REPORT

Ballincor Wind Farm

Background Noise Survey

CLIENT	DOCUMENT REFERENCE	DATE
Tobin Consulting Engineers	227501.064NT04	29/09/2025

AWN Consulting Ltd, The Tecpro Building, IDA Business & Technology Park, Clonshaugh, Dublin 17, D17 XD90

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Signature		
Name	Miguel Cartuyvels	Dermot Blunnie
Title	Acoustic Consultant	Associate (Acoustics)
Date	21 November 2025	21 November 2025

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1. INTRODUCTION

AWN has completed a background noise survey that will inform a wind turbine environmental noise impact assessment for the proposed Ballincor Wind Farm at Co. Tipperary. This note has been prepared to provide details of the background noise levels derived at the relevant Noise Monitoring Locations (NMLs). A brief description of the assessment methodology is outlined in the note.

The background noise levels presented within this document have been determined based on an assessment hub height of 105 m for the proposed Wind Farm.

2. BACKGROUND NOISE SURVEY

The noise survey and subsequent data analysis was carried out in accordance with best practice following the guidance contained in the Institute of Acoustics publication *A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise* (May 2013), (IOA GPG).

2.1 Summary of Measurement Procedure

Measurements were conducted at all locations over the periods outlined in Table 2-3. Data samples for all measurements (noise, rainfall, and wind) were logged continuously at 10-minute interval periods for the duration of the survey. The $L_{Aeq,10min}$ and $L_{A90,10min}$ noise parameters were measured in this instance and the results were saved to the instrument memory for post analysis.

Survey personnel noted potential primary noise sources contributing to noise build-up during the installation and removal of the sound level meters from site.

2.2 Selected Measurement Locations

The purpose of the noise survey is to determine the background noise at representative noise sensitive locations (NSLs) within the receiving environment surrounding the proposed development.

The assessment methodology in the EIAR will be in accordance with the Institute of Acoustics document A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (2013) hereafter referred to as the IOA GPG.

The following text summaries the guidance from the IOA GPG for the selection of background noise survey locations:

- The selection of suitable noise monitoring locations for background noise surveys is not straightforward general guidance is provided in the IOA GPG.
- Often there are practical constraints on where equipment can be placed, and a considerable degree of experience-based judgement is required when selecting these positions.
- Any contribution to background noise levels of noise from an existing wind farm must be excluded when assigning background noise and setting noise limits for a new development.

A robust assessment of the noise impacts of the wind farm necessitates a detailed survey of the background noise at houses in the vicinity of the wind farm.

2.3 Measurement Locations

Table 2-1 Co-Ordinates of Noise Monitoring Equipment

Location (Nearest NSL)	Co – Ordinates (ITM)	
	Easting	Northing
NML 1 (H010)	603,041	698,628
NML 2 (H141)	602,239	700,043
NML 3 (H173)	605,622	698,581
NML 4 (H017)	605,740	696,773
NML 5 (H289)	603,903	696,862
NML 6 (H109)	603,105	697,327
NML 7 (H225)	603,589	701,036

Figure 1 shows the locations each of the monitoring location in the context of the surrounding area. Appendix B presents pictures of the installed equipment at each location.

Figure 1 Map Location of NMLs

Site visits by survey personnel were carried out during morning and afternoon periods; during these visits, primary noise sources contributing to noise build-up were noted. In respect of night-time periods, when noise due to traffic on local roads, agricultural activities and other sources tend to reduce, there was no indication of any significant local night-time sources of noise at any location. No sources of vibration were noted at any of the survey locations.

Any noise from the existing wind turbines in the area should not form part of the background noise environment at noise sensitive locations. In contrast, the terms 'baseline noise level' or the 'existing noise levels' environment, incorporate current noise contributions from the operation of the existing turbines.

2.3.1 Notes

During the equipment installations and each location visit, notes were taken to record notable activity or noise sources at each location. In general, the significant noise sources in the area were noted to be local and distant traffic movements, activity in and around the residences, wind generated noise from local foliage and other typical anthropogenic sources typically found in such rural settings.

Table 2-2 Notable items from Site Observations during Site Visits

Location	Details
NML 1	Distant chainsaw noise was audible during one battery change – no significant effect on data noted.
NML 2	Distant chainsaw noise was audible during one battery change – no significant effect on data noted.
NML 3	No additional notable noise sources at this location.
NML 4	The noise meter was moved to a field to the rear of the property by the resident between the install and first battery change – no significant effect on the measured data was observed or noted.
NML 5	No additional notable noise sources at this location.
NML 6	No additional notable noise sources at this location.
NML 7	Nearby farm activity noted during battery change – no significant effect on data

2.4 Measurement Periods

The periods of noise measurements used in the background noise monitoring assessment are outlined in Table 2-3. The survey was deemed completed when an adequate number of datasets had been measured as recommended in the IOA GPG to determine a suitable representation of the typical background noise.

Table 2-3 Measurement periods of Noise Monitoring Equipment

Location	Start Date	End Date
NML 1	15 July 2022	17 September 2022
NML 2	15 July 2022	17 September 2022
NML 3	15 July 2022	23 August 2022
NML 4	15 July 2022	26 August 2022
NML 5	15 July 2022	10 September 2022
NML 6	15 July 2022	14 September 2022
NML 7	15 July 2022	26 August 2023

2.5 Instrumentation

2.5.1 Sound Level Meters

Table 2-4 confirms the details of the noise monitoring instrumentation installed at each location.

Table 2-4 Details of Noise Measurement Instrumentation

Location Reference	Equipment Make and Model	Serial Number
NML 1	Rion NL-52	564809
NML 2	Rion NL-52	998410
NML 3	Rion NL-52	998411
NML 4	Rion NL-52	575785
NML 5	Rion NL-52	586940
NML 6	Rion NL-52	998409
NML 7	Rion NL-52	164426

Before and after the survey the measurement apparatus was check calibrated using a Brüel & Kjær type 4231 Sound Level Calibrator where appropriate. Instruments were calibrated on each interim visit and any drift noted. All calibration drifts were less than ±0.2 dB and within acceptable tolerances outlined in the IOA GPG.

The Rion NL-52 SLMs were each fitted with a Rion WS-15 Outdoor Microphone Protection wind shield. The WS-15 is certified to comply with the recommended specifications as per Section 2.4.1 of the IOA GPG.

2.5.2 Rainfall Data

Rain fall was monitored and logged using a Texas Instruments TR-525 data loggers that was installed at Location NML-1.

2.5.3 Wind Data

Average wind speed and direction was measured in 10-minute intervals at an on-site Lidar and provided to AWN. Location coordinates for the Lidar are confirmed in Table 2-5. A copy of the Installation Report is included in the Appendix to Noise and vibration chapter in the EIAR.

Table 2-5 Co-Ordinates of Meteorological Mast

Item	Co – Ordinates (ITM)	
	Easting	Northing
Lidar	603,749	698,391

3. ANALYSIS AND RESULTS

The following sections present details of the statistical analysis carried out on the noise monitoring data to derive the background noise curves at each NML.

3.1 Data Analysis

3.1.1 Assessment Periods

The results presented in the following sections refer to the noise data collated during 'quiet periods' of the day and night as defined in the IOA GPG. These periods are defined in Table 3-1.

Table 3-1 Daytime and Night Periods

Period Description	Period Definition
Daytime (Amenity Hours)	ETSU-R-97 defines the amenity hours as: 18.00 to 23.00 Monday to Friday; 13.00 to 23.00 on Saturdays; and, 07.00 to 23.00 on Sundays.
Night	ETSU-R-97 defines the night-time hours as 23.00 to 07.00 every day

3.1.2 Noise from Existing Turbines

An existing operational wind farm, Lacka/Skehanagh, is located southwest of the proposed development. The data has been analysed to account for any contribution from the existing wind turbine noise. This was achieved through a combination of directional filtering upwind of the receptor and subtracting the

predicted noise from the existing wind farm from the measured levels in accordance with guidance from the IOA GPG.

The IOA GPG states that any contribution to the background noise levels from an existing wind turbine must be excluded when assigning background noise and setting noise limits for a new development.

