

CORK COUNTY COUNCIL
NORTON HOUSE, ST. PATRICKS, CO. CORK

REG. No. PLANNING (M/EST) DEPT
16 NOV 2025



APPENDIX 12-3 BACKGROUND NOISE LEVELS





Trinity
Consultants



awn consulting

Curraglass Wind Farm Background Noise Survey

Report Subtitle: Propped Curraglass Wind Farm, Co. Cork

CLIENT

MKO

DOCUMENT REFERENCE

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DATE

20 August 2025

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| Revision | Revision Date | Description |
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| Details | Written by | Approved by |
|------------------|--|---|
| Signature |  |  |
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| Title | Acoustic Consultant | Principal Acoustic Consultant |
| Date | 20 August 2025 | |

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1. INTRODUCTION

AWN completed a background noise survey at strategic locations surrounding the Proposed Development. The noise survey was undertaken as part of the environmental noise impact assessment for the Proposed Development. This note has been prepared to provide details of the background noise levels derived at the relevant Noise Monitoring Locations (NMLs). A description of the assessment methodology is outlined.

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 Selection of Measurement Locations and Methodology

The intent of the survey was to measure background noise at representative locations for typical noise sensitive locations surrounding the development. The assessment methodology in the EIAR is 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.

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. As mentioned in section 2.2.2 of the IOA GPG: '*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).*

In this instance, the most practical approach was to apply directional filtering removing sector down wind of existing operational turbines.

2.2 Measurement Locations

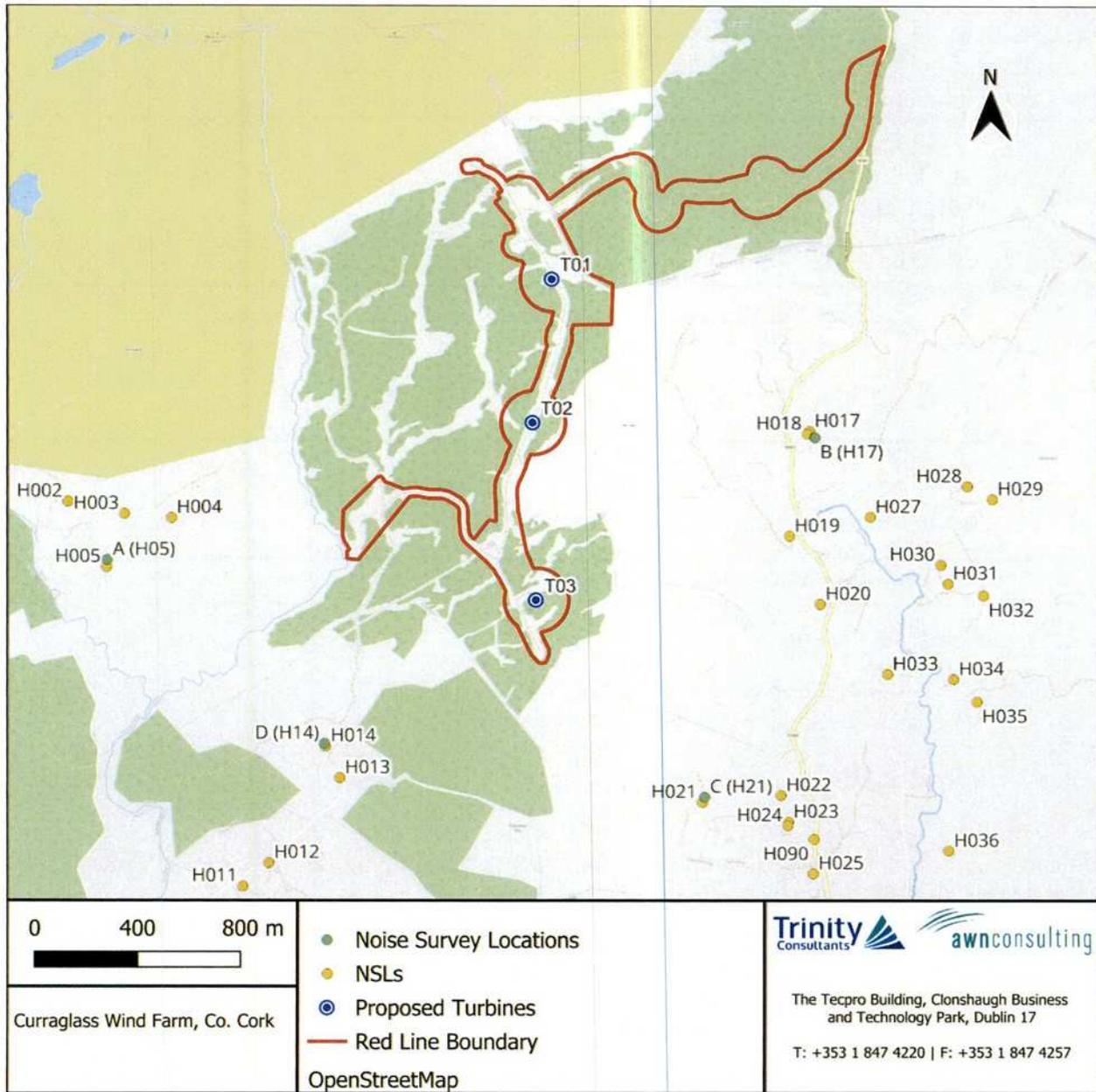
Table 2-1 presents the coordinates of each of the monitoring locations. Figure 2-1 shows the locations of each of the monitoring locations in the context of the surrounding area.

