1	0.0	9.5	-2	100.1	40
150	10.5	53.6	0.0	9.0	-2	100.1	40
151	10.6	51.6	0.0	8.4	-2	100.1	40
152	10.7	50.1	0.0	8.8	-2	100.1	40
153	10.8	50.5	0.0	9.3	-2	100.1	40
154	11.4	50.8	0.0	10.3	-2	100.1	40
155	9.7	50.7	0.0	10.6	-2	100.1	40
156	9.5	51.3	0.0	9.5	-2	100.1	40
157	9.5	52.9	0.0	10.5	-2	100.1	40
158	10.0	51.1	0.0	9.4	-2	100.1	40
159	11.0	52.0	0.0	9.4	-2	100.1	40
160	12.3	51.4	0.0	9.2	-2	100.1	41
161	13.0	50.6	0.0	8.7	-2	100.1	41
162	11.5	51.7	0.0	9.8	-2	100.1	41
163	12.6	50.8	0.0	9.9	-2	100.1	41
164	12.2	53.7	0.0	9.0	-2	100.1	41
165			0.0	8.9	-2	100.1	41
166	10.4	51.0	0.0	8.4	-2	100.1	43

***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			0.0	7.6	-2	100.1	44
168			0.0	7.9	-2	100.1	44
169	9.6	49.8	0.0	9.4	-2	100.1	44
170	10.0	48.7	0.0	9.3	-2	100.1	44
171	9.4	49.6	0.0	8.9	-2	100.1	44
172	9.8	47.3	0.0	9.4	-2	100.1	42
173	9.6	49.2	0.0	10.3	-2	100.1	41
174	9.3	49.2	0.0	9.7	-2	100.1	41
175	11.1	44.0	0.0	8.9	-2	100.1	41
176	10.9	43.2	0.0	8.6	-2	100.1	41
177	9.8	47.3	0.0	8.9	-2	100.1	41
178	9.5	47.3	0.0	7.5	-2	100.1	42
179	9.4	49.7	0.0	7.8	-2	100.1	42
180	9.3	45.9	0.0	8.5	-2	100.1	42
181	9.7	47.7	0.0	9.2	-2	100.1	42
182	7.9	47.1	0.0	9.5	-2	100.1	42
183	8.5	46.8	0.0	10.4	-2	100.1	42
184	6.0	47.0	0.0	9.1	-2	100.1	43
185	7.1	50.6	0.0	8.5	-2	100.1	43
186	8.3	51.0	0.0	8.6	-2	100.1	43
187			0.0	9.8	-2	100.1	43
188	9.1	51.5	0.0	9.3	-2	100.1	43
189	8.6	50.4	0.0	9.2	-2	100.1	43
190	8.5	50.3	0.0	9.1	-2	100.1	43
191			0.0	7.6	-2	100.1	43
192			0.0	6.9	-2	100.1	43
193	5.5	47.9	0.0	6.9	-2	100.1	43
194	6.6	48.2	0.0	7.5	-2	100.1	43
195	7.7	48.4	0.0	7.6	-2	100.1	43
196	8.0	45.9	0.0	7.0	-2	100.1	44
197	10.6	44.2	0.0	7.2	-2	100.1	46
198	8.6	42.7	0.0	7.0	-2	100.1	46
199	11.1	42.9	0.0	6.4	-2	100.1	46
200	9.0	44.9	0.0	6.4	-2	100.1	46
201	5.7	45.3	0.0	6.5	-2	100.1	46
202	6.2	42.9	0.0	7.1	-2	100.1	47
203	8.2	44.6	0.0	7.7	-2	100.1	48
204	7.2	45.7	0.0	9.0	-2	100.1	48
205	6.9	44.7	0.0	9.2	-2	100.1	48
206	10.5	47.6	0.0	8.9	-2	100.1	48
207	9.8	49.5	0.0	7.7	-2	100.1	48
208	9.3	48.4	0.0	7.2	-2	100.1	46
209	9.4	46.5	0.0	7.5	-2	100.1	44
210	9.1	47.6	0.0	9.1	-2	100.1	44
211	9.4	46.9	0.0	9.5	-2	100.1	44
212	8.8	44.6	0.0	8.9	-2	100.1	44
213	8.0	44.1	0.0	8.5	-2	100.1	44
214	8.4	46.4	0.0	8.3	-2	100.1	46
215	9.2	46.6	0.0	7.8	-2	100.1	47
216			0.0	8.3	-2	100.1	47
217	9.4	47.7	0.0	8.3	-2	100.1	47
218	9.4	49.8	0.0	7.9	-2	100.1	47
219	9.6	49.3	0.0	7.8	-2	100.1	47
220	8.3	47.1	0.0	7.3	-2	100.1	47
221	8.8	48.4	0.0	7.5	-2	100.1	46
222	8.0	50.1	0.0	7.2	-2	100.1	46
223			0.0	6.5	-2	100.1	46
224			0.0	7.2	-2	100.1	46
225	8.4	49.2	0.0	8.0	-2	100.1	46
226	8.7	48.0	0.0	7.0	-2	100.1	47
227	10.0	48.5	0.0	7.1	-2	100.1	47
228	8.8	48.8	0.0	6.7	-2	100.1	47
229	7.8	48.9	0.0	6.5	-2	100.1	47
230	8.1	48.4	0.0	7.2	-2	100.1	47
231	7.1	47.5	0.0	7.9	-2	100.1	47
232	6.2	44.7	0.0	8.5	-2	100.1	46
233	6.3	46.3	0.0	9.2	-2	100.1	46
234	6.9	48.9	0.0	8.3	-2	100.1	46
235	7.6	47.5	0.0	7.5	-2	100.1	46
236	8.4	44.8	0.0	6.8	-2	100.1	46
237	8.2	46.1	0.0	7.9	-2	100.1	46
238	9.6	46.1	0.0	8.1	-2	100.1	46
239	9.7	51.4	0.0	7.5	-2	100.1	46
240	9.8	50.1	0.0	6.8	-2	100.1	46
241	9.1	50.4	0.0	8.5	-2	100.1	46
242	7.6	47.9	0.0	8.2	-2	100.1	46
243	7.7	49.3	0.0	8.3	-2	100.1	46
244	9.0	47.4	0.0	7.2	-2	100.1	46
245			0.0	8.1	-2	100.1	45
246	9.3	49.2	0.0	7.9	-2	100.1	45
247	8.3	46.4	0.0	9.2	-2	100.1	45
248	8.8	46.4	0.0	10.2	-2	100.1	45
249	10.0	45.1	0.0	9.6	-2	100.1	45

Table E.02 Measurement data - Background

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

***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 (%)
250	9.8	49.3	0.0	9.5	-2	100.1	46
251	9.3	47.7	0.0	8.6	-2	100.1	46
252	7.7	45.3	0.0	9.8	-2	100.1	46
253	7.9	51.8	0.0	8.7	-2	100.1	46
254	6.9	51.2	0.0	9.1	-2	100.1	46
255	7.9	49.9	0.0	8.9	-2	100.1	46
256	9.5	48.3	0.0	7.5	-2	100.1	46
257	10.1	46.0	0.0	7.2	-2	100.1	46
258	9.9	50.9	0.0	9.5	-2	100.1	46
259	9.3	48.6	0.0	8.3	-2	100.1	46
260	10.0	52.3	0.0	9.1	-2	100.1	46
261	12.0	53.3	0.0	9.8	-2	100.1	46
262			0.0	8.5	-2	100.1	46
263			0.0	9.1	-2	100.1	46
264	10.2	51.1	0.0	9.5	-2	100.1	46
265	9.5	50.1	0.0	9.1	-2	100.1	46
266	10.8	50.9	0.0	7.3	-2	100.1	46
267	11.0	49.2	0.0	6.9	-2	100.1	46
268	10.6	48.8	0.0	8.4	-2	100.1	46
269	7.6	50.8	0.0	6.9	-2	100.1	47
270			0.0	7.3	-2	100.1	47
271	10.8	49.1	0.0	6.5	-2	100.1	47
272			0.0	5.6	-2	100.1	47
273	9.7	48.7	0.0	6.3	-2	100.1	47
274			0.0	6.1	-2	100.1	48
275			0.0	6.9	-2	100.1	49
276	8.7	47.7	0.0	7.2	-2	100.1	49
277	9.0	45.2	0.0	7.6	-2	100.1	49
278	9.0	46.3	0.0	7.9	-2	100.1	49
279	10.4	45.0	0.0	8.1	-2	100.1	49
280	9.7	49.5	0.0	7.2	-2	100.1	48
281			0.0	6.6	-2	100.1	47
282	7.3	49.7	0.0	7.6	-2	100.1	47
283	7.0	46.8	0.0	8.0	-2	100.1	47
284	8.4	45.9	0.0	7.4	-2	100.1	47
285	8.4	49.2	0.0	7.1	-2	100.1	47
286	7.2	50.3	0.0	6.9	-2	100.2	48
287	8.8	50.6	0.0	8.0	-2	100.2	49
288	7.5	49.4	0.0	8.5	-2	100.2	49
289	10.0	48.6	0.0	9.4	-2	100.2	49
290	9.8	48.7	0.0	8.9	-2	100.2	49
291	9.9	48.4	0.0	9.6	-2	100.2	49
292	10.7	46.4	0.0	9.4	-2	100.1	49
293	8.4	48.7	0.0	8.9	-2	100.1	48
294	9.4	48.6	0.0	8.2	-2	100.1	48
295	9.7	46.3	0.0	7.6	-2	100.1	48
296	9.1	48.2	0.0	8.2	-2	100.1	48
297	8.5	46.2	0.0	7.7	-2	100.1	48
298	7.8	48.9	0.0	7.9	-2	100.1	49
299	9.3	47.9	0.0	7.8	-2	100.1	49
300	8.8	46.5	0.0	8.8	-2	100.1	49
301	10.2	45.0	0.0	8.3	-2	100.1	49
302	10.0	48.0	0.0	8.5	-2	100.1	49
303	9.7	48.9	0.0	8.8	-2	100.1	49
304	9.4	48.9	0.0	8.3	-2	100.2	50
305	9.3	47.3	0.0	8.1	-2	100.2	50
306	7.2	48.4	0.0	8.7	-2	100.2	50
307	9.6	48.2	0.0	8.5	-2	100.2	50
308	8.9	50.8	0.0	8.2	-2	100.2	50
309	7.9	49.2	0.0	7.3	-2	100.2	50
310	8.6	46.4	0.0	6.5	-2	100.2	50
311	9.1	45.1	0.0	5.9	-2	100.2	50
312	8.1	43.9	0.0	6.3	-2	100.2	50
313	8.7	45.5	0.0	7.7	-2	100.2	50
314	9.2	46.9	0.0	7.2	-2	100.2	50
315	7.7	45.0	0.0	8.3	-2	100.2	50
316	9.5	47.1	0.0	7.1	-2	100.2	50
317	9.9	48.9	0.0	7.3	-2	100.2	50
318	8.0	45.5	0.0	7.0	-2	100.2	50
319	7.8	46.3	0.0	7.2	-2	100.2	50
320	7.6	45.9	0.0	7.0	-2	100.2	50
321	7.8	47.4	0.0	7.3	-2	100.2	50
322	9.9	45.7	0.0	7.2	-2	100.2	50
323	10.2	47.1	0.0	7.0	-2	100.2	49
324	10.7	46.1	0.0	8.0	-2	100.2	49
325	10.0	45.2	0.0	8.4	-2	100.2	49
326	11.5	45.8	0.0	8.9	-2	100.2	49
327	11.8	45.2	0.0	8.5	-2	100.2	49
328	11.7	49.4	0.0	7.4	-2	100.2	50
329			0.0	7.1	-2	100.2	50
330			0.0	7.7	-2	100.2	50
331			0.0	7.0	-2	100.2	50
332	9.3	47.3	0.0	7.3	-2	100.2	50

***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 (%)
333	8.5	50.0	0.0	7.9	-2	100.2	50
334	9.0	49.2	0.0	6.9	-2	100.2	51
335	10.4	46.1	0.0	6.7	-2	100.2	51
336	9.7	46.7	0.0	6.5	-2	100.2	51
337	9.1	47.2	0.0	7.5	-2	100.2	51
338	10.3	45.0	0.0	9.3	-2	100.2	51
339	10.9	46.1	0.0	8.9	-2	100.2	51
340	10.1	48.5	0.0	8.6	-2	100.2	52
341	9.5	47.9	0.0	8.9	-2	100.2	53
342	9.9	44.2	0.0	9.2	-2	100.2	53
343	10.3	44.6	0.0	9.2	-2	100.2	53
344	10.2	49.4	0.0	9.2	-2	100.2	53
345	10.8	50.2	0.0	8.7	-2	100.2	53
346			0.0	7.9	-2	100.2	52
347			0.0	7.3	-2	100.2	51
348			0.0	7.0	-2	100.2	51
349			0.0	7.4	-2	100.2	51
350	8.9	48.1	0.0	6.8	-2	100.2	51
351	8.5	47.2	0.0	6.4	-2	100.2	51
352	9.3	48.5	0.0	8.1	-2	100.2	52
353	10.3	50.6	0.0	8.4	-2	100.2	53
354			0.0	8.3	-2	100.2	53
355	9.3	50.6	0.0	8.0	-2	100.2	53
356	9.6	50.8	0.0	8.3	-2	100.2	53
357	9.2	49.8	0.0	8.2	-2	100.2	53
358	8.8	49.7	0.0	7.4	-2	100.2	52
359	9.0	49.0	0.0	7.4	-2	100.2	51
360	9.1	46.5	0.0	7.5	-2	100.2	51
361	7.0	47.6	0.0	7.5	-2	100.2	51
362			0.0	7.9	-2	100.2	51
363	9.0	49.6	0.0	7.7	-2	100.2	51
364	9.2	50.7	0.0	7.5	-2	100.2	51
365			0.0	7.1	-2	100.2	51
366	9.7	50.8	0.0	7.5	-2	100.2	51
367	10.0	49.6	0.0	7.3	-2	100.2	51
368	9.6	49.4	0.0	6.8	-2	100.2	51
369	9.5	49.4	0.0	6.7	-2	100.2	51
370	9.9	48.1	0.0	7.5	-2	100.2	52
371	9.0	48.0	0.0	7.2	-2	100.2	52
372	8.6	47.9	0.0	6.6	-2	100.2	52
373			0.0	6.4	-2	100.2	52
374			0.0	6.8	-2	100.2	52
375	10.4	48.7	0.0	8.0	-2	100.2	52
376			0.0	7.8	-2	100.2	52
377			0.0	6.6	-2	100.2	53
378			0.0	7.0	-2	100.2	53
379	9.4	47.4	0.0	7.0	-2	100.2	53
380	9.3	44.4	0.0	6.5	-2	100.2	53
381	8.6	47.0	0.0	7.1	-2	100.2	53
382			0.0	8.0	-2	100.2	52
383			0.0	7.9	-2	100.2	52
384	9.3	47.6	0.0	6.9	-2	100.2	52
385	9.0	47.8	0.0	6.2	-2	100.2	52
386	8.2	47.2	0.0	6.0	-2	100.2	52
387	8.0	46.5	0.0	7.4	-2	100.2	52
388	5.8	49.3	0.0	6.6	-2	100.2	52
389	4.7	47.0	0.0	6.9	-2	100.2	52
390	5.6	48.9	0.0	6.9	-2	100.2	52
391	7.5	48.5	0.0	7.1	-2	100.2	52
392	7.6	48.3	0.0	6.5	-2	100.2	52
393	6.2	47.2	0.0	6.7	-2	100.2	52
394	6.3	45.9	0.0	6.4	-2	100.2	52
395	6.9	43.6	0.0	6.4	-2	100.2	52
396	7.1	44.0	0.0	7.0	-2	100.2	52
397	8.1	46.6	0.0	7.6	-2	100.2	52
398	8.0	46.6	0.0	6.3	-2	100.2	52
399	8.5	47.6	0.0	5.9	-2	100.2	52
400	7.3	45.9	0.0	6.2	-2	100.2	53
401	7.3	44.6	0.0	7.2	-2	100.2	53
402	6.7	44.5	0.0	7.4	-2	100.2	53
403	5.1	43.3	0.0	6.7	-2	100.2	53
404	7.2	44.9	0.0	6.7	-2	100.2	53
405	7.6	44.0	0.0	8.2	-2	100.2	53
406	8.4	46.1	0.0	7.8	-2	100.2	54
407	8.0	47.5	0.0	7.4	-2	100.2	54
408	7.4	48.1	0.0	7.0	-2	100.2	54
409	6.5	47.1	0.0	7.1	-2	100.2	54
410	8.2	48.6	0.0	7.6	-2	100.2	54
411	8.2	47.0	0.0	7.0	-2	100.2	54
412	9.0	47.2	0.0	6.7	-2	100.2	53
413	8.5	44.9	0.0	6.4	-2	100.2	52
414	9.0	44.9	0.0	5.9	-2	100.2	52
415	9.1	46.4	0.0	5.6	-2	100.2	52