Section 2.2.2 of the IOA GPG states: '*Any contribution to background noise levels of noise from an existing wind farm must be excluded when assigning background noise and setting noise limits for a new development*.'

There are a number of ways of achieving this, as described in section 5.2 of IOA GPG:

> *5.2.2 Where a new wind farm is proposed and a receptor is also within the area acoustically affected by an already operational wind farm, then noise from the existing wind farm must not be allowed to influence the background noise measurements for the proposed development.*
>
> *5.2.3 In the presence of an existing wind farm, suitable background noise levels can be derived by one of the following methods:*
>
> 1. *switching off the existing wind farm during the background noise level survey (with associated significant cost implications);*
> 2. *accounting for the contribution of the existing wind farm in the measurement data e.g. directional filtering (only including background data when it is not influenced by the existing turbines e.g. upwind of the receptor, but mindful of other extraneous noise sources e.g. motorways) or subtracting a prediction of noise from the existing wind farm from the measured noise levels.*
> 3. *utilising an agreed proxy location removed from the area acoustically affected by the existing wind farm/s; or*
> 4. *utilising background noise level data as presented within the Environmental Statement/s for the original wind farm/s (the suitability of the background noise level data should be established).*

The other wind farms are outside the control of the applicant. Considering the distance from the NMLs to the existing operational turbines, it is not necessary to switch off turbines. In this instance, the selected NMLs were at sufficient distances from the existing turbines such that the application of option 2 (directional filtering) was sufficient to remove significant contributions of noise from existing turbines.

Where required the data has been analysed to remove contributions from existing wind turbine noise. This was achieved through directional filtering upwind of the receptor from the existing wind turbines. The following table summarises key information relevant to this aspect of the methodology.

Table 3-2 Location-specific wind direction filters

Location	Nearest existing turbine to measurement location	Analysis details
NML 1	Approximately 1.6 km from NML	Directional filtering applied. Wind direction sectors, South, Southwest and West omitted from data sets.
NML 2	Approximately 2 km from NML	Directional filtering applied. Wind directions from the South omitted from data sets.
NML 3	Approximately 4.1 km from NML	Contribution from existing turbine at NML is not significant.

NML 4	Approximately 4.3 km from NML	Contribution from existing turbine at NML is not significant.
NML 5	Approximately 2.5 km from NML	Directional filtering applied. Wind direction sectors, South, Southwest, West, Northwest and North omitted from data sets.
NML 6	Approximately 1.6 km from NML	Directional filtering applied. Wind direction sectors, South, Southwest, West, Northwest and North omitted from data sets.
NML 7	Approximately 3.6 km from NML	Contribution from existing turbine at NML is not significant. Directional filtering applied to omit wind directions from the South from data sets.

3.1.3 Atypical Noise Data

The data sets have been filtered to remove issues such as the dawn chorus and the influence of other atypical noise sources. An example of atypical sources would be short, isolated periods of raised noise levels attributable to local sources, agricultural activity, boiler flues, operation of gardening equipment etc. In addition, sample periods affected by rainfall or when rainfall resulted in prolonged periods of atypical noise levels have also been removed from the data sets.

3.1.4 Consideration of Wind Shear

As part of a robust wind farm noise assessment due consideration should be given to the issue of wind shear. It is standard procedure to reference noise data to standardised 10 metre wind speed. Wind shear has been considered in this assessment in accordance with the guidance contained in the IOA GPG, Supplementary Guidance Note (SGN) 4: Wind Shear, July 2014. This guidance presents the following equations in relation to the derivation of a standardised wind speed at 10 m above ground level:

Equation A Shear Exponent Profile: this uses the following equation:

$$U = U_{ref}\left[\frac{H}{H_{ref}}\right]^{m}$$

Where:

U	calculated wind speed.
U_{ref}	measured wind speed.
H	height at which the wind speed will be calculated.
H_{ref}	height at which the wind speed is measured.
m	shear exponent.

Equation B Roughness Length Shear Profile: this uses the following equation:

$$U_1 = U_2 \frac{\ln(H_1/z)}{\ln(H_2/z)}$$

Where:

H_1 the height of the wind speed to be calculated (10m)
H_2 the height of the measured wind speed.
U_1 the wind speed to be calculated.
U_2 the measured wind speed.
z the roughness length.

Note: A roughness length of 0.05m is used to standardise hub height wind speeds to 10m height in the IEC 61400-11:2003 standard, regardless of what the actual roughness length seen on a site may have been. This 'normalisation' procedure was adopted for comparability between test results for different turbines.

The derived background noise level at integer wind speeds (standardised 10 m height) is dependent on the specific hub height. Wind speed measurements made at 100 m and 80 m were used to correct the wind speed up to a provisional assessment HH at 105 m.

The calculated HH wind speeds were then corrected to the 'standardised' 10 m wind speed in accordance with the IOA GPG. Any reference to wind speed in the following sections of this chapter should be understood to be the standardised 10 m height wind speed reference unless otherwise stated.

Figure 3-1 presents the distributions of the measured wind speed and wind direction over the survey period.

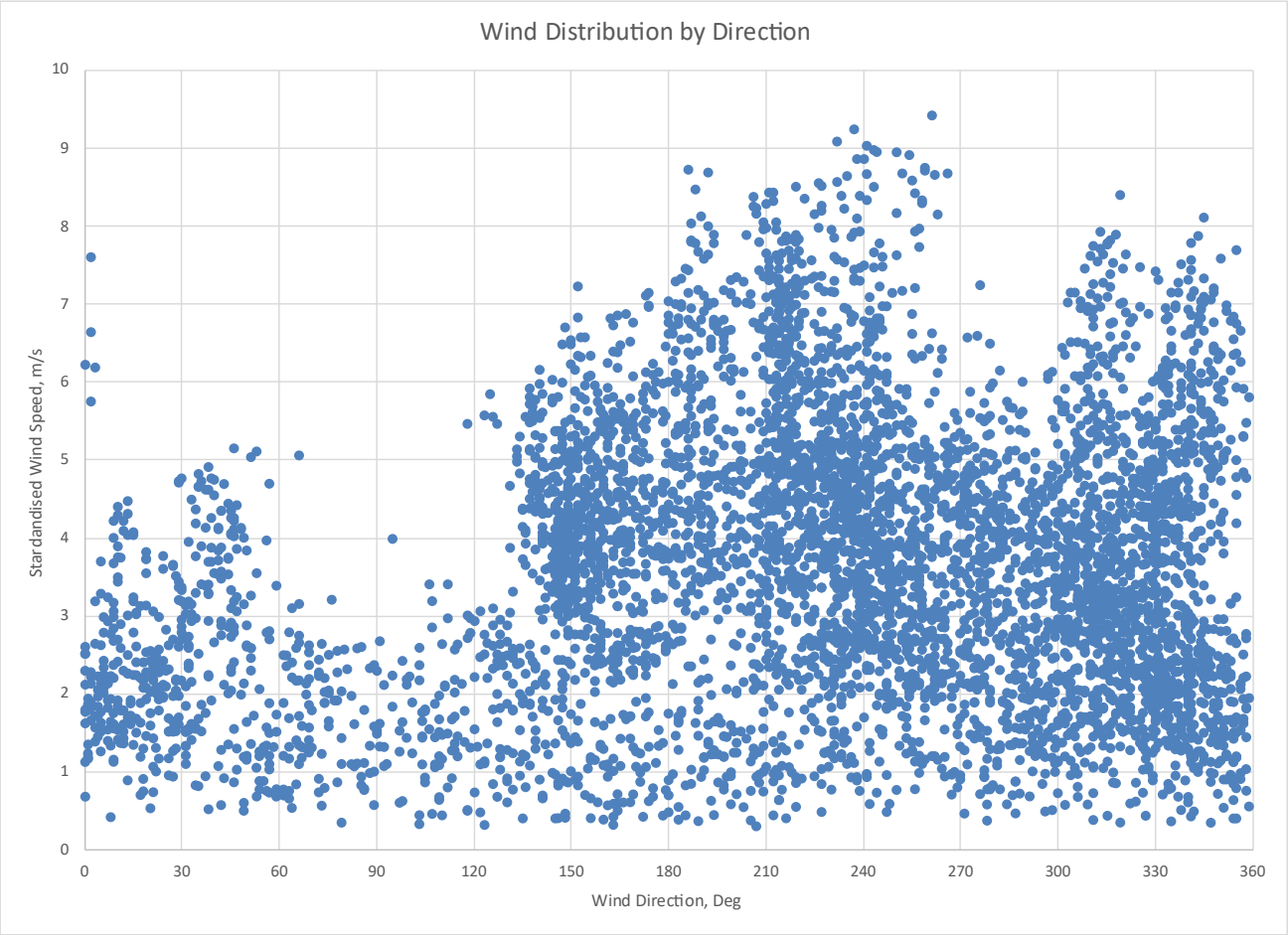


Figure 3-1 Distributions of Wind Speeds and Directions Over the Survey Period

3.2 Results

3.2.1 Derived Background Noise Levels

Appendix C presents the preliminary regression analysis for daytime and night-time periods from each NML from which the background noise levels have been derived.