Table 2-1. Coordinates of Noise Monitoring Equipment

| Location | Coordinates (ITM) | |
|----------|-------------------|----------|
| | Easting | Northing |
| A (H05) | 507,346 | 562,105 |
| B (H17) | 510,104 | 562,586 |
| C (H21) | 509,674 | 561,180 |
| D (H14) | 508,191 | 561,389 |

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Figure 2-1. Location of Noise Measurement Locations



Significant noise sources in this area were noted to be farming activity, intermittent local traffic movements, activity in and around the residences and wind generated noise from local foliage. During the site visits there was no noise from existing turbines audible. There were no perceptible sources of vibration noted at any of the survey locations.

2.3 Measurement Periods

The periods of noise measurements used in the background noise monitoring assessment are outlined in Table 2-2. 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.

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Table 2-2. Measurement periods of Noise Monitoring Equipment

| Location | Start Date | End Date |
|----------|-------------|---------------|
| A (H05) | 28 Jan 2020 | 10 March 2020 |
| B (H17) | 28 Jan 2020 | 10 March 2020 |
| C (H21) | 28 Jan 2020 | 10 March 2020 |
| D (H14) | 28 Jan 2020 | 10 March 2020 |

2.4 Noise Data

Table 2-3 confirms the details of the noise monitoring instrumentation installed at each location.

Table 2-3. Details of Noise Measurement Instrumentation

| Location | Equipment Make and Model | Serial Number |
|----------|--------------------------|---------------|
| A (H05) | Rion – NL-52 | 164427 |
| B (H17) | Rion – NL-52 | 564808 |
| C (H21) | Rion – NL-52 | 564809 |
| D (H14) | Rion – NL-52 | 764925 |

Before, after and during each survey period, the measurement instrument was checked and calibrated using a Brüel & Kjær type 4231 Sound Level Calibrator. All calibration drifts were less than +/- 0.5 dB. Copies of the relevant calibration certificates are included in Appendix D.

2.5 Rainfall Data

Rainfall was monitored and logged using two Texas Instruments TR-525 data loggers that were installed at Locations A and C over the duration of the survey.

2.6 Wind Data

Average wind speed and direction data from each turbine in 10-minute intervals. Wind speed measurements were provided to AWN for the assessment. The measurements were obtained from the Kealkill 80 m Meteorological Mast Located at ITM 508,969E, 562,208N.

These wind speeds were then corrected to the 'standardised' 10 m wind speed in accordance with the IOA GPG. The 'standardised' wind speed is the industry standard for referencing wind speeds with respect to wind turbines.

2.6.1 Wind Shear

Wind speed collected at 65 m and 80 m were used to correct the wind speed up to an assessment hub height (HH) at 90 m, as per the methodology outlined in the IOA GPG.

The calculated HH wind speeds were then corrected to the 'standardised' 10 m height wind speed in accordance with the IOA GPG. The 'standardised' wind speed is the industry standard for referencing wind speeds with respect to wind turbines.

The calculated hub height wind speeds have been corrected standardised to 10 m height using a fixed correction. The standardised is a wind speed measured at a height different than 10 m (generally measured at the turbine hub height) which is expressed to a reference height of 10 m using a roughness length of 0.05 for standardisation purpose in accordance with the IEC 61400-11 standard:

Roughness Length Shear Profile: $U_1 = U_2 \times \left[\frac{\ln(H_1/z)}{\ln(H_2/z)} \right]$

Where:

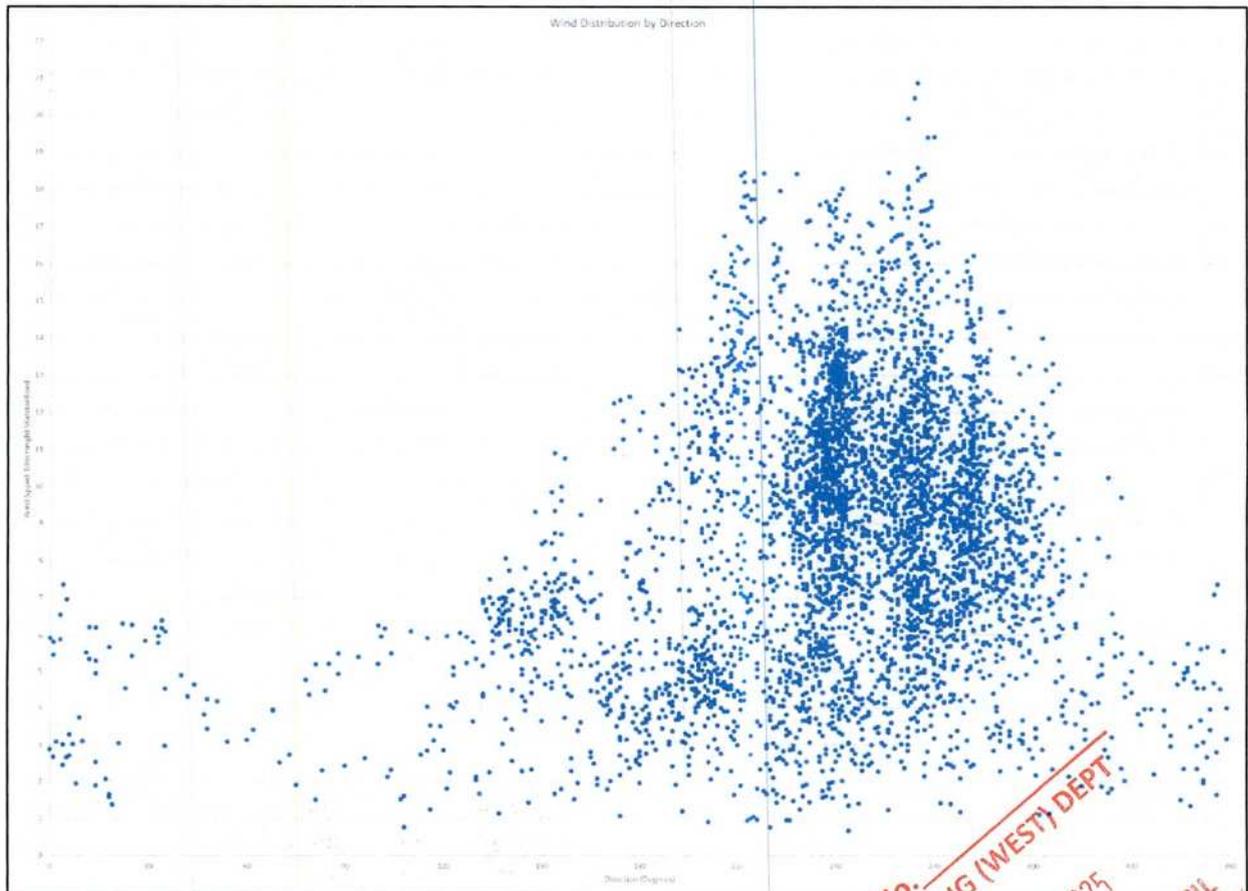
| | |
|-------|---|
| H_1 | The height of the wind speed to be calculated (10m) |
| H_2 | The height of the measured or calculated HH wind speed. |
| U_1 | The wind speed to be calculated. |
| U_2 | The measured or calculated HH wind speed. |
| Z | The roughness length. |

