



esp

Environmental &
Safety Professionals

ENVIRONMENTAL NOISE MONITORING QUARTER 3, 2017



Northparkes Mines
PO Box 995
Parkes NSW 2870

Job No: J36276
Report issued: 6 November 2017

ESP – ENVIRONMENTAL & SAFETY PROFESSIONALS

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This report relates to specific conditions existing at the time of undertaking the work. Current or future conditions of the areas reviewed may not be able to be assumed or inferred from information contained in this report.

REVISION HISTORY

Revision	Revision Description	Issued	Recipient
1	<i>Final version</i>	6/11/2017	N. Jones

EXECUTIVE SUMMARY

ESP – Environmental and Safety Professionals (ESP) – was commissioned by Northparkes Mines (NPM) to undertake Environmental Noise Assessments at four residential/farming properties (Hubberstone, Lone Pine, Milpose and Hillview) in the vicinity of the NPM mine site. Monitoring was conducted to assess noise levels, resulting from NPM operations, at four key receivers around the site.

Attended noise monitoring was undertaken from the 20th to the 22nd of September 2017 and unattended noise monitoring was undertaken from the 27th of August to the 1st of September 2017.

Attended monitoring was undertaken during favourable atmospheric conditions. Attended noise monitoring results indicate that noise emissions from the mine site comply with the development consent and project approval criteria.

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1. INTRODUCTION

ESP was commissioned by Northparkes Mines (NPM) to undertake an Environmental Noise Assessment during Quarter 3, 2017 as part of their regular noise monitoring program in accordance with Development Consent 06-0026.

This report presents:

- results of attended measurements from day, evening and night operation of the mine for the period from the 20th to the 22nd of September 2017;
- results of unattended measurements from the 27th of August to the 1st of September 2017 and;
- an assessment of the results against Development Consent 06-0026 (DC 06-0026) requirements and the criteria described in Northparkes Mine Step Change Project Approval.

2. BACKGROUND

The NPM site is located approximately 27 kilometres NNW of the town of Parkes, NSW.

ESP was asked to conduct attended and unattended monitoring at four locations as per the following table.

Location name	Type
Hillview	Residential & farming
Hubberstone	Residential & farming
Milpose	Residential & farming
Lone Pine	Residential & farming

Table 1: Monitoring location and type

A map showing monitoring locations in relation to the mine site is presented in Appendix A of this report.

3. NOISE LIMITS

Noise Management Plan

NPM has implemented a Noise and Vibration Management Plan (NVMP) which requires noise to be monitored at key locations adjacent to the mine site.

The NVMP requires that attended noise monitoring be conducted once per quarter for three consecutive 15-minute periods at each monitoring location for the day, evening and night time periods. In addition, unattended noise monitoring must be conducted continuously for seven days per quarter.

Project Specific Criteria

According to DC 06-0026 and the Northparkes Mine Step Change Project Approval, the project specific criteria at each location are as follows:

Period		Project Specific Criteria dB*	
Day	0700 - 1800	$L_{Aeq(15min)}$	35
Evening	1800 – 2200	$L_{Aeq(15min)}$	35
Night	2200 – 0700	$L_{Aeq(15min)}$	35
		$L_{A1(1min)}$	45

Table 2: Project specific criteria for day, evening & night periods.

* Note: All noise measurements are “A-weighted” sound pressure level measurements, hence, the notation “dB” has been used in this report without the additional qualifier “(A)” for purposes of brevity and readability.

4. NOISE LEVEL MEASUREMENT

Methodology - Equipment

Attended noise measurements were carried out using a Rion Class 1 sound level meter. Unattended noise measurement results were provided by NPM.

Calibration details are attached in Appendix B.

The equipment used is listed below:

Equipment	Model	Serial Number	Calibration due
Sound level meter (SLM)	Rion NL-52	00375605	24/05/2019

Table 3: Noise monitoring equipment details

Measurements were conducted in accordance with AS1055.1-1997 *Acoustics - Description and measurement of environmental noise - General procedures*.

Methodology – Meteorological Conditions

The noise limits in PA 11_0060 apply only in wind speeds up to 3m/s. Meteorological data from NPM's weather station, corresponding with the entire monitoring period, is attached in Appendix C.

It is noted that noise limits apply during relatively calm conditions (wind speeds up to 3 m/s equates to 10.8 km/h). Where wind speeds have exceeded this limit, measurements are marked as being not applicable using "NA". Comparison with the documented limit should only be made when measurement of wind speed conforms to the maximum allowable wind speed.

Observations

The noise output from the mine site was found to be continuous. No adjustments were required to the measured noise level for intermittent, tonal or impulsive characteristics. Additionally, the measurement points were chosen so that no adjustment was required for reflection or indoor measurement.

It is noted that at various times during attended monitoring, extraneous noise sources, i.e. sources other than the mine, were the primary contributor to measured noise levels. Commonly, these noise sources include wildlife (e.g. birds, frogs and insects), livestock (e.g. sheep and cattle), road traffic, overhead aircraft, farm machinery and vegetation noise (i.e. rustling of foliage). Where possible, extraneous noise was excluded from the result either by pausing the sound level meter until the extraneous noise event had ceased (such as for traffic or aircraft noise) or by removing the extraneous noise via frequency analysis – i.e. subtracting the contribution to the overall sound pressure level at key frequencies not related to noise emissions from NPM. Adjusting via frequency analysis is not possible with LA1 results.

Frequency analysis can only be utilised at frequencies where there is no overlap between the frequencies of NPM noise and extraneous noise. Peaks in the frequency spectrum of received noise are present but not caused by NPM noise (e.g. insect, frog and bird noise) at frequencies of approximately 2 kHz and above.

Attended Noise Monitoring Results

Measurements conducted during excessive winds do not conform to the maximum wind speed requirements of PA11_0060 and are not to be compared against the criteria. These levels are marked with the notation "NA" in the tables overleaf. Where noise levels have been adjusted due to the presence of extraneous noise such as insect or bird noise, these levels are marked with the notation "adj.".

Location	Date and Time	L_{A1} dB	L_{A10} dB	L_{Aeq} dB	L_{A90} dB	Compliance?	Notes
Hillview	20/09/17 12:50	40	35	32	27	Yes	Wind gusts. Occasional truck noise. Continuous bird and insect noise. Mine inaudible.
	20/09/17 13:49	39	34	33	29	Yes	
	20/09/17 14:07	39	35	33	29	Yes	
Hubberstone	20/09/17 14:53	41	38	31	34	Yes (adj.)	Wind gusts. Continuous bird and insect noise necessitating adjustment. Mine audible.
	20/09/17 15:14	44	41	33	36	Yes (adj.)	
	20/09/17 15:34	43	41	35	37	Yes (adj.)	
Milpose	20/09/17 17:44	38	30	28	21	Yes	Mine inaudible. Continuous frog noise. Mine barely audible. Continuous insect noise necessitating adjustment. Occasional domestic and bird noise.
	21/09/17 17:08	45	43	27	29	Yes (adj.)	
	21/09/17 17:33	46	45	27	31	Yes (adj.)	
Lonepine	20/09/17 16:06	42	37	28	33	Yes (adj.)	Continuous bird and insect noise necessitating adjustment. Mine inaudible.
	21/09/17 16:42	45	37	29	31	Yes (adj.)	
	21/09/17 17:00	49	46	28	34	Yes (adj.)	

Table 4: Daytime Attended Noise Results

Location	Date and Time	L_{A1} dB	L_{A10} dB	L_{Aeq} dB	L_{A90} dB	Compliance?	Notes
Hillview	20/09/17 20:00	37	24	25	15	Yes	
	20/09/17 20:23	34	21	24	16	Yes	Continuous insect noise. Mine inaudible.
	20/09/17 20:42	37	26	24	14	Yes	
Hubberstone	21/09/17 19:51	33	31	29	26	Yes	
	21/09/17 20:10	31	29	27	25	Yes	Continuous frog noise. Mine inaudible.
	21/09/17 20:34	31	25	27	22	Yes	
Milpose	21/09/17 18:41	41	38	34	25	Yes	
	21/09/17 19:01	41	38	34	25	Yes	Continuous frog noise. Mine inaudible.
	21/09/17 19:21	41	38	34	25	Yes	
Lonepine	20/09/17 18:11	55	54	27	51	Yes (adj.)	Continuous bird, insect and frog noise necessitating adjustment. Occasional dog barking. Mine inaudible.
	20/09/17 18:45	53	52	26	47	Yes (adj.)	
	20/09/17 19:05	49	47	27	40	Yes (adj.)	

Table 5: Evening Attended Noise Results

Location	Date and Time	L_{A1} dB	L_{A10} dB	L_{Aeq} dB	L_{A90} dB	Compliance?	Notes
Hillview	22/09/17 01:53	32	20	22	18	Yes	
	22/09/17 02:10	33	20	22	18	Yes	Mine barely audible.
	22/09/17 02:26	35	22	23	19	Yes	
Hubberstone	21/09/17 22:00	35	25	24	17	Yes	
	21/09/17 22:27	28	21	19	15	Yes	Occasional dog barking. Continuous frog noise. Mine inaudible.
	21/09/17 22:45	40	22	26	15	Yes	
Milpose	22/09/17 00:39	40	37	34	27	Yes	
	22/09/17 00:56	42	38	35	26	Yes	Continuous frog noise. Mine slightly audible.
	22/09/17 01:13	47*	43	27	28	Yes (adj.)*	
Lonepine	21/09/17 23:20	46*	23	30	14	Yes (adj.)*	
	21/09/17 23:42	34	20	23	14	Yes	Occasional dog barking.
	22/09/17 00:01	28	15	19	14	Yes	

Table 6: Night Attended Noise Results

* Note: This measurement was impacted by extraneous noise not related to the mine. As LA1 results are not adjustable, this measurement is not representative of noise produced by the mine and should be disregarded.

Unattended Noise Monitoring Results

Noise levels were continuously monitored over a period of seven days from the 27th of August to the 1st of September. A summary, with average values tabled, is provided below and graphs of the full results are attached in Appendix D. These summarised levels include extraneous noise which cannot be excluded from the continuous monitoring conducted; the results do not include measurements where the wind speed exceeded three meters per second.

Location	$L_{Aeq\ (15min)}$			$L_{A1\ (1min)}$
	Day	Evening	Night	Night
Hillview	42	39	34	34
Hubberstone	47	31	31	34
Lone Pine	44	32	31	35
Milpose	41	36	30	36

Table 7: Summary of Unattended Noise Monitoring, 27/08/17 – 1/09/17

5. DISCUSSION

Attended Noise Monitoring

Attended monitoring was conducted in near-ideal conditions.

Measurements indicate compliance with the 15-minute L_{Aeq} limitation of 35 dB at all locations. This is despite noise from the mine being audible at several locations at various times.

Measurements indicate compliance with the night limit of L_{A1} 45 dB at all locations.

Where possible, extraneous noise sources have been excluded from attended measurements by pausing the sound level meter when non-NPM sources predominate (e.g. passing traffic or aircraft) and/or subtracting the component of the frequency spectrum that is caused by non-NPM sources (e.g. wildlife noise, livestock noise or foliage noise). Extraneous noise sources may contribute as much as 15 to 20 dB to the overall measured noise levels.

Unattended Noise Monitoring

In accordance with Project Approval 11_0600, Appendix 5, Clause 3, "*attended monitoring is to be used to evaluate compliance with the relevant conditions of this consent*". Specifically, unattended monitoring is therefore *not to be used* to evaluate compliance with the Project Approval criteria. Nonetheless, ESP notes that average night-time results from unattended monitoring indicated compliance with the L_{A1} 45 dB limit and the L_{Aeq} 35 dB limit at all locations.

Unattended noise measurements will invariably include noise levels that cannot be directly attributed to NPM. Road traffic, farm machinery, livestock, wildlife and air traffic are some of the noise sources that contribute to noise levels logged during unattended noise monitoring. Extraneous noise sources are expected to have a higher contribution during the day and evening period. It is also noted that there is an observable correlation between wind speed and recorded noise level evident in the graphs.