***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 (%)
416	8.3	44.9	0.0	6.4	-2	100.2	52
417	8.1	44.7	0.0	6.8	-2	100.2	52
418	8.7	47.3	0.0	5.9	-2	100.2	53
419	9.9	44.8	0.0	7.0	-2	100.2	53
420	10.4	44.2	0.0	7.6	-2	100.2	53
421	8.4	45.2	0.0	6.7	-2	100.2	53
422	9.2	47.1	0.0	7.0	-2	100.2	53
423	9.5	45.2	0.0	6.9	-2	100.2	53
424	10.4	47.2	0.0	7.2	-2	100.2	53
425	9.6	44.9	0.0	7.6	-2	100.2	54
426	10.5	43.4	0.0	7.9	-2	100.2	54
427	10.9	43.4	0.0	8.9	-2	100.2	54
428	10.2	47.5	0.0	8.3	-2	100.2	54
429	11.1	47.5	0.0	9.4	-2	100.2	54
430	10.4	49.6	0.0	9.4	-2	100.2	53
431	8.6	51.6	0.0	8.8	-2	100.2	52
432			0.0	8.3	-2	100.2	52
433	7.9	50.7	0.0	8.3	-2	100.2	52
434	7.8	48.8	0.0	8.6	-2	100.2	52
435	9.3	45.9	0.0	7.6	-2	100.2	52
436	9.6	47.9	0.0	6.9	-2	100.2	54
437	9.7	51.2	0.0	9.0	-2	100.2	55
438	9.2	51.6	0.0	9.4	-2	100.2	55
439	9.4	50.7	0.0	9.5	-2	100.2	55
440	9.8	50.9	0.0	10.1	-2	100.2	55
441	9.5	46.9	0.0	9.6	-2	100.2	55
442	9.3	49.7	0.0	9.5	-2	100.2	53
443	9.5	50.1	0.0	9.3	-2	100.2	51
444	9.0	50.3	0.0	9.3	-2	100.2	51
445	9.7	51.5	0.0	8.8	-2	100.2	51
446	9.2	48.9	0.0	9.6	-2	100.2	51
447	9.1	48.8	0.0	9.7	-2	100.2	51
448	9.3	47.0	0.0	10.5	-2	100.2	51
449	8.2	46.7	0.0	8.8	-2	100.2	52
450	10.4	44.7	0.0	8.0	-2	100.2	52
451	9.4	46.2	0.0	7.6	-2	100.2	52
452	7.7	44.7	0.0	8.1	-2	100.2	52
453	10.7	44.7	0.0	8.5	-2	100.2	52
454	10.4	49.4	0.0	8.0	-2	100.2	53
455			0.0	7.5	-2	100.2	53
456	6.1	48.0	0.0	8.4	-2	100.2	53
457			0.0	7.6	-2	100.2	53
458			0.0	6.7	-2	100.2	53
459			0.0	7.1	-2	100.2	53
460	5.6	49.6	0.0	7.5	-2	100.2	54
461	6.3	46.4	0.0	8.1	-2	100.2	55
462	7.6	45.8	0.0	7.7	-2	100.2	55
463	6.0	48.4	0.0	7.7	-2	100.2	55
464	7.4	46.9	0.0	7.8	-2	100.2	55
465	6.8	43.6	0.0	7.5	-2	100.2	55
466	6.5	45.5	0.0	8.1	-2	100.2	54
467	7.8	49.0	0.0	7.3	-2	100.2	54
468	6.3	49.2	0.0	6.8	-2	100.2	54
469	7.4	46.8	0.0	7.2	-2	100.2	54
470	8.8	46.8	0.0	8.9	-2	100.2	54
471	8.7	48.4	0.0	8.6	-2	100.2	54
472	9.2	47.7	0.0	8.0	-2	100.2	52
473	9.9	46.7	0.0	7.6	-2	100.2	51
474	9.4	43.7	0.0	8.0	-2	100.2	51
475	8.4	47.0	0.0	8.3	-2	100.2	51
476	9.7	46.4	0.0	9.5	-2	100.2	51
477	10.6	46.1	0.0	8.6	-2	100.2	51
478	9.1	45.1	0.0	9.1	-2	100.2	52
479	8.6	45.4	0.0	8.3	-2	100.2	53
480	7.9	46.4	0.0	6.6	-2	100.2	53
481	8.1	45.9	0.0	5.5	-2	100.2	53
482	7.0	45.9	0.0	7.6	-2	100.2	53
483	6.8	44.2	0.0	7.1	-2	100.2	53
484	5.1	45.0	0.0	6.5	-2	100.2	55
485	5.4	45.9	0.0	7.1	-2	100.2	57
486	7.0	49.0	0.0	6.1	-2	100.2	57
487			0.0	6.4	-2	100.2	57
488	8.0	47.6	0.0	8.0	-2	100.2	57
489	6.8	48.9	0.0	8.2	-2	100.2	57
490	7.8	48.7	0.0	8.4	-2	100.2	55
491	9.1	49.9	0.0	8.8	-2	100.2	54
492	9.2	50.2	0.0	8.3	-2	100.2	54
493	9.7	49.9	0.0	8.3	-2	100.2	54
494	8.9	51.6	0.0	8.3	-2	100.2	54
495	9.7	50.8	0.0	8.3	-2	100.2	54
496	10.3	51.8	0.0	7.9	-2	100.2	53
497	10.7	48.8	0.0	8.1	-2	100.2	53
498	11.9	48.6	0.0	7.1	-2	100.2	53

Table E.02 Measurement data - Background

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

***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	12.0	45.4	0.0	8.7	-2	100.2	53
500	12.4	44.2	0.0	9.3	-2	100.2	53
501	6.7	44.7	0.0	6.7	-3	100.4	59
502	6.5	43.2	0.0	8.4	-3	100.4	59
503	5.6	44.9	0.0	7.8	-3	100.4	60
504	6.2	45.8	0.0	8.4	-3	100.4	60
505	5.2	47.8	0.0	8.7	-3	100.4	60
506	6.1	48.3	0.0	8.4	-3	100.4	60
507	6.2	47.5	0.0	8.2	-3	100.4	60
508			0.0	8.2	-3	100.4	60
509			0.0	8.3	-3	100.4	58
510			0.0	8.9	-3	100.4	58
511	5.7	47.9	0.0	8.6	-3	100.4	58
512	7.2	47.2	0.0	8.6	-3	100.4	58
513	7.7	45.6	0.0	8.1	-3	100.4	58
514	6.2	50.2	0.0	7.5	-3	100.4	59
515	6.0	48.7	0.0	9.0	-3	100.4	59
516	5.6	49.2	0.0	9.3	-3	100.4	59
517	6.8	51.5	0.0	7.9	-3	100.4	59
518	7.1	51.2	0.0	7.9	-3	100.4	59
519	5.6	48.4	0.0	7.7	-3	100.4	59
520	6.6	48.8	0.0	7.2	-3	100.4	61
521	8.1	51.9	0.0	8.4	-3	100.4	63
522	5.8	49.0	0.0	8.5	-3	100.4	63
523			0.0	8.6	-3	100.4	63
524			0.0	8.5	-3	100.4	63
525	7.1	48.9	0.0	7.6	-3	100.4	63
526	8.2	49.5	0.0	7.5	-3	100.4	62
527	9.6	49.3	0.0	6.8	-3	100.4	59
528	7.1	48.4	0.0	6.8	-3	100.4	59
529	7.2	45.1	0.0	7.4	-3	100.4	59
530	7.0	46.0	0.0	7.2	-3	100.4	59
531	5.6	48.0	0.0	7.0	-3	100.4	59
532	6.4	47.3	0.0	6.5	-3	100.4	59
533	5.5	46.4	0.0	6.4	-3	100.4	60
534	5.8	48.6	0.0	7.5	-3	100.4	60
535	6.0	47.0	0.0	8.3	-3	100.4	60
536	6.4	46.3	0.0	8.0	-3	100.4	60
537	6.3	46.2	0.0	9.0	-3	100.4	60
538	6.1	47.0	0.0	8.4	-3	100.4	60
539	6.6	48.6	0.0	9.2	-3	100.4	59
540	7.4	48.9	0.0	9.6	-3	100.4	59
541	8.8	46.9	0.0	9.2	-3	100.4	59
542	8.1	44.9	0.0	9.4	-3	100.4	59
543	9.0	45.8	0.0	10.1	-3	100.4	59
544	10.9	47.9	0.0	9.4	-4	100.4	58
545	7.5	51.4	0.0	9.0	-4	100.4	58
546	6.3	50.9	0.0	8.4	-4	100.4	58
547	7.2	50.7	0.0	9.5	-4	100.4	58
548	5.8	46.8	0.0	10.0	-4	100.4	58
549	7.1	49.0	0.0	9.2	-4	100.4	58
550	7.8	48.6	0.0	8.2	-4	100.4	57
551	8.9	46.3	0.0	9.0	-4	100.4	55
552	7.2	43.6	0.0	8.3	-4	100.4	55
553	7.7	43.7	0.0	9.6	-4	100.4	55
554	8.4	47.5	0.0	8.4	-4	100.4	55
555	6.9	46.0	0.0	9.6	-4	100.4	55
556	7.4	45.1	0.0	9.2	-4	100.4	56
557	7.5	48.5	0.0	7.6	-4	100.4	56
558	8.4	48.2	0.0	7.2	-4	100.4	56
559	7.3	48.5	0.0	7.5	-4	100.4	56
560	7.5	45.6	0.0	9.4	-4	100.4	56
561	6.5	49.7	0.0	9.5	-4	100.4	56
562	7.4	45.3	0.0	9.0	-4	100.4	56
563	8.4	47.7	0.0	8.2	-4	100.4	56
564	8.9	48.9	0.0	7.2	-4	100.4	56
565	8.8	47.1	0.0	7.0	-4	100.4	56
566	8.7	47.2	0.0	7.6	-4	100.4	56
567	8.3	47.4	0.0	10.2	-4	100.4	56
568	9.4	45.9	0.0	9.8	-4	100.4	56
569	10.5	48.3	0.0	9.1	-4	100.4	56
570	9.0	48.0	0.0	8.6	-4	100.4	56
571	7.7	48.7	0.0	8.9	-4	100.4	56
572	8.9	51.9	0.0	9.2	-4	100.4	56
573	9.4	49.7	0.0	7.5	-4	100.4	56
574	8.2	48.6	0.0	8.8	-4	100.4	56
575	8.8	50.3	0.0	7.8	-4	100.4	56
576	8.5	45.5	0.0	6.5	-4	100.4	56
577	7.6	48.7	0.0	6.6	-4	100.4	56
578			0.0	7.2	-4	100.4	56
579	7.2	51.8	0.0	9.2	-4	100.4	56
580	8.8	49.5	0.0	8.7	-4	100.4	56
581	8.7	50.1	0.0	8.2	-4	100.4	55

***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	10.4	51.9	0.0	9.0	-4	100.4	55
583	9.9	50.0	0.0	8.2	-4	100.4	55
584	9.9	47.2	0.0	8.0	-4	100.4	55
585	10.9	47.8	0.0	8.2	-4	100.4	55
586	11.2	44.7	0.0	9.2	-4	100.4	56
587	10.6	43.7	0.0	9.0	-4	100.4	58
588	9.9	45.4	0.0	8.7	-4	100.4	58
589	8.8	48.1	0.0	9.4	-4	100.4	58
590	9.2	47.3	0.0	9.2	-4	100.4	58
591	8.7	48.1	0.0	9.5	-4	100.4	58
592	7.7	48.1	0.0	9.0	-4	100.4	57
593	9.1	48.3	0.0	7.4	-4	100.4	55
594	7.5	47.1	0.0	6.5	-4	100.4	55
595	8.0	48.6	0.0	6.1	-4	100.4	55
596			0.0	6.6	-4	100.4	55
597	6.2	47.0	0.0	7.6	-4	100.4	55
598	6.7	47.4	0.0	6.8	-4	100.4	55
599	8.1	46.1	0.0	7.0	-4	100.4	56
600	9.4	44.8	0.0	8.2	-4	100.4	56
601	9.5	44.7	0.0	8.2	-4	100.4	56
602	9.6	42.6	0.0	7.1	-4	100.4	56
603	7.8	43.1	0.0	7.0	-4	100.4	56
604	6.4	45.9	0.0	8.5	-4	100.4	56
605	6.7	43.4	0.0	7.5	-4	100.4	58
606	7.1	46.6	0.0	7.7	-4	100.4	58
607	7.0	46.8	0.0	8.1	-4	100.4	58
608	7.0	46.3	0.0	6.6	-4	100.4	58
609	7.1	48.9	0.0	7.4	-4	100.4	58
610	7.6	49.5	0.0	8.6	-4	100.4	57
611	6.8	46.0	0.0	8.7	-4	100.4	56
612	7.1	47.5	0.0	8.2	-4	100.4	56
613	6.2	47.7	0.0	7.8	-4	100.4	56
614	7.6	48.5	0.0	7.2	-4	100.4	56
615	6.6	46.5	0.0	8.2	-4	100.4	56
616	7.6	48.3	0.0	7.6	-4	100.4	55
617	7.7	49.1	0.0	6.9	-4	100.4	54
618	7.4	50.3	0.0	9.0	-4	100.4	54
619	7.4	48.7	0.0	8.6	-4	100.4	54
620	9.4	46.9	0.0	8.3	-4	100.4	54
621	7.7	47.0	0.0	7.9	-4	100.4	54
622	6.0	49.7	0.0	7.9	-4	100.4	54
623	7.2	49.9	0.0	7.4	-4	100.4	53
624	8.0	44.0	0.0	7.7	-4	100.4	53
625	8.6	44.6	0.0	8.2	-4	100.4	53
626	8.6	46.9	0.0	7.6	-4	100.4	53
627	8.9	45.8	0.0	7.0	-4	100.4	53
628	7.0	46.9	0.0	6.7	-4	100.4	53
629	7.7	48.1	0.0	7.6	-4	100.4	54
630	6.1	49.0	0.0	7.7	-4	100.4	54
631	6.6	47.8	0.0	7.9	-4	100.4	54
632	5.4	44.9	0.0	8.6	-4	100.4	54
633	7.1	44.8	0.0	8.9	-4	100.4	54
634	7.3	43.9	0.0	8.7	-4	100.4	54
635	6.7	45.4	0.0	7.9	-4	100.4	53
636	8.0	47.9	0.0	7.2	-4	100.4	53
637	7.0	47.3	0.0	8.3	-4	100.4	53
638	6.2	44.6	0.0	6.8	-4	100.4	53
639	5.7	48.4	0.0	7.4	-4	100.4	53
640	6.8	47.4	0.0	8.9	-4	100.4	54
641	5.6	46.6	0.0	6.8	-4	100.4	54
642	7.1	46.5	0.0	7.7	-4	100.4	54
643	7.3	46.3	0.0	7.4	-4	100.4	54
644	8.5	43.1	0.0	6.2	-4	100.4	54
645	6.1	45.0	0.0	6.2	-4	100.4	54
646	9.2	47.3	0.0	9.0	-4	100.4	55
647	6.8	47.5	0.0	9.1	-4	100.4	55
648	6.7	47.5	0.0	9.1	-4	100.4	55
649	9.9	49.0	0.0	8.4	-4	100.4	55
650	7.2	49.7	0.0	8.9	-4	100.4	55
651	6.4	48.5	0.0	8.9	-4	100.4	55
652	7.6	46.7	0.0	9.6	-4	100.4	55
653	6.3	47.2	0.0	9.5	-4	100.4	53
654	8.4	50.7	0.0	8.8	-4	100.4	53
655	8.3	48.9	0.0	9.3	-4	100.4	53
656	6.5	46.8	0.0	8.3	-4	100.4	53
657	5.9	45.2	0.0	10.1	-4	100.4	53
658	8.6	50.0	0.0	9.8	-4	100.4	53
659	8.8	50.4	0.0	9.0	-4	100.4	52
660	9.3	52.3	0.0	10.1	-4	100.4	52
661			0.0	10.3	-4	100.4	52
662			0.0	9.6	-4	100.4	52
663	9.4	51.5	0.0	9.1	-4	100.4	52
664			0.0	9.6	-4	100.4	52

***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			0.0	8.9	-4	100.4	51
666			0.0	7.8	-4	100.4	51
667	8.1	49.4	0.0	7.4	-4	100.4	51
668			0.0	7.9	-4	100.4	51
669			0.0	6.6	-4	100.4	51
670			0.0	7.4	-4	100.4	52
671	6.4	50.4	0.0	8.0	-4	100.4	54
672	6.4	49.5	0.0	8.7	-4	100.4	54
673	8.5	46.2	0.0	8.3	-4	100.4	54
674	5.6	45.3	0.0	7.3	-4	100.4	54
675	6.9	44.0	0.0	6.9	-4	100.4	54
676	6.6	46.6	0.0	6.2	-4	100.4	54
677	7.3	48.7	0.0	7.1	-4	100.4	54
678			0.0	7.2	-4	100.4	54
679	5.9	47.3	0.0	7.3	-4	100.4	54
680	5.8	46.1	0.0	7.3	-4	100.4	54
681	4.7	46.9	0.0	6.7	-4	100.4	54
682	5.3	45.4	0.0	6.9	-4	100.4	54
683	4.9	47.1	0.0	6.1	-4	100.4	54
684			0.0	5.0	-4	100.4	54
685	4.8	45.7	0.0	6.3	-4	100.4	54
686	6.3	42.8	0.0	7.4	-4	100.4	54
687	6.5	45.1	0.0	7.2	-4	100.4	54
688	5.5	43.6	0.0	6.9	-4	100.4	55
689	5.7	48.4	0.0	6.9	-4	100.4	56
690	7.9	48.7	0.0	6.5	-4	100.4	56
691	6.9	49.1	0.0	7.5	-4	100.4	56
692	6.3	47.5	0.0	9.7	-4	100.4	56
693	6.0	47.0	0.0	9.0	-4	100.4	56
694	6.7	46.2	0.0	8.7	-4	100.4	55
695	7.4	45.7	0.0	8.3	-4	100.4	53
696	9.3	44.5	0.0	8.3	-4	100.4	53
697	8.1	44.7	0.0	7.5	-4	100.4	53
698	7.9	44.4	0.0	7.8	-4	100.4	53
699	6.5	48.9	0.0	7.6	-4	100.4	53
700	7.6	48.0	0.0	8.6	-4	100.4	53
701	9.2	52.5	0.0	10.5	-4	100.4	54
702	10.1	51.1	0.0	10.2	-4	100.4	54
703	10.9	51.0	0.0	10.5	-4	100.4	54
704	10.9	49.0	0.0	10.5	-4	100.4	54
705	11.3	47.9	0.0	9.7	-4	100.4	54
706	10.9	50.2	0.0	9.1	-4	100.4	54
707	8.0	49.5	0.0	9.3	-4	100.4	53
708	9.6	50.0	0.0	9.9	-4	100.4	53
709	9.6	48.0	0.0	8.9	-4	100.4	53
710	10.6	46.8	0.0	9.8	-4	100.4	53
711	9.3	50.4	0.0	9.8	-4	100.4	53
712	8.5	51.8	0.0	9.5	-4	100.4	53
713	10.1	51.5	0.0	8.8	-4	100.4	53
714	10.2	51.2	0.0	9.3	-4	100.4	53
715	11.3	48.5	0.0	8.5	-4	100.4	53
716	11.0	50.2	0.0	9.1	-4	100.4	53
717			0.0	9.7	-4	100.4	53
718	10.8	48.2	0.0	10.1	-4	100.4	53
719	10.4	47.5	0.0	9.3	-4	100.4	53
720	9.4	47.4	0.0	8.1	-4	100.4	53
721			0.0	6.9	-4	100.4	53
722	8.9	47.7	0.0	6.9	-4	100.4	53
723	10.0	47.5	0.0	7.7	-4	100.4	53
724	9.8	49.4	0.0	6.8	-4	100.4	53
725	9.6	46.4	0.0	7.6	-4	100.4	55
726	8.9	47.3	0.0	7.6	-4	100.4	55
727	10.9	48.8	0.0	8.0	-4	100.4	55
728	10.0	49.1	0.0	7.7	-4	100.4	55
729			0.0	6.4	-4	100.4	55
730			0.0	7.1	-4	100.4	55
731			0.0	8.8	-4	100.4	56
732	10.2	49.8	0.0	9.5	-4	100.4	56
733	9.2	50.6	0.0	9.2	-4	100.4	56
734	9.0	49.3	0.0	8.4	-4	100.4	56
735	7.8	48.9	0.0	8.5	-4	100.4	56
736	7.9	44.5	0.0	8.7	-4	100.4	55
737	7.7	47.4	0.0	8.2	-4	100.4	53
738	6.8	45.4	0.0	7.6	-4	100.4	53
739	8.3	45.0	0.0	7.3	-4	100.4	53
740	8.6	44.1	0.0	8.0	-4	100.4	53
741	8.5	45.0	0.0	7.0	-4	100.4	53
742	8.5	46.2	0.0	6.6	-4	100.4	53
743	8.4	48.5	0.0	7.4	-4	100.4	55
744	8.1	45.6	0.0	7.3	-4	100.4	55
745	8.0	44.5	0.0	6.8	-4	100.4	55
746	8.7	43.5	0.0	6.8	-4	100.4	55
747	8.7	44.4	0.0	7.1	-4	100.4	55