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.

Any reference to wind speed in this chapter should be understood to be the standardised 10 m height wind speed reference unless otherwise stated.

Figure 2-2 presents the distributions of wind speed and wind direction standardised to 10 m height over the survey period.

Figure 2-2. Distributions of Wind Speeds and Directions Over the Survey Period



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3. Results

3.1 Data Analysis

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

Background noise data sets can be re-analysed for various scenarios should this be required, for instance, if background noise levels are required to be derived for specific wind direction sectors not identified as part of this assessment.

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 |

The data sets have been assessed separately for both daytime and night-time periods as outlined in Table 3 and analysed with respect to the methods outlined in the IOA GPG.

3.1.2 Noise from Existing Turbines

As discussed above in Section 2.1, any contribution to the measured noise levels from existing wind turbines must be excluded when deriving background noise levels and setting noise limits for wind turbine noise. The nearest existing wind farms are Grousemount, consisting of 38 turbines, located approximately 3.7 km to the North; Shillahertane, consisting of 10 turbines, and approximately 7.3 km to the North; and Shehy More, consisting of 11 turbines, approximately 5.5 km to the East. Other wind farms such as Maughnaclea and Gorthloughra are currently in the process of seeking planning permission, however, as they were not operational when the survey was undertaken, they did not affect the measured noise levels during the survey.

The following table summarises important information relevant to this aspect of the methodology.

Table 3-2. Location-specific methodology details

| Location | Nearest existing turbine to measurement location | Analysis details |
|----------|--|-----------------------------------|
| A (H05) | 7.5 km to East | Wind directions 110° to 345° only |
| B (H17) | 4.7 to South east | Wind directions 125° to 325° only |
| C (H21) | 7.1 km to East | Wind directions 110° to 345° only |
| D (H14) | 6.1 km to East | Wind directions 110° to 345° only |

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3.1.3 Atypical Noise Data

The data sets have been filtered to remove issues such as periods affected by rainfall, 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. This approach is in line with the guidance contained in the IOA GPG.

3.2 **Derived Background Noise Levels**

Appendix B presents the 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 dB $L_{A90,10min}$ for daytime and nighttime are presented in Table 3-3 and Table 3-4 respectively. These background noise levels will be used to determine the appropriate turbine noise limits in accordance with the adopted turbine noise criteria and will be set out in the Noise and Vibration Chapter for the Proposed Development.

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 90 m Hub Height | | | | | | | |
|-----------|--------|--|------|------|------|------|------|------|------|
| | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| A (H05) | Day | 32.4 | 33.1 | 34.5 | 36.4 | 38.7 | 41.1 | 43.6 | 45.9 |
| B (H17) | Day | 33.7 | 34.8 | 35.9 | 37.0 | 38.1 | 39.2 | 40.3 | 41.5 |
| C (H21) | Day | 29.4 | 30.3 | 31.5 | 32.8 | 34.4 | 36.2 | 38.1 | 40.3 |
| D (H14) | Day | 29.7 | 31.5 | 33.4 | 35.3 | 37.4 | 39.6 | 41.9 | 44.2 |

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 90 m Hub Height | | | | | | | |
|-----------|--------|--|------|------|------|------|------|------|------|
| | | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| A (H05) | Night | 32.4 | 33.9 | 35.4 | 36.9 | 38.4 | 40.0 | 41.7 | 43.4 |
| B (H17) | Night | 34.1 | 34.6 | 35.3 | 36.1 | 37.0 | 38.0 | 39.1 | 40.4 |
| C (H21) | Night | 28.3 | 29.4 | 30.7 | 32.2 | 33.8 | 35.6 | 37.5 | 39.7 |
| D (H14) | Night | 28.8 | 30.9 | 33.1 | 35.3 | 37.5 | 39.8 | 42.1 | 44.5 |

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APPENDIX A. INSTALLATION PHOTOGRAPHS

The noise meter at Location A was positioned approximately 20m north of the dwelling, 45m from the local road and 1.5m above the low-level vegetation in the immediate area.