The derived background noise levels for daytime are presented in Table 3-3.

Table 3-3 Derived Background Noise Levels at Assessment Hub Height - Daytime

Locations	Period	Background Noise Levels dB L_{A90} at standardised 10m height wind speed m/s for 105 m Hub Height						
		3	4	5	6	7	8	9
NML-1	Day	23.9	25.4	27.8	30.7	34.0	37.4	40.6
NML-2	Day	24.9	26.0	27.6	29.8	32.4	35.5	39.0
NML-3	Day	28.3	29.8	31.8	34.5	37.8	41.6	45.8
NML-4	Day	27.3	28.3	29.7	31.6	34.0	37.1	40.8
NML-5	Day	25.3	27.5	30.8	34.8	39.1	43.4	47.2
NML-6	Day	26.7	28.2	30.4	33.3	36.9	41.1	46.1
NML-7	Day	27.4	29.5	32.9	37.2	42.2	47.6	(47.6)

The derived background noise levels for night-time are presented in Table 3-4.

Table 3-4 Derived Background Noise Levels at Assessment Hub Height – Night-time

Locations	Period	Background Noise Levels dB L_{A90} at standardised 10m height wind speed m/s for 105 m Hub Height						
		3	4	5	6	7	8	9
NML-1	Night	18.8	20.4	22.6	25.5	29.4	34.4	(34.4)
NML-2	Night	17.8	18.9	20.6	23.3	27.0	31.9	(31.9)
NML-3	Night	18.9	21.2	24.6	28.9	34.2	40.5	(40.5)
NML-4	Night	17.9	19.0	21.0	24.3	28.9	35.3	(35.3)
NML-5	Night	17.8	19.5	22.7	27.6	33.8	40.4	(40.4)
NML-6	Night	18.9	20.6	23.3	27.1	32	38.2	(38.2)
NML-7	Night	19.1	21.9	27.1	33.7	39.3	40.3	(40.3)

APPENDIX A. GLOSSARY OF TERMS

Background noise	The noise level rarely fallen below in any given location over any given time period, often classed according to day time, evening or night-time periods.
dB	Abbreviation for 'decibel'.
dB(A)	Abbreviation for the decibel level of a sound that has been A-weighted.
Dawn Chorus	Noise due to birds which can occur at sunrise.
Decibel	The unit normally employed to measure the magnitude of sound.
Directivity	The property of a sound source that causes more sound to be radiated in one direction than another.
L_{A90}	The noise level exceeded 90% of the time during a measurement period, often used for the measurement of background noise.
Level	The general term used to describe a sound once it has been converted into decibels.
Sound level meter	An instrument for measuring sound pressure level.

APPENDIX B. INSTALLATION PHOTOGRAPHS

Appendix Figure 1 NML 1 Installation Photo

Appendix Figure 2 NML 2 Installation Photo

Appendix Figure 3 NML 3 Installation Photo

Appendix Figure 4 NML 4 Installation Photo

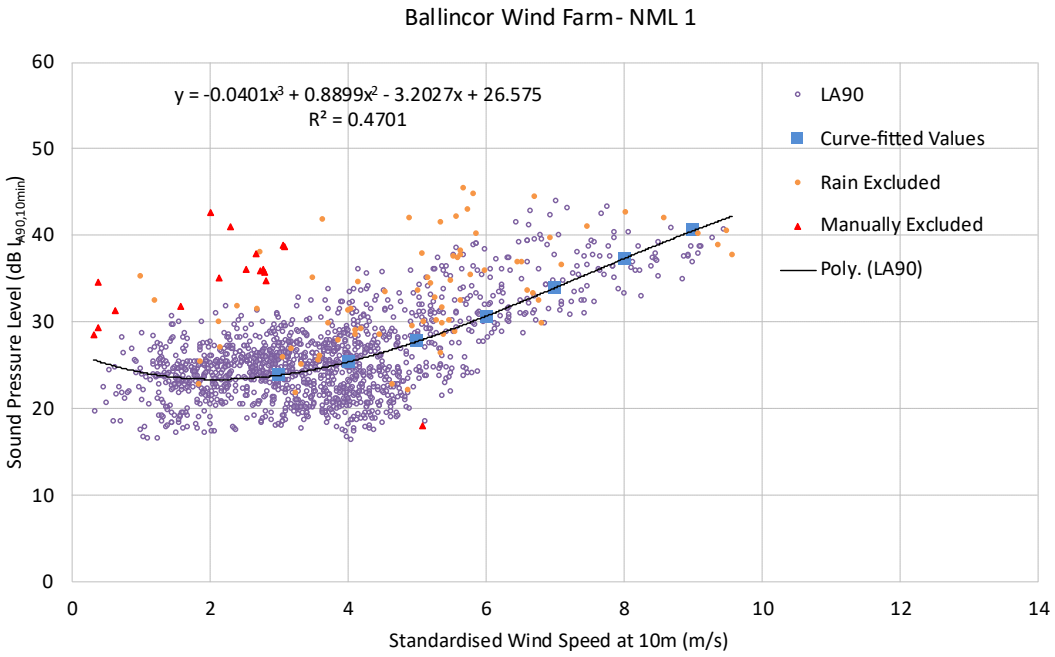
Appendix Figure 5 NML 5 Installation Photo

Appendix Figure 6 NML 6 Installation Photo

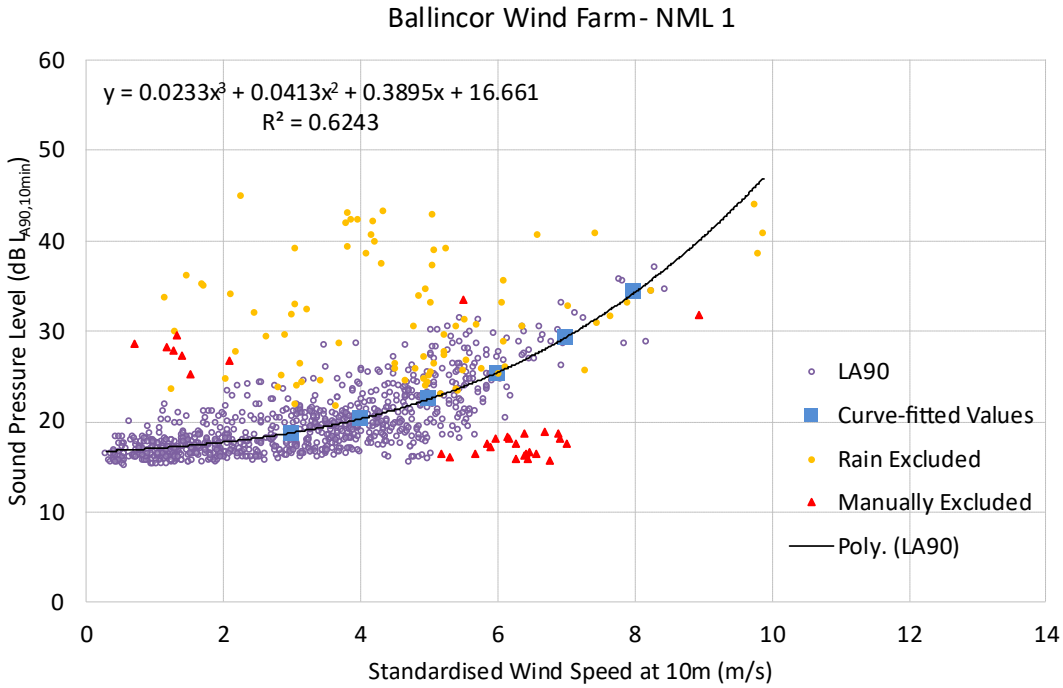
Appendix Figure 7 NML 7 Installation Photo