6. CONCLUSION

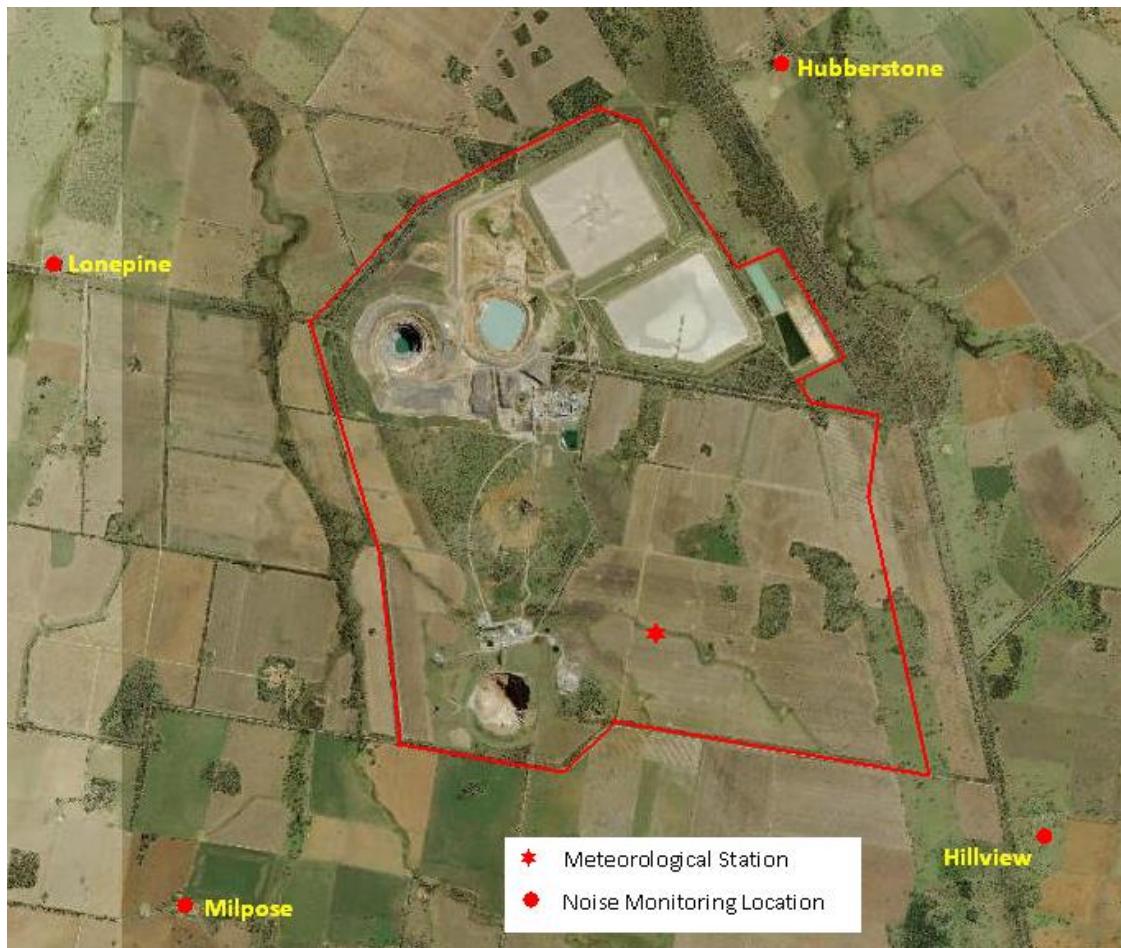
Environmental noise monitoring was conducted at four noise sensitive receivers around the Northparkes Mine site; attended monitoring was conducted from the 20th to the 22nd of September 2017 and unattended monitoring was conducted from the 27th of August to the 1st of September 2017.

Attended noise monitoring during this round was conducted during favourable atmospheric conditions.

Attended noise monitoring results indicate noise emissions from the mine site comply with the development consent criteria.

Despite unattended monitoring invariably including extraneous noise, for the night period, the average unattended $L_{Aeq\,(15min)}$ and $L_{A1\,(1min)}$ results were below the respective limits of 35 and 45 dB.

Appendix A – Monitoring location map



Appendix B – Equipment Calibration Details



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Sound Level Meter
IEC 61672-3.2013

Calibration Certificate

Calibration Number C17244

Client Details	ESP Environmental & Safety Professionals Unit 2, 2B Parker Street FOOTSCRAY VIC 3011
-----------------------	--

Equipment Tested/ Model Number :	Rion NL-52EX
Instrument Serial Number :	00375605
Microphone Serial Number :	11074
Pre-amplifier Serial Number :	65732

Pre-Test Atmospheric Conditions
Ambient Temperature : 22.1°C
Relative Humidity : 53.1%
Barometric Pressure : 99.31kPa

Post-Test Atmospheric Conditions
Ambient Temperature : 22.2°C
Relative Humidity : 53.1%
Barometric Pressure : 99.29kPa

Calibration Technician : Vicky Jaiswal
Calibration Date : 24/05/2017

Secondary Check: Sandra Minto
Report Issue Date : 24/05/2017

Approved Signatory : 

Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
12: Acoustical Sig. tests of a frequency weighting	Pass	17: Level linearity incl. the level range control	Pass
13: Electrical Sig. tests of frequency weightings	Pass	18: Toneburst response	Pass
14: Frequency and time weightings at 1 kHz	Pass	19: C Weighted Peak Sound Level	Pass
15: Long Term Stability	Pass	20: Overload Indication	Pass
16: Level linearity on the reference level range	Pass	21: High Level Stability	Pass

The sound level meter submitted for testing has successfully completed the class 1 periodic tests of IEC 61672-3:2006, for the environmental conditions under which the tests were performed.

As public evidence was available, from an independent testing organisation responsible for approving the results of pattern evaluation test performed in accordance with IEC 61672-2:2003, to demonstrate that the model of sound level meter fully conformed to the requirements in IEC 61672-1:2002, the sound level meter submitted for testing conforms to the class 1 requirements of IEC 61672-1:2002.

Least Uncertainties of Measurement -			
Environmental Conditions			
Acoustic Tests		Temperature	±0.05°C
31.5 Hz to 8kHz	±0.16dB	Relative Humidity	±0.46%
12.5kHz	±0.2dB	Barometric Pressure	±0.017kPa
16kHz	±0.29dB		
Electrical Tests			
31.5 Hz to 20 kHz	±0.12dB		

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This calibration certificate is to be read in conjunction with the calibration test report.

Acoustic Research Labs Pty Ltd is NATA Accredited Laboratory Number 14172.
Accredited for compliance with ISO/IEC 17025.

The results of the tests, calibrations and/or measurements included in this document are traceable to Australian/national standards.

NATA is a signatory to the ILAC Mutual Recognition Arrangement for the mutual recognition of the equivalence of testing, medical testing, calibration and inspection reports.



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**Octave Band Filter
AS 4476:1997**
Calibration Certificate

Calibration Number C17244A

Client Details	ESP Environmental & Safety Professionals Unit 2, 2B Parker Street FOOTSCRAY VIC 3011
-----------------------	--

Filter Model Number :	Rion NL-52EX
Filter Serial Number :	N/A
Instrument Serial Number :	00375605
Microphone Serial Number :	11074
Pre-amplifier Serial Number :	65732

Atmospheric Conditions

Ambient Temperature : 21.8°C
Relative Humidity : 49.1%
Barometric Pressure : 99.27kPa

Calibration Technician :	Vicky Jaiswal	Secondary Check:	Sandra Minto
Calibration Date :	24/05/2017	Report Issue Date :	24/05/2017

Approved Signatory :  Ken Williams

Clause and Characteristic Tested	Result	Clause and Characteristic Tested	Result
4.4 & 5.3: 1/1 Octave relative attenuation	Pass	4.6 & 5.5: Linear operating range	Pass
4.4 & 5.3: 1/3 Octave relative attenuation	Pass	4.8 & 5.7: Anti-alias filters	Pass
		4.10 & 5.9: Flat frequency response	Pass

The fractional octave band meter under test has been shown to conform to the class 1 requirements for periodic testing as described in AS 4476:1997 for the tests stated above.

Electrical Test	Least Uncertainties of Measurement - Environmental Conditions			
	Temperature	Relative Humidity	Barometric Pressure	
< 16Hz	±0.19dB			±0.05°C
16Hz-100Hz	±0.11dB			±0.46%
100Hz-1000Hz	±0.09dB			±0.017kPa
1000Hz-10kHz	±0.09dB			
> 10kHz	±0.16dB			

All uncertainties are derived at the 95% confidence level with a coverage factor of 2.

This calibration certificate is to be read in conjunction with the calibration test report.

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Appendix C – Weather Conditions during Monitoring Period

Note. Data provided by Northparkes Mine.