Figure A-1. Location A (H05) Installation Photo



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Location B was positioned 20m west of the dwelling, 12m northeast of a strong hedgerow and 100m from the local road and 1.5m above the low-level vegetation in the immediate area:

Figure A-2. Location A (H17) Installation Photo



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Location C was positioned 20m west of the dwelling and 1.5m above the low-level vegetation in the immediate area:

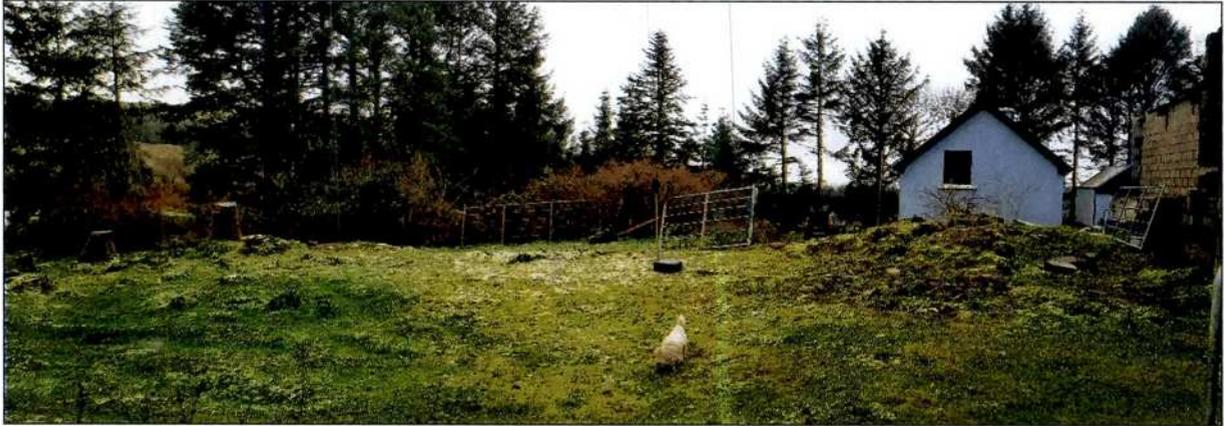
Figure A-3. Location C (H21) Installation Photo



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Location D was positioned on a lawn at 15m to the east of the dwelling and at 10m from a line of trees that surround the dwelling and 1.5m above the surrounding grass.

Figure A-4. Location D (H15) Installation Photo



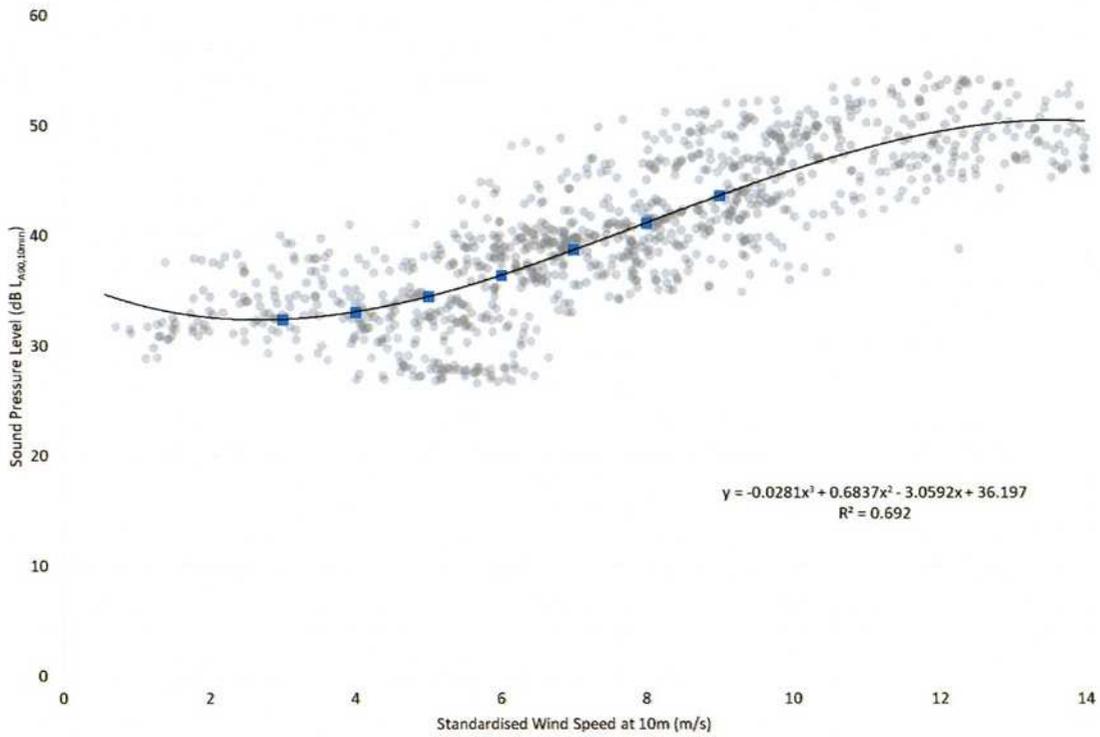
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APPENDIX B. REGRESSION ANALYSIS ON DATA SETS

The following graphs present the 'upwind' data sets for each location. In each case, the daytime data is presented first and the night-time data below.

Figure B-1. Location A (H05) Daytime

Curraglass Wind Farm - A - Daytime, Upwind



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Figure B-2. Location A (H05) Night-time