APPENDIX C. PRELMINARY REGRESSION CURVES

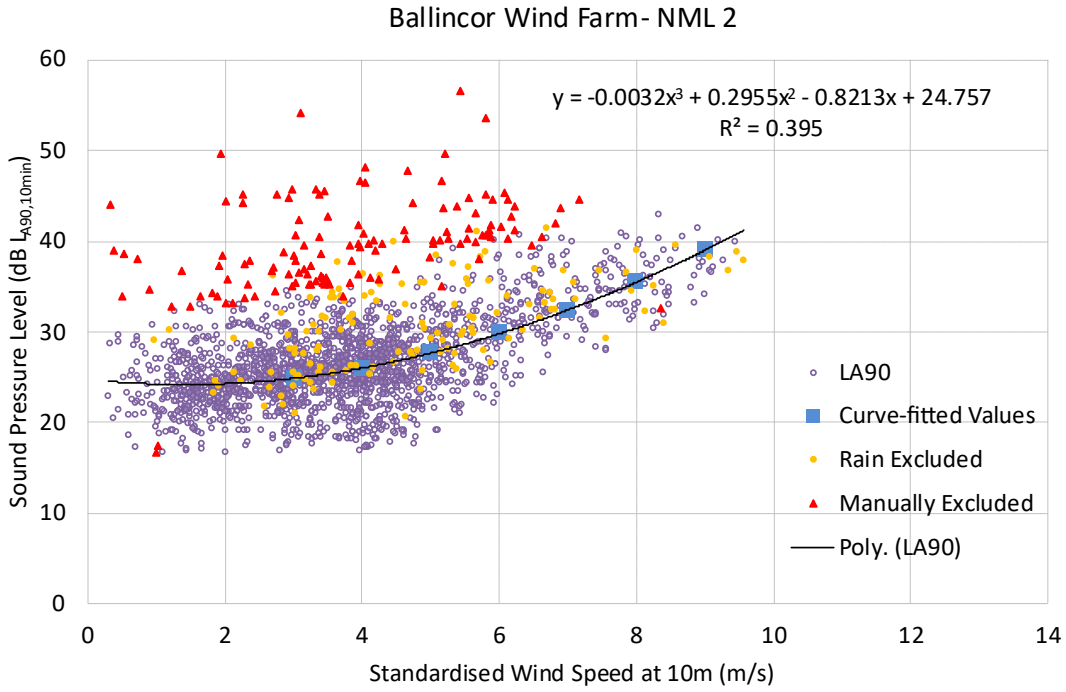
Appendix Figure 8 NML 1 – Daytime



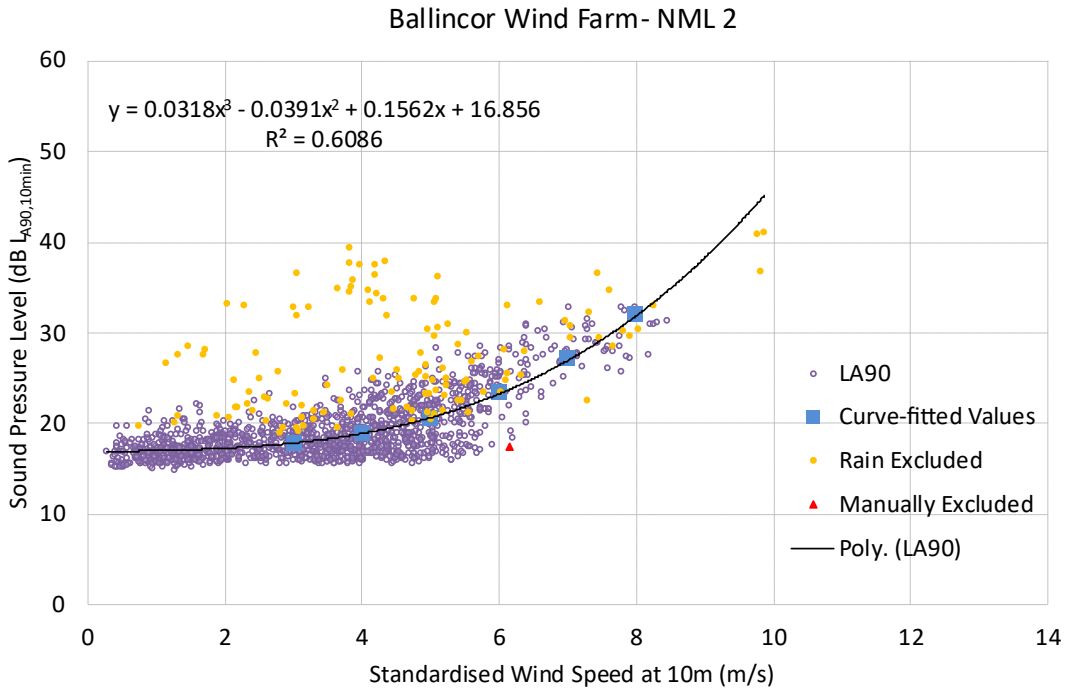
Appendix Figure 9 NML 1 – Night



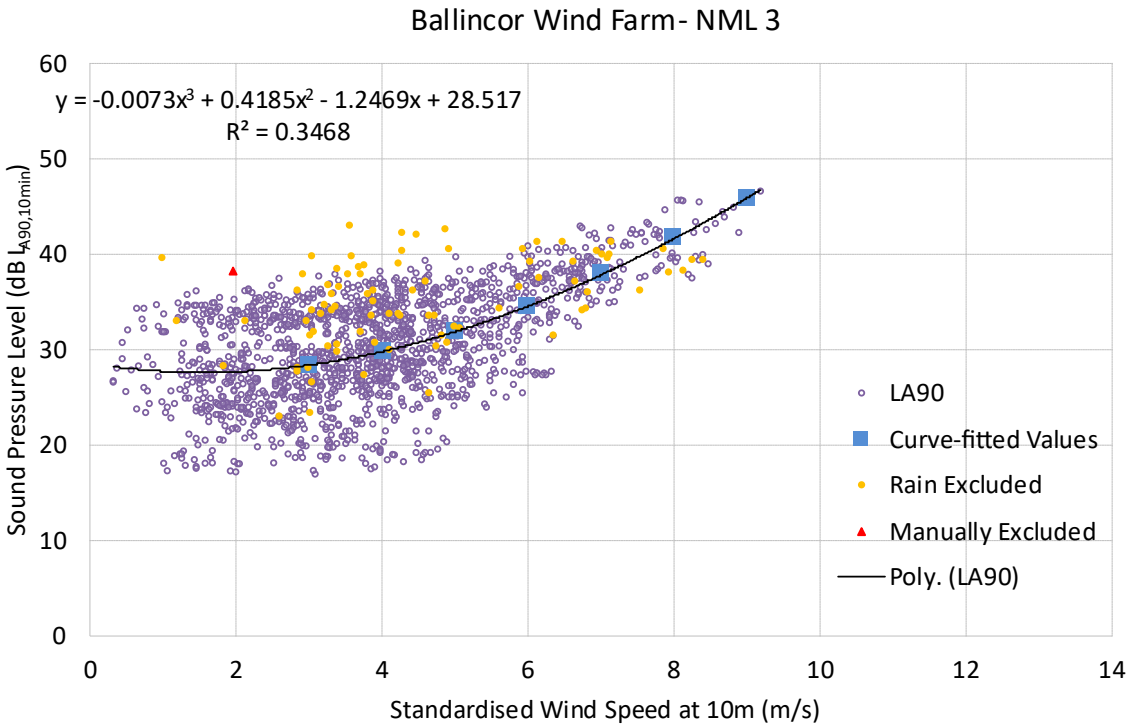
Appendix Figure 10 NML 2 – Daytime



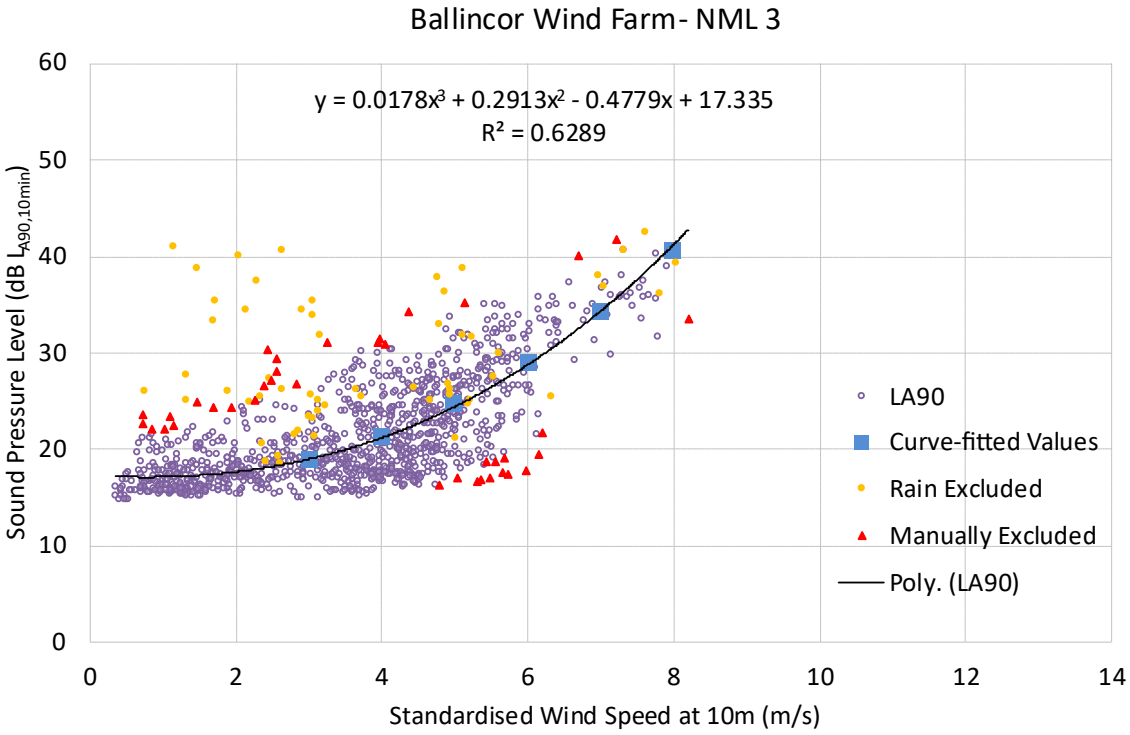