Table E.02 Measurement data - Background

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

***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	8.2	49.5	0.0	7.6	-4	100.4	55
749	8.3	49.6	0.0	8.0	-4	100.4	54
750	8.2	46.1	0.0	7.4	-4	100.4	54
751	8.1	44.3	0.0	6.5	-4	100.4	54
752	8.8	47.6	0.0	6.3	-4	100.4	54
753			0.0	5.9	-4	100.4	54
754	9.5	48.7	0.0	7.3	-4	100.4	55
755			0.0	6.7	-4	100.4	56
756			0.0	6.7	-4	100.4	56
757	8.0	47.3	0.0	7.7	-4	100.4	56
758	7.7	43.9	0.0	7.5	-4	100.4	56
759	8.7	46.1	0.0	7.1	-4	100.4	56
760	8.6	45.1	0.0	7.3	-4	100.4	55
761	8.8	43.9	0.0	6.2	-4	100.4	54
762	8.1	48.5	0.0	6.2	-4	100.4	54
763	7.7	44.8	0.0	6.5	-4	100.4	54
764	7.6	43.4	0.0	6.2	-4	100.4	54
765	7.5	43.0	0.0	5.9	-4	100.4	54
766	7.8	44.2	0.0	5.8	-4	100.4	54
767	7.7	43.1	0.0	5.5	-4	100.4	53
768	8.8	43.7	0.0	5.9	-4	100.4	53
769	7.7	43.5	0.0	6.8	-4	100.4	53
770	7.3	42.8	0.0	6.8	-4	100.4	53
771	7.2	43.8	0.0	6.2	-4	100.4	53
772	6.8	44.3	0.0	6.2	-4	100.4	53
773	6.2	46.3	0.0	6.0	-4	100.4	54
774	6.5	45.2	0.0	6.1	-4	100.4	54
775	6.4	43.9	0.0	5.9	-4	100.4	54
776	7.1	42.5	0.0	4.3	-4	100.4	54
777	7.6	44.3	0.0	4.7	-4	100.4	54
778	8.6	43.7	0.0	5.3	-4	100.4	55
779	9.0	45.3	0.0	5.9	-4	100.4	57
780	8.8	42.6	0.0	6.1	-4	100.4	57
781	8.8	45.8	0.0	6.4	-4	100.4	57
782	8.6	46.4	0.0	6.8	-4	100.4	57
783	8.6	45.2	0.0	6.5	-4	100.4	57
784	8.6	45.7	0.0	5.6	-4	100.4	57
785	7.8	46.9	0.0	6.2	-4	100.4	55
786	6.8	45.9	0.0	7.1	-4	100.4	55
787	6.7	46.8	0.0	8.4	-4	100.4	55
788	6.9	45.2	0.0	9.3	-4	100.4	55
789	6.5	45.4	0.0	8.4	-4	100.4	55
790	8.8	46.3	0.0	8.2	-4	100.4	55
791	7.9	44.9	0.0	8.5	-4	100.4	53
792	8.3	41.3	0.0	8.9	-4	100.4	53
793	9.1	41.8	0.0	8.1	-4	100.4	53
794	9.4	44.3	0.0	7.6	-4	100.4	53
795	9.4	45.4	0.0	7.5	-4	100.4	53
796			0.0	7.7	-4	100.4	53
797			0.0	7.1	-4	100.4	53
798	9.0	49.3	0.0	7.0	-4	100.4	53
799	9.6	49.2	0.0	7.5	-4	100.4	53
800	7.8	48.6	0.0	7.9	-4	100.4	53
801	6.6	47.3	0.0	7.4	-4	100.4	53
802	7.9	48.9	0.0	7.3	-4	100.4	53
803	7.9	49.0	0.0	6.4	-4	100.4	53
804	9.8	46.9	0.0	5.4	-4	100.4	53
805	9.1	45.6	0.0	6.4	-4	100.4	53
806	9.0	46.1	0.0	7.0	-4	100.4	53
807	8.7	46.9	0.0	6.8	-4	100.4	53
808	7.7	45.9	0.0	7.4	-4	100.4	54
809	6.8	45.1	0.0	6.6	-4	100.4	55
810	7.7	48.0	0.0	5.7	-4	100.4	55
811			0.0	5.9	-4	100.4	55
812			0.0	5.9	-4	100.4	55
813			0.0	6.8	-4	100.4	55
814	8.7	47.9	0.0	6.7	-4	100.4	55
815	8.9	47.3	0.0	7.9	-4	100.4	55
816	8.1	46.5	0.0	7.9	-4	100.4	55
817	7.5	50.1	0.0	8.2	-4	100.4	55
818	8.2	48.4	0.0	9.1	-4	100.4	55
819	9.1	48.4	0.0	9.3	-4	100.4	55
820			0.0	6.9	-4	100.5	55
821	9.6	47.6	0.0	6.6	-4	100.5	54
822	8.7	46.4	0.0	7.1	-4	100.5	54
823	7.4	48.0	0.0	6.4	-4	100.5	54
824	7.9	50.5	0.0	7.9	-4	100.5	54
825	7.5	50.4	0.0	8.8	-4	100.5	54
826	5.7	49.9	0.0	8.3	-4	100.5	54
827	5.7	49.3	0.0	7.7	-4	100.5	54
828			0.0	7.5	-4	100.5	54
829	5.7	49.5	0.0	7.0	-4	100.5	54
830	8.4	49.0	0.0	7.2	-4	100.5	54

***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	8.6	45.5	0.0	7.1	-4	100.5	54
832	8.0	46.8	0.0	7.0	-4	100.5	54
833	7.2	47.7	0.0	9.3	-4	100.5	53
834	7.2	45.7	0.0	9.7	-4	100.5	53
835	8.9	45.2	0.0	9.6	-4	100.5	53
836	8.5	45.5	0.0	9.6	-4	100.5	53
837	8.9	45.7	0.0	9.0	-4	100.5	53
838	9.5	46.8	0.0	8.3	-4	100.5	53
839			0.0	8.0	-4	100.5	52
840			0.0	8.0	-4	100.5	52
841			0.0	7.3	-4	100.5	52
842	8.2	49.3	0.0	7.1	-4	100.5	52
843	10.0	48.1	0.0	7.2	-4	100.5	52
844	8.9	49.9	0.0	8.5	-4	100.5	53
845	7.2	47.5	0.0	9.2	-4	100.5	54
846	8.5	46.4	0.0	8.7	-4	100.5	54
847	7.4	46.2	0.0	8.5	-4	100.5	54
848	9.5	45.4	0.0	8.8	-4	100.5	54
849	10.1	45.1	0.0	9.0	-4	100.5	54
850	8.3	44.7	0.0	9.8	-4	100.5	53
851	6.0	44.6	0.0	8.4	-4	100.5	52
852			0.0	7.6	-4	100.5	52
853	9.1	49.2	0.0	7.2	-4	100.5	52
854	8.6	46.0	0.0	6.8	-4	100.5	52
855			0.0	7.4	-4	100.5	52
856	9.2	47.3	0.0	6.2	-4	100.5	52
857	8.8	48.0	0.0	6.5	-4	100.5	54
858	7.3	46.9	0.0	6.9	-4	100.5	54
859	5.7	45.3	0.0	6.6	-4	100.5	54
860	5.7	46.4	0.0	7.5	-4	100.5	54
861	5.3	48.2	0.0	8.2	-4	100.5	54
862	5.5	46.2	0.0	7.8	-4	100.5	53
863	5.1	46.6	0.0	7.2	-4	100.5	52
864	6.3	46.2	0.0	9.0	-4	100.5	52
865	6.9	45.4	0.0	8.8	-4	100.5	52
866	9.0	45.4	0.0	8.1	-4	100.5	52
867	8.7	46.2	0.0	7.8	-4	100.5	52
868	8.4	45.5	0.0	8.5	-4	100.5	52
869	8.5	45.6	0.0	7.1	-4	100.5	52
870	9.4	48.5	0.0	6.9	-4	100.5	52
871	10.4	47.1	0.0	8.9	-4	100.5	52
872	10.3	47.0	0.0	8.5	-4	100.5	52
873	9.5	47.8	0.0	8.2	-4	100.5	52
874	9.3	47.5	0.0	7.6	-4	100.5	53
875	6.8	46.7	0.0	7.3	-4	100.5	54
876	5.8	49.7	0.0	7.2	-4	100.5	54
877	6.6	47.0	0.0	7.1	-4	100.5	54
878	7.0	46.9	0.0	6.9	-4	100.5	54
879	9.0	46.3	0.0	6.3	-4	100.5	54
880	7.1	43.7	0.0	5.6	-4	100.5	54
881	8.0	45.2	0.0	5.7	-4	100.5	55
882	7.8	47.9	0.0	6.9	-4	100.5	55
883	8.0	45.3	0.0	6.8	-4	100.5	55
884	7.3	43.3	0.0	6.6	-4	100.5	55
885	6.9	43.1	0.0	6.4	-4	100.5	55
886	4.6	45.9	0.0	6.9	-4	100.5	55
887	6.3	43.9	0.0	7.4	-4	100.5	54
888	6.1	42.7	0.0	7.6	-4	100.5	54
889	7.1	42.1	0.0	7.4	-4	100.5	54
890	8.5	41.7	0.0	7.3	-4	100.5	54
891	7.7	43.5	0.0	6.5	-4	100.5	54
892	8.3	45.8	0.0	7.2	-4	100.5	54
893	8.3	46.4	0.0	6.7	-4	100.5	54
894	8.2	45.1	0.0	6.2	-4	100.5	54
895	7.6	47.4	0.0	5.7	-4	100.5	54
896	7.7	44.5	0.0	6.0	-4	100.5	54
897	7.9	47.3	0.0	6.1	-4	100.5	54
898	6.8	47.0	0.0	6.0	-4	100.5	54
899	5.3	46.4	0.0	6.4	-4	100.5	56
900	7.2	46.6	0.0	6.2	-4	100.5	56
901	8.2	47.0	0.0	5.3	-4	100.5	56
902			0.0	5.2	-4	100.5	56
903	6.9	46.4	0.0	5.3	-4	100.5	56
904	6.1	44.5	0.0	5.7	-4	100.5	56
905	7.0	44.3	0.0	7.2	-4	100.5	56
906	7.3	45.4	0.0	8.1	-4	100.5	56
907	7.3	44.1	0.0	8.3	-4	100.5	56
908	6.3	42.9	0.0	7.4	-4	100.5	56
909	6.3	45.2	0.0	7.8	-4	100.5	56
910	8.3	45.6	0.0	7.0	-4	100.5	56
911	9.3	42.2	0.0	6.6	-4	100.5	54
912	9.2	45.1	0.0	6.8	-4	100.5	54
913	8.5	44.2	0.0	6.4	-4	100.5	54

***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 (%)
914	7.9	43.6	0.0	7.3	-4	100.5	54
915	7.8	42.7	0.0	8.3	-4	100.5	54
916	8.3	40.9	0.0	8.4	-4	100.5	55
917	8.3	42.0	0.0	6.9	-4	100.5	55
918	8.3	44.2	0.0	5.8	-4	100.5	55
919	8.0	42.0	0.0	5.7	-4	100.5	55
920	7.8	44.0	0.0	5.7	-4	100.5	55
921	6.9	44.7	0.0	5.7	-4	100.5	55
922	6.8	41.7	0.0	5.6	2	100.5	68
923	6.4	43.1	0.0	6.2	-4	100.5	56
924	7.7	45.4	0.0	6.7	-4	100.5	56
925	7.3	43.7	0.0	6.6	-4	100.5	56
926	7.2	45.9	0.0	6.2	-4	100.5	56
927	7.3	44.6	0.0	6.1	-4	100.5	56
928	7.6	45.7	0.0	7.5	-4	100.5	56
929	8.0	44.9	0.0	7.4	-4	100.5	56
930	8.8	43.2	0.0	6.2	-4	100.5	56
931	8.2	40.5	0.0	5.5	-4	100.5	56
932	6.5	40.8	0.0	5.4	-4	100.5	56
933	6.2	43.4	0.0	5.4	-4	100.5	56
934	7.0	43.6	0.0	6.7	-4	100.5	56
935	6.7	43.1	0.0	5.7	-4	100.5	56
936	6.2	43.0	0.0	4.8	-4	100.5	56
937	7.2	42.2	0.0	5.6	-4	100.5	56
938	6.7	44.0	0.0	6.4	-4	100.5	56
939	7.4	46.0	0.0	6.5	-4	100.5	56
940	6.8	46.6	0.0	6.5	-4	100.5	56
941	7.0	45.3	0.0	6.2	-4	100.5	55
942	7.0	43.4	0.0	6.3	-4	100.5	55
943	7.0	42.8	0.0	5.5	-4	100.5	55
944	6.6	43.6	0.0	4.9	-4	100.5	55
945	7.3	42.8	0.0	5.5	-4	100.5	55
946	7.5	43.1	0.0	5.4	-4	100.5	56
947	7.0	42.1	0.0	5.9	-4	100.5	56
948	6.6	41.5	0.0	6.5	-4	100.5	56
949	6.3	42.5	0.0	6.2	-4	100.5	56
950	7.5	42.5	0.0	6.5	-4	100.5	56
951	7.3	41.1	0.0	5.6	-4	100.5	56
952	6.5	41.0	0.0	6.4	-4	100.5	56
953	6.8	41.6	0.0	6.2	-4	100.5	56
954	5.7	41.1	0.0	6.6	-4	100.5	56
955	5.4	41.0	0.0	5.9	-4	100.5	56
956	5.5	40.9	0.0	5.7	-4	100.5	56
957	5.9	42.1	0.0	5.7	-4	100.5	56
958	6.2	41.0	0.0	6.4	-4	100.5	56
959	7.4	41.4	0.0	6.4	-4	100.5	56
960	7.5	41.0	0.0	6.9	-4	100.5	56
961	6.5	43.2	0.0	6.1	-4	100.5	56
962	7.2	44.8	0.0	5.1	-4	100.5	56
963	7.2	45.0	0.0	5.4	-4	100.5	56
964	8.5	42.2	0.0	5.0	-4	100.5	56
965	7.9	42.9	0.0	4.8	-4	100.5	57
966	7.5	43.9	0.0	5.2	-4	100.5	57
967	7.1	46.6	0.0	5.3	-4	100.5	57
968			0.0	5.3	-4	100.5	57
969	4.6	45.4	0.0	6.0	-4	100.5	57
970	5.0	46.5	0.0	5.6	-4	100.5	56
971	5.5	46.3	0.0	5.5	-4	100.5	54
972	8.0	46.0	0.0	5.0	-4	100.5	54
973	10.6	46.9	0.0	6.8	-4	100.5	54
974	10.8	50.7	0.0	8.9	-4	100.5	54
975	11.7	47.2	0.0	8.6	-4	100.5	54
976	10.4	47.5	0.0	8.7	-4	100.5	54
977	10.7	48.3	0.0	8.7	-4	100.5	52
978	11.6	47.2	0.0	7.7	-4	100.5	52
979	11.7	44.6	0.0	9.5	-4	100.5	52
980	11.6	44.7	0.0	10.3	-4	100.5	52
981	10.9	46.5	0.0	9.2	-4	100.5	52
982	8.1	48.8	0.0	8.0	-4	100.5	53
983			0.0	6.7	-4	100.5	54
984			0.0	6.8	-4	100.5	54
985			0.0	7.8	-4	100.5	54
986	8.0	47.8	0.0	8.0	-4	100.5	54
987	8.0	48.8	0.0	8.4	-4	100.5	54
988	8.0	50.7	0.0	8.0	-4	100.5	54
989	7.3	49.4	0.0	7.6	-4	100.5	54
990	9.4	48.8	0.0	6.9	-4	100.5	54
991	9.3	48.2	0.0	6.0	-4	100.5	54
992	9.7	46.7	0.0	5.7	-4	100.5	54
993	9.2	44.3	0.0	6.9	-4	100.5	54
994	10.1	46.2	0.0	8.4	-4	100.5	54
995	9.9	47.2	0.0	8.5	-4	100.5	53
996	9.8	44.9	0.0	7.7	-4	100.5	53

Table E.02 Measurement data - Background

Project: Adelaide Wind Energy Centre - Turbine T32 - IEC 61400-11 Measurement

Report ID: 14331.02.T32.RP4

Created on: 11/1/2017

***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 (%)
997	9.2	47.2	0.0	8.5	-4	100.5	53
998	9.4	47.1	0.0	7.9	-4	100.5	53
999	9.6	50.1	0.0	7.7	-4	100.5	53
1000	8.1	47.2	0.0	6.7	-4	100.5	53
1001	8.2	46.9	0.0	6.3	-4	100.5	52
1002	8.0	48.0	0.0	6.8	-4	100.5	52
1003	8.3	47.9	0.0	7.2	-4	100.5	52
1004	7.7	49.6	0.0	8.5	-4	100.5	52
1005	7.0	48.2	0.0	9.0	-4	100.5	52
1006	8.0	46.6	0.0	7.8	-4	100.5	52
1007	8.8	45.9	0.0	7.1	-4	100.5	52
1008	7.8	42.8	0.0	7.2	-4	100.5	52
1009	8.8	42.0	0.0	7.0	-4	100.5	52
1010	7.8	45.3	0.0	6.6	-4	100.5	52
1011	5.7	46.2	0.0	6.8	-4	100.5	52
1012	7.3	45.5	0.0	7.1	-4	100.5	52
1013	6.1	50.4	0.0	7.4	-4	100.5	53
1014	5.2	46.3	0.0	7.3	-4	100.5	53
1015	6.9	45.7	0.0	7.3	-4	100.5	53
1016	7.2	45.2	0.0	7.0	-4	100.5	53
1017	7.2	44.2	0.0	6.7	-4	100.5	53
1018	7.7	45.8	0.0	7.0	-4	100.5	53
1019	6.0	47.2	0.0	8.0	-4	100.5	53
1020	6.7	47.1	0.0	8.5	-4	100.5	53
1021	6.6	45.1	0.0	8.2	-4	100.5	53
1022	6.6	43.2	0.0	7.6	-4	100.5	53
1023	8.3	43.7	0.0	7.0	-4	100.5	53
1024	7.4	45.3	0.0	6.7	-4	100.5	53
1025	6.7	45.6	0.0	7.8	-4	100.5	53
1026	9.2	47.0	0.0	8.3	-4	100.5	53
1027	8.9	46.1	0.0	7.2	-4	100.5	53
1028	7.9	48.0	0.0	7.1	-4	100.5	53
1029	7.7	49.0	0.0	7.0	-4	100.5	53
1030			0.0	6.5	-4	100.5	53
1031			0.0	5.6	-4	100.5	54
1032			0.0	5.1	-4	100.5	54
1033			0.0	5.4	-4	100.5	54
1034			0.0	6.1	-4	100.5	54
1035			0.0	5.8	-4	100.5	54
1036	8.2	46.6	0.0	6.4	-4	100.5	54
1037	7.1	48.0	0.0	6.4	-4	100.5	54
1038	6.2	49.7	0.0	6.9	-4	100.5	54
1039	9.5	47.5	0.0	6.6	-4	100.5	54
1040	10.2	46.2	0.0	7.4	-4	100.5	54
1041	8.5	44.4	0.0	7.9	-4	100.5	54
1042	7.1	45.0	0.0	8.1	-4	100.5	54
1043	6.8	45.1	0.0	8.0	-4	100.5	53
1044	8.3	44.5	0.0	7.6	-4	100.5	53
1045	7.7	45.8	0.0	7.6	-4	100.5	53
1046	8.5	47.2	0.0	7.8	-4	100.5	53