Wind-Rose

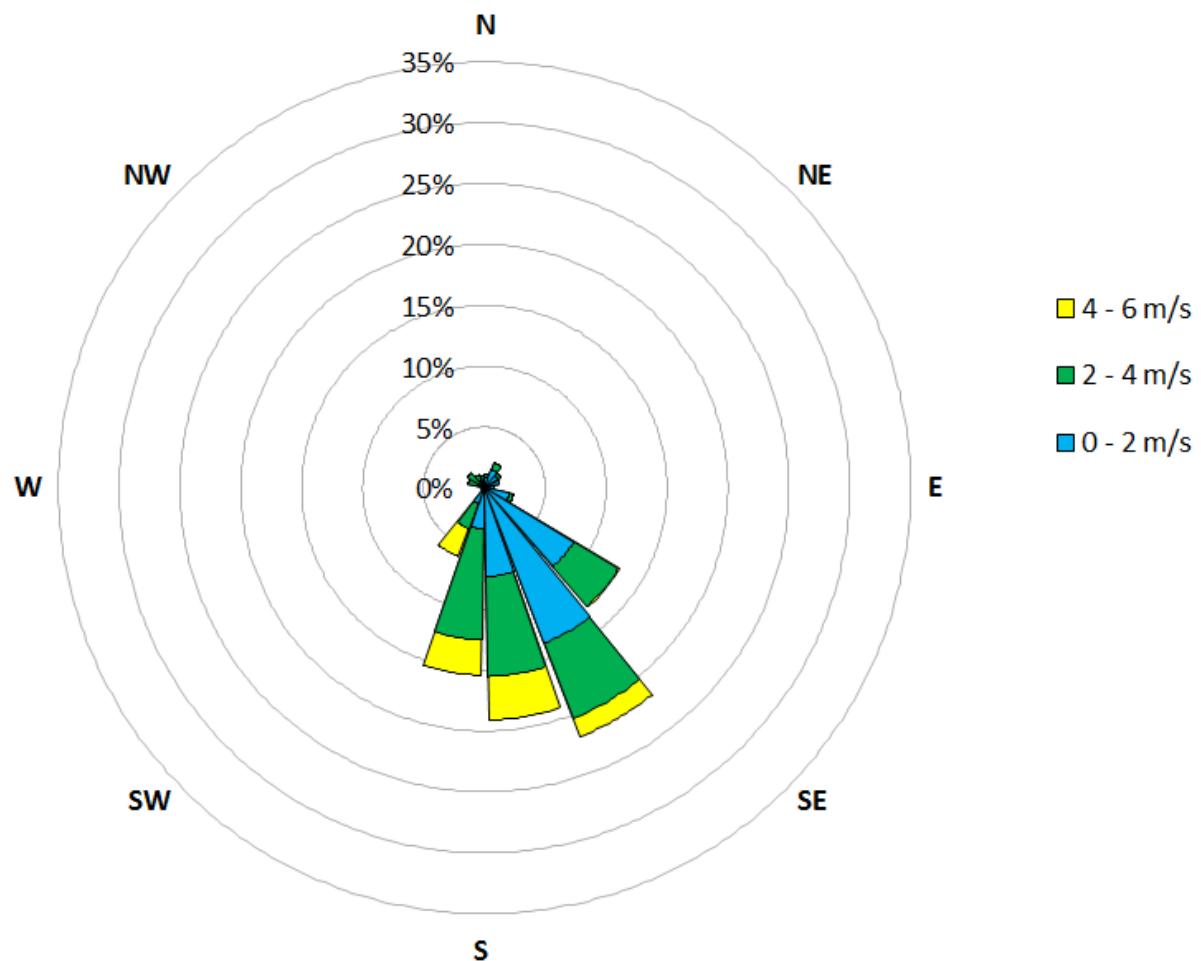


Figure 1 - Wind rose for period 27/08/17 – 1/09/17

Tabulated Meteorological Conditions

Date & time	Wind speed (m/s)	Wind Direction (°)
27/08/2017 0:00	2.441	133.6
27/08/2017 0:10	2.398	134.8
27/08/2017 0:20	1.613	134.1
27/08/2017 0:30	1.211	134.8
27/08/2017 0:40	0.957	143.6
27/08/2017 0:50	1.307	124.2
27/08/2017 1:00	1.814	125.4
27/08/2017 1:10	1.632	155.7
27/08/2017 1:20	1.435	154.4
27/08/2017 1:30	0.844	132.6
27/08/2017 1:40	1.068	142.1
27/08/2017 1:50	2.281	177.8
27/08/2017 2:00	2.83	196.2
27/08/2017 2:10	3.466	188.1
27/08/2017 2:20	3.363	191.6
27/08/2017 2:30	3.092	185.7
27/08/2017 2:40	2.879	173.3
27/08/2017 2:50	2.58	170.1
27/08/2017 3:00	2.259	172.1
27/08/2017 3:10	1.985	173.8
27/08/2017 3:20	1.947	162.6
27/08/2017 3:30	2.16	161.9
27/08/2017 3:40	2.142	162.4
27/08/2017 3:50	3.763	192.4
27/08/2017 4:00	4.166	195.6
27/08/2017 4:10	3.457	198.6
27/08/2017 4:20	2.703	187.6
27/08/2017 4:30	1.863	148.8
27/08/2017 4:40	2.061	128.8
27/08/2017 4:50	1.87	128.3
27/08/2017 5:00	1.592	140.6
27/08/2017 5:10	1.45	154.1
27/08/2017 5:20	1.518	147.9
27/08/2017 5:30	1.896	146.9
27/08/2017 5:40	1.988	156.4
27/08/2017 5:50	1.926	152.2
27/08/2017 6:00	1.413	159.6
27/08/2017 6:10	0.403	177.9
27/08/2017 6:20	0.863	164.9
27/08/2017 6:30	0.612	146.9
27/08/2017 6:40	0.739	143.5
27/08/2017 6:50	0.793	128.4
27/08/2017 7:00	1.165	118.7
27/08/2017 7:10	0.954	131.6
27/08/2017 7:20	0.841	147.1
27/08/2017 7:30	0.679	145.2
27/08/2017 7:40	0.123	142.7
27/08/2017 7:50	0.144	126.3

Date & time	Wind speed (m/s)	Wind Direction (°)
27/08/2017 8:00	0.169	155.5
27/08/2017 8:10	0.526	173.2
27/08/2017 8:20	1.299	191.9
27/08/2017 8:30	1.315	198.5
27/08/2017 8:40	1.513	199.5
27/08/2017 8:50	1.893	220
27/08/2017 9:00	1.906	224
27/08/2017 9:10	2.218	216.9
27/08/2017 9:20	2.276	204.5
27/08/2017 9:30	2.793	209.9
27/08/2017 9:40	3.001	207.5
27/08/2017 9:50	2.755	197.5
27/08/2017 10:00	4.652	183.2
27/08/2017 10:10	5.773	192.8
27/08/2017 10:20	5.344	199.7
27/08/2017 10:30	5.128	202.5
27/08/2017 10:40	6.215	195.4
27/08/2017 10:50	4.628	198.7
27/08/2017 11:00	4.774	205.7
27/08/2017 11:10	5.104	207.1
27/08/2017 11:20	4.347	211.6
27/08/2017 11:30	4.171	212.8
27/08/2017 11:40	5.326	218.7
27/08/2017 11:50	5.905	201.1
27/08/2017 12:00	5.679	224
27/08/2017 12:10	5.884	218.2
27/08/2017 12:20	6.031	214.8
27/08/2017 12:30	6.115	215.5
27/08/2017 12:40	7.333	223.8
27/08/2017 12:50	6.49	212.6
27/08/2017 13:00	6.812	226.1
27/08/2017 13:10	5.737	215.8
27/08/2017 13:20	6.012	215.1
27/08/2017 13:30	6.708	217.2
27/08/2017 13:40	6.98	219.1
27/08/2017 13:50	6.056	225.7
27/08/2017 14:00	6.534	222.6
27/08/2017 14:10	7.288	226.4
27/08/2017 14:20	6.068	232.1
27/08/2017 14:30	5.633	224.6
27/08/2017 14:40	5.676	215.7
27/08/2017 14:50	8.73	194.7
27/08/2017 15:00	6.381	192.2
27/08/2017 15:10	6.484	195.9
27/08/2017 15:20	6.576	194.7
27/08/2017 15:30	6.391	198.4
27/08/2017 15:40	6.082	192.8
27/08/2017 15:50	6.63	191.4

Date & time	Wind speed (m/s)	Wind Direction (°)
27/08/2017 16:00	4.497	208.1
27/08/2017 16:10	6.207	211.2
27/08/2017 16:20	6.324	213.2
27/08/2017 16:30	5.621	226.2
27/08/2017 16:40	5.885	214.2
27/08/2017 16:50	7.963	200.5
27/08/2017 17:00	5.769	184.9
27/08/2017 17:10	4.996	188.8
27/08/2017 17:20	4.716	189.8
27/08/2017 17:30	5.42	189.4
27/08/2017 17:40	4.628	191.7
27/08/2017 17:50	4.362	194
27/08/2017 18:00	3.715	196.3
27/08/2017 18:10	4.177	202.5
27/08/2017 18:20	4.13	202.9
27/08/2017 18:30	3.976	202.9
27/08/2017 18:40	3.608	205.1
27/08/2017 18:50	4.034	208.7
27/08/2017 19:00	3.852	206.5
27/08/2017 19:10	4.052	201.7
27/08/2017 19:20	3.97	200.5
27/08/2017 19:30	3.774	200.2
27/08/2017 19:40	3.444	195
27/08/2017 19:50	3.53	199.3
27/08/2017 20:00	3.48	198.3
27/08/2017 20:10	3.206	192.6
27/08/2017 20:20	3.199	199.3
27/08/2017 20:30	2.776	196.7
27/08/2017 20:40	2.727	191.5
27/08/2017 20:50	2.52	188.9
27/08/2017 21:00	2.806	194.3
27/08/2017 21:10	2.23	194.7
27/08/2017 21:20	2.799	198.4
27/08/2017 21:30	3.165	204.7
27/08/2017 21:40	3.03	202.4
27/08/2017 21:50	2.023	187.6
27/08/2017 22:00	2.398	206.4
27/08/2017 22:10	3.542	209.6
27/08/2017 22:20	3.643	215
27/08/2017 22:30	3.495	221.6
27/08/2017 22:40	3.817	217.4
27/08/2017 22:50	4.134	204.9
27/08/2017 23:00	3.775	206.2
27/08/2017 23:10	3.726	201.4
27/08/2017 23:20	3.542	195.9
27/08/2017 23:30	2.545	187.1
27/08/2017 23:40	2.029	179.3
27/08/2017 23:50	2.036	187.9
28/08/2017 0:00	2.275	185
28/08/2017 0:10	2.69	189.6
28/08/2017 0:20	2.703	192.7

Date & time	Wind speed (m/s)	Wind Direction (°)
28/08/2017 0:30	2.324	193.3
28/08/2017 0:40	1.973	184.6
28/08/2017 0:50	2.049	184.3
28/08/2017 1:00	1.965	188.1
28/08/2017 1:10	2.156	189.3
28/08/2017 1:20	2.002	174.6
28/08/2017 1:30	1.813	186.4
28/08/2017 1:40	1.737	193.2
28/08/2017 1:50	1.862	179.2
28/08/2017 2:00	1.886	144.5
28/08/2017 2:10	2.11	115.8
28/08/2017 2:20	0.799	115.2
28/08/2017 2:30	1.003	152.4
28/08/2017 2:40	1.888	175.3
28/08/2017 2:50	2.43	170.8
28/08/2017 3:00	2.274	156.3
28/08/2017 3:10	2.007	163.6
28/08/2017 3:20	2.41	177.5
28/08/2017 3:30	2.207	176.8
28/08/2017 3:40	2.453	176
28/08/2017 3:50	2.224	179.2
28/08/2017 4:00	1.924	176.7
28/08/2017 4:10	1.784	177.4
28/08/2017 4:20	2.172	164.6
28/08/2017 4:30	1.942	147.3
28/08/2017 4:40	1.453	137.3
28/08/2017 4:50	1.571	141.1
28/08/2017 5:00	0.796	127.7
28/08/2017 5:10	1.154	149.5
28/08/2017 5:20	0.798	150.1
28/08/2017 5:30	0.851	151.7
28/08/2017 5:40	0.784	162.7
28/08/2017 5:50	2.141	163.5
28/08/2017 6:00	1.777	163
28/08/2017 6:10	1.578	164.3
28/08/2017 6:20	1.922	177.5
28/08/2017 6:30	2.039	170.9
28/08/2017 6:40	2.106	161.1
28/08/2017 6:50	1.811	140
28/08/2017 7:00	2.019	141.3
28/08/2017 7:10	2.591	154.8
28/08/2017 7:20	1.902	170.4
28/08/2017 7:30	1.291	182.8
28/08/2017 7:40	2.049	184.7
28/08/2017 7:50	2.114	181.2
28/08/2017 8:00	2.963	180.4
28/08/2017 8:10	3.218	166.8
28/08/2017 8:20	3.649	175.3
28/08/2017 8:30	3.916	171.7
28/08/2017 8:40	3.467	164.5
28/08/2017 8:50	3.463	176.6

Date & time	Wind speed (m/s)	Wind Direction (°)
28/08/2017 9:00	3.21	173.8
28/08/2017 9:10	3.343	187.9
28/08/2017 9:20	3.687	182.2
28/08/2017 9:30	3.474	173.6
28/08/2017 9:40	3.65	175.4
28/08/2017 9:50	3.671	166.3
28/08/2017 10:00	3.786	162.3
28/08/2017 10:10	4.121	156.2
28/08/2017 10:20	4.375	150.4
28/08/2017 10:30	4.196	152.2
28/08/2017 10:40	4.195	154.1
28/08/2017 10:50	4.394	146.5
28/08/2017 11:00	4.342	147
28/08/2017 11:10	4.356	162.6
28/08/2017 11:20	4.446	167.7
28/08/2017 11:30	4.393	167.6
28/08/2017 11:40	4.311	176
28/08/2017 11:50	4.092	168.9
28/08/2017 12:00	4.841	180.8
28/08/2017 12:10	4.782	163.1
28/08/2017 12:20	4.284	186.1
28/08/2017 12:30	4.821	158.9
28/08/2017 12:40	4.387	170.8
28/08/2017 12:50	4.246	190.7
28/08/2017 13:00	3.781	182.4
28/08/2017 13:10	3.768	172.7
28/08/2017 13:20	4.432	180.6
28/08/2017 13:30	3.665	178.2
28/08/2017 13:40	4.234	182.6
28/08/2017 13:50	4.107	173.4
28/08/2017 14:00	3.612	190.3
28/08/2017 14:10	3.561	183.8
28/08/2017 14:20	4.043	187.6
28/08/2017 14:30	3.061	173.3
28/08/2017 14:40	4.22	153.2
28/08/2017 14:50	3.141	168.9
28/08/2017 15:00	3.66	180.5
28/08/2017 15:10	3.981	160.3
28/08/2017 15:20	3.489	170.9
28/08/2017 15:30	4.765	161.5
28/08/2017 15:40	3.627	173.9
28/08/2017 15:50	4.027	168.1
28/08/2017 16:00	3.491	197.7
28/08/2017 16:10	3.693	181.7
28/08/2017 16:20	3.607	176.8
28/08/2017 16:30	3.807	168.8
28/08/2017 16:40	4.163	169.9
28/08/2017 16:50	4.335	178
28/08/2017 17:00	3.879	182.4
28/08/2017 17:10	3.866	180.9
28/08/2017 17:20	4.039	182