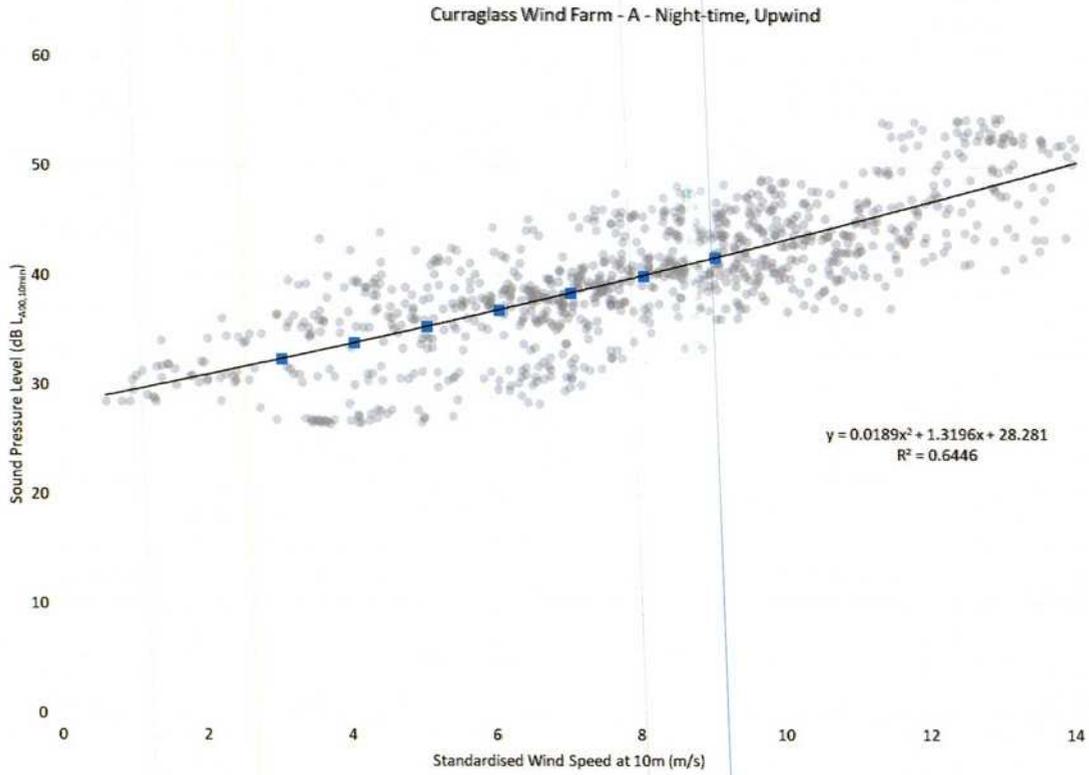
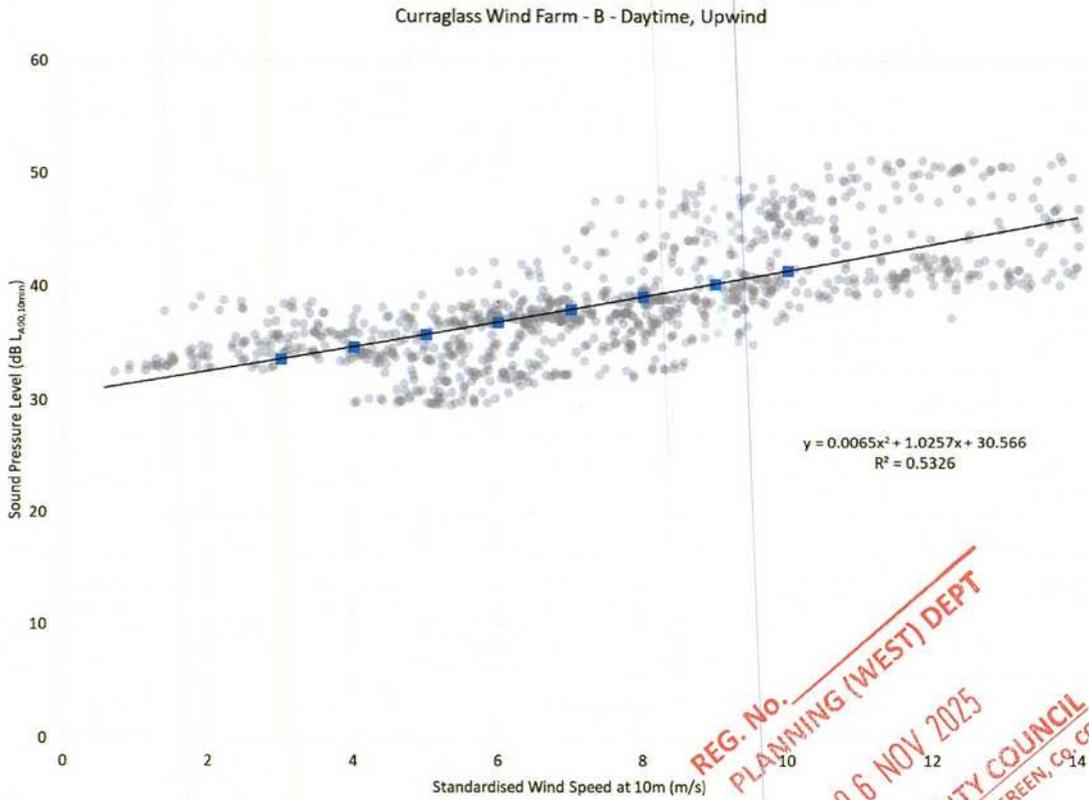