***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 (%)
1080							
1081							
1082							
1083							
1084							
1085							
1086							
1087							
1088							
1089							
1090							
1091							
1092							
1093							
1094							
1095							
1096							
1097							
1098							
1099							
1100							
1101							
1102							
1103							
1104							
1105							
1106							
1107							
1108							
1109							
1110							
1111							
1112							
1113							
1114							
1115							
1116							
1117							
1118							
1119							
1120							
1121							
1122							
1123							
1124							
1125							
1126							
1127							
1128							
1129							

***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 (%)
1163							
1164							
1165							
1166							
1167							
1168							
1169							
1170							
1171							
1172							
1173							
1174							
1175							
1176							
1177							
1178							
1179							
1180							
1181							
1182							
1183							
1184							
1185							
1186							
1187							
1188							
1189							
1190							
1191							
1192							
1193							
1194							
1195							
1196							
1197							
1198							
1199							
1200							
1201							
1202							
1203							
1204							
1205							
1206							
1207							
1208							
1209							
1210							
1211							
1212							

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

CALIBRATION CERTIFICATE

Region:	Canada
Account:	Aercoustics Engineering Limited,Toronto
Instrument:	LMS SCADAS
Manufacturer:	LMS Instruments BV
Type:	SCM05
Serial number(s):	53103922
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 22.0 °C and a relative humidity of 19 %.
Calibration date:	24 January 2013
Results:	The calibration results, together with their associated uncertainties, are included in this calibration certificate.
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, 24 January, 2013

Calibration performed by:

Wilfred Nolles

Certificate approved by:

Rinus Damen

LMS Instruments BV
Druivenstraat 47
4816 KB 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-A-021
Serial No:	2622169
Calibration Recall No:	24274

Submitted By:

Customer:

Company: AERCOUSTICS ENGINEERING

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-A-021 BRUE

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

Within (X) see attached Report of Calibration.

the tolerance of the indicated specification.

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.

Calibration Date: 16-Jun-14

Certificate No: 24274 - 2

Approved by:

FC

Felix Christopher (QA Mgr.)
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.

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 Microphone Unit **Model No.: 4189-A-021** **Serial No.: 2622169**
Mic. Model: 4189 **Serial No.: 2625417**
Preamp. Model No.: 2671 **Serial No.: 2614900**
Company : Aercoustics Engineering **I. D. No.: XXXX**

Calibration results: Before data: ..... After data: .....
Combined Sensitivity @ 250 Hz and pressure of 99.622 kPa Before & after data same: .....
(Sensitivity with microphone and preamplifier.)

-26.71 dB re.1V/Pascal	Ambient Temperature:	21	°C
46.21 mV/Pascal	Ambient Humidity:	51.8	% RH
0.71 Ko (- dB re 50 mV/Pascal)	Ambient Pressure:	99.62	kPa
Sensitivity: Pass	Calibration Date:	16-Jun-2014	
Freq. Response Pass	Re-calibration Due:	16-Jun-2015	
All tests: Pass	Report Number:	24274 -2	
	Control Number:	24274	

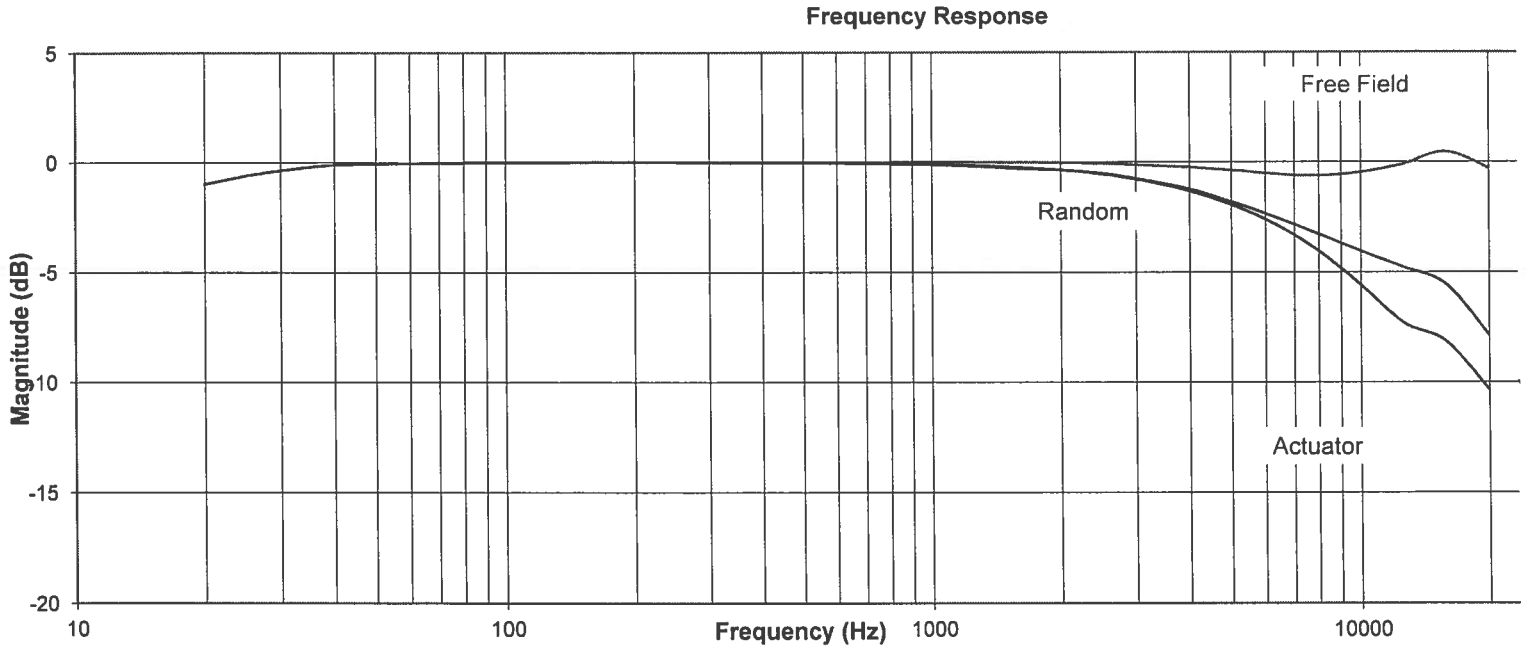
Combined Sensitivity @ 1000 Hz -26.80 dB re.1V/Pascal or 45.72 mV/Pascal

The above listed instrument meets or exceeds the tested manufacturer's specifications.

This Calibration is traceable through NIST test numbers: 683/281764-12

The expanded uncertainty of calibration: 0.18dB at 95% confidence level with a coverage factor of k=2.

The lower curve is the pressure response recorded with electrostatic actuator.



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 4189A021B&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: .....
Felix Christopher

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-A-021 **Serial No.: 2622169**
I. D. No.: XXXX

Company : Aercoustics Engineering

Frequency Response (Reference = 0 dB @ 250Hz)

Frequency [Hz]	Actuator [dB]	Random (dB)	Free Field (dB)	Frequency [Hz]	Actuator [dB]	Random (dB)	Free Field (dB)
19.95	-0.99	-0.99	-0.99	631.0	-0.04	-0.04	-0.01
25.12	-0.58	-0.58	-0.58	794.3	-0.06	-0.06	0.00
31.62	-0.30	-0.30	-0.30	1000.0	-0.09	-0.11	0.00
39.81	-0.10	-0.10	-0.10	1258.9	-0.15	-0.18	0.00
50.12	-0.07	-0.07	-0.07	1584.9	-0.23	-0.29	-0.01
63.10	-0.03	-0.03	-0.03	1995.3	-0.35	-0.35	-0.03
79.43	-0.02	-0.02	-0.02	2511.9	-0.55	-0.51	-0.07
100.00	-0.01	-0.01	-0.01	3162.3	-0.86	-0.82	-0.15
125.89	-0.01	-0.01	-0.01	3981.1	-1.30	-1.21	-0.24
158.49	0.01	0.01	0.01	5011.9	-1.94	-1.80	-0.37
199.53	0.01	0.01	0.01	6309.6	-2.82	-2.50	-0.54
251.19	0.00	0.00	0.00	7943.3	-4.01	-3.26	-0.63
316.23	-0.01	-0.01	-0.01	10000.0	-5.58	-4.05	-0.46
398.11	-0.02	-0.02	-0.01	12589.3	-7.29	-4.78	-0.10
501.19	-0.03	-0.03	-0.01	15848.9	-8.12	-5.54	0.46
				19952.6	-10.33	-7.84	-0.28

Frequency Response: Expanded Uncertainty (dB) with coverage factor K = 2
20 to 25 Hz 0.8dB, 25 to 160 Hz 0.5dB, 160 to 2kHz 0.3dB, 2k to 10kHz 0.5dB, 10k to 20kHz 1.3dB.

Instruments used for calibration:				Date of Cal.	Traceability No.	Re-cal. Due Date
Brüel & Kjær	4134	S/N	1942286	2-Oct-2013	683/281764-12	3-Oct-2014
HP	34401A	S/N	36064102	8-Oct-2013	,287708	8-Oct-2014
HP	34401A	S/N	36102471	8-Oct-2013	,287708	8-Oct-2014
HP	33120A	S/N	36043716	8-Oct-2013	,287708	8-Oct-2014
Brüel & Kjær	2636	S/N	1324082	3-Oct-2013	683/281764-12	3-Oct-2014
Brüel & Kjær	2669	S/N	1835082	3-Oct-2013	683/281764-12	3-Oct-2014
Brüel & Kjær	4228	S/N	1742061	2-Oct-2013	683/281764-12	3-Oct-2014

Cal. Date: 16-Jun-2014 **Tested by: Felix Christopher**

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:	2513184
Calibration Recall No:	24274

Submitted By:

Customer:

Company: AERCOUSTICS ENGINEERING

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) see attached Report of Calibration.

the tolerance of the indicated specification.

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: 16-Jun-14

Certificate No: 24274 - 1

Felix Christopher (QA Mgr.)
ISO/IEC 17025:2005

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

ACCREDITED

Calibration Lab. Cert. # 1533.01

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.: 2513184**

Company : Aercoustics Engineering **I. D. No: XXXX**

Calibration results:

Before data: ..... After data: .....

Before & after data same: ..✓.....

Sound Pressure Level at 999.9 Hz and pressure of 1013 hPa (mbar)
was 114.0 dB re 20µPa

(Calibrator tested with ½" adaptor UC 0210)

IEC 1094-4 Type WS 2 P Microphone was used for measurement.

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

Laboratory Environment:

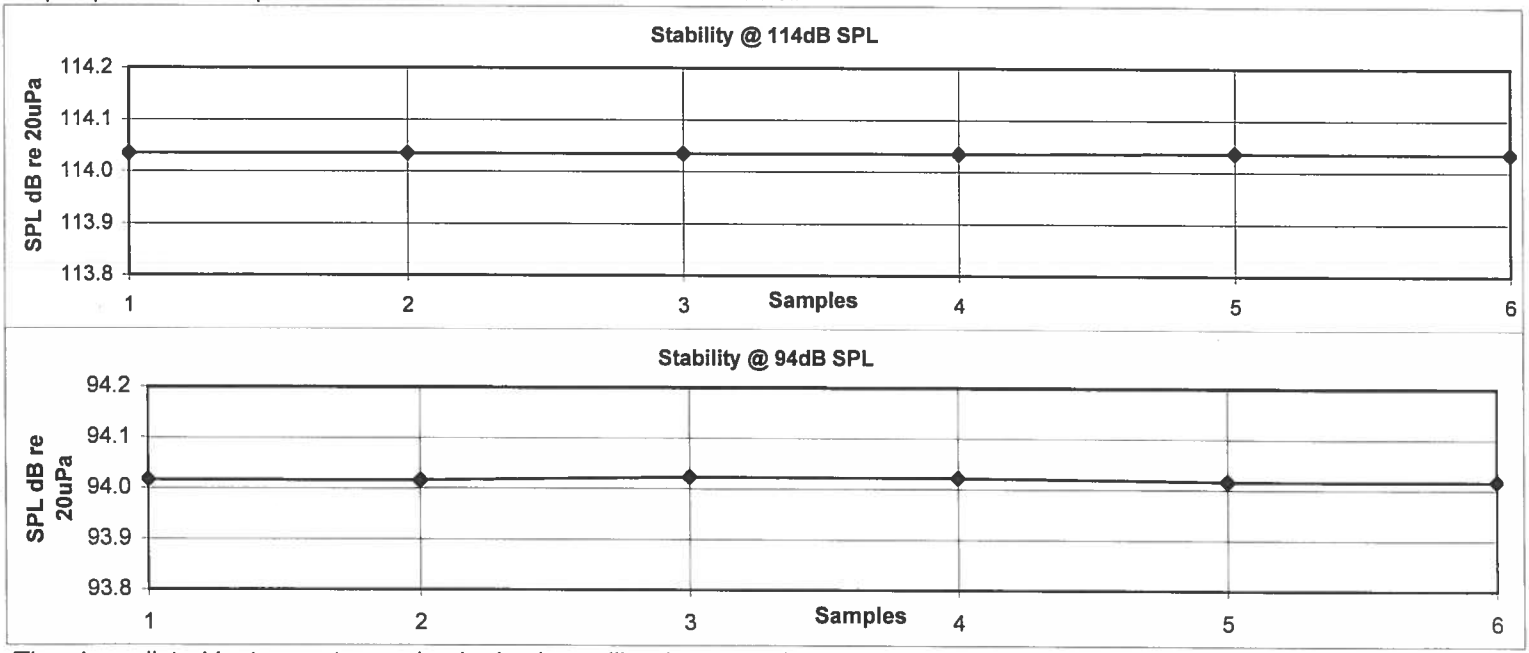
Ambient Temperature:	21.0	°C
Ambient Humidity:	51.8	% RH
Ambient Pressure:	99.622	kPa
Calibration Date:	16-Jun-2014	
Re-calibration Due:	16-Jun-2015	
Report Number:	24274 -1	
Control Number:	24274	

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: 683/281764-12

The expanded uncertainty of calibration: 0.09dB at 95% confidence level with a coverage factor of k=2.

Graph represents six samples of Sound Pressure Level measured at 5sec. 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: 16-Jun-2014

Measurements performed by: .....
Joanne Lemmon

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 Acoustical Calibrator **Model No.: 4231** **Serial No.: 2513184**

Company : Aercoustics Engineering

All tested parameters: Pass

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

Sample	1	114.03 dB re 20µPa	94.02 dB re 20µPa	
	2	114.03	94.02	
	3	114.03	94.02	
	4	114.03	94.02	
	5	114.04	94.02	
	6	114.03	94.02	
	Average	**114.0** Spec. 114dB ± 0.2dB	**94.0**	Spec. 94dB ± 0.2dB

Frequency measured (Three samples at 30 sec. Interval)

Sample	1	999.95 Hz	999.96 Hz	
	2	999.95	999.94	
	3	999.95	999.96	
	Average	**999.95**	**999.95**	Spec. 1000Hz ±0.1%

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

Distortion measured	-51.8 dB	-47.7 dB	Spec. ≤-40dB

Instruments used for calibration:			Date of Cal.	Traceability No.	Re-cal. Due Date
Brüel & Kjær	4231	S/N 2205493	2-Oct-2013	683/281764-12	3-Oct-2014
Brüel & Kjær	4134	S/N 1942286	2-Oct-2013	683/281764-12	3-Oct-2014
Brüel & Kjær	2669	S/N 1835082	3-Oct-2013	683/281764-12	3-Oct-2014
HP	34401A	S/N 44002907	12-Dec-2013	,287708	12-Dec-2014
Brüel & Kjær	2636	S/N 1487493	11-Oct-2013	683/281764-13	11-Oct-2014
HP	33120A	S/N 40011694	16-Oct-2013	,287708	16-Oct-2014

Cal. Date: 16-Jun-2014 **Tested by: Joanne Lemmon**

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 ANEMOMETER

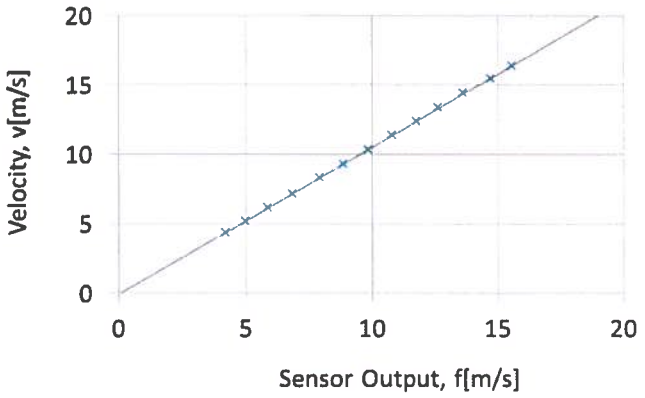
Certificate number: 14.US1.04688 **Date of issue:** July 1, 2014
Type: Vaisala Weather Transmitter, WXT520 **Serial number:** K2420011
Manufacturer: VAISALA Oyj, Pl 26, FIN-00421 Helsinki, Finland