Date & time	Wind speed (m/s)	Wind Direction (°)
28/08/2017 17:30	3.55	185.1
28/08/2017 17:40	3.561	183.6
28/08/2017 17:50	2.797	180.9
28/08/2017 18:00	2.665	181.9
28/08/2017 18:10	2.794	181.1
28/08/2017 18:20	2.66	181.2
28/08/2017 18:30	2.537	178.9
28/08/2017 18:40	2.055	177.7
28/08/2017 18:50	1.902	175.3
28/08/2017 19:00	1.935	172.4
28/08/2017 19:10	1.961	168.5
28/08/2017 19:20	1.997	162.6
28/08/2017 19:30	2.071	147.6
28/08/2017 19:40	2.226	141.6
28/08/2017 19:50	2.692	130.3
28/08/2017 20:00	2.236	134.7
28/08/2017 20:10	2.04	143
28/08/2017 20:20	2.133	171.3
28/08/2017 20:30	2.577	198.7
28/08/2017 20:40	1.694	95.9
28/08/2017 20:50	1.762	135.2
28/08/2017 21:00	1.734	127.4
28/08/2017 21:10	1.868	130.8
28/08/2017 21:20	1.205	152.8
28/08/2017 21:30	1.063	148.2
28/08/2017 21:40	0.46	142.3
28/08/2017 21:50	0.991	143.5
28/08/2017 22:00	1.308	137.6
28/08/2017 22:10	0.99	144.3
28/08/2017 22:20	1.045	146.2
28/08/2017 22:30	1.445	133.8
28/08/2017 22:40	1.27	133.6
28/08/2017 22:50	1.138	141
28/08/2017 23:00	1.255	139.5
28/08/2017 23:10	1.42	150.6
28/08/2017 23:20	1.666	154.5
28/08/2017 23:30	2.003	141
28/08/2017 23:40	2.362	135.1
28/08/2017 23:50	2.222	138.2
29/08/2017 0:00	1.691	145.9
29/08/2017 0:10	1.704	142.8
29/08/2017 0:20	2.019	127.1
29/08/2017 0:30	1.883	135.4
29/08/2017 0:40	1.806	143.3
29/08/2017 0:50	1.97	136.1
29/08/2017 1:00	0.93	136
29/08/2017 1:10	1.5	147.5
29/08/2017 1:20	1.488	156.2
29/08/2017 1:30	0.709	183.5
29/08/2017 1:40	0.589	196.5
29/08/2017 1:50	0.448	207.5

Date & time	Wind speed (m/s)	Wind Direction (°)
29/08/2017 2:00	0.576	193.2
29/08/2017 2:10	0.594	179.3
29/08/2017 2:20	0.369	179
29/08/2017 2:30	0.659	186.6
29/08/2017 2:40	0.285	196.1
29/08/2017 2:50	0.722	182.3
29/08/2017 3:00	1.06	171.7
29/08/2017 3:10	0.889	188.9
29/08/2017 3:20	0.962	217.5
29/08/2017 3:30	1.187	161.2
29/08/2017 3:40	2.008	133.8
29/08/2017 3:50	2.134	147.4
29/08/2017 4:00	1.286	165.2
29/08/2017 4:10	0.991	168.1
29/08/2017 4:20	1.336	159.3
29/08/2017 4:30	1.616	164.2
29/08/2017 4:40	1.838	146.1
29/08/2017 4:50	1.71	134.4
29/08/2017 5:00	1.254	179.8
29/08/2017 5:10	1.474	173.3
29/08/2017 5:20	1.945	142
29/08/2017 5:30	1.997	136.6
29/08/2017 5:40	2.151	123.8
29/08/2017 5:50	2.432	128
29/08/2017 6:00	1.659	133.8
29/08/2017 6:10	1.991	136.8
29/08/2017 6:20	1.888	164.9
29/08/2017 6:30	1.54	174.5
29/08/2017 6:40	1.005	176.5
29/08/2017 6:50	1.548	156.1
29/08/2017 7:00	1.382	136.8
29/08/2017 7:10	1.692	116
29/08/2017 7:20	1.558	125.9
29/08/2017 7:30	0.658	140.5
29/08/2017 7:40	0.839	113.3
29/08/2017 7:50	0.691	171.5
29/08/2017 8:00	0.723	189.9
29/08/2017 8:10	0.596	204
29/08/2017 8:20	0.671	209
29/08/2017 8:30	0.815	217.2
29/08/2017 8:40	0.644	199
29/08/2017 8:50	0.412	173.8
29/08/2017 9:00	0.186	127.3
29/08/2017 9:10	0.296	73.83
29/08/2017 9:20	0.79	95.4
29/08/2017 9:30	0.585	60.02
29/08/2017 9:40	0.872	353.5
29/08/2017 9:50	0.242	289.7
29/08/2017 10:00	1.187	26.58
29/08/2017 10:10	1.652	6.256
29/08/2017 10:20	2.022	308.2

Date & time	Wind speed (m/s)	Wind Direction (°)
29/08/2017 10:30	2.276	328.2
29/08/2017 10:40	0.72	275.3
29/08/2017 10:50	1.375	352.9
29/08/2017 11:00	1.806	329.9
29/08/2017 11:10	2.083	334.3
29/08/2017 11:20	1.558	313.9
29/08/2017 11:30	2.291	271.4
29/08/2017 11:40	2.839	287.6
29/08/2017 11:50	2.065	307.5
29/08/2017 12:00	0.926	44.09
29/08/2017 12:10	2.149	300.4
29/08/2017 12:20	1.369	269.5
29/08/2017 12:30	2.902	264
29/08/2017 12:40	1.661	280.2
29/08/2017 12:50	3.488	281.8
29/08/2017 13:00	3.357	268.8
29/08/2017 13:10	2.596	318.8
29/08/2017 13:20	4.399	277.1
29/08/2017 13:30	3.725	290.6
29/08/2017 13:40	3.041	266.2
29/08/2017 13:50	3.247	280.7
29/08/2017 14:00	2.112	297
29/08/2017 14:10	2.862	254.2
29/08/2017 14:20	3.089	283.3
29/08/2017 14:30	2.528	309.1
29/08/2017 14:40	2.521	214.9
29/08/2017 14:50	3.152	224.7
29/08/2017 15:00	2.276	232.2
29/08/2017 15:10	2.902	204
29/08/2017 15:20	2.728	192.5
29/08/2017 15:30	4.144	181.1
29/08/2017 15:40	3.994	192.8
29/08/2017 15:50	4.802	190.7
29/08/2017 16:00	3.696	190.6
29/08/2017 16:10	5.174	191.2
29/08/2017 16:20	4.278	182.6
29/08/2017 16:30	3.142	177.9
29/08/2017 16:40	3.593	178.5
29/08/2017 16:50	3.063	179.6
29/08/2017 17:00	3.514	180.9
29/08/2017 17:10	3.513	188.2
29/08/2017 17:20	4.012	196.5
29/08/2017 17:30	3.95	200.3
29/08/2017 17:40	3.758	200
29/08/2017 17:50	3.17	193.8
29/08/2017 18:00	3.532	196.6
29/08/2017 18:10	3.143	198.1
29/08/2017 18:20	3.005	198.4
29/08/2017 18:30	3.156	198.1
29/08/2017 18:40	3.598	197.4
29/08/2017 18:50	3.466	197.4

Date & time	Wind speed (m/s)	Wind Direction (°)
29/08/2017 19:00	2.751	186.9
29/08/2017 19:10	2.415	181.2
29/08/2017 19:20	2.407	188.7
29/08/2017 19:30	2.82	193.6
29/08/2017 19:40	2.6	186.4
29/08/2017 19:50	2.952	169.1
29/08/2017 20:00	3.356	169.2
29/08/2017 20:10	3.428	179.3
29/08/2017 20:20	1.942	176.4
29/08/2017 20:30	1.831	184.1
29/08/2017 20:40	2.198	191.4
29/08/2017 20:50	2.498	186.6
29/08/2017 21:00	2.337	185.1
29/08/2017 21:10	1.622	170.7
29/08/2017 21:20	1.877	157.3
29/08/2017 21:30	1.715	163.3
29/08/2017 21:40	1.463	149.2
29/08/2017 21:50	1.441	143.9
29/08/2017 22:00	1.437	145.8
29/08/2017 22:10	1.493	140.5
29/08/2017 22:20	1.609	147.4
29/08/2017 22:30	1.27	156.8
29/08/2017 22:40	0.788	142.4
29/08/2017 22:50	0.931	127.8
29/08/2017 23:00	0.783	161.3
29/08/2017 23:10	1.04	175.6
29/08/2017 23:20	1.198	181.2
29/08/2017 23:30	1.859	186.2
29/08/2017 23:40	1.751	183.4
29/08/2017 23:50	1.866	178.2
30/08/2017 0:00	1.849	150.1
30/08/2017 0:10	1.91	145.1
30/08/2017 0:20	1.853	150.6
30/08/2017 0:30	1.698	146
30/08/2017 0:40	1.562	155.5
30/08/2017 0:50	1.151	155.5
30/08/2017 1:00	1.445	169.3
30/08/2017 1:10	1.632	162.5
30/08/2017 1:20	1.832	167.3
30/08/2017 1:30	1.372	172.8
30/08/2017 1:40	1.457	153.5
30/08/2017 1:50	1.738	160.1
30/08/2017 2:00	1.644	156.8
30/08/2017 2:10	1.653	153.4
30/08/2017 2:20	1.489	155.6
30/08/2017 2:30	1.443	146.4
30/08/2017 2:40	1.491	130.6
30/08/2017 2:50	1.386	135.6
30/08/2017 3:00	1.302	155
30/08/2017 3:10	1.255	175.3
30/08/2017 3:20	2.269	185

Date & time	Wind speed (m/s)	Wind Direction (°)
30/08/2017 3:30	2.639	176.8
30/08/2017 3:40	2.033	168.3
30/08/2017 3:50	2.124	158.2
30/08/2017 4:00	2.263	153.3
30/08/2017 4:10	2.317	147.7
30/08/2017 4:20	2.358	152.7
30/08/2017 4:30	1.759	145.6
30/08/2017 4:40	1.327	149.6
30/08/2017 4:50	1.33	149.5
30/08/2017 5:00	1.913	166.8
30/08/2017 5:10	2.004	184
30/08/2017 5:20	2.195	180.9
30/08/2017 5:30	2.364	173.8
30/08/2017 5:40	2.485	169.3
30/08/2017 5:50	2.275	165.2
30/08/2017 6:00	2.268	156.8
30/08/2017 6:10	2.003	156.2
30/08/2017 6:20	2.179	161.4
30/08/2017 6:30	2.05	164.8
30/08/2017 6:40	1.655	163.3
30/08/2017 6:50	1.386	164.4
30/08/2017 7:00	1.258	149.7
30/08/2017 7:10	0.955	138.8
30/08/2017 7:20	0.877	141.3
30/08/2017 7:30	0.87	145.1
30/08/2017 7:40	0.898	150.3
30/08/2017 7:50	1.326	145.9
30/08/2017 8:00	1.294	139.4
30/08/2017 8:10	1.786	143.4
30/08/2017 8:20	2.038	149.2
30/08/2017 8:30	1.799	132.1
30/08/2017 8:40	2.242	157.9
30/08/2017 8:50	3.654	178.9
30/08/2017 9:00	4.195	165
30/08/2017 9:10	4.393	175.1
30/08/2017 9:20	4.658	173.7
30/08/2017 9:30	5.102	166.3
30/08/2017 9:40	6.084	152.5
30/08/2017 9:50	6.229	164.6
30/08/2017 10:00	6.578	159.7
30/08/2017 10:10	6.169	173.7
30/08/2017 10:20	5.541	172.1
30/08/2017 10:30	5.793	167
30/08/2017 10:40	6.709	172.7
30/08/2017 10:50	7.408	150.3
30/08/2017 11:00	7.724	153.7
30/08/2017 11:10	7.102	160.8
30/08/2017 11:20	6.955	161.5
30/08/2017 11:30	7.481	159.1
30/08/2017 11:40	7.189	163
30/08/2017 11:50	6.449	167.5