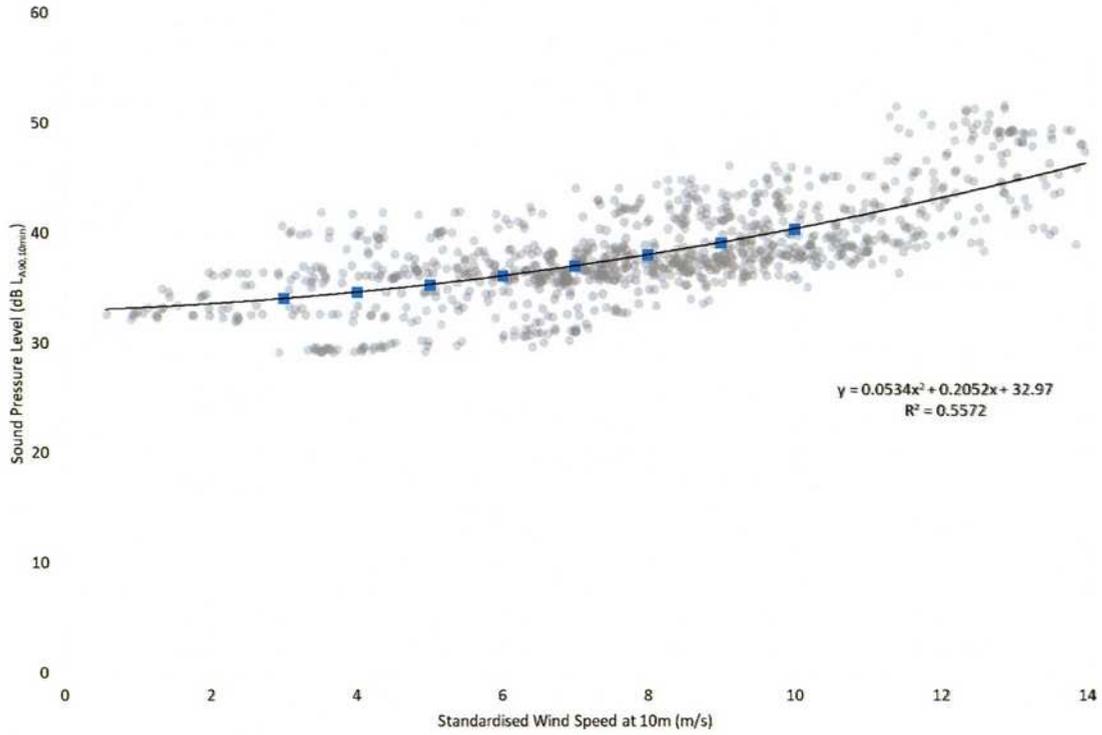
Figure B-3. Location B (H17) Daytime



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Figure B-4. Location B (H17) Night-time

Curraglass Wind Farm - B - Night-time, Upwind



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Figure B-5. Location C (H21) Daytime

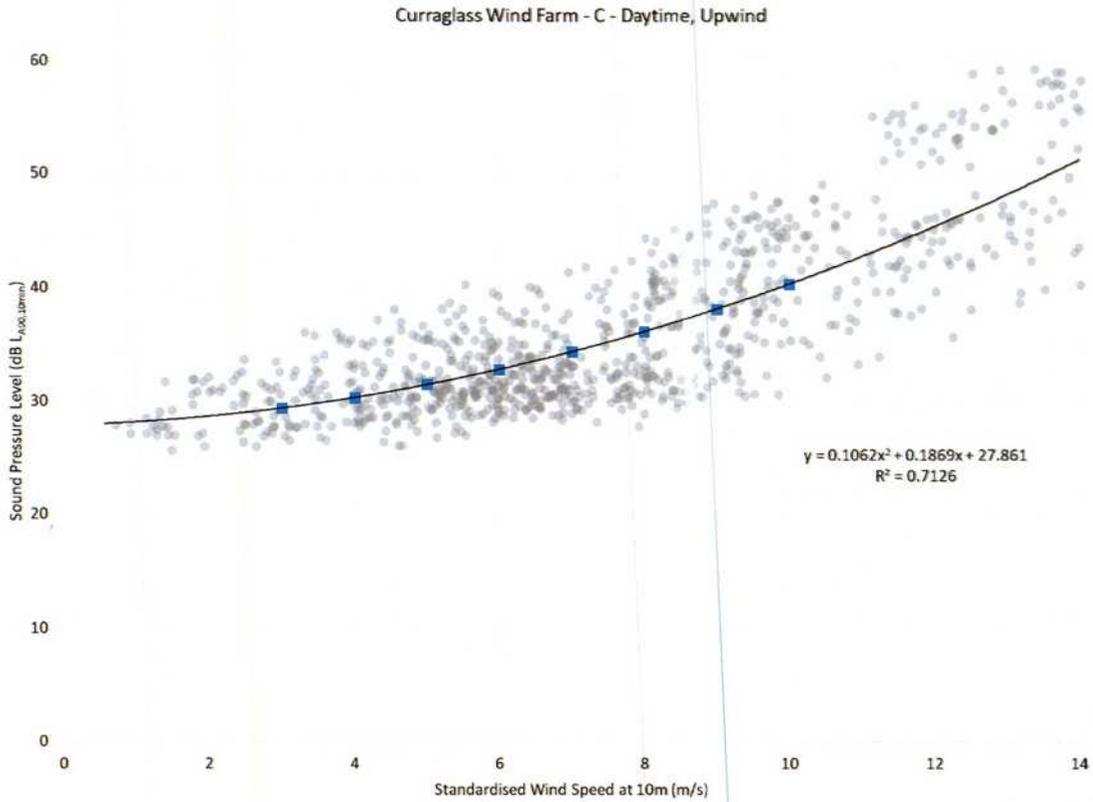
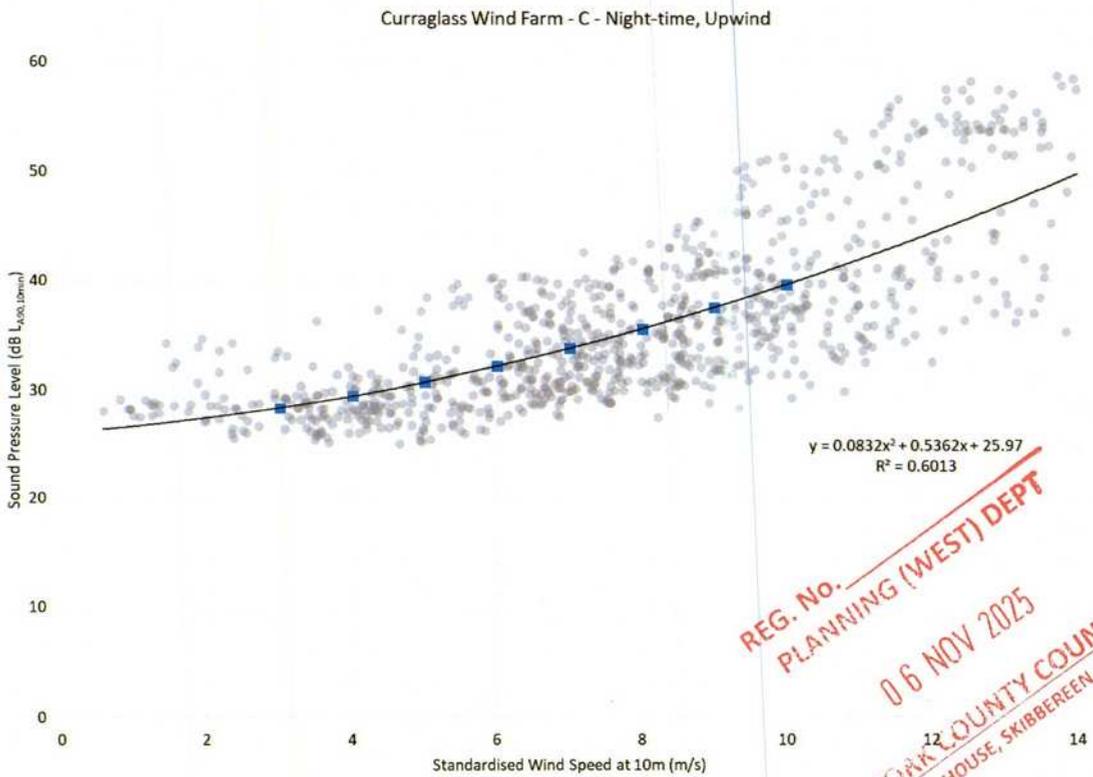