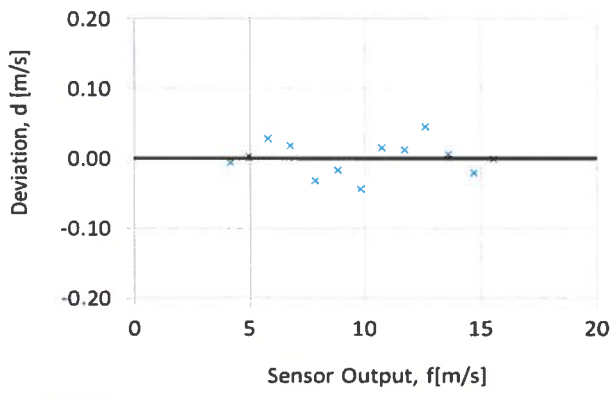
Client: Aercoustics Engineering Ltd., 50 Ronson Dr, Suite 165, Toronto, ON M9W IB3, Canada
Anemometer received: June 26, 2014 **Anemometer calibrated:** July 1, 2014
Calibrated by: mej **Calibration procedure:** IEC 61400-12-1:2005(E) Annex F
Certificate prepared by: ejf **Approved by:** Calibration engineer, rds

Calibration equation obtained: v [m/s] = 1.05788 · f [m/s] + -0.04497
Standard uncertainty, slope: 0.00184 **Standard uncertainty, offset:** -0.43799
Covariance: -0.0000375 $(m/s)^2/m/s$ **Coefficient of correlation:** $\rho = 0.999981$
Absolute maximum deviation: 0.044 m/s at 13.329 m/s

Barometric pressure: 992.4 hPa **Relative humidity:** 53.5% **Sensor Orientation:** 90°

Succession	Velocity pressure, q. [Pa]	Temperature in wind tunnel [°C]	d.p. box [°C]	Wind velocity, v. [m/s]	Sensor Output, f. [m/s]	Deviation, d. [m/s]	Uncertainty u_c (k=2) [m/s]
2	10.15	28.9	26.2	4.377	4.1862	-0.006	0.047
4	14.49	29.0	26.2	5.229	4.9828	0.003	0.040
6	20.18	29.0	26.2	6.173	5.8517	0.027	0.034
8	27.34	29.0	26.2	7.184	6.8172	0.017	0.030
10	36.48	29.0	26.2	8.299	7.9172	-0.032	0.027
12	46.02	29.0	26.2	9.320	8.8690	-0.017	0.025
13-last	56.53	29.0	26.2	10.330	9.8483	-0.044	0.023
11	68.33	29.0	26.2	11.358	10.7655	0.014	0.023
9	81.17	29.0	26.2	12.380	11.7345	0.011	0.022
7	94.08	29.0	26.2	13.329	12.6000	0.044	0.022
5	109.30	29.0	26.2	14.366	13.6172	0.005	0.022
3	126.98	29.0	26.2	15.484	14.7000	-0.021	0.023
1-first	142.83	28.8	26.2	16.420	15.5655	-0.002	0.023





EQUIPMENT USED

Serial Number	Description
Njord 1	Wind tunnel, blockage factor = 1.003
2254	Control cup anemometer
-	Mounting tube, D = 26.7 mm
TT001	Summit RT-AUI, wind tunnel
TT002	Summit RT-AUI, differential pressure box
DP005	Setra Model 239 pressure transducer
HY001	Dwyer Instruments RHP-2D20 humidity transmitter
BP001	Setra Model 278 barometer
PL3	Pitot tube
XB001	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: TRANSCAT, Atlantic Scale, & Furness Controls. A real-time analysis module within the data acquisition software detects pulse frequency.

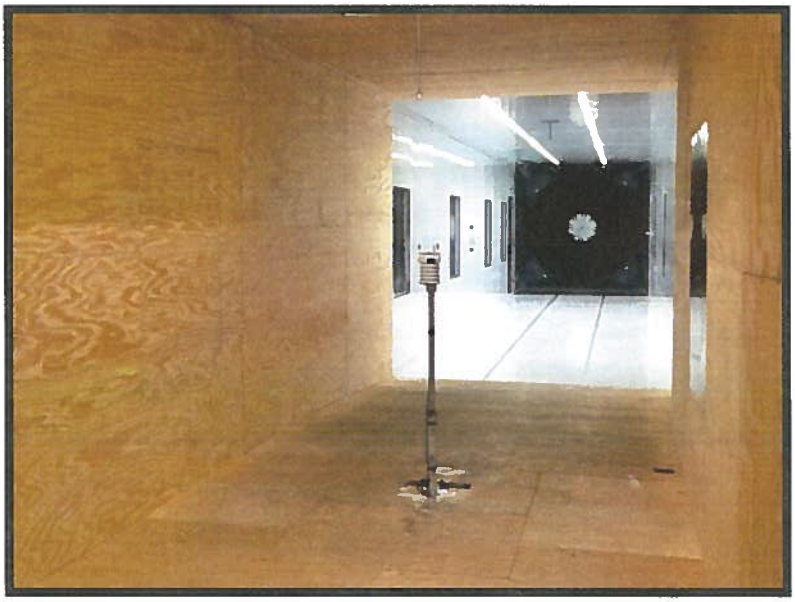


Photo of the wind tunnel setup. The cross-sectional area is 2.5 x 2.5 m.

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.DC.016 for further details.

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 ANEMOMETER

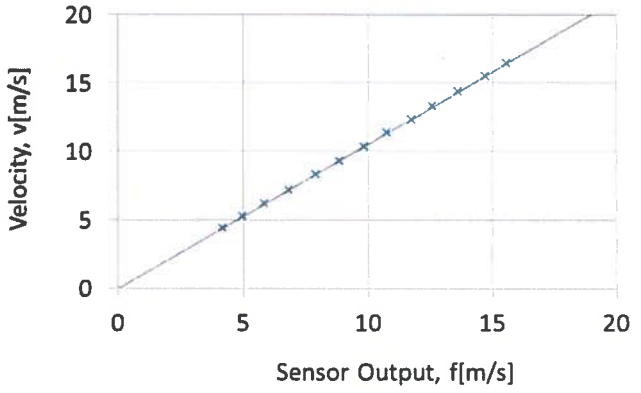
Certificate number: 14.US1.04687 **Date of issue:** July 1, 2014
Type: Vaisala Weather Transmitter, WXT520 **Serial number:** K2420011
Manufacturer: VAISALA Oyj, Pl 26, FIN-00421 Helsinki, Finland

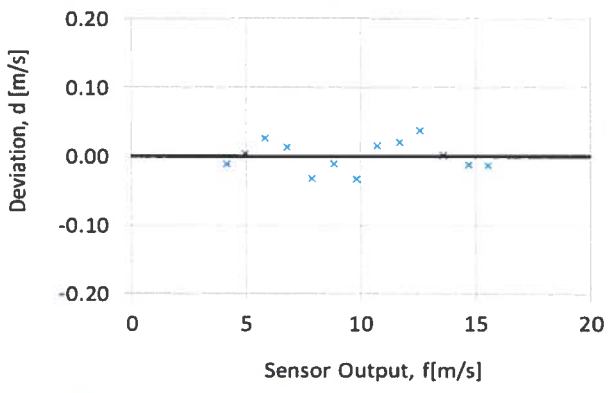
Client: Aercoustics Engineering Ltd., 50 Ronson Dr, Suite 165, Toronto, ON M9W IB3, Canada
Anemometer received: June 26, 2014 **Anemometer calibrated:** July 1, 2014
Calibrated by: mej **Calibration procedure:** IEC 61400-12-1:2005(E) Annex F
Certificate prepared by: ejf **Approved by:** Calibration engineer, rds

Calibration equation obtained: v [m/s] = 1.05657 · f [m/s] + -0.02907
Standard uncertainty, slope: 0.00162 **Standard uncertainty, offset:** -0.59400
Covariance: -0.0000288 (m/s)²/m/s **Coefficient of correlation:** ρ = 0.999986
Absolute maximum deviation: 0.036 m/s at 13.320 m/s

Barometric pressure: 993.2 hPa **Relative humidity:** 53.6% **Sensor Orientation:** 0°

Succession	Velocity pressure, q. [Pa]	Temperature in wind tunnel [°C]	d.p. box [°C]	Wind velocity, v. [m/s]	Sensor Output, f. [m/s]	Deviation, d. [m/s]	Uncertainty u_c (k=2) [m/s]
2	10.19	28.8	26.1	4.383	4.1862	-0.011	0.047
4	14.56	28.9	26.1	5.239	4.9828	0.004	0.040
6	20.26	28.9	26.1	6.179	5.8517	0.025	0.034
8	27.40	28.9	26.1	7.186	6.8172	0.012	0.030
10	36.57	28.9	26.1	8.304	7.9172	-0.032	0.027
12	46.17	28.9	26.1	9.331	8.8690	-0.011	0.025
13-last	56.74	28.9	26.1	10.344	9.8483	-0.033	0.023
11	68.44	28.9	26.1	11.360	10.7655	0.015	0.023
9	81.39	28.9	26.1	12.389	11.7345	0.019	0.022
7	94.10	28.9	26.1	13.320	12.6000	0.036	0.022
5	109.37	28.9	26.1	14.360	13.6172	0.001	0.022
3	127.26	28.8	26.1	15.490	14.7000	-0.012	0.023
1-first	142.75	28.7	26.1	16.404	15.5655	-0.013	0.023





ilac-MRA ACLASS ACCREDITED CALIBRATION

EQUIPMENT USED

Serial Number	Description
Njord 1	Wind tunnel, blockage factor = 1.003
2254	Control cup anemometer
-	Mounting tube, D = 26.7 mm
TT001	Summit RT-AUI, wind tunnel
TT002	Summit RT-AUI, differential pressure box
DP005	Setra Model 239 pressure transducer
HY001	Dwyer Instruments RHP-2D20 humidity transmitter
BP001	Setra Model 278 barometer
PL3	Pitot tube
XB001	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: TRANSCAT, Atlantic Scale, & Furness Controls. A real-time analysis module within the data acquisition software detects pulse frequency.

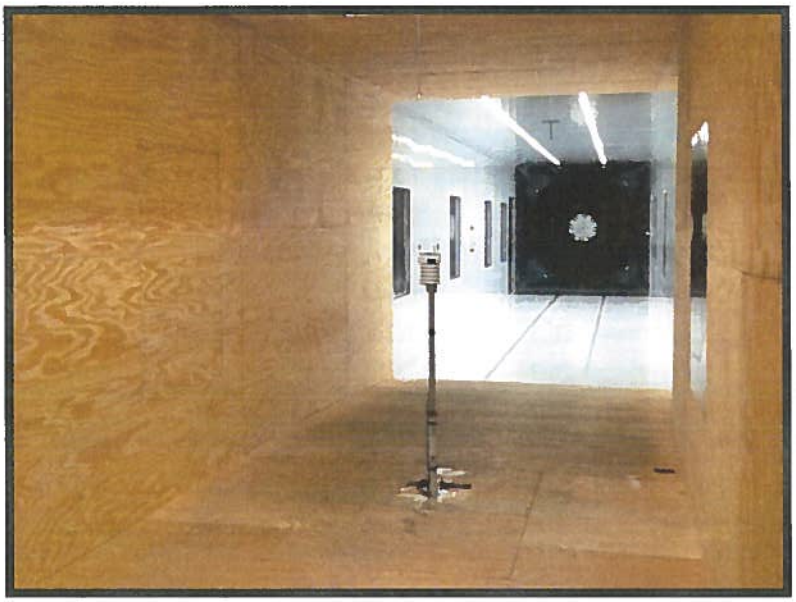


Photo of the wind tunnel setup. The cross-sectional area is 2.5 x 2.5 m.

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.DC.016 for further details.

TRANSCAT® TRANSCAT.COM
800.828.1470
Better by every measure

NVLAP®
NVLAP LAB CODE
200905-0

CERTIFICATE OF CALIBRATION

Customer: AEROCOUSTICS ENGINEERING LTD
50 RONSON DRIVE
SUITE 165
TORONTO, ON M9W 1B3

Cert/SO Nbr: 33-803WQ-1-1
Manufacturer: Nokeval
Model Nbr: 7470

Customer Nbr: 9-322110-000
PO Nbr: C062414
Date Received: June 26, 2014

Date Completed: July 04, 2014
Due Date: July 04, 2015

Description: Serial to Analog Converter
Serial Nbr: A165152
ID Nbr: NONE
Unit Barcode: 901B0165859

Calibrated To: Manufacturer Specification
Calibration Proc: 1-AC58014-0
Item Received: In Tolerance
Item Returned: In Tolerance

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 on this Certificate of Calibration. Any measurements on an accredited calibration not covered by that Lab's Scope are listed in the notes section of the certificate. This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Transcat calibrations, as applicable, are performed in compliance with the requirements of ISO 9001:2008, ISO TS16949, ANSI/NCSL Z540-1994, and ISO 10012-1992. When specified contractually, the requirements of 10CFR21, 10CFR50 App. B and NQA-1 are also covered.

Traceability includes no less than: An unbroken chain of comparison, realization of SI units, measurement uncertainty, documentation, competence, periodic recalibration, and measurement assurance. 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 recognized national measurement institutes (NMI's) or international standard bodies, or to measurable conditions created in our laboratory, or accepted fundamental and/or natural physical constants, ratio type of calibration, or by comparison to consensus standards. The specific path of traceability for the reported measurement results is maintained at the Transcat facility and is available there for review.

Complete records of work performed are maintained by Transcat and are available for inspection. Laboratory standards used in the performance of this calibration are shown on the Supplemental Report.

The results in this report relate only to the item calibrated or tested, and the determination of in or out of tolerance is specific to the model/serial no. referenced above based on the tolerances shown on the supplemental report; these tolerances are either the original equipment manufacturer's (OEM's) warranted specifications or the client's requested specifications.

The applied uncertainty is the uncertainty of the calibration process. The Test Uncertainty Ratio (TUR) is calculated as per NCSL International RP-9, section 8.2. All calibrations have been performed using processes having a TUR of 4 : 1 or better (3:1 for mass calibrations), unless otherwise noted on the Supplemental Report. Uncertainties have been estimated at a 95 percent confidence level (k=2). Calibration at a 4:1 TUR (or greater) provides reasonable confidence that the instrument is within the stated tolerances. For measuring instruments, in order to consider the contribution to the uncertainty from reproducibility of the unit under test (UUT), add 0.6 of the UUT's least significant digit to the reported uncertainty. For mass calibrations: Conventional mass referenced to 8.0 g/cm³.

Any number of factors can cause a unit to drift out of tolerance at any time following its calibration. Limitations on the uses of this instrument are detailed in the OEM's operating instructions.

Notes:

Calibrated At:
4043 Carling Avenue
Ottawa, ON K2K 2A4
By: Shabeba Bucknor
Digitally Signed On July 04, 2014

Facility Responsible:
4043 Carling Avenue
Ottawa, ON K2K 2A4
613-591-8140

Digitally Signed By Keith Powell
Date: July 04, 2014

Keith Powell
Lab Manager

F0013R25 4/23/14

Revision 0

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.02
Summary of Measurement Results

Summary of Measurement Results

1.1 Sound Power Levels

From Table 11 of IEC test report 14331.02.T32.RP4:

Wind Speed (m/s)	Apparent L_{WA}, (dBA)	Maximum Sound Power Level (dBA)* REA # 5663-9R9JTB
7	98.0*	103.5
7.5	99.4*	103.5
8	100.8*	103.5
8.5	101.8*	103.5
9	102.3	103.5
9.5	103.0	103.5
10	103.3	103.5
10.5	103.2	103.5
11	103.5	103.5

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

1.2 Tonal Audibility Values

From Table 12 of IEC test report 14331.02.T32.RP4:

Wind Speed (m/s)	Frequency (Hz)	Tonal audibility, ΔL_a (dB)	Tonal Audibility from AAR* (dB)
7	103	-2.0	2
7.5	111	-1.1	2
8	96	-0.9	2
8	516	-1.3	2
8	1706	-2.4	2
8.5	123	-2.5	2
8.5	381	-1.5	2
8.5	523	1.9	2
8.5	1724	-1.7	2
9	126	-1.1	2
9	537	3.7	2
9.5	130	0.3	2
9.5	546	5.4	2
9.5	566	3.2	2
10	130	0.5	2
10	556	4.2	2
10.5	130	-0.2	2
10.5	558	3.4	2
11	131	-0.1	2
11	558	5.4	2

*Adelaide Wind Energy Centre – Noise Impact Assessment Report (April 2013)

1.3 Statement of Compliance

Based on the results in Table 11 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 # 8980-95RSLP and Section E3.1 of the MOECC Compliance Protocol for Wind Turbine Noise.

Based on the results in Table 12 of the IEC 61400-11 to which this statement is attached, the maximum tonal audibility of the test turbine does not comply with the maximum tonal audibility of 2 dB as indicated in the statement from the manufacturer in Appendix E of the Acoustic Assessment Report dated April, 2013.

The owner/operator intends to demonstrate compliance at the worst-case receptors in accordance with Section E3.1 of the E-Audit review process in the Compliance Protocol for Wind Turbine Noise. Specifically, the owner/operator pursues Option 2: where I-Audit has been chosen to demonstrate compliance at the worst-case receptor(s).

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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 53 to 58, and 61; 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 Item 61	✓	Report Section 3, Appendix E, Slant distance provided in response letter
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 65; NPC-233, Section 10, Report Format, bullet point number 4, Conclusions and Recommendations Item 66; NPC-233, Section 12.3, Acoustic Audit – Acoustical Data, bullet point number 8, All necessary and supporting calculations Item 67; 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, Compliance Statement provided in response letter
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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Appendix F.04
Standardized Wind Speed Sample Calc

SAMPLE CALCULATION

This calculation example demonstrates the calculation of standardized wind speed through power curve and the calculation of standardized wind speed with Nacelle anemometer as per IEC 61400-11 Edition 3.0 section 8.2.1.1 and section 8.2.1.2

Sample calculations have been based on measurement data collected and reported for Adelaide Wind Energy Centre (Report ID: 14331.00.T32.RP4) for data points collected during Turbine ON measurements [Data point #3 and #139]

8.2.1.1 Determination of Wind Speed through power curve (m/s)

Step 1: Determine Acceptable Range of Power Curve

The power curve relates the power to the wind speed at hub height. The wind speed is determined from the measured electric power. Correlation between measured sound level and measured electric power is very high for the allowed intervals of the power curve, see Equation (3).

The intervals on the power curve that can be used are all intervals where no duplicated values exist and the slope of the power curve including the uncertainty is positive. The demand on the slope of the power curve is satisfied for any interval on the power curve, where the following is fulfilled:

$$(P_{k+1} - P_{tol}) - (P_k + P_{tol}) > 0 \qquad (3)$$

where

k is the wind speed bin number of the power curve;

P_k is the power curve value at wind bin k;

P_{tol} is the tolerance on the power reading, typical values for Ptol are 1 to 5% of maximum value

The Acceptable Range of the power curve based on the slope of the power curve is highlighted in table 1.

