



DESIGNING AND DELIVERING  
A SUSTAINABLE FUTURE

## APPENDIX 8

### NOISE AND VIBRATION

Appendix 8.1 – Baseline Noise Measurements

Appendix 8.2 – Equipment Calibration Certificates

Appendix 8.3 – Noise Sensitive Location Details

Appendix 8.4 – Sound Power Level Data for Wind  
Turbines

Appendix 8.5 – Predicted Noise Levels at Nearby Noise  
Sensitive Locations



## APPENDIX 8.1

### Baseline Noise Measurements





## **Baseline Noise Measurements**

Baseline noise monitoring was undertaken at 7 no. locations, NML1 – NML7, to establish the existing background noise levels at these locations. These locations represent the nearest noise sensitive locations to the north, south, east and west of the proposed wind farm.

## **Selection of Monitoring Locations**

Section 2.2.5 of the Institute of Acoustics', *A Good Practice Guide to the Application of ETUS-R-97 for the Assessment at Rating of Wind Turbine Noise* (2013) regarding use of proxy locations states "*When choosing a location that will serve as a proxy for others, the basis for selection is that it can reasonably be claimed, from inspection and observation, to be representative of the non-surveyed locations, in line with the criteria of Section 2.5. Measurement locations outside a property's curtilage (such as an adjacent field) may be used when access to a representative property cannot be obtained, provided that such a location can be justified as being representative. No general guidance can therefore be given on the number of measurement locations as this will be site-specific.*" Section 2.5 of the GPG is summarised in Table 8.1.1 with the applicability of the proxy locations selected for Derrynadarragh Wind Farm.

**Table 8.1.1: IOA GPG Section 2.5 Criteria and Applicability to Derrynadarragh Wind Farm Monitoring Locations**

| Requirements of Section 2.5                                                                                                                       | Derrynadarragh Wind Farm Monitoring Locations                                                                                                                                |
|---------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>2.5.1 <i>Where possible, measurements should be made in the vicinity of a dwelling in an area frequently used for rest and recreation.</i></p> | <p>This was adhered to where possible. In some instances, access to the dwellings of interest were denied. In those instances, suitable proxy locations were identified.</p> |

| Requirements of Section 2.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Derrynadarragh Wind Farm Monitoring Locations                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>2.5.2 <i>Equipment should be placed at outdoor positions where noise levels are representative of typical 'low' levels likely to be experienced in the vicinity of a dwelling (or group of dwellings if the measurements are intended to be applied to more than one dwelling). The overriding consideration is that <u>it can reasonably be claimed, from inspection and observation, that there are no other suitable noise-sensitive locations, in the vicinity of any selected location and close to a dwelling, where background noise levels would be expected to be consistently lower than the levels at the selected position.</u></i></p> | <p>This was adhered to where possible. In some instances, access to the dwellings of interest was denied e.g. location NL3 and NL7 and proxy locations were used. Proxy locations were chosen to be representative of the background noise levels expected at the dwellings. There are no other suitable noise-sensitive locations/ alternative monitoring locations where background noise levels would be expected to be consistently lower than the levels at the selected positions.</p> |
| <p>2.5.3 <i>Ideally the position should be one which would be exposed to noise from the wind turbines whilst being best-screened from other noise sources such as nearby roads or vegetation.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>The locations were in open areas or within the curtilage of a property, set back from local roads and vegetation/forestry and watercourses, with clear line of sight to the proposed wind turbines, where possible.</p>                                                                                                                                                                                                                                                                   |
| <p>2.5.4 <i>The background surveys provide the basis for setting both daytime and night-time noise limits: the measurement position must therefore reasonably represent external areas (for daytime noise) and also building façades containing windows (for night-time noise).</i></p>                                                                                                                                                                                                                                                                                                                                                                | <p>The locations being used to derive limits are considered representative of external areas and façade locations.</p>                                                                                                                                                                                                                                                                                                                                                                       |
| <p>2.5.5 <i>In most locations, background noise levels will be determined by wind in trees and vegetation and noise sources external to the property such as traffic noise. The presence of local noise sources such as boiler flues, garden fountains, domestic drains, watercourses and farm equipment should be identified.</i></p>                                                                                                                                                                                                                                                                                                                 | <p>There were some local noise sources identified and described below, where applicable, including farm machinery and livestock.</p>                                                                                                                                                                                                                                                                                                                                                         |

| Requirements of Section 2.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Derrynadarragh Wind Farm Monitoring Locations                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2.5.6 <i>Where it is not possible to exclude the influence of variable local noise sources by selection of monitoring position, it is generally possible to identify such data from inspection of noise level time histories and therefore to exclude it from the data set used to derive noise limits</i>                                                                                                                                                                                                           | Noise sources were noted during attendance at the monitoring location during installation, battery changes and equipment removal. Atypical noise data was removed from data analysis.                                                                                                                                                                                          |
| 2.5.7 <i>In all cases, microphones should be supported at a height of 1.2 – 1.5 metres above the ground and no closer than 3.5 metres to any significant reflecting surface (such as a building or fence), except the ground. The position should be within 20 metres of the dwelling unless there are particular reasons for measuring at a more distant position (such as the presence of vegetation or denial of access); if so, the reasons should be explained.</i>                                             | The microphones were mounted on tripods at an approximate height of 1.5 m and at least 3.5 m from any significant reflecting surface other than the ground. Where possible the noise monitors were located within 20m of the dwelling. When the noise monitors were located at more distant locations, this was due to either the refusal of access or presence of vegetation. |
| 2.5.8 <i>A resident at a selected property may request that measurements are made at a position which is considered inappropriate; perhaps because the preferred location(s) are inconvenient (it might obstruct lawn mowing, for example). In this situation the consultant should explain clearly the reasons why the measurements could be compromised; if no agreement can be reached, an alternative property or location should be sought. The assistance of the EHO may help to resolve these situations.</i> | This was not an issue.                                                                                                                                                                                                                                                                                                                                                         |

### Monitoring Locations

Seven noise monitoring locations were selected for obtaining a detailed representation of the background noise levels in the area. The chosen noise monitoring locations were representative of the different noise environments in the vicinity of the proposed Derrynadarragh Wind Farm development, as well as being located at some of the closest dwellings (or their representative proxies) to the proposed wind farm development. Details of the noise monitoring locations are provided in Table 8.1.2 overleaf. The position of the monitoring locations are shown in Figure 8.2.

**Table 8.1.2: Details on the Noise Monitoring Locations**

| Location ID | Easting | Northing | Description                                                                                                                                                                                                                                    | Photograph  |
|-------------|---------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| NML1        | 660150  | 717666   | Located in agricultural field adjacent to a group of dwellings. The location was chosen so it was away from trees and vegetation along the boundary.<br><br>Properties north east of proposed development site. Closest are: R156, R161, R167. | Plate 8.1-1 |

| Location ID | Easting | Northing | Description                                                                                                                                                                                                                                | Photograph  |
|-------------|---------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| NML2        | 660857  | 717685   | Located in field/paddock beside dwelling house approximately 20m from dwelling façade.<br>Properties north east of proposed site. Closest are: R299, R304, R324.                                                                           | Plate