Figure B-6. Location C (H21) Night-time



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Figure B-7. Location D (H14) Daytime

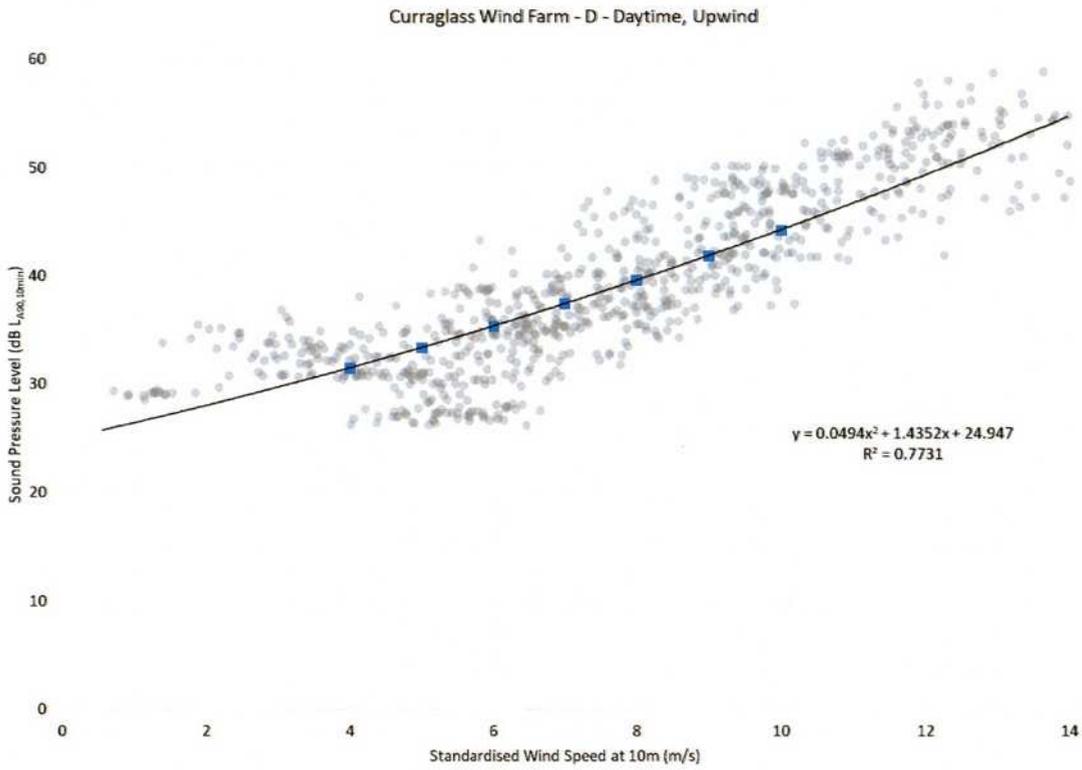
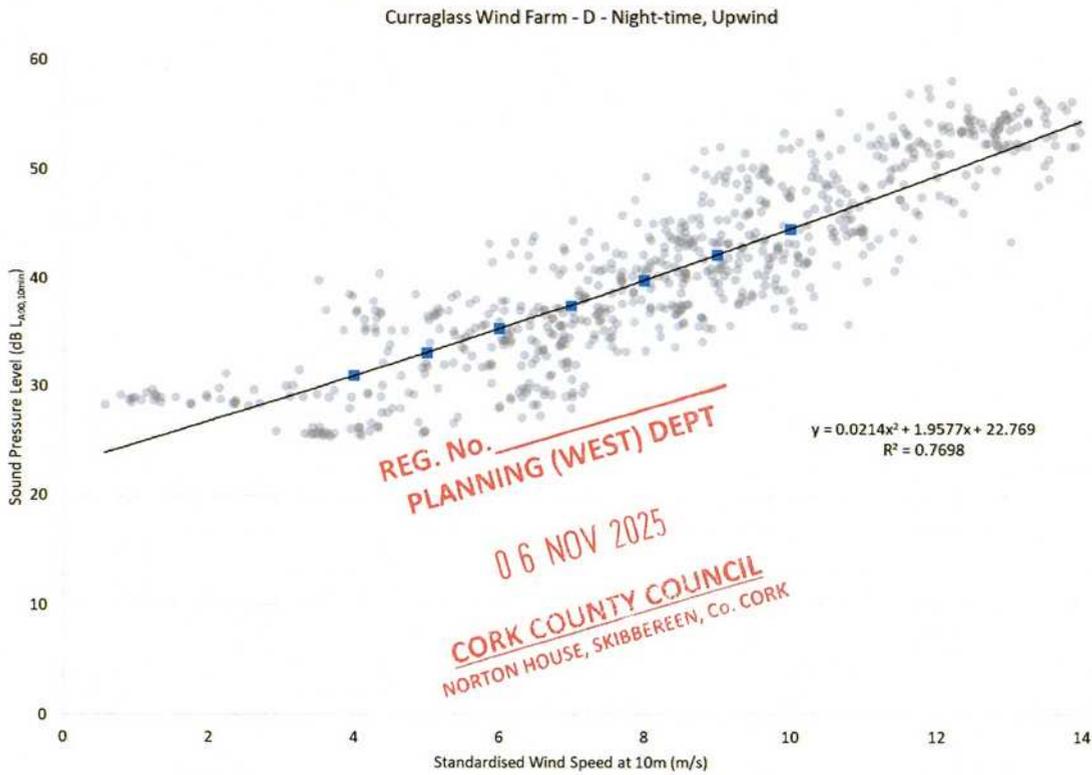