Step2: Determine Standardized Wind Speed from linear interpolation from power curve for Data Point # 3

Average Active Power measured for Data Point #3 (x) = 1602 kW

$$y = y_0 + (x - x_0)\frac{y_1 - y_0}{x_1 - x_0} = \frac{y_0(x_1 - x) + y_1(x - x_0)}{x_1 - x_0},$$

y_0 =	7	m/s
x_0 =	832	kW
y_1 =	8	m/s
x_1 =	1213	kW
x =	847	kW
y =	7.04	m/s

8.2.1.2 Determination of Wind Speed with Nacelle Anemometer

For all data points with power levels from the allowed range of the power curve, the average value of the ratio of the wind speed derived from the power curve $V_{P,n}$ and the measured nacelle wind speed $V_{nac,m}$,k_{nac}, is derived. This value is applied to the measured nacelle wind speed for the data points with power levels outside the allowed range of the power curve to derive the normalised wind speed using Equation (4).

$$V_{nac,n} = \kappa_{nac} V_{nac,m} \qquad (4)$$

$V_{nac,m}$ is the wind speed measured with the nacelle anemometer;

$V_{nac,n}$ is the normalised wind speed from the nacelle anemometer, corrected to hub height

Determine Standardized Wind Speed using eq(4) for Data Point #2

K_{nac} =	1.1230	
$V_{nac,m}$ =	9.10	m/s
$V_{nac,n}$ =	10.21	m/s

Table 1 - Power Curve and Acceptable Range of Power Curve

Power Curve		+ value = acceptable
Hub Wind Speed (m/s)	Power [kW]	slope of power curve
0	0	-32.4
1	0	-32.4
2	0	-28.4
3	4	60.6
4	97	149.6
5	279	212.6
6	524	275.6
7	832	348.6
8	1213	231.6
9	1477	86.6
10	1596	-8.4
11	1620	-32.4
12	1620	-32.4
13	1620	-32.4
14	1620	-32.4
15	1620	-32.4
16	1620	-32.4
17	1620	-32.4
18	1620	-32.4
19	1620	-32.4
20	1620	-32.4
21	1620	-32.4
22	1620	-32.4
23	1620	-32.4
24	1620	-32.4
25	1620	

Table 2 - Power Curve & Required Wind Speeds

Power Curve & Required Wind Speeds		
Power Curve Tolerance	1%	
Acceptable range min	3	m/s
Acceptable range max	9	m/s
Min allowable range	3	m/s
Max allowable range	9	m/s
Power Output	1620	kW
85% Power	1377	kW
Corresponding wind speed	8.62	m/s
Minimum bin	7.0	m/s
Maximum bin	11.0	m/s

Table 3 - Nacelle K-factor and Bacground K-factor

Environmental Details		
k_nac	1.1230	
k_Z	1.1614	

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2

Sample calculations have been based on measurement data collected and reported for Adelaide Wind Energy Centre (Report ID: 14331.02.T32.RP3)

For all data points with power levels from the allowed range of the power curve, the average value of the ratio of the wind speed derived from the power curve $V_{P,n}$ and the measured nacelle wind speed $V_{nac,m}$, k_{nac}, is derived as per equation (1). Information to calculate k_{nac} is provided in Table 1.

$$k_{nac} = \frac{1}{n}\left(\sum_{i=1}^{n}\left(\frac{v_{p,n}}{v_{nac,m}}\right)_i\right) \quad (1)$$

where

$V_{nac,m}$ is measured nacelle wind speed

K_{nac} is nacelle k-factor

$V_{P,n}$ is wind speed derived from the power curve

k_{nac} = 1.1230

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2

Table 1 - Information to calculate K_{nac}

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed in acceptable range 1=yes, 0=no	wind speed from acceptable range $V_{p,k}$ (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{p,k}/V_{nac,m}$
1	0	883	7.12	0	7.12	6.69	1.06
2	0	845	7.02	0	7.02	6.24	1.12
3	0	847	7.02	0	7.02	5.59	1.26
4	0	836	6.99	0	6.99	6.18	1.13
5	0	794	6.86	0	6.86	6.47	1.06
6	0	780	6.81	0	6.81	6.27	1.09
7	0	927	7.23	0	7.23	6.77	1.07
8	0	1193	7.93	0	7.93	8.13	0.98
9	0	1144	7.80	0	7.80	7.44	1.05
10	0	1075	7.62	0	7.62	7.35	1.04
11	0	1385	8.64	0	8.64	8.39	1.03
12	0	1505	9.23	0	9.23	8.01	1.15
13	0	1303	8.32	0	8.32	6.71	1.24
14	0	1203	7.96	0	7.96	5.98	1.33
15	0	1192	7.93	0	7.93	5.94	1.33
16	0	1430	8.82	0	8.82	8.48	1.04
17	0	1680		0		8.94	
18	0	1639		0		8.16	
19	0	1626		0		7.73	
20	0	1619	10.94	0		8.40	
21	0	1611	10.61	0		8.53	
22	0	1593	9.97	0		7.77	
23	0	1636	10.39	0		8.55	
24	0	1519	9.34	0		8.09	
25	0	1521	9.36	0		7.86	
26	0	1577	9.83	0		7.81	
27	0	1573	9.80	0		7.17	
28	0	1504	9.22	0	9.22	7.94	1.16
29	0	1604	10.30	0		7.97	
30	0	1647		0		7.88	
31	0	1581	9.87	0		7.50	
32	0	1601	10.19	0		6.99	
33	0	1598	9.25	0		6.97	
34	0	1516	9.32	0		6.96	
35	0	1537	9.49	0		7.99	
36	0	1597	10.00	0		7.31	
37	0	1541	9.53	0		8.15	
38	0	1479	9.01	0	9.01	8.03	1.12
39	0	1475	8.99	0	8.99	7.19	1.25
40	0	1334	8.44	0	8.44	7.20	1.17
41	0	1257	8.15	0	8.15	7.06	1.15
42	0	1276	8.22	0	8.22	6.80	1.21
43	0	1281	8.24	0	8.24	7.19	1.15
44	0	1198	7.94	0	7.94	7.33	1.08
45	0	1088	7.66	0	7.66	6.81	1.12
46	0	1172	7.88	0	7.88	8.01	0.98
47	0	1139	7.79	0	7.79	5.87	1.33
48	0	1138	7.79	0	7.79	7.27	1.07
49	0	1231	8.05	0	8.05	7.07	1.14
50	0	1287	8.26	0	8.26	8.20	1.01
51	0	1475	8.99	0	8.99	8.82	1.02
52	0	1685		0		8.95	
53	0	1626		0		7.89	
54	0	1615	10.77	0		7.10	
55	0	1612	10.65	0		7.16	
56	0	1580	9.86	0		7.31	
57	0	1404	8.72	0	8.72	6.61	1.32
58	0	1142	7.80	0	7.80	5.97	1.31
59	0	1017	7.47	0	7.47	6.42	1.16
60	0	955	7.31	0	7.31	6.54	1.12
61	0	995	7.41	0	7.41	7.15	1.04
62	0	1102	7.69	0	7.69	7.69	1.00
63	0	1287	8.26	0	8.26	8.25	1.00
64	0	1231	8.05	0	8.05	7.65	1.05
65	0	1021	7.48	0	7.48	6.86	1.09
66	0	850	7.03	0	7.03	5.98	1.18
67	0	832	6.98	0	6.98	7.27	0.96
68	0	906	7.18	0	7.18	7.44	0.96
69	0	947	7.29	0	7.29	7.93	0.92
70	0	959	7.32	0	7.32	6.88	1.06
71	0	968	7.34	0	7.34	6.56	1.12
72	0	1053	7.56	0	7.56	7.79	0.97
73	0	1364	8.56	0	8.56	8.35	1.03
74	0	1638		0		7.80	
75	0	1480	9.01	0	9.01	8.66	1.04
76	0	1448	8.88	0	8.88	8.24	1.08
77	0	1593	9.97	0		8.62	
78	0	1461	8.93	0	8.93	7.84	1.14
79	0	1317	8.38	0	8.38	6.99	1.20
80	0	1214	7.99	0	7.99	6.68	1.20
81	0	1476	8.99	0	8.99	7.93	1.13
82	0	1641		0		8.29	
83	0	1599	10.11	0		7.56	
84	0	1646		0		8.21	
85	0	1642		0		7.67	
86	0	1552	9.62	0		7.39	
87	0	1516	9.32	0		7.38	
88	0	1625		0		7.67	
89	0	1657		0		8.09	
90	0	1602	10.22	0		7.96	
91	0	1632		0		8.14	
92	0	1636		0		8.46	
93	0	1627		0		8.03	
94	0	1632		0		8.34	
95	0	1622		0		7.70	
96	0	1625		0		7.43	
97	0	1611	10.63	0		8.78	
98	0	1609	10.50	0		8.15	
99	0	1642		0		8.95	
100	0	1646		0		9.66	
101	0	1636		0		8.48	
102	0	1618	10.90	0		8.32	
103	0	1620	10.98	0		8.25	
104	0	1617	10.89	0		7.65	
105	0	1595	9.98	0		7.21	
106	0	1618	10.91	0		8.19	
107	0	1653		0		8.70	
108	0	1624		0		7.78	
109	0	1611	10.63	0		8.13	
110	0	1432	8.82	0	8.82	7.21	1.22
111	0	1198	7.94	0	7.94	6.94	1.14
112	0	1110	7.71	0	7.71	7.46	1.03
113	0	1098	7.68	0	7.68	5.98	1.28
114	0	1244	8.10	0	8.10	6.93	1.17
115	0	1362	8.55	0	8.55	7.19	1.19
116	0	1587	9.92	0		8.82	
117	0	1613	10.70	0		7.82	
118	0	1608	10.46	0		7.87	
119	0	1660		0		7.89	
120	0	1631		0		7.79	
121	0	1616	10.81	0		8.47	
122	0	1586	9.91	0		7.85	
123	0	1556	9.65	0		7.12	
124	0	1414	8.75	0	8.75	7.40	1.18
125	0	1276	8.22	0	8.22	7.85	1.05
126	0	1154	7.83	0	7.83	7.01	1.12
127	0	1059	7.58	0	7.58	6.54	1.16
128	0	954	7.30	0	7.30	6.67	1.09
129	0	1017	7.47	0	7.47	7.06	1.06
130	0	1195	7.94	0	7.94	6.39	1.24
131	0	1476	8.99	0	8.99	8.58	1.05
132	0	1670		0		9.20	
133	0	1633		0		8.00	
134	0	1591	9.95	0		7.26	
135	0	1628		0		8.63	
136	0	1611	10.61	0		8.31	
137	0	1620	10.99	0		8.95	
138	0	1624		0		8.57	
139	0	1636		0		9.10	
140	0	1568	9.76	0		8.15	
141	0	1621		0		8.01	
142	0	1635		0		8.74	
143	0	1635		0		7.81	
144	0	1623		0		8.48	
145	0	1402	8.71	0	8.71	7.23	1.20
146	0	1251	8.12	0	8.12	6.73	1.21
147	0	1402	8.71	0	8.71	7.69	1.13
148	0	1624		0		8.28	
149	0	1611	10.60	0		7.69	
150	0	1533	9.46	0		7.63	
151	0	1522	9.37	0		7.26	
152	0	1591	9.95	0		7.73	
153	0	1656		0		7.68	
154	0	1557	9.66	0		6.98	
155	0	1614	10.73	0		7.92	
156	0	1631		0		7.30	
157	0	1570	9.77	0		7.01	
158	0	1441	8.86	0	8.86	7.26	1.22
159	0	1419	8.77	0	8.77	7.67	1.14
160	0	1603	10.25	0		7.97	
161	0	1634		0		8.14	
162	0	1571	9.78	0		7.68	
163	0	1247	8.11	0	8.11	5.89	1.38
164	0	1058	7.58	0	7.58	6.78	1.12
165	0	1075	7.62	0	7.62	7.61	1.00
166	0	1085	7.65	0	7.65	7.73	0.99
167	0	990	7.40	0	7.40	7.50	0.99
168	0	890	7.14	0	7.14	6.34	1.13
169	0	856	7.05	0	7.05	6.49	1.09
170	0	1145	7.81	0	7.81	8.43	0.93
171	0	1514	9.31	0		8.88	
172	0	1385	8.64	0	8.64	6.94	1.24
173	0	1257	8.15	0	8.15	6.91	1.18
174	0	1067	7.60	0	7.60	6.49	1.17
175	0	925	7.23	0	7.23	6.47	1.12
176	1	996	7.41	0		7.72	
177	1	1162	7.85	0		7.16	
178	1	1222	8.01	0		6.77	
179	0	1267	8.19	0	8.19	7.60	1.08
180	0	1315	8.37	0	8.37	8.96	0.93
181	0	1415	8.76	0	8.76	8.11	1.08
182	0	1505	9.22	0	9.22	8.76	1.05
183	0	1474	8.98	0	8.98	7.73	1.16
184	0	1356	8.53	0	8.53	7.35	1.16
185	0	1364	8.56	0	8.56	7.68	1.11
186	0	1376	8.60	0	8.60	8.05	1.07
187	0	1282	8.24	0	8.24	7.46	1.10
188	0	1240	8.08	0	8.08	6.81	1.19
189	0	1184	7.91	0	7.91	6.02	1.31
190	0	1067	7.60	0	7.60	5.69	1.34
191	0	942	7.27	0	7.27	5.99	1.21
192	0	824	6.95	0	6.95	5.08	1.37
193	0	804	6.89	0	6.89	6.15	1.12
194	0	875	7.10	0	7.10	6.59	1.08
195	0	1173	7.88	0	7.88	7.80	1.01
196	0	1435	8.83	0	8.83	7.53	1.17
197	0	1274	8.21	0	8.21	6.20	1.32
198	0	1244	8.10	0	8.10	6.97	1.16
199	0	1298	8.31	0	8.31	6.34	1.31
200	0	1196	7.94	0	7.94	7.55	1.05
201	0	1085	7.65	0	7.65	6.09	1.26
202	0	957	7.31	0	7.31	6.65	1.10
203	0	810	6.91	0	6.91	6.41	1.08
204	0	676	6.48	0	6.48	5.39	1.20
205	0	585	6.18	0	6.18	5.85	1.06
206	0	569	6.13	0	6.13	4.68	1.31
207	0	608	6.26	0	6.26	4.78	1.31
208	0	708	6.58	0	6.58	6.53	1.01
209	0	837	7.00	0	7.00	6.11	1.14
210	0	923	7.22	0	7.22	7.89	0.92
211	0	929	7.24	0	7.24	7.51	0.96
212	0	847	7.02	0	7.02	6.49	1.08
213	0	691	6.53	0	6.53	5.69	1.15
214	0	551	6.08	0	6.08	5.13	1.19
215	0	495	5.87	0	5.87	5.14	1.14
216	0	486	5.83	0	5.83	5.35	1.09
217	0	585	6.18	0	6.18	6.00	1.03
218	0	700	6.56	0	6.56	5.43	1.21
219	0	768	6.77	0	6.77	6.44	1.05
220	0	848	7.03	0	7.03	6.05	1.16
221	0	973	7.36	0	7.36	7.38	1.00
222	0	984	7.38	0	7.38	6.47	1.14
223	0	910	7.19	0	7.19	5.36	1.34
224	0	925	7.23	0	7.23	7.21	1.00
225	0	991	7.40	0	7.40	8.08	0.92
226	0	963	7.33	0	7.33	5.74	1.28
227	0	844	7.02	0	7.02	6.43	1.09
228	0	955	7.31	0	7.31	7.29	1.00
229	0	1648		0		9.55	
230	0	1632		0		7.51	
231	0	1648		0		9.09	
232	0	1603	10.28	0		8.47	
233	0	1631		0		8.20	
234	0	1608	10.48	0		8.76	
235	0	1621		0		7.91	
236	0	1627		0		8.54	
237	0	1626		0		7.35	
238	0	1642		0		9.35	
239	0	1618	10.92	0		7.91	
240	0	1638		0		8.63	
241	0	1624		0		8.23	
242	0	1620		0		8.50	
243	0	1604	10.29	0		9.11	
244	0	1631		0		7.78	
245	0	1630		0		7.35	
246	0	1620	11.00	0		7.28	
247	0	1646		0		7.52	
248	0	1640		0		8.95	
249	0	1635		0		8.51	
250	0	1637		0		9.01	
251	0	1622		0		8.44	
252	0	1613	10.71	0		9.08	
253	0	1619	10.94	0		9.15	
254	0	1619	10.95	0		8.15	
255	0	1628		0		8.95	
256	0	1611	10.60	0		8.07	
257	0	1624		0		7.86	
258	0	1649		0		8.23	
259	0	1653		0		8.36	
260	0	1629		0		9.20	
261	0	1615	10.79	0		7.17	
262	0	1613	10.72	0		8.11	
263	0	1626		0		7.96	
264	0	1626		0		8.59	