Appendix Figure 11 NML 2 – Night



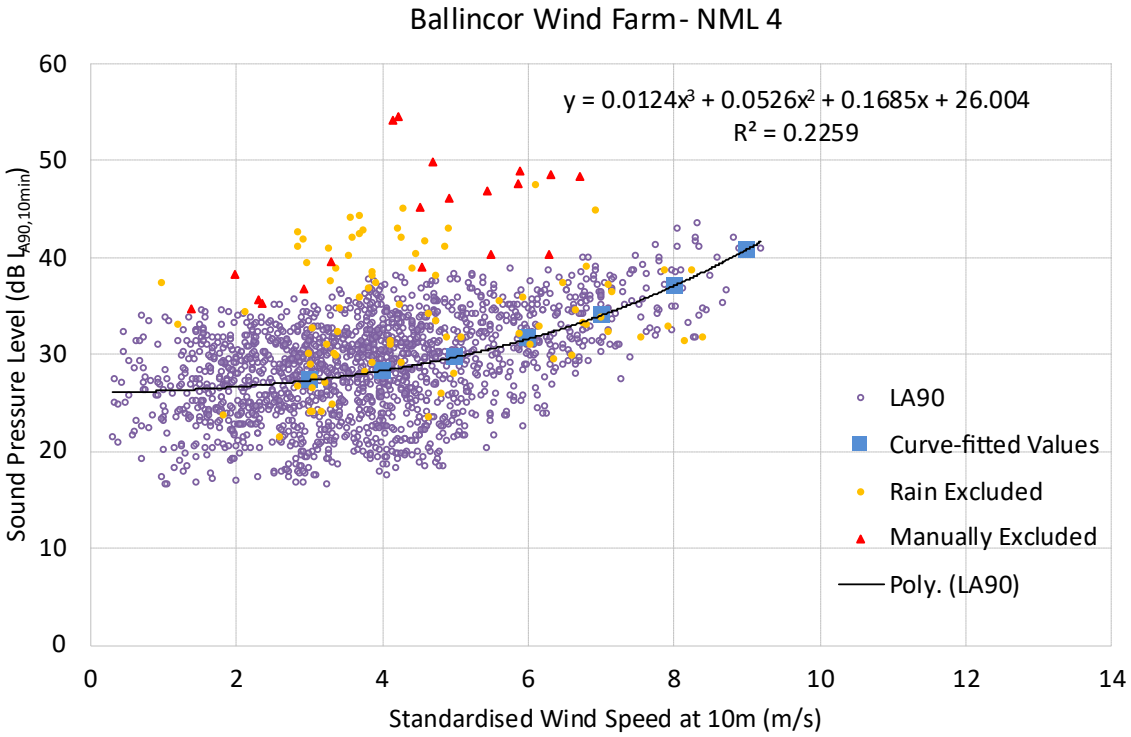
Appendix Figure 12 NML 3 – Daytime



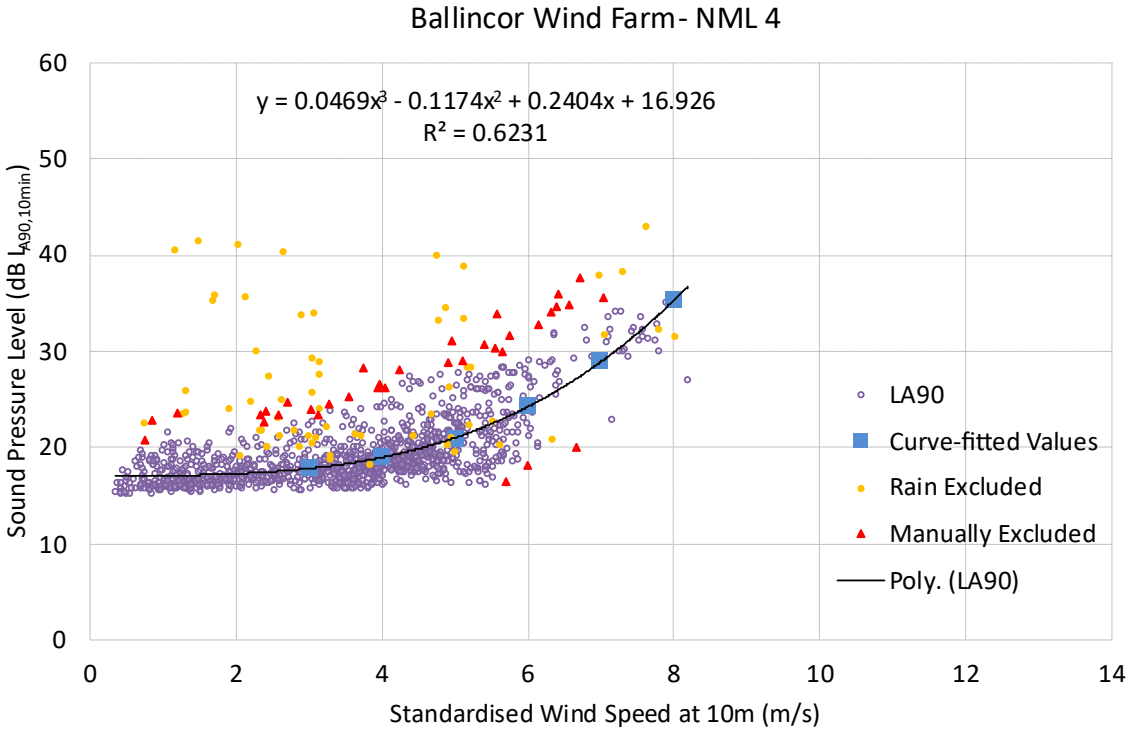
Appendix Figure 13 NML 3 – Night



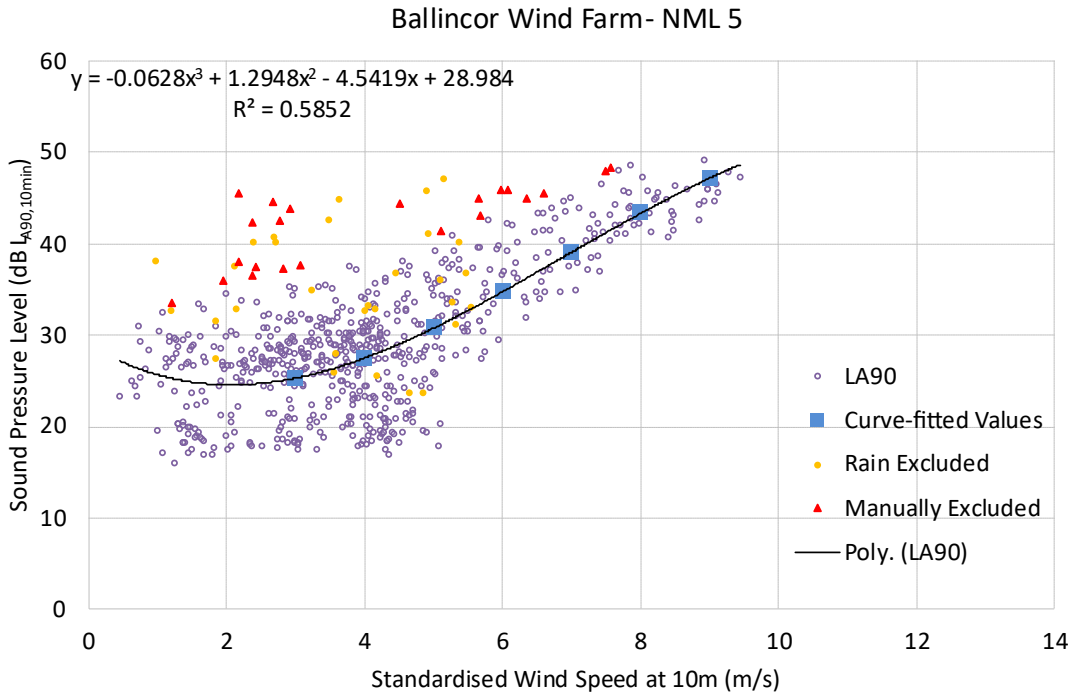
Appendix Figure 14 NML 4 – Daytime



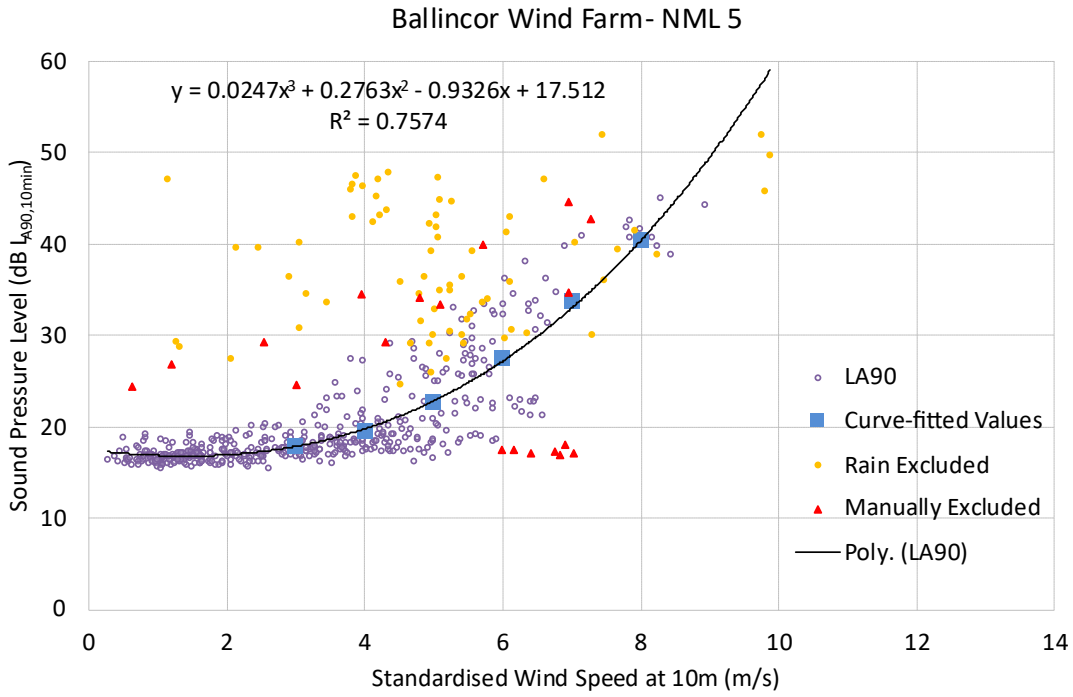