Figure B-8. Location D (H14) Night-time



APPENDIX C. CALIBRATION CERTIFICATES

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CERTIFICATE OF CALIBRATION



0653

Date of Issue: 22 August 2018

Certificate Number: UCRT18/1862

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

| |
|--------------------|
| Page 1 of 2 Pages |
| Approved Signatory |
| |
| K. Mistry |

Customer AWN Consulting Limited
 The Tecpro Building
 IDA Business and Technology Park
 Clonshaugh
 Dublin 17
 Ireland

Order No. PO1872
Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator
Identification

| Manufacturer | Instrument | Type | Serial No. / Version |
|--------------|---------------------------------------|-------|----------------------|
| Rion | Sound Level Meter | NL-52 | 00564808 |
| Rion | Firmware | | 1.8 |
| Rion | Pre Amplifier | NH-25 | 64933 |
| Rion | Microphone | UC-59 | 09446 |
| Rion | Calibrator | NC-74 | 34536109 |
| | Calibrator adaptor type if applicable | | NC-74-002 |

Performance Class 1
Test Procedure TP 2.SLM 61672-3 TPS-49
Procedures from IEC 61672-3:2006 were used to perform the periodic tests.
Type Approved to IEC 61672-1:2002 **YES** **Approval Number** 21.21 / 13.02
If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003
Date Received 17 August 2018 **ANV Job No.** UKAS18/08534
Date Calibrated 22 August 2018

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 tests 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.

| Previous Certificate | Dated | Certificate No. | Laboratory |
|----------------------|----------------|-----------------|------------|
| | 18 August 2016 | UCRT16/1263 | 7623 |

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Date of issue: 22 August 2018

Certificate Number: UCRT18/1866

Issued by:

ANV Measurement Systems

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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

| |
|--------------------|
| Page 1 of 2 Pages |
| Approved Signatory |
| |
| K. Mistry |

Customer AWN Consulting Limited
 The Tecpro Building
 IDA Business and Technology Park
 Clonshaugh
 Dublin 17
 Ireland

Order No. PO1872
 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 | | 1.8 |
| Rion | Pre Amplifier | NH-25 | 64934 |
| Rion | Microphone | UC-59 | 09447 |
| Rion | Calibrator | NC-74 | 34536109 |
| | Calibrator adaptor type if applicable | | NC-74-002 |

Performance Class 1
 Test Procedure TP 2.SLM 61672-3 TPS-49
Procedures from IEC 61672-3:2006 were used to perform the periodic tests.
 Type Approved to IEC 61672-1:2002 YES Approval Number 21.21 / 13.02
If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003
 Date Received 17 August 2018 ANV Job No. UKAS18/08534
 Date Calibrated 22 August 2018

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 tests 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.

| Previous Certificate | Dated | Certificate No | Laboratory |
|----------------------|----------------|----------------|------------|
| | 18 August 2016 | UCRT16/1262 | 7623 |

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REG. No. _____
 PLANNING (WEST) DEPT

06 NOV 2025

CORK COUNTY COUNCIL
 NORTON HOUSE, SKIBBEREEN, Co. CORK



CERTIFICATE OF CALIBRATION



Date of Issue: 22 August 2018

Certificate Number: UCRT18/1863

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

| |
|---|
| Page 1 of 2 Pages |
| Approved Signatory |
|  K. Mistry |

Customer AWN Consulting Limited
 The Tecpro Building
 IDA Business and Technology Park
 Clonshaugh
 Dublin 17
 Ireland

Order No. PO1872

Description Sound Level Meter / Pre-amp / Microphone / Associated Calibrator

| Identification | Manufacturer | Instrument | Type | Serial No. / Version |
|----------------|--------------|---------------------------------------|-------|----------------------|
| | Rion | Sound Level Meter | NL-52 | 00764925 |
| | Rion | Firmware | | 1.8 |
| | Rion | Pre Amplifier | NH-25 | 65051 |
| | Rion | Microphone | UC-59 | 09853 |
| | Rion | Calibrator | NC-74 | 34536109 |
| | | Calibrator adaptor type if applicable | | NC-74-002 |

Performance Class 1

Test Procedure TP 2.SLM 61672-3 TPS-49

Procedures from IEC 61672-3:2006 were used to perform the periodic tests.

Type Approved to IEC 61672-1:2002 **YES** **Approval Number** 21.21 / 13.02

If YES above there is public evidence that the SLM has successfully completed the applicable pattern evaluation tests of IEC 61672-2:2003

Date Received 17 August 2018

ANV Job No. UKAS18/08534

Date Calibrated 22 August 2018

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 tests 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.

| Previous Certificate | Dated | Certificate No. | Laboratory |
|----------------------|----------------|-----------------|------------|
| | 18 August 2016 | UCRT16/1261 | 7623 |

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