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range $V_{i,n}$ (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{hub}/V_{nac,m}$
265	0	1617	10.86	0		9.31	
266	0	1616	10.84	0		8.12	
267	0	1622		0		8.20	
268	0	1635		0		8.92	
269	0	1626		0		7.30	
270	0	1620		0		7.65	
271	0	1551	9.62	0		6.88	
272	0	1428	8.81	0	8.81	7.78	1.13
273	0	1456	8.91	0	8.91	7.60	1.17
274	0	1509	9.26	0		7.37	
275	0	1633		0		7.89	
276	0	1634		0		7.80	
277	0	1653		0		7.92	
278	0	1616	10.83	0		8.10	
279	0	1646		0		7.98	
280	0	1608	10.49	0		7.58	
281	0	1616	10.84	0		7.65	
282	0	1615	10.80	0		8.57	
283	0	1597	10.00	0		7.72	
284	0	1599	10.08	0		7.93	
285	0	1495	9.14	0	9.14	8.51	1.07
286	0	1495	9.14	0	9.14	9.68	0.94
287	0	1682		0		8.83	
288	0	1608	10.50	0		7.03	
289	0	1608	10.50	0		6.21	
290	0	1572	9.79	0		7.72	
291	0	1526	9.41	0		7.84	
292	0	1579	9.85	0		9.15	
293	0	1672		0		8.07	
294	0	1630		0		7.67	
295	0	1615	10.77	0		7.18	
296	0	1541	9.53	0		7.37	
297	0	1416	8.76	0	8.76	6.78	1.29
298	0	1665		0		10.07	
299	0	1618	10.90	0		8.90	
300	0	1629		0		8.65	
301	0	1622		0		8.80	
302	0	1611	10.63	0		9.45	
303	0	1589	9.93	0		7.82	
304	0	1601	10.19	0		8.16	
305	0	1635		0		8.63	
306	0	1521	9.36	0		8.13	
307	0	1344	8.48	0	8.48	8.35	1.02
308	0	1104	7.70	0	7.70	7.40	1.04
309	0	1119	7.74	0	7.74	7.73	1.00
310	0	1308	8.34	0	8.34	8.50	0.98
311	0	1398	8.69	0	8.69	7.35	1.18
312	0	1378	8.61	0	8.61	6.69	1.29
313	0	1279	8.23	0	8.23	6.59	1.25
314	0	1169	7.87	0	7.87	7.56	1.04
315	0	1441	8.86	0	8.86	7.98	1.11
316	0	1660		0		8.57	
317	0	1557	9.67	0		7.17	
318	0	1519	9.34	0		8.11	
319	0	1300	8.31	0	8.31	7.04	1.18
320	0	1104	7.70	0	7.70	7.22	1.07
321	0	984	7.38	0	7.38	6.51	1.13
322	0	896	7.15	0	7.15	6.03	1.18
323	0	840	7.01	0	7.01	5.82	1.20
324	0	901	7.17	0	7.17	6.25	1.15
325	0	1064	7.59	0	7.59	6.38	1.19
326	0	1053	7.56	0	7.56	6.76	1.12
327	0	981	7.38	0	7.38	5.99	1.23
328	0	1022	7.48	0	7.48	7.30	1.02
329	0	969	7.34	0	7.34	5.94	1.24
330	0	971	7.35	0	7.35	5.29	1.39
331	0	1146	7.81	0	7.81	6.16	1.27
332	0	1537	9.50	0		7.74	
333	0	1657		0		8.09	
334	0	1647		0		7.05	
335	0	1648		0		7.88	
336	0	1610	10.56	0		7.53	
337	0	1595	9.98	0		7.35	
338	0	1566	9.74	0		7.10	
339	0	1285	8.26	0	8.26	6.45	1.28
340	0	1165	7.86	0	7.86	6.42	1.22
341	0	1307	8.34	0	8.34	6.95	1.20
342	0	1289	8.27	0	8.27	6.66	1.24
343	0	1209	7.97	0	7.97	6.57	1.21
344	0	1302	8.32	0	8.32	7.69	1.08
345	0	1683		0		9.79	
346	0	1603	10.26	0		7.17	
347	0	1596	9.99	0		6.80	
348	0	1580	9.85	0		7.10	
349	0	1661		0		8.89	
350	0	1647		0		9.68	
351	0	1620		0		8.57	
352	0	1615	10.79	0		9.84	
353	0	1620		0		10.51	
354	0	1623		0		10.95	
355	0	1627		0		11.02	
356	0	1621		0		9.82	
357	0	1634		0		10.22	
358	0	1633		0		10.22	
359	0	1621		0		10.31	
360	0	1624		0		11.38	
361	0	1617	10.86	0		9.74	
362	0	1620		0		8.98	
363	0	1643		0		9.04	
364	0	1621		0		9.30	
365	0	1613	10.70	0		8.44	
366	0	1624		0		8.47	
367	0	1639		0		8.80	
368	0	1636		0		8.29	
369	0	1646		0		9.13	
370	0	1614	10.76	0		8.75	
371	0	1633		0		9.02	
372	0	1639		0		9.25	
373	0	1615	10.79	0		9.17	
374	0	452	5.69	0	5.69	6.39	0.89
375	0	498	5.88	0	5.88	5.83	1.01
376	0	536	6.03	0	6.03	6.16	0.98
377	0	560	6.10	0	6.10	5.52	1.11
378	0	528	6.00	0	6.00	5.01	1.20
379	0	506	5.91	0	5.91	5.01	1.18
380	0	523	5.98	0	5.98	5.34	1.12
381	0	550	6.07	0	6.07	6.46	0.94
382	0	526	5.99	0	5.99	5.51	1.09
383	0	472	5.77	0	5.77	4.83	1.20
384	0	457	5.71	0	5.71	5.19	1.10
385	0	468	5.76	0	5.76	5.33	1.08
386	0	477	5.79	0	5.79	5.13	1.13
387	0	462	5.73	0	5.73	5.54	1.03
388	0	485	5.83	0	5.83	6.34	0.92
389	0	631	6.33	0	6.33	5.73	1.10
390	0	930	7.24	0	7.24	6.94	1.04
391	0	1120	7.74	0	7.74	6.39	1.21
392	0	1146	7.81	0	7.81	6.81	1.15
393	0	1220	8.00	0	8.00	7.28	1.10
394	0	1356	8.53	0	8.53	6.95	1.23
395	0	1360	8.54	0	8.54	7.32	1.17
396	0	1318	8.38	0	8.38	7.65	1.10
397	0	1286	8.26	0	8.26	7.50	1.10
398	0	1210	7.98	0	7.98	6.82	1.17
399	0	1170	7.87	0	7.87	7.37	1.07
400	0	1286	8.26	0	8.26	8.65	0.96
401	0	1368	8.58	0	8.58	7.51	1.14
402	0	1209	7.97	0	7.97	6.41	1.24
403	0	1053	7.56	0	7.56	7.02	1.08
404	0	1012	7.46	0	7.46	6.33	1.18
405	0	984	7.38	0	7.38	6.22	1.19
406	0	956	7.31	0	7.31	6.62	1.10
407	0	919	7.21	0	7.21	6.89	1.05
408	0	806	6.90	0	6.90	6.14	1.12
409	0	692	6.53	0	6.53	5.88	1.11
410	0	712	6.59	0	6.59	6.36	1.04
411	0	765	6.77	0	6.77	5.94	1.14
412	0	766	6.77	0	6.77	6.12	1.11
413	0	763	6.76	0	6.76	6.44	1.05
414	0	749	6.71	0	6.71	6.06	1.11
415	0	740	6.68	0	6.68	6.84	0.98
416	0	745	6.70	0	6.70	6.33	1.06
417	0	679	6.49	0	6.49	5.39	1.20
418	0	592	6.21	0	6.21	5.65	1.10
419	0	567	6.13	0	6.13	5.78	1.06
420	0	582	6.17	0	6.17	6.46	0.96
421	0	572	6.14	0	6.14	6.38	0.96
422	0	574	6.15	0	6.15	5.12	1.20
423	0	610	6.27	0	6.27	5.92	1.06
424	0	579	6.16	0	6.16	5.70	1.08
425	0	526	5.99	0	5.99	5.22	1.15
426	0	510	5.93	0	5.93	5.40	1.10
427	0	512	5.93	0	5.93	6.40	0.93
428	0	501	5.89	0	5.89	5.82	1.01
429	0	426	5.59	0	5.59	5.18	1.08
430	0	373	5.37	0	5.37	5.08	1.06
431	0	384	5.42	0	5.42	4.80	1.13
432	0	373	5.37	0	5.37	4.57	1.18
433	0	453	5.70	0	5.70	4.86	1.17
434	0	525	5.99	0	5.99	4.99	1.20
435	0	593	6.21	0	6.21	5.37	1.16
436	0	619	6.29	0	6.29	5.12	1.23
437	0	594	6.21	0	6.21	5.38	1.16
438	0	562	6.11	0	6.11	5.03	1.22
439	0	565	6.12	0	6.12	5.84	1.05
440	0	627	6.32	0	6.32	6.00	1.05
441	0	736	6.67	0	6.67	6.68	1.00
442	0	880	7.11	0	7.11	6.70	1.06
443	0	953	7.30	0	7.30	6.76	1.08
444	0	924	7.23	0	7.23	6.76	1.07
445	0	856	7.05	0	7.05	6.22	1.13
446	0	825	6.96	0	6.96	6.55	1.06
447	0	822	6.95	0	6.95	6.65	1.04
448	0	821	6.95	0	6.95	6.39	1.09
449	0	843	7.01	0	7.01	6.16	1.14
450	0	858	7.05	0	7.05	6.20	1.14
451	0	825	6.96	0	6.96	6.22	1.12
452	0	795	6.86	0	6.86	5.91	1.16
453	0	738	6.68	0	6.68	5.89	1.13
454	0	731	6.66	0	6.66	5.91	1.13
455	0	803	6.89	0	6.89	6.42	1.07
456	0	896	7.15	0	7.15	7.11	1.01
457	0	995	7.41	0	7.41	6.93	1.07
458	0	1051	7.56	0	7.56	6.28	1.20
459	0	1065	7.60	0	7.60	6.79	1.12
460	0	1034	7.51	0	7.51	6.35	1.18
461	0	1011	7.45	0	7.45	6.32	1.18
462	0	963	7.33	0	7.33	6.17	1.19
463	0	907	7.18	0	7.18	6.72	1.07
464	0	834	6.99	0	6.99	5.67	1.23
465	0	765	6.76	0	6.76	6.26	1.08
466	0	718	6.61	0	6.61	5.85	1.13
467	0	669	6.45	0	6.45	5.98	1.08
468	0	634	6.34	0	6.34	6.23	1.02
469	0	648	6.39	0	6.39	5.41	1.18
470	0	1600	10.13	0		7.94	
471	0	1491	9.11	0	9.11	7.15	1.27
472	0	1273	8.21	0	8.21	6.38	1.29
473	0	1049	7.55	0	7.55	5.98	1.26
474	0	827	6.96	0	6.96	5.44	1.28
475	0	724	6.63	0	6.63	5.77	1.15
476	0	790	6.84	0	6.84	6.38	1.07
477	0	1073	7.62	0	7.62	7.42	1.03
478	0	1436	8.84	0	8.84	9.37	0.94
479	0	1550	9.61	0		9.04	
480	0	1665		0		9.36	
481	0	1640		0		8.17	
482	0	1613	10.68	0		6.89	
483	0	1605	10.34	0		7.75	
484	0	1585	9.90	0		7.20	
485	0	1612	10.64	0		7.60	
486	0	1637		0		9.14	
487	0	1649		0		9.12	
488	0	1651		0		8.55	
489	0	1645		0		8.36	
490	0	1592	9.96	0		7.13	
491	0	1508	9.25	0		7.50	
492	0	1404	8.72	0	8.72	8.21	1.06
493	0	1510	9.27	0		8.32	
494	0	1516	9.32	0		8.25	
495	0	1495	9.14	0	9.14	8.15	1.12
496	0	1447	8.88	0	8.88	7.60	1.17
497	0	1361	8.55	0	8.55	7.41	1.15
498	0	1268	8.19	0	8.19	6.63	1.23
499	0	1130	7.77	0	7.77	6.10	1.27
500	0	968	7.34	0	7.34	6.54	1.12
501	0	859	7.05	0	7.05	6.95	1.02
502	0	883	7.12	0	7.12	7.00	1.02
503	0	886	7.13	0	7.13	7.61	0.94
504	0	876	7.10	0	7.10	7.20	0.99
505	0	892	7.14	0	7.14	7.31	0.98
506	0	824	6.96	0	6.96	6.25	1.11
507	0	798	6.87	0	6.87	6.81	1.01
508	0	840	7.01	0	7.01	6.77	1.03
509	0	869	7.08	0	7.08	6.47	1.09
510	0	870	7.08	0	7.08	5.62	1.26
511	0	843	7.01	0	7.01	6.29	1.11
512	0	790	6.85	0	6.85	5.63	1.22
513	0	723	6.63	0	6.63	5.52	1.20
514	0	686	6.51	0	6.51	5.32	1.22
515	0	635	6.34	0	6.34	5.40	1.18
516	0	616	6.29	0	6.29	4.94	1.27
517	0	786	6.83	0	6.83	7.43	0.92
518	0	1047	7.55	0	7.55	7.55	1.00
519	0	1170	7.87	0	7.87	7.22	1.09
520	0	1194	7.93	0	7.93	8.02	0.99
521	0	1164	7.86	0	7.86	7.53	1.04
522	0	1153	7.83	0	7.83	7.75	1.01
523	0	1012	7.46	0	7.46	6.45	1.16
524	0	853	7.04	0	7.04	6.38	1.10
525	0	753	6.73	0	6.73	5.57	1.21
526	0	711	6.59	0	6.59	5.75	1.15
527	0	938	7.26	0	7.26	6.39	1.14
528	0	1661		0		9.63	

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed in acceptable range 1=yes, 0=no	wind speed from acceptable range $V_{h,n}$ (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{h,n}/V_{nac,m}$
529	0	1591	9.95	0		7.68	
530	0	1637		0		8.69	
531	0	1650		0		8.17	
532	0	1633		0		9.41	
533	0	1625		0		9.72	
534	0	1609	10.52	0		9.33	
535	0	1622		0		9.23	
536	0	1617	10.89	0		9.33	
537	0	1620	10.99	0		8.37	
538	0	1617	10.85	0		8.30	
539	0	1623		0		8.50	
540	0	1655		0		9.03	
541	0	1630		0		7.66	
542	0	1629		0		8.41	
543	0	1602	10.21	0		8.02	
544	0	1606	10.41	0		7.51	
545	0	1591	9.95	0		7.46	
546	0	1380	8.62	0	8.62	6.52	1.32
547	0	1279	8.23	0	8.23	6.67	1.23
548	0	1237	8.07	0	8.07	6.51	1.24
549	0	1224	8.02	0	8.02	6.04	1.33
550	0	1113	7.72	0	7.72	6.91	1.12
551	0	1092	7.67	0	7.67	6.75	1.14
552	0	1125	7.75	0	7.75	6.32	1.23
553	0	1118	7.73	0	7.73	7.06	1.09
554	0	1120	7.74	0	7.74	6.73	1.15
555	0	1435	8.83	0	8.83	7.60	1.16
556	0	1645		0		7.98	
557	0	1598	9.26	0		7.66	
558	0	1435	8.83	0	8.83	8.53	1.04
559	0	1563	9.72	0		8.77	
560	0	1653		0		7.35	
561	0	1562	9.70	0		6.62	
562	0	1620	10.98	0		8.01	
563	0	1646		0		7.76	
564	0	1627		0		7.31	
565	0	1615	10.80	0		7.05	
566	0	1610	10.58	0		7.93	
567	0	1627		0		7.17	
568	0	1611	10.60	0		7.15	
569	0	1634		0		7.74	
570	0	1638		0		7.16	
571	0	1631		0		7.14	
572	0	1640		0		6.91	
573	0	1633		0		7.77	
574	0	1628		0		7.62	
575	0	1608	10.50	0		6.71	
576	0	1619	10.94	0		7.26	
577	0	1637		0		8.94	
578	0	1639		0		8.00	
579	0	1628		0		8.23	
580	0	1625		0		8.50	
581	0	1592	9.95	0		7.55	
582	0	1501	9.19	0	9.19	7.53	1.22
583	0	1407	8.73	0	8.73	7.79	1.12
584	0	1560	9.69	0		7.38	
585	0	1642		0		8.41	
586	0	1661		0		9.25	
587	0	1636		0		8.75	
588	0	1610	10.57	0		8.62	
589	0	1611	10.59	0		9.36	
590	0	1620	10.98	0		9.46	
591	0	1614	10.75	0		8.73	
592	0	1617	10.86	0		8.51	
593	0	1618	10.93	0		8.27	
594	0	1628		0		7.58	
595	0	1642		0		8.61	
596	0	1628		0		7.80	
597	0	1615	10.77	0		7.93	
598	0	1628		0		9.22	
599	0	1616	10.83	0		8.52	
600	0	1507	9.24	0	9.24	7.36	1.26
601	0	1166	7.86	0	7.86	6.43	1.22
602	0	1135	7.78	0	7.78	7.26	1.07
603	0	1190	7.92	0	7.92	6.34	1.25
604	0	1107	7.71	0	7.71	6.18	1.25
605	0	957	7.31	0	7.31	6.54	1.12
606	0	934	7.25	0	7.25	6.51	1.11
607	0	508	5.92	0	5.92	9.09	0.65
608	0	670	6.46	0	6.46	8.80	0.73
609	0	753	6.73	0	6.73	9.28	0.72
610	0	1107	7.71	0	7.71	10.46	0.74
611	0	1469	8.97	0	8.97	10.19	0.88
612	0	1636		0		9.43	
613	0	1620	11.00	0		10.22	
614	0	1637		0		11.64	
615	0	1632		0		10.75	
616	0	1621		0		10.47	
617	0	1626		0		9.29	
618	0	1617	10.86	0		10.17	
619	0	1617	10.89	0		8.41	
620	0	1624		0		8.99	
621	0	1654		0		9.01	
622	0	1626		0		9.63	
623	0	1627		0		10.17	
624	0	1634		0		10.54	
625	0	1609	10.54	0		9.64	
626	0	1610	10.57	0		8.29	
627	0	1628		0		7.99	
628	0	1618	10.93	0		7.44	
629	0	1635		0		7.26	
630	0	1633		0		6.14	
631	0	1660		0		7.90	
632	0	1650		0		10.28	
633	0	1621		0		10.62	
634	0	1606	10.38	0		8.66	
635	0	1626		0		7.10	
636	0	1625		0		8.03	
637	0	1619	10.94	0		8.03	
638	0	1635		0		8.15	
639	0	1646		0		9.34	
640	0	1629		0		8.61	
641	0	1615	10.77	0		8.97	
642	0	1624		0		8.86	
643	0	1630		0		8.37	
644	0	1620		0		8.59	
645	0	1611	10.60	0		7.85	
646	0	1610	10.58	0		8.00	
647	0	1616	10.84	0		7.69	
648	0	1646		0		8.01	
649	0	1558	9.67	0		7.66	
650	0	1283	8.25	0	8.25	6.81	1.21
651	0	1160	7.85	0	7.85	6.80	1.15
652	0	1006	7.44	0	7.44	5.54	1.34
653	0	832	6.98	0	6.98	6.04	1.15
654	0	741	6.69	0	6.69	6.22	1.07
655	0	681	6.49	0	6.49	5.79	1.12
656	0	646	6.38	0	6.38	5.74	1.11
657	0	638	6.35	0	6.35	5.36	1.19
658	0	635	6.34	0	6.34	5.66	1.12
659	0	691	6.53	0	6.53	6.78	0.96
660	0	848	7.03	0	7.03	7.08	0.99
661	0	1164	7.86	0	7.86	7.49	1.05
662	0	1613	10.69	0		7.30	
663	0	1594	9.97	0		6.98	
664	0	1635		0		6.93	
665	0	1618	10.93	0		7.84	
666	0	1583	9.88	0		7.14	
667	0	1581	9.86	0		9.44	
668	0	1346	8.49	0	8.49	7.85	1.08
669	0	1401	8.70	0	8.70	8.63	1.01
670	0	1488	9.09	0	9.09	8.15	1.11
671	0	1564	9.73	0		7.37	
672	0	1646		0		7.26	
673	0	1633		0		7.48	
674	0	1656		0		8.25	
675	0	1619	10.97	0		8.14	
676	0	1611	10.60	0		9.42	
677	0	1611	10.61	0		8.51	
678	0	1604	10.30	0		8.22	
679	0	1625		0		8.51	
680	0	1654		0		9.90	
681	0	1636		0		9.32	
682	0	1625		0		9.32	
683	0	1616	10.85	0		9.70	
684	0	1627		0		10.63	
685	0	1613	10.68	0		8.97	
686	0	1633		0		9.45	
687	0	1616	10.84	0		10.15	
688	0	1611	10.60	0		8.51	
689	0	1627		0		8.92	
690	0	1644		0		7.69	
691	0	1634		0		9.53	
692	0	1633		0		9.66	
693	0	1590	9.94	0		7.69	
694	0	1605	10.34	0		7.54	
695	0	1594	9.97	0		8.58	
696	0	1684		0		9.77	
697	0	1623		0		8.74	
698	0	1659		0		8.50	
699	0	1635		0		9.75	
700	0	1613	10.71	0		9.04	
701	0	1617	10.88	0		9.66	
702	0	1625		0		10.40	
703	0	1627		0		10.34	
704	0	1623		0		10.41	
705	0	1631		0		9.47	
706	0	1620		0		10.90	
707	0	1616	10.82	0		10.17	
708	0	1630		0		10.00	
709	0	1619	10.98	0		8.95	
710	0	1634		0		7.24	
711	1	1617	10.88	0		7.64	
712	1	1580	9.86	0		5.70	
713	1	1669		0		8.68	
714	0	1623		0		7.76	
715	0	1642		0		7.75	
716	0	1635		0		10.03	
717	0	1604	10.32	0		8.72	
718	0	1622		0		9.45	
719	0	1611	10.60	0		8.40	
720	0	1623		0		10.70	
721	0	1630		0		9.89	
722	0	1624		0		8.84	
723	0	1630		0		9.30	
724	0	1630		0		9.87	
725	0	1626		0		9.55	
726	0	1617	10.89	0		10.09	
727	0	1623		0		8.50	
728	0	1627		0		10.04	
729	0	1636		0		8.58	
730	0	1615	10.80	0		9.16	
731	0	1614	10.72	0		8.95	
732	0	1637		0		9.89	
733	0	1639		0		9.25	
734	0	1630		0		9.83	
735	0	1630		0		9.11	
736	0	1627		0		9.70	
737	0	1617	10.87	0		8.74	
738	0	1619	10.96	0		8.07	
739	0	1639		0		8.99	
740	0	1621		0		8.78	
741	0	1609	10.51	0		8.64	
742	0	1626		0		8.43	
743	0	1609	10.54	0		7.90	
744	0	1629		0		8.34	
745	0	1642		0		8.55	
746	0	1641		0		6.95	
747	0	1584	9.89	0		6.94	
748	0	1638		0		7.22	
749	0	1668		0		8.05	
750	0	1620		0		8.81	
751	0	1593	9.97	0		7.91	
752	0	1626		0		7.67	
753	0	1624		0		8.66	
754	0	1626		0		8.24	
755	0	1623		0		9.43	
756	0	1598	10.04	0		7.68	
757	0	1623		0		7.02	
758	0	1644		0		8.73	
759	0	1643		0		6.82	
760	0	1618	10.90	0		7.09	
761	0	1605	10.35	0		8.15	
762	0	1582	9.88	0		7.57	
763	0	1603	10.26	0		8.52	
764	0	1664		0		7.96	
765	0	1625		0		7.12	
766	0	1653		0		8.27	
767	0	1654		0		8.61	
768	0	1638		0		8.89	
769	0	1615	10.80	0		7.73	
770	0	1607	10.41	0		7.99	
771	0	1612	10.63	0		7.93	
772	0	1625		0		8.13	
773	0	1638		0		7.92	
774	0	1615	10.76	0		8.09	
775	0	1618	10.91	0		7.14	
776	0	1607	10.45	0		7.69	
777	0	1627		0		7.31	
778	0	1555	9.65	0		7.12	
779	0	1401	8.70	0	8.70	6.95	1.25
780	0	1535	9.48	0		7.36	
781	0	1466	8.96	0	8.96	6.66	1.35
782	0	1497	9.16	0	9.16	7.22	1.27
783	0	1667		0		9.25	
784	0	1654		0		8.43	
785	0	1614	10.73	0		8.69	
786	0	1622		0		9.19	
787	0	1603	10.26	0		8.38	
788	0	1609	10.54	0		8.05	
789	0	1610	10.58	0		8.91	
790	0	1642		0		8.87	
791	0	1625		0		9.13	
792	0	1597	10.00	0		8.16	