Date & time	Wind speed (m/s)	Wind Direction (°)
30/08/2017 12:00	6.638	166.9
30/08/2017 12:10	6.765	162.9
30/08/2017 12:20	7.248	169.1
30/08/2017 12:30	7.76	163.5
30/08/2017 12:40	7.521	172.2
30/08/2017 12:50	7.94	159.9
30/08/2017 13:00	6.746	175
30/08/2017 13:10	6.604	160.9
30/08/2017 13:20	6.363	163
30/08/2017 13:30	5.331	170.9
30/08/2017 13:40	6.308	174.2
30/08/2017 13:50	6.833	165
30/08/2017 14:00	6.517	168
30/08/2017 14:10	6.171	167.7
30/08/2017 14:20	6.801	161.4
30/08/2017 14:30	6.813	159.2
30/08/2017 14:40	5.896	179.2
30/08/2017 14:50	6.921	180
30/08/2017 15:00	5.828	178.4
30/08/2017 15:10	4.562	184.9
30/08/2017 15:20	5.028	180.6
30/08/2017 15:30	5.257	165.4
30/08/2017 15:40	6.22	182.4
30/08/2017 15:50	5.021	174.9
30/08/2017 16:00	6.42	169.2
30/08/2017 16:10	5.633	177
30/08/2017 16:20	6.955	165.3
30/08/2017 16:30	6.355	173.3
30/08/2017 16:40	5.913	174.4
30/08/2017 16:50	5.998	175.7
30/08/2017 17:00	5.209	170.3
30/08/2017 17:10	5.639	177.3
30/08/2017 17:20	4.841	172.7
30/08/2017 17:30	4.769	169.6
30/08/2017 17:40	4.345	172
30/08/2017 17:50	3.79	167.7
30/08/2017 18:00	3.348	169.6
30/08/2017 18:10	3.399	172.9
30/08/2017 18:20	3.417	172.8
30/08/2017 18:30	3.307	168.7
30/08/2017 18:40	2.603	170.6
30/08/2017 18:50	2.284	165.1
30/08/2017 19:00	2.356	161
30/08/2017 19:10	1.634	146.1
30/08/2017 19:20	1.372	156.5
30/08/2017 19:30	1.749	151.8
30/08/2017 19:40	1.721	144.8
30/08/2017 19:50	1.68	141.4
30/08/2017 20:00	2.038	135.2
30/08/2017 20:10	2.278	136.6
30/08/2017 20:20	2.098	131.6

Date & time	Wind speed (m/s)	Wind Direction (°)
30/08/2017 20:30	1.468	147.6
30/08/2017 20:40	1.338	124.1
30/08/2017 20:50	1.652	124.2
30/08/2017 21:00	1.229	152.5
30/08/2017 21:10	0.934	161.2
30/08/2017 21:20	1.37	156.6
30/08/2017 21:30	1.207	151.9
30/08/2017 21:40	1.437	135.2
30/08/2017 21:50	1.487	123.9
30/08/2017 22:00	1.123	121.1
30/08/2017 22:10	0.928	148.8
30/08/2017 22:20	1.068	184.1
30/08/2017 22:30	0.933	170.8
30/08/2017 22:40	0.726	128.4
30/08/2017 22:50	1.025	113.2
30/08/2017 23:00	0.99	115
30/08/2017 23:10	0.87	172.9
30/08/2017 23:20	1.307	181.3
30/08/2017 23:30	1.427	162.7
30/08/2017 23:40	1.167	165.6
30/08/2017 23:50	0.923	164.8
31/08/2017 0:00	1.193	155.2
31/08/2017 0:10	1.636	145.1
31/08/2017 0:20	1.516	156.3
31/08/2017 0:30	1.325	139
31/08/2017 0:40	1.191	146.4
31/08/2017 0:50	1.642	158.3
31/08/2017 1:00	1.717	144.1
31/08/2017 1:10	1.42	143.7
31/08/2017 1:20	1.56	143.9
31/08/2017 1:30	1.821	151.4
31/08/2017 1:40	1.22	143.5
31/08/2017 1:50	1.653	139.1
31/08/2017 2:00	2.067	140.7
31/08/2017 2:10	2.486	131
31/08/2017 2:20	3.642	138.8
31/08/2017 2:30	3.823	137.2
31/08/2017 2:40	3.507	136.1
31/08/2017 2:50	2.934	138.9
31/08/2017 3:00	2.879	142.4
31/08/2017 3:10	3.187	150.5
31/08/2017 3:20	3.44	155.2
31/08/2017 3:30	3.052	158.4
31/08/2017 3:40	2.111	154.8
31/08/2017 3:50	1.31	138.7
31/08/2017 4:00	0.906	154.3
31/08/2017 4:10	0.859	169
31/08/2017 4:20	0.893	171.8
31/08/2017 4:30	1.323	151.4
31/08/2017 4:40	1.359	132.1
31/08/2017 4:50	1.191	138.2

Date & time	Wind speed (m/s)	Wind Direction (°)
31/08/2017 5:00	0.874	148.4
31/08/2017 5:10	0.562	131.4
31/08/2017 5:20	1.238	133.3
31/08/2017 5:30	1.625	125.8
31/08/2017 5:40	1.943	122.1
31/08/2017 5:50	1.822	130.3
31/08/2017 6:00	1.543	137.2
31/08/2017 6:10	2.002	149.4
31/08/2017 6:20	2.747	154.2
31/08/2017 6:30	2.634	145.8
31/08/2017 6:40	3.061	149.9
31/08/2017 6:50	2.412	158
31/08/2017 7:00	2.42	150.3
31/08/2017 7:10	2.473	140.2
31/08/2017 7:20	2.467	138.4
31/08/2017 7:30	2.307	141.3
31/08/2017 7:40	2.266	142.7
31/08/2017 7:50	2.523	142.6
31/08/2017 8:00	2.8	142.1
31/08/2017 8:10	2.376	141.7
31/08/2017 8:20	2.314	136.3
31/08/2017 8:30	1.829	133.1
31/08/2017 8:40	1.463	123.9
31/08/2017 8:50	1.278	133.7
31/08/2017 9:00	1.065	117.4
31/08/2017 9:10	0.728	132.4
31/08/2017 9:20	1.111	125.9
31/08/2017 9:30	1.415	127
31/08/2017 9:40	1.433	114.4
31/08/2017 9:50	1.363	117
31/08/2017 10:00	1.699	149.9
31/08/2017 10:10	1.697	136.4
31/08/2017 10:20	1.654	162
31/08/2017 10:30	1.633	94.2
31/08/2017 10:40	1.341	185.7
31/08/2017 10:50	2.165	105.6
31/08/2017 11:00	1.321	144.4
31/08/2017 11:10	1.341	260.7
31/08/2017 11:20	2.034	185.8
31/08/2017 11:30	1.93	203.8
31/08/2017 11:40	1.665	249
31/08/2017 11:50	2.465	180.9
31/08/2017 12:00	1.384	214.5
31/08/2017 12:10	2.518	173.2
31/08/2017 12:20	1.797	202.9
31/08/2017 12:30	1.787	161.9
31/08/2017 12:40	2.185	154.6
31/08/2017 12:50	2.334	124.3
31/08/2017 13:00	1.975	200.1
31/08/2017 13:10	2.888	194.4
31/08/2017 13:20	1.709	121.6

Date & time	Wind speed (m/s)	Wind Direction (°)
31/08/2017 13:30	4.084	158
31/08/2017 13:40	2.852	145.7
31/08/2017 13:50	2.43	155.7
31/08/2017 14:00	1.512	212
31/08/2017 14:10	3.393	135.7
31/08/2017 14:20	3.857	182.2
31/08/2017 14:30	3.879	168.7
31/08/2017 14:40	2.866	123.8
31/08/2017 14:50	4.169	130.4
31/08/2017 15:00	2.969	147.5
31/08/2017 15:10	2.713	156.3
31/08/2017 15:20	3.765	153.2
31/08/2017 15:30	3.004	126.5
31/08/2017 15:40	3.357	151.1
31/08/2017 15:50	3.177	149.6
31/08/2017 16:00	3.619	158.4
31/08/2017 16:10	3.612	153.7
31/08/2017 16:20	3.75	152.9
31/08/2017 16:30	3.697	170.3
31/08/2017 16:40	3.373	166.2
31/08/2017 16:50	4.516	151.7
31/08/2017 17:00	4.363	155.9
31/08/2017 17:10	4.225	156.8
31/08/2017 17:20	4.174	157.2
31/08/2017 17:30	4.063	153.9
31/08/2017 17:40	3.909	160.5
31/08/2017 17:50	3.695	163.5
31/08/2017 18:00	3.634	157.3
31/08/2017 18:10	3.367	159.8
31/08/2017 18:20	3.365	161.3
31/08/2017 18:30	3.421	158
31/08/2017 18:40	2.608	152.1
31/08/2017 18:50	2.357	149.5
31/08/2017 19:00	2.198	146.4
31/08/2017 19:10	2.078	140.5
31/08/2017 19:20	2.411	131.5
31/08/2017 19:30	2.618	139.6
31/08/2017 19:40	2.429	137.7
31/08/2017 19:50	2.363	136.8
31/08/2017 20:00	2.103	137
31/08/2017 20:10	1.944	137.2
31/08/2017 20:20	1.452	141
31/08/2017 20:30	1.899	149.4
31/08/2017 20:40	1.271	180.7
31/08/2017 20:50	0.621	178.8
31/08/2017 21:00	0.222	188.5
31/08/2017 21:10	0.193	192.4
31/08/2017 21:20	0.479	191.6
31/08/2017 21:30	0.138	202.4
31/08/2017 21:40	0.052	202.2
31/08/2017 21:50	0.143	198.9

Date & time	Wind speed (m/s)	Wind Direction (°)
31/08/2017 22:00	0.379	169.6
31/08/2017 22:10	0.574	158
31/08/2017 22:20	1.172	175.5
31/08/2017 22:30	0.988	178.3
31/08/2017 22:40	0.63	165
31/08/2017 22:50	0.481	156.3
31/08/2017 23:00	1.207	155.1
31/08/2017 23:10	1.256	159
31/08/2017 23:20	1.42	147.7
31/08/2017 23:30	1.321	149.7
31/08/2017 23:40	1.36	148.7
31/08/2017 23:50	1.45	143.5
1/09/2017 0:00	1.841	147.5
1/09/2017 0:10	2.638	147.7
1/09/2017 0:20	1.652	138.3
1/09/2017 0:30	1.899	138.8
1/09/2017 0:40	1.246	127.8
1/09/2017 0:50	0.789	120.7
1/09/2017 1:00	1.138	127.6
1/09/2017 1:10	1.685	138.4
1/09/2017 1:20	1.403	119.5
1/09/2017 1:30	1.541	130
1/09/2017 1:40	1.673	118
1/09/2017 1:50	1.356	83.4
1/09/2017 2:00	2	57.72
1/09/2017 2:10	2.2	47.46
1/09/2017 2:20	2.456	33.58
1/09/2017 2:30	1.943	37.94
1/09/2017 2:40	1.471	36.06
1/09/2017 2:50	1.491	32.32
1/09/2017 3:00	1.262	45.31
1/09/2017 3:10	1.188	59.29
1/09/2017 3:20	1.115	57.59
1/09/2017 3:30	1.419	59.89
1/09/2017 3:40	1.821	41.24
1/09/2017 3:50	1.511	31.56
1/09/2017 4:00	0.895	61.34
1/09/2017 4:10	1.009	97.4
1/09/2017 4:20	1.314	102.1
1/09/2017 4:30	2.176	122.6
1/09/2017 4:40	2.742	131.1
1/09/2017 4:50	2.865	133.5
1/09/2017 5:00	2.374	141.2
1/09/2017 5:10	2.227	157.6
1/09/2017 5:20	1.04	174.2
1/09/2017 5:30	0.657	150.1
1/09/2017 5:40	1.455	134.1
1/09/2017 5:50	1.41	137.3
1/09/2017 6:00	1.358	143
1/09/2017 6:10	0.809	141
1/09/2017 6:20	0.201	157.8