Appendix Figure 15 NML 4 – Night



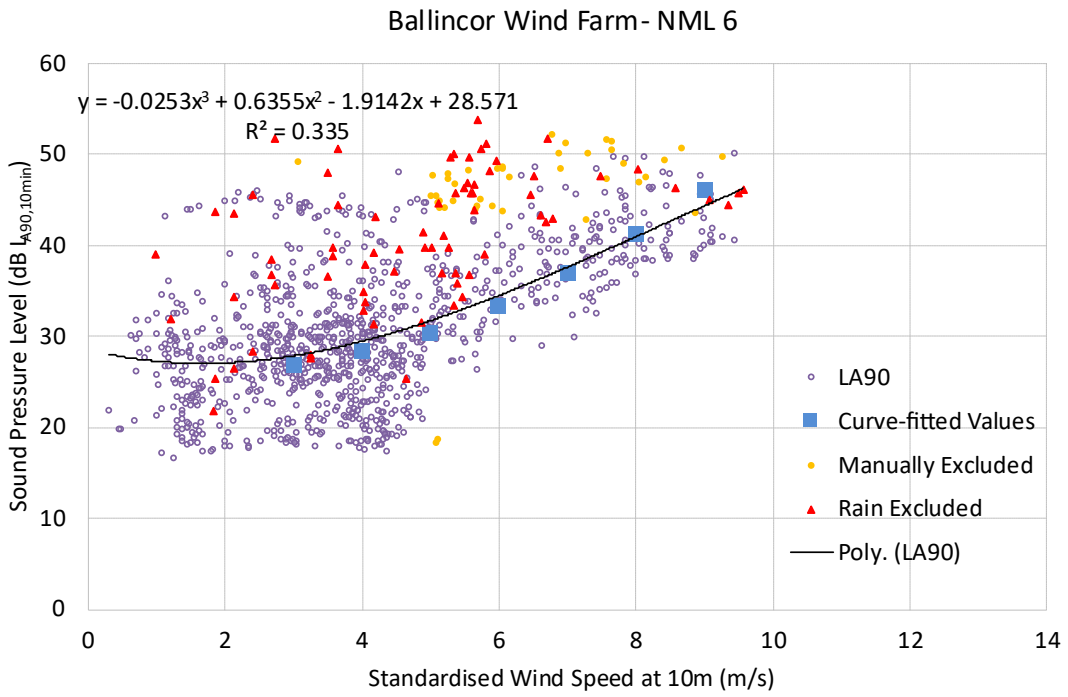
Appendix Figure 16 NML 5 – Daytime



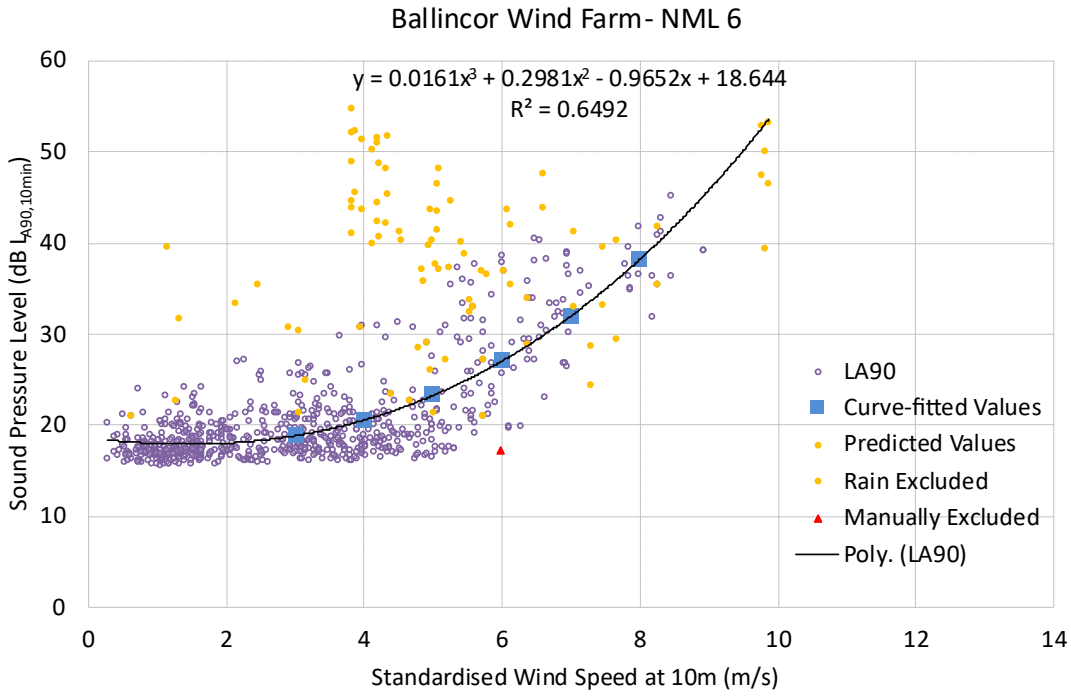
Appendix Figure 17 NML 5 – Night



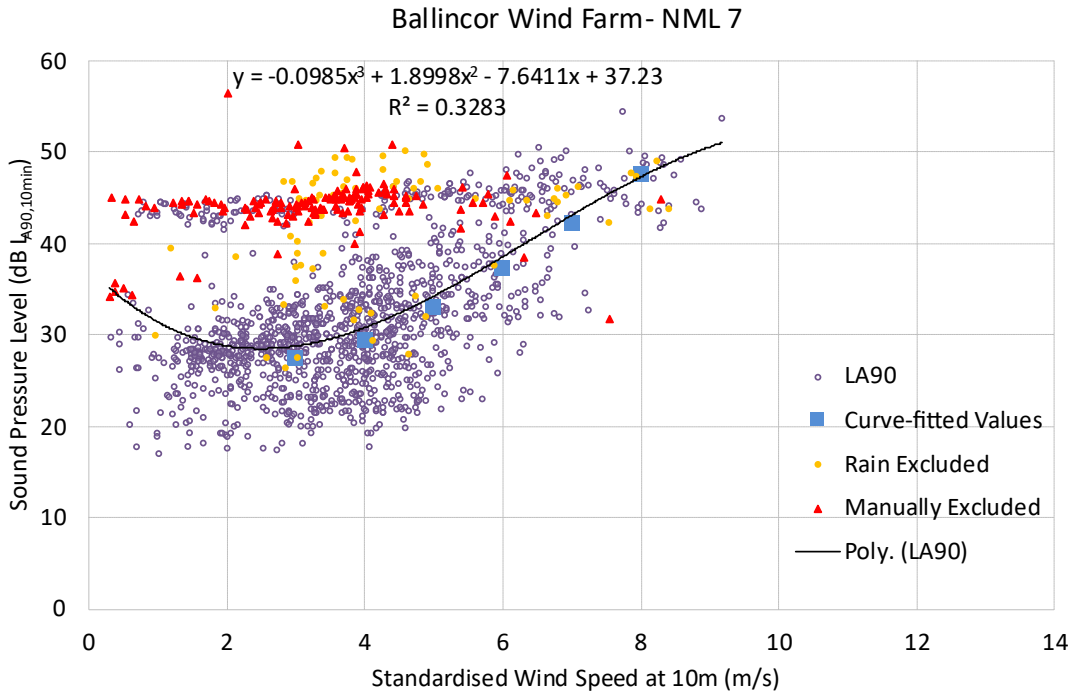
Appendix Figure 18 NML 6 – Daytime



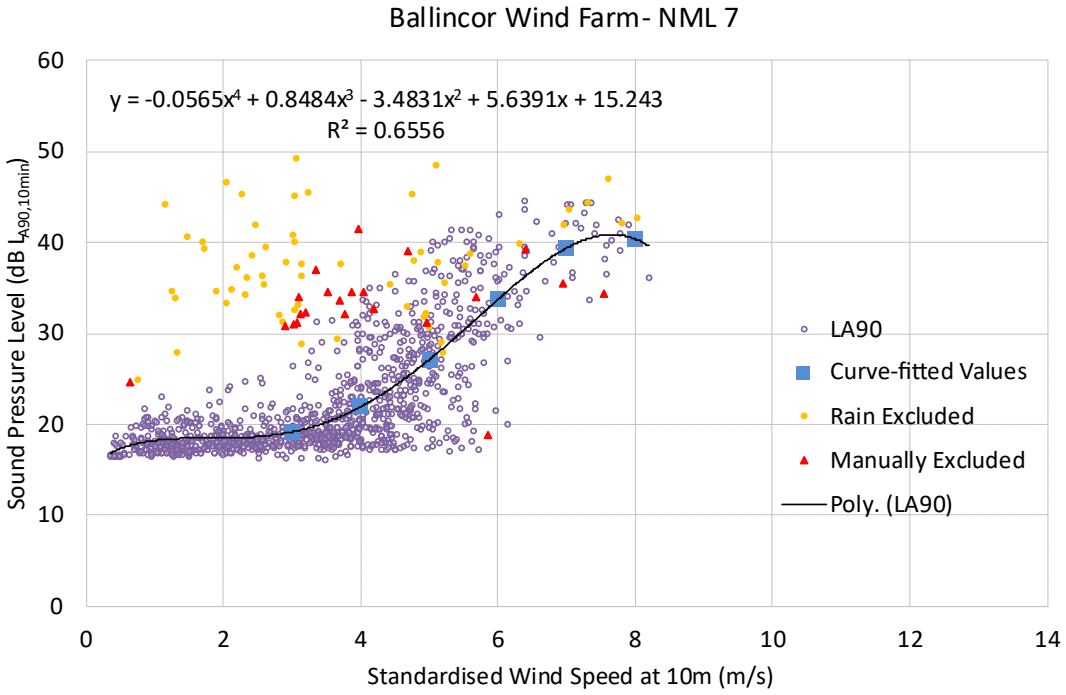
Appendix Figure 19 NML 6 – Night



Appendix Figure 20 NML 7 – Daytime



Appendix Figure 21 NML 7 – Night



APPENDIX D. CALIBRATION CERTIFICATES

Calibration Certificate 164626

MEASUREMENT SYSTEMS

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 21 March 2024 **Certificate Number: UCRT24/1471**