SAMPLE CALCULATION

This calculation example demonstrates the calculation of nacelle k-factor as per IEC 61400-11 Edition 3.0 section 8.2.1.2

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range $V_{i,n}$ (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{hr,n}/V_{nac,m}$
793	0	1613	10.69	0		7.54	
794	0	1597	10.00	0		7.44	
795	0	1473	8.98	0	8.98	7.45	1.21
796	0	1415	8.75	0	8.75	7.13	1.23
797	0	1375	8.60	0	8.60	7.67	1.12
798	0	1420	8.78	0	8.78	7.03	1.25
799	0	1623		0		7.95	
800	0	1670		0		7.89	
801	0	1635		0		9.12	
802	0	1621		0		8.53	
803	0	1617	10.89	0		8.59	
804	0	1609	10.52	0		8.39	
805	0	1620		0		8.29	
806	0	1629		0		8.80	
807	0	1628		0		8.46	
808	0	1618	10.90	0		9.23	
809	0	1629		0		9.69	
810	0	1621		0		8.06	
811	0	1624		0		9.20	
812	0	1634		0		9.92	
813	0	1629		0		9.78	
814	0	1611	10.63	0		8.35	
815	0	1621		0		8.32	
816	0	1623		0		8.29	
817	0	1571	9.78	0		6.62	
818	0	1626		0		8.15	
819	0	1657		0		8.41	
820	0	1638		0		7.27	
821	0	1644		0		8.13	
822	0	1574	9.81	0		6.29	
823	0	1487	9.08	0	9.08	6.41	1.42
824	0	1385	8.64	0	8.64	7.07	1.22
825	0	1153	7.83	0	7.83	5.77	1.36
826	0	1256	8.14	0	8.14	7.46	1.09
827	0	1677		0		8.69	
828	0	1647		0		7.90	
829	0	1604	10.31	0		7.44	
830	0	1489	9.10	0	9.10	6.46	1.41
831	0	1651		0		8.61	
832	0	1632		0		8.24	
833	0	1591	9.95	0		7.32	
834	0	1598	10.04	0		6.77	
835	0	1656		0		8.51	
836	0	1639		0		7.36	
837	0	1550	9.60	0		6.68	
838	0	1287	8.26	0	8.26	6.18	1.34
839	0	1532	9.45	0		7.83	
840	0	1616	10.80	0		7.67	
841	0	1611	10.60	0		9.88	
842	0	1618	10.89	0		9.04	
843	0	1621		0		9.27	
844	0	1619	10.95	0		8.79	
845	0	1618	10.90	0		7.96	
846	0	1629		0		7.57	
847	0	1463	8.94	0	8.94	7.92	1.13
848	0	1330	8.43	0	8.43	7.29	1.16
849	0	1642		0		7.74	
850	0	1484	9.05	0	9.05	7.25	1.25
851	0	1230	8.04	0	8.04	6.64	1.21
852	0	1269	8.19	0	8.19	8.62	0.95
853	0	1449	8.89	0	8.89	8.39	1.06
854	0	1627		0		8.65	
855	0	1656		0		9.40	
856	0	1606	10.39	0		7.77	
857	0	1653		0		8.44	
858	0	1608	10.46	0		8.61	
859	0	1608	10.48	0		9.74	
860	0	1617	10.86	0		9.89	
861	0	1623		0		9.57	
862	0		2.00	0		0.00	
863	0		2.00	0		0.00	
864	0		2.00	0		0.00	
865	0		2.00	0		0.00	
866	0		2.00	0		0.00	
867	0		2.00	0		0.00	
868	0		2.00	0		0.00	
869	0		2.00	0		0.00	
870	0		2.00	0		0.00	
871	0		2.00	0		0.00	
872	0		2.00	0		0.00	
873	0		2.00	0		0.00	
874	0		2.00	0		0.00	
875	0		2.00	0		0.00	
876	0		2.00	0		0.00	
877	0		2.00	0		0.00	
878	0		2.00	0		0.00	
879	0		2.00	0		0.00	
880	0		2.00	0		0.00	

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range $V_{i,n}$ (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{hr,n}/V_{nac,m}$
881	0		2.00	0		0.00	
882	0		2.00	0		0.00	
883	0		2.00	0		0.00	
884	0		2.00	0		0.00	
885	0		2.00	0		0.00	
886	0		2.00	0		0.00	
887	0		2.00	0		0.00	
888	0		2.00	0		0.00	
889	0		2.00	0		0.00	
890	0		2.00	0		0.00	
891	0		2.00	0		0.00	
892	0		2.00	0		0.00	
893	0		2.00	0		0.00	
894	0		2.00	0		0.00	
895	0		2.00	0		0.00	
896	0		2.00	0		0.00	
897	0		2.00	0		0.00	
898	0		2.00	0		0.00	
899	0		2.00	0		0.00	
900	0		2.00	0		0.00	
901	0		2.00	0		0.00	
902	0		2.00	0		0.00	
903	0		2.00	0		0.00	
904	0		2.00	0		0.00	
905	0		2.00	0		0.00	
906	0		2.00	0		0.00	
907	0		2.00	0		0.00	
908	0		2.00	0		0.00	
909	0		2.00	0		0.00	
910	0		2.00	0		0.00	
911	0		2.00	0		0.00	
912	0		2.00	0		0.00	
913	0		2.00	0		0.00	
914	0		2.00	0		0.00	
915	0		2.00	0		0.00	
916	0		2.00	0		0.00	
917	0		2.00	0		0.00	
918	0		2.00	0		0.00	
919	0		2.00	0		0.00	
920	0		2.00	0		0.00	
921	0		2.00	0		0.00	
922	0		2.00	0		0.00	
923	0		2.00	0		0.00	
924	0		2.00	0		0.00	
925	0		2.00	0		0.00	
926	0		2.00	0		0.00	
927	0		2.00	0		0.00	
928	0		2.00	0		0.00	
929	0		2.00	0		0.00	
930	0		2.00	0		0.00	
931	0		2.00	0		0.00	
932	0		2.00	0		0.00	
933	0		2.00	0		0.00	
934	0		2.00	0		0.00	
935	0		2.00	0		0.00	
936	0		2.00	0		0.00	
937	0		2.00	0		0.00	
938	0		2.00	0		0.00	
939	0		2.00	0		0.00	
940	0		2.00	0		0.00	
941	0		2.00	0		0.00	
942	0		2.00	0		0.00	
943	0		2.00	0		0.00	
944	0		2.00	0		0.00	
945	0		2.00	0		0.00	
946	0		2.00	0		0.00	
947	0		2.00	0		0.00	
948	0		2.00	0		0.00	
949	0		2.00	0		0.00	
950	0		2.00	0		0.00	
951	0		2.00	0		0.00	
952	0		2.00	0		0.00	
953	0		2.00	0		0.00	
954	0		2.00	0		0.00	
955	0		2.00	0		0.00	
956	0		2.00	0		0.00	
957	0		2.00	0		0.00	
958	0		2.00	0		0.00	
959	0		2.00	0		0.00	
960	0		2.00	0		0.00	
961	0		2.00	0		0.00	
962	0		2.00	0		0.00	
963	0		2.00	0		0.00	
964	0		2.00	0		0.00	
965	0		2.00	0		0.00	
966	0		2.00	0		0.00	
967	0		2.00	0		0.00	
968	0		2.00	0		0.00	

Data ID#	Data Point Excluded 1=yes, 0=no	Power (kW)	Hub Height Wind Speed (m/s) from power curve	Hub Wind speed In acceptable range 1=yes, 0=no	wind speed from acceptable range $V_{i,n}$ (m/s)	Nacelle Anemometer Wind Speed, $V_{nac,m}$ (m/s)	$V_{hr,n}/V_{nac,m}$
969	0		2.00	0		0.00	
970	0		2.00	0		0.00	
971	0		2.00	0		0.00	
972	0		2.00	0		0.00	
973	0		2.00	0		0.00	
974	0		2.00	0		0.00	
975	0		2.00	0		0.00	
976	0		2.00	0		0.00	
977	0		2.00	0		0.00	
978	0		2.00	0		0.00	
979	0		2.00	0		0.00	
980	0		2.00	0		0.00	
981	0		2.00	0		0.00	
982	0		2.00	0		0.00	
983	0		2.00	0		0.00	
984	0		2.00	0		0.00	
985	0		2.00	0		0.00	
986	0		2.00	0		0.00	
987	0		2.00	0		0.00	
988	0		2.00	0		0.00	
989	0		2.00	0		0.00	
990	0		2.00	0		0.00	
991	0		2.00	0		0.00	
992	0		2.00	0		0.00	
993	0		2.00	0		0.00	
994	0		2.00	0		0.00	
995	0		2.00	0		0.00	
996	0		2.00	0		0.00	
997	0		2.00	0		0.00	
998	0		2.00	0		0.00	
999	0		2.00	0		0.00	
1000	0		2.00	0		0.00	
1001	0		2.00	0		0.00	
1002	0		2.00	0		0.00	
1003	0		2.00	0		0.00	
1004	0		2.00	0		0.00	
1005	0		2.00	0		0.00	
1006	0		2.00	0		0.00	
1007	0		2.00	0		0.00	
1008	0		2.00	0		0.00	
1009	0		2.00	0		0.00	
1010	0		2.00	0		0.00	
1011	0		2.00	0		0.00	
1012	0		2.00	0		0.00	
1013	0		2.00	0		0.00	
1014	0		2.00	0		0.00	
1015	0		2.00	0		0.00	
1016	0		2.00	0		0.00	
1017	0		2.00	0		0.00	
1018	0		2.00	0		0.00	
1019	0		2.00	0		0.00	
1020	0		2.00	0		0.00	
1021	0		2.00	0		0.00	
1022	0		2.00	0		0.00	
1023	0		2.00	0		0.00	
1024	0		2.00	0		0.00	
1025	0		2.00	0		0.00	
1026	0		2.00	0		0.00	
1027	0		2.00	0		0.00	
1028	0		2.00	0		0.00	
1029	0		2.00	0		0.00	
1030	0		2.00	0		0.00	
1031	0		2.00	0		0.00	
1032	0		2.00	0		0.00	
1033	0		2.00	0		0.00	
1034	0		2.00	0		0.00	
1035	0		2.00	0		0.00	
1036	0		2.00	0		0.00	
1037	0		2.00	0		0.00	
1038	0		2.00	0		0.00	
1039	0		2.00	0		0.00	
1040	0		2.00	0		0.00	
1041	0		2.00	0		0.00	
1042	0		2.00	0		0.00	
1043	0		2.00	0		0.00	
1044	0		2.00	0		0.00	
1045	0		2.00	0		0.00	
1046	0		2.00	0		0.00	
1047	0		2.00	0		0.00	
1048	0		2.00	0		0.00	
1049	0		2.00	0		0.00	
1050	0		2.00	0		0.00	
1051	0		2.00	0		0.00	
1052	0		2.00	0		0.00	
1053	0		2.00	0		0.00	
1054	0		2.00	0		0.00	
1055	0		2.00	0		0.00	
1056	0		2.00	0		0.00	

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Appendix F.05
Note N6.023.17

Note N6.040.17

Note on anemometer position with IEC 61400-11 editions 2.1 and 3.0

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Project number: 35.6539.01
Date: 7/11/2017
Project manager: Bo Søndergaard
Controlled by: -

To : Aercoustics Engineering Limited
Att.: Payam Ashtiani

From : Bo Søndergaard

1. Purpose

In the capacity of convenor for Maintenance Team 11, the workgroup in charge of IEC 61400-11, since 2006, I have been asked to provide background information, and comment on the consequences of changing the anemometer position when going from edition 2.1 to edition 3, and the recommended method for using measurements based on edition 2.1 for an analysis with edition 3.

2. Comment

There are several differences between IEC 61400-11 standard edition 2.1 (November 2006) and edition 3.0 (November 2012). In particular, the general data treatment procedures for noise levels, and the tonality assessment were changed to keep up with the changes in wind turbine design at the time.

However, since edition 1.0 (1998), very few changes have been made to the IEC 61400-11 standard with respect to the measurement setup. In edition 1.0 the prescribed position of the anemometer was upwind (2 to 4 rotor diameters) as it was allowed to use the anemometer for determination of the standardized wind speed with the wind turbine running. At that time the distances were smaller and this setup is maintained in Annex F on small wind turbines in edition 3. Editions 2.0 and 2.1, still allowed such use of the anemometer

In Germany, modified versions of IEC 61400-11 edition 2 were introduced by the FGW. In revision 15 (from 2004), using the power for determination of the standardized wind speed was mandatory. In revision 16 (from 2005), it was stated that the position of the anemometer can deviate from the requirements in IEC 61400-11 edition 2, without specifying position requirements. Germany has had a strong influence on the development of the IEC 61400-11 standard through the experience from several measuring companies and German authorities. The decision to allow alternative positions for the anemometer is very representative of the situation. It is difficult to set up general requirements for the position of the anemometer that works at all sites. As such, it makes sense to allow for an expert

judgement on the anemometer position in a given situation. In the Danish regulations, it is stated that the anemometer has to be close to the wind turbine in a position where neither the wind turbine nor objects in the terrain is expected to influence the wind speed measurements.

The German and Danish considerations on the position of the anemometer is based on the fact that the dominating background noise at the microphone position can be more or less dependent on wind speed; and can be generated by vegetation upwind, downwind or to the side of the wind turbine. This is often reflected in background noise with a weak dependence on wind speed.

Maintenance Team 11, responsible for revising IEC 61400-11, discussed this issue and there was a strong support from the measurement institutes for using the nacelle anemometer for background noise measurements. In most cases, this would give a reasonable correlation between wind speed and background noise. The nacelle anemometer is not influenced by terrain and represents, to a reasonable degree, the wind in the surroundings. However, the manufacturers argued that the nacelle anemometer might not be a part of future designs and could not be guaranteed. There was a general agreement that it was difficult to decide on an optimum position, but in most cases, downwind and to the side would make sense, resulting in Figure 5 of edition 3.0. The position of the anemometer is not considered an important issue and the wording is “guidance” and “acceptable” and not a stronger wording like “shall”. This is a deliberate decision by the Maintenance Team 11 to ensure flexibility when other choices make more sense.

The recommended method when using measurements made according to IEC 61400-11 edition 2.1 for analysis with IEC 61400-11 edition 3.0 is to use the nacelle anemometer for the background noise. This will work well in most cases. Alternatively, to use the measured wind speed at 10 m height if there is no strong influence from the background noise (e.g. when signal to noise ratio is better than 6 dB).

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End of Report