Date & time	Wind speed (m/s)	Wind Direction (°)
1/09/2017 6:30	0.528	112.5
1/09/2017 6:40	1.385	110.1
1/09/2017 6:50	2.314	123.6
1/09/2017 7:00	2.375	118.1
1/09/2017 7:10	1.458	117.8
1/09/2017 7:20	0.677	129
1/09/2017 7:30	0.6	127.9
1/09/2017 7:40	0.253	124.6
1/09/2017 7:50	0.709	75.28
1/09/2017 8:00	1.422	37.31
1/09/2017 8:10	2.33	29.96
1/09/2017 8:20	2.455	38.07
1/09/2017 8:30	2.314	44.64
1/09/2017 8:40	1.646	31.81
1/09/2017 8:50	1.687	23.35
1/09/2017 9:00	1.944	36.31
1/09/2017 9:10	1.963	19.26
1/09/2017 9:20	2.421	17.2
1/09/2017 9:30	2.842	21.16
1/09/2017 9:40	2.225	349.1
1/09/2017 9:50	2.836	352.7
1/09/2017 10:00	2.203	349.1
1/09/2017 10:10	2.118	354.1
1/09/2017 10:20	1.893	4.093
1/09/2017 10:30	2.598	355.4
1/09/2017 10:40	2.52	334.7
1/09/2017 10:50	2.27	310.8
1/09/2017 11:00	2.149	322
1/09/2017 11:10	1.614	12.76
1/09/2017 11:20	2.146	6.69
1/09/2017 11:30	1.765	267.6
1/09/2017 11:40	1.494	5.853
1/09/2017 11:50	2.698	316.7
1/09/2017 12:00	1.589	285
1/09/2017 12:10	2.265	311.6
1/09/2017 12:20	2.62	301.5
1/09/2017 12:30	2.468	310.4
1/09/2017 12:40	2.945	307.5
1/09/2017 12:50	2.212	293.2
1/09/2017 13:00	1.695	342.1
1/09/2017 13:10	2.428	271.2
1/09/2017 13:20	1.895	261.2
1/09/2017 13:30	2.279	317.8
1/09/2017 13:40	1.438	323.1
1/09/2017 13:50	1.359	310.7
1/09/2017 14:00	1.589	319.7
1/09/2017 14:10	1.712	337.1
1/09/2017 14:20	1.958	25.23
1/09/2017 14:30	1.223	51.25
1/09/2017 14:40	0.694	159.9
1/09/2017 14:50	1.225	263

Date & time	Wind speed (m/s)	Wind Direction (°)
1/09/2017 15:00	1.708	164.9
1/09/2017 15:10	1.472	182.8
1/09/2017 15:20	1.35	324.5
1/09/2017 15:30	1.758	349.7
1/09/2017 15:40	1.192	338.4
1/09/2017 15:50	1.627	276.3
1/09/2017 16:00	1.22	285
1/09/2017 16:10	1.458	294.2
1/09/2017 16:20	0.948	276.2
1/09/2017 16:30	0.802	21.63
1/09/2017 16:40	1.22	268.7
1/09/2017 16:50	1.027	238.5
1/09/2017 17:00	0.766	8.02
1/09/2017 17:10	1.409	34.21
1/09/2017 17:20	1.777	38.07
1/09/2017 17:30	1.874	43.98
1/09/2017 17:40	1.403	48.44
1/09/2017 17:50	1.091	45
1/09/2017 18:00	0.956	57.24
1/09/2017 18:10	0.746	22.8
1/09/2017 18:20	0.238	3.729
1/09/2017 18:30	0.185	110.6
1/09/2017 18:40	1.552	93.7
1/09/2017 18:50	1.112	75.54
1/09/2017 19:00	0.872	66.81
1/09/2017 19:10	0.633	66.54
1/09/2017 19:20	0.713	102.8
1/09/2017 19:30	1.207	132.4
1/09/2017 19:40	1.231	121.2
1/09/2017 19:50	1.17	129.7
1/09/2017 20:00	1.218	146
1/09/2017 20:10	1.64	149.8
1/09/2017 20:20	1.17	157.8
1/09/2017 20:30	1.995	139.6
1/09/2017 20:40	2.439	126.8
1/09/2017 20:50	1.335	98.7
1/09/2017 21:00	0.567	36.68
1/09/2017 21:10	0.161	15.66
1/09/2017 21:20	0.384	219.9
1/09/2017 21:30	0.7	180.7
1/09/2017 21:40	0.79	141.2
1/09/2017 21:50	0.973	126.9
1/09/2017 22:00	1.044	116
1/09/2017 22:10	0.633	132.4
1/09/2017 22:20	0.257	76.26
1/09/2017 22:30	0.649	170.6
1/09/2017 22:40	0.854	158
1/09/2017 22:50	1.158	102.3
1/09/2017 23:00	0.786	65.58
1/09/2017 23:10	0.232	62.2
1/09/2017 23:20	0.033	58.74

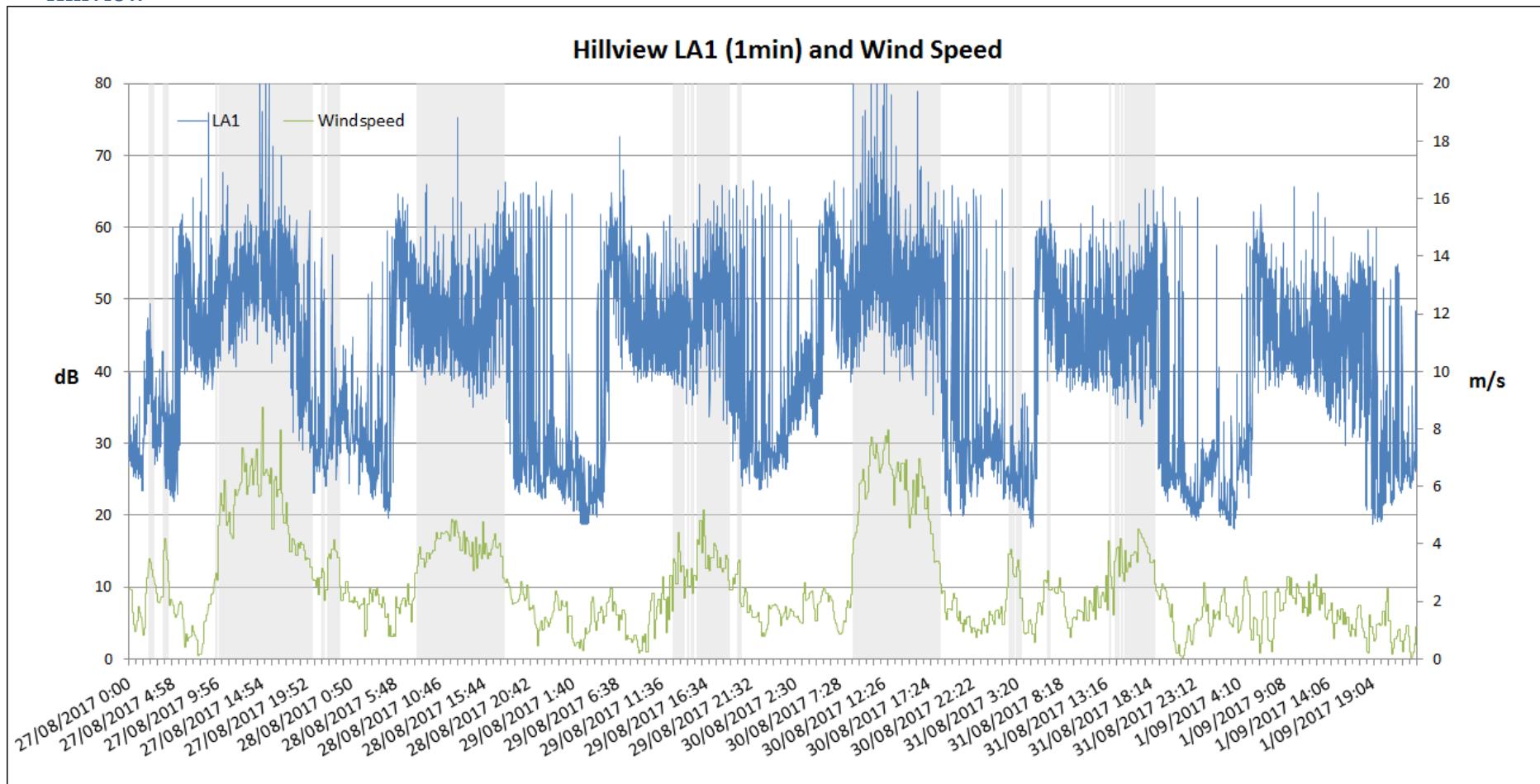
Date & time	Wind speed (m/s)	Wind Direction (°)
1/09/2017 23:30	0.258	261.5
1/09/2017 23:40	0.532	275.7
1/09/2017 23:50	0.485	249.8

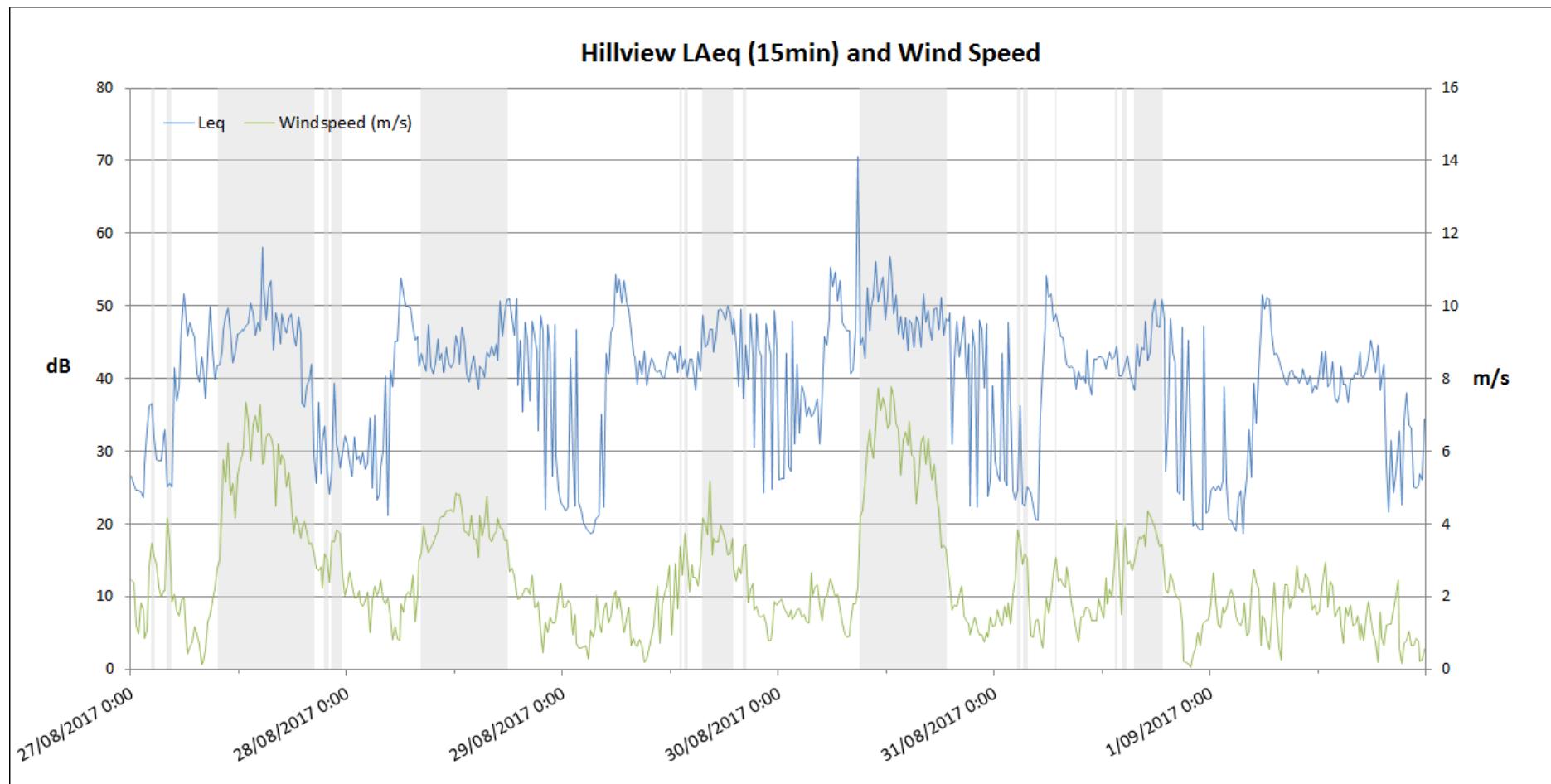
Appendix D – Full Results Graphs

Note:

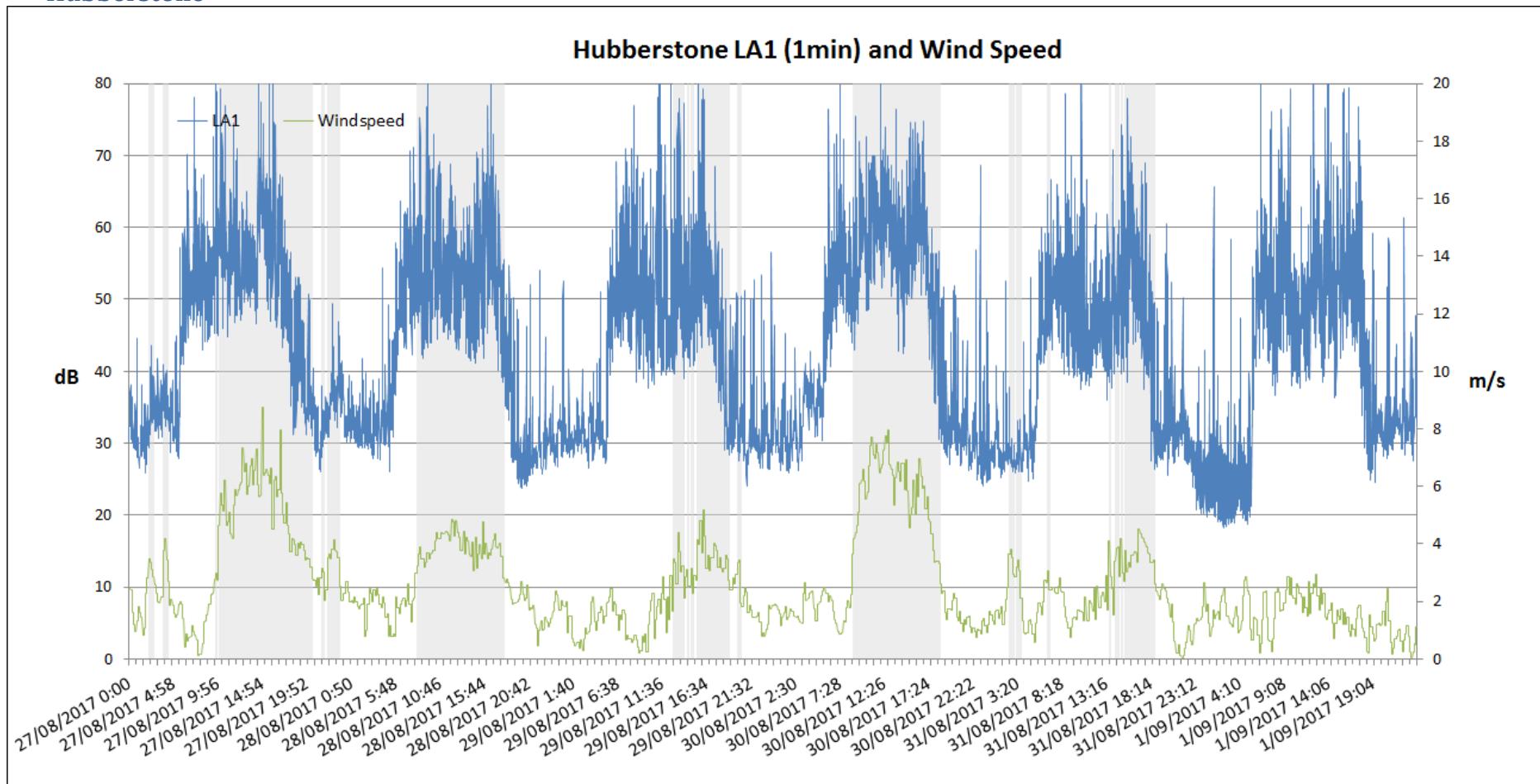
- Grey shaded areas indicate periods when wind speeds were in excess of 3 m/s; data from these periods have been excluded in the calculation for average results presented in Table 7.
- L_{A1} data is only plotted for night periods, which is when the L_{A1} criteria applies.