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Approved Signatory

K. Mistry

Customer	AWN Consulting The Tecpro Building IDA Business and Technology Park Clonshaugh Dublin 17 D17 XD90 Ireland			
Order No.	2365			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	*Manufacturer*	*Instrument*	*Type*	*Serial No. / Version*
	Rion	Sound Level Meter	NL-52	00164426
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	54559
	Rion	Microphone	UC-59	09207
	Brüel & Kjær	Calibrator	4231	2022651
		Calibrator adaptor type if applicable		UC 0210
Performance Class	1			
Test Procedure	TP 10. SLM 61672-3:2013 *Procedures from IEC 61672-3:2013 were used to perform the periodic tests.*			
Type Approved to IEC 61672-1:2013	Yes *If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013*			
Date Received	20 March 2024		ANV Job No.	UKAS24/03253
Date Calibrated	21 March 2024			

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	04 November 2021	UCRT21/2362	0653

Calibration Certificate 564809

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 13 January 2023 **Certificate Number: UCRT23/1053**

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Approved Signatory

K. Mistry

Customer	AWN Consulting Limited The Tecpro Building IDA Business and Technology Park Clonshaugh Dublin D17 XD90, Ireland			
Order No.	DOD/22/Cal045			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	*Manufacturer*	*Instrument*	*Type*	*Serial No. / Version*
	Rion	Sound Level Meter	NL-52	00564809
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	64934
	Rion	Microphone	UC-59	09447
	Brüel & Kjær	Calibrator	4231	2263026
		Calibrator adaptor type if applicable		UC 0210
Performance Class	1			
Test Procedure	TP 10. SLM 61672-3:2013 *Procedures from IEC 61672-3:2013 were used to perform the periodic tests.*			
Type Approved to IEC 61672-1:2013	Yes *If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013*			
Date Received	09 January 2023	ANV Job No.	UKAS23/01009	
Date Calibrated	13 January 2023			

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	15 September 2020	UCRT20/1868	0653

Calibration Certificate 575785

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 29 September 2023 **Certificate Number: UCRT23/2261**

Calibrated at & Certificate issued by:
ANV Measurement Systems
Beaufort Court
17 Roebuck Way
Milton Keynes MK5 8HL
Telephone 01908 642846 Fax 01908 642814
E-Mail: info@noise-and-vibration.co.uk
Web: www.noise-and-vibration.co.uk
Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Approved Signatory

K. Mistry

Customer	AWN Consulting The Tecpro Building 17 Clonshaugh Business & Technology Park Dublin			
Order No.	AWN200923			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	*Manufacturer*	*Instrument*	*Type*	*Serial No. / Version*
	Rion	Sound Level Meter	NL-52	00575785
	Rion	Firmware		2.1
	Rion	Pre Amplifier	NH-25	68512
	Rion	Microphone	UC-59	11406
	Rion	Calibrator	NC-75	34334830
		Calibrator adaptor type if applicable		NC-75-022
Performance Class	1			
Test Procedure	TP 10. SLM 61672-3:2013 *Procedures from IEC 61672-3:2013 were used to perform the periodic tests.*			
Type Approved to IEC 61672-1:2013	Yes *If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013*			
Date Received	28 September 2023	ANV Job No.	UKAS23/09669	
Date Calibrated	29 September 2023			

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	09 September 2021	UCRT21/2108	0653

Calibration Certificate 586940

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 20 February 2024 **Certificate Number: UCRT24/1277**

Calibrated at & Certificate issued by:
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Approved Signatory

K. Mistry

Customer	AWN Consulting Limited The Tecpro Building IDA Business and Technology Park Clonshaugh Dublin D17 XD90 Ireland			
Order No.	2358			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	*Manufacturer*	*Instrument*	*Type*	*Serial No. / Version*
	Rion	Sound Level Meter	NL-52	00586940
	Rion	Firmware		2.1
	Rion	Pre Amplifier	NH-25	87059
	Rion	Microphone	UC-59	17049
	Brüel & Kjær	Calibrator	4231	2263026
		Calibrator adaptor type if applicable		UC 0210
Performance Class	1			
Test Procedure	TP 10. SLM 61672-3:2013 *Procedures from IEC 61672-3:2013 were used to perform the periodic tests.*			
Type Approved to IEC 61672-1:2013	Yes *If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013*			
Date Received	19 February 2024	ANV Job No.	UKAS24/02147	
Date Calibrated	20 February 2024			

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	17 March 2022	UCRT22/1382	0653

Calibration Certificate 998409

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 20 February 2024 **Certificate Number: UCRT24/1283**

Calibrated at & Certificate issued by:
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Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Approved Signatory

K. Mistry

Customer	AWN Consulting Limited The Tecpro Building IDA Business and Technology Park Clonshaugh Dublin D17 XD90 Ireland			
Order No.	2358			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	*Manufacturer*	*Instrument*	*Type*	*Serial No. / Version*
	Rion	Sound Level Meter	NL-52	00998409
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	98623
	Rion	Microphone	UC-59	15915
	Brüel & Kjær	Calibrator	4231	2263026
		Calibrator adaptor type if applicable		UC 0210
Performance Class	1			
Test Procedure	TP 10. SLM 61672-3:2013 *Procedures from IEC 61672-3:2013 were used to perform the periodic tests.*			
Type Approved to IEC 61672-1:2013	Yes *If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013*			
Date Received	19 February 2024	ANV Job No.	UKAS24/02147	
Date Calibrated	20 February 2024			

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	01 February 2022	UCRT22/1142	0653

Calibration Certificate 998410

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 20 February 2024 **Certificate Number: UCRT24/1279**

Calibrated at & Certificate issued by:
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Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Approved Signatory

K. Mistry

Customer	AWN Consulting Limited The Tecpro Building IDA Business and Technology Park Clonshaugh Dublin D17 XD90 Ireland			
Order No.	2358			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	*Manufacturer*	*Instrument*	*Type*	*Serial No. / Version*
	Rion	Sound Level Meter	NL-52	00998410
	Rion	Firmware		2.1
	Rion	Pre Amplifier	NH-25	98627
	Rion	Microphone	UC-59	15920
	Brüel & Kjær	Calibrator	4231	2263026
		Calibrator adaptor type if applicable		UC 0210
Performance Class	1			
Test Procedure	TP 10. SLM 61672-3:2013 *Procedures from IEC 61672-3:2013 were used to perform the periodic tests.*			
Type Approved to IEC 61672-1:2013	Yes *If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013*			
Date Received	19 February 2024	ANV Job No.	UKAS24/02147	
Date Calibrated	20 February 2024			

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	17 March 2022	UCRT22/1389	0653

Calibration Certificate 998411

CERTIFICATE OF CALIBRATION

0653

Date of Issue: 20 February 2024 **Certificate Number: UCRT24/1281**

Calibrated at & Certificate issued by:
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Acoustics Noise and Vibration Ltd trading as ANV Measurement Systems

Approved Signatory

K. Mistry

Customer	AWN Consulting Limited The Tecpro Building IDA Business and Technology Park Clonshaugh Dublin D17 XD90 Ireland			
Order No.	2358			
Description	Sound Level Meter / Pre-amp / Microphone / Associated Calibrator			
Identification	*Manufacturer*	*Instrument*	*Type*	*Serial No. / Version*
	Rion	Sound Level Meter	NL-52	00998411
	Rion	Firmware		2.0
	Rion	Pre Amplifier	NH-25	98625
	Rion	Microphone	UC-59	17215
	Brüel & Kjær	Calibrator	4231	2263026
		Calibrator adaptor type if applicable		UC 0210
Performance Class	1			
Test Procedure	TP 10. SLM 61672-3:2013 *Procedures from IEC 61672-3:2013 were used to perform the periodic tests.*			
Type Approved to IEC 61672-1:2013	Yes *If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2013*			
Date Received	19 February 2024	ANV Job No.	UKAS24/02147	
Date Calibrated	20 February 2024			

The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3:2013, for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern-evaluation tests performed in accordance with IEC 61672-2:2013, to demonstrate that the model of sound level meter fully conformed to the class 1 specifications in IEC 61672-1:2013, the sound level meter submitted for testing conforms to the class 1 specifications of IEC 61672-1:2013.

Previous Certificate	*Dated*	*Certificate No.*	*Laboratory*
	01 February 2022	UCRT22/1140	0653