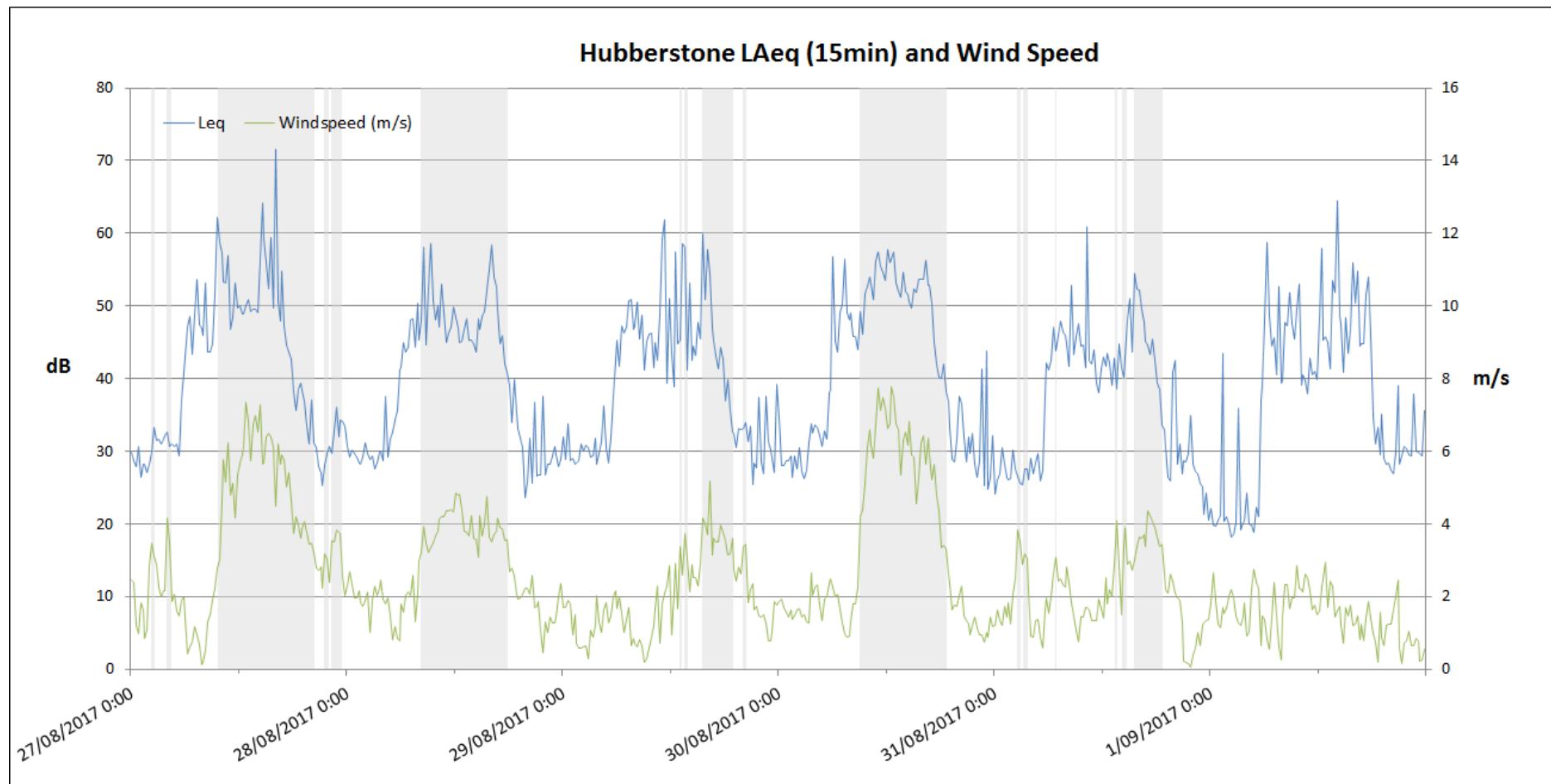
Hillview



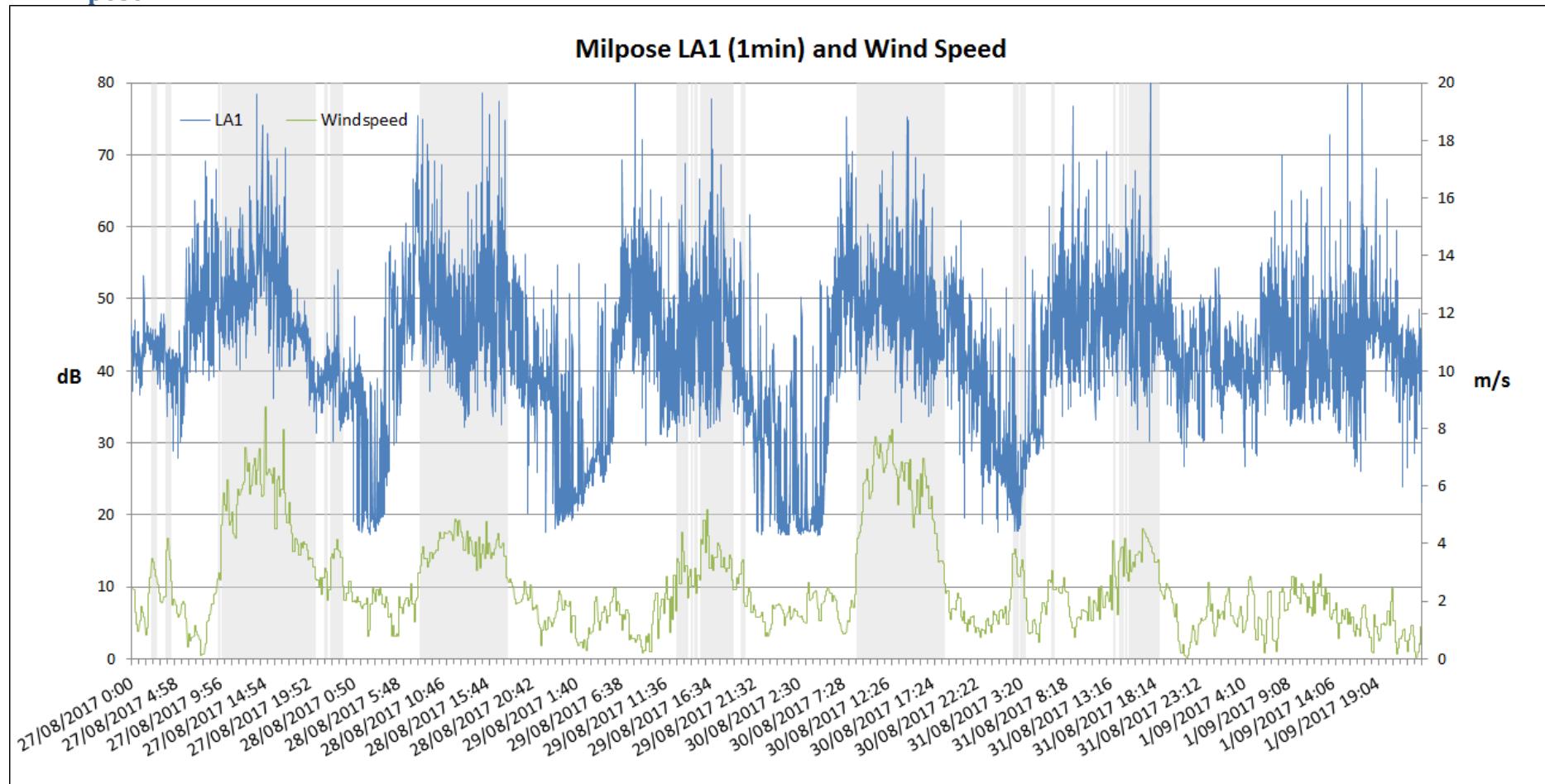


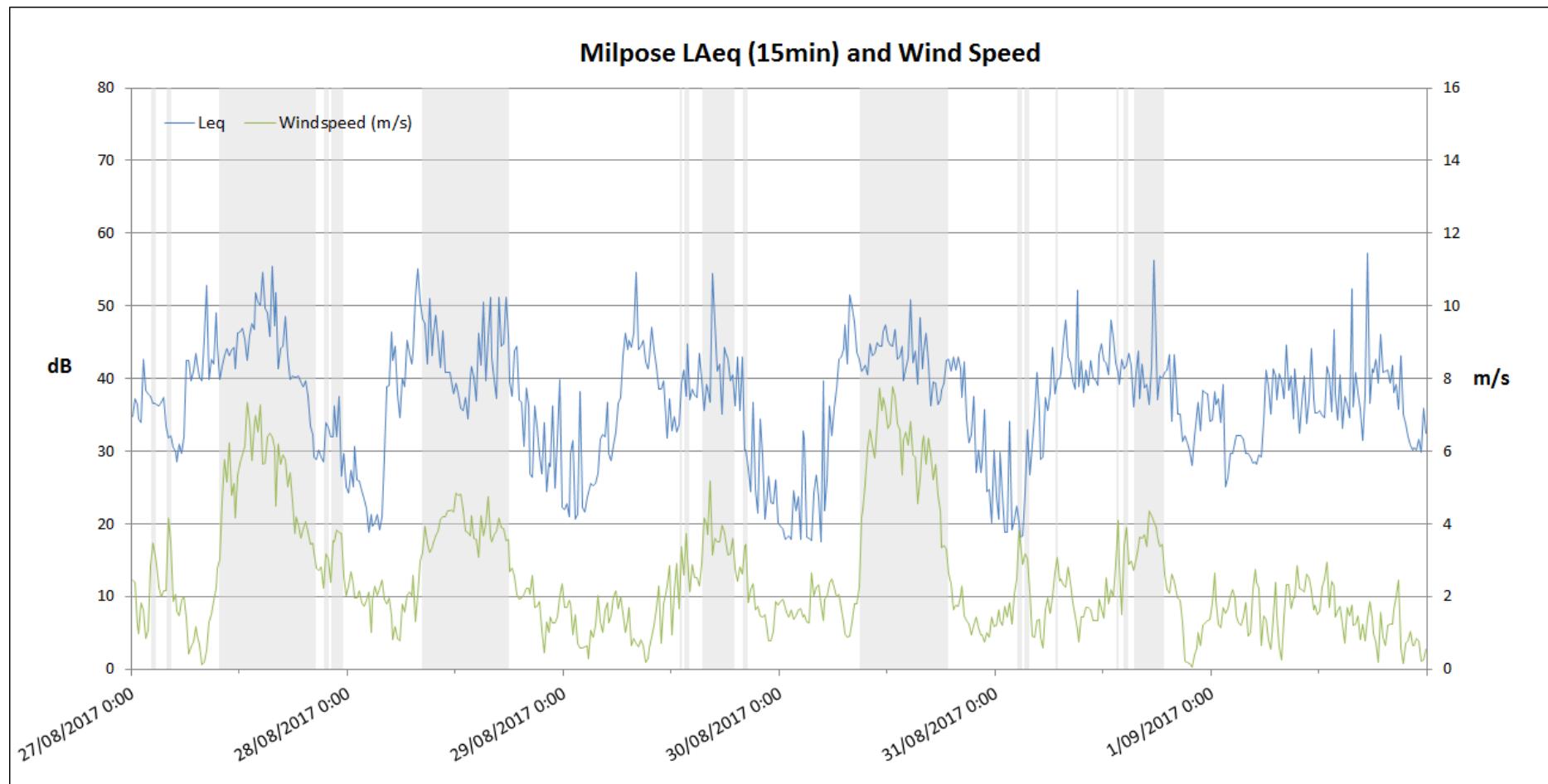
Hubberstone



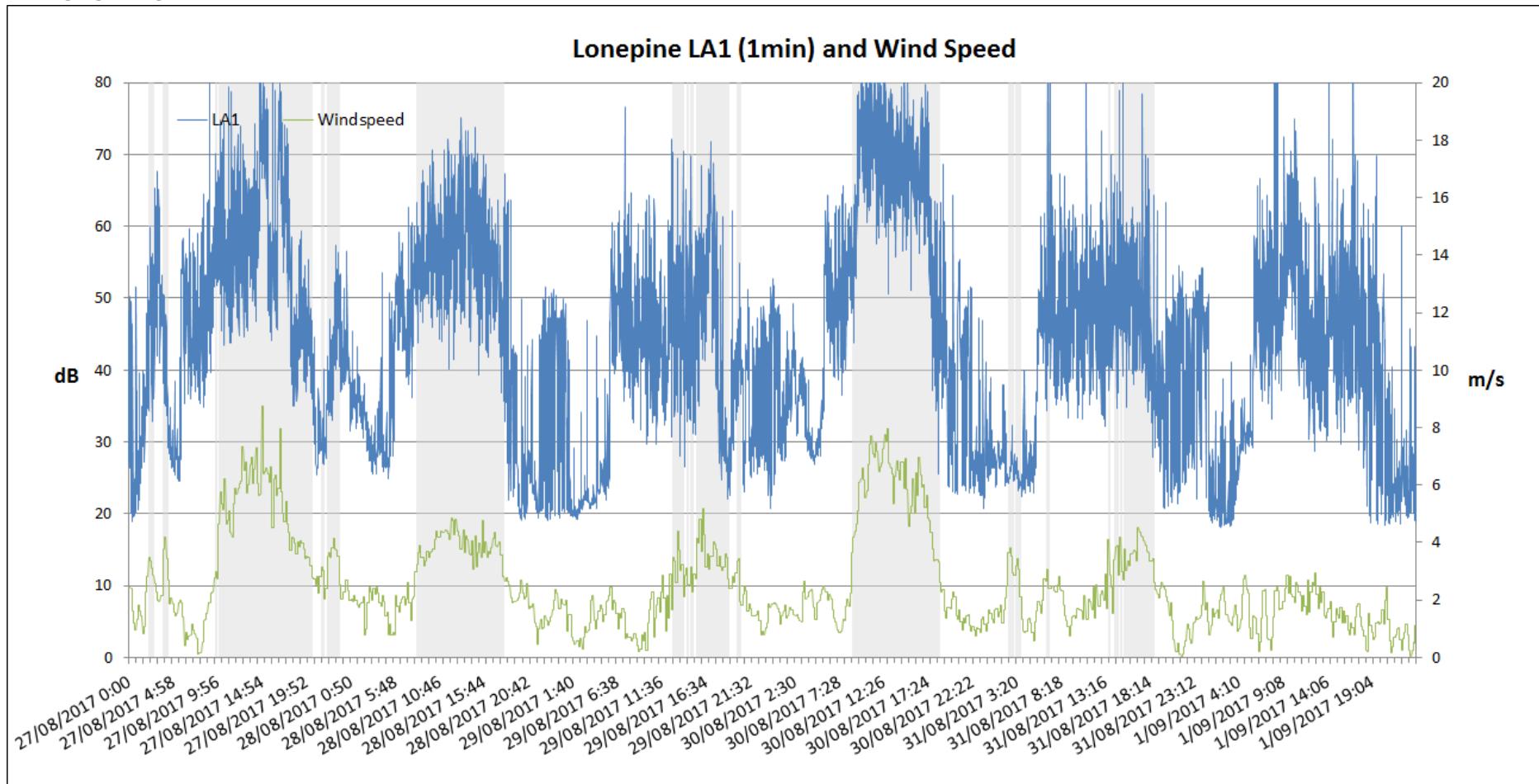


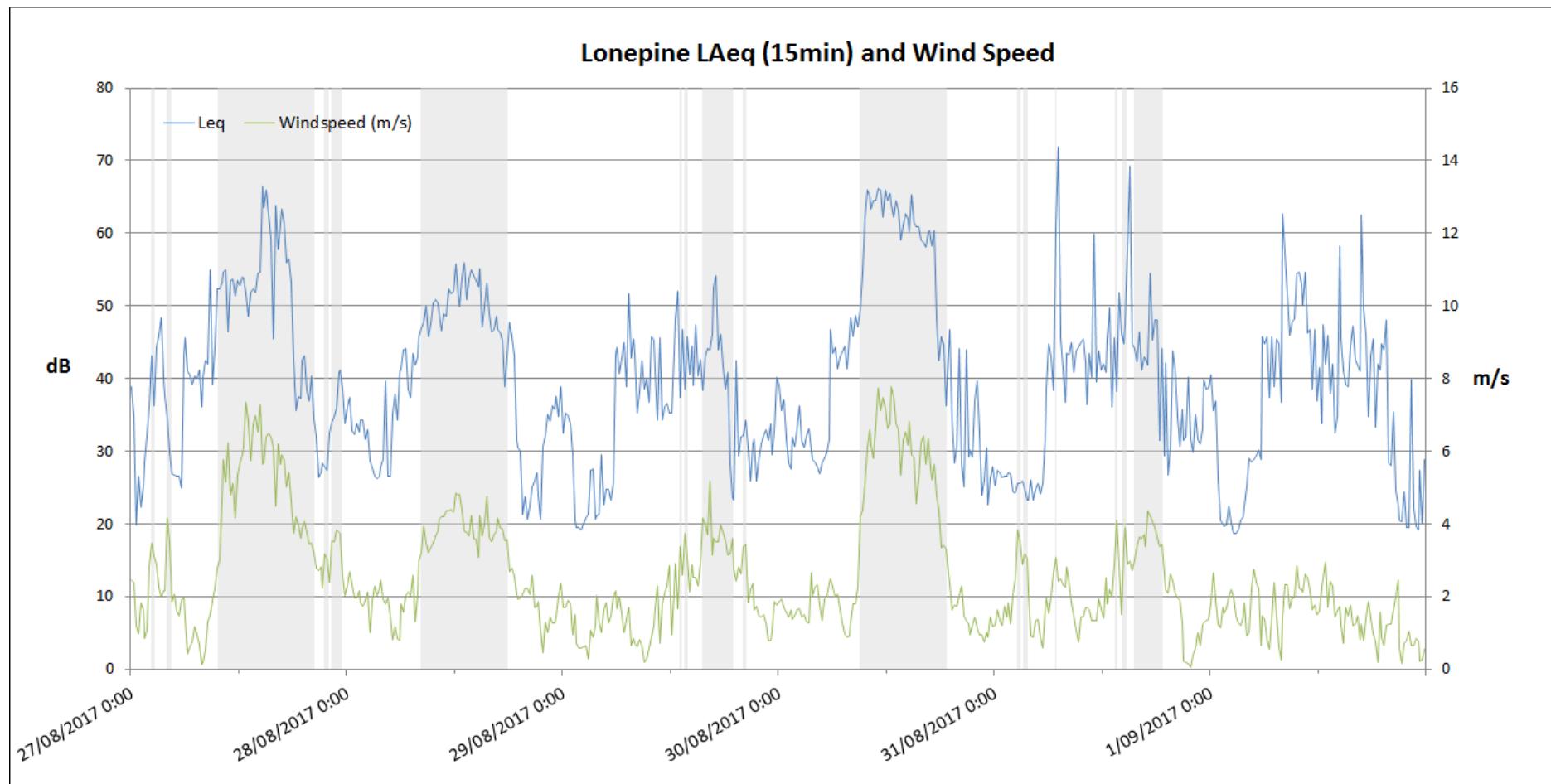
Milpose





Lone Pine





-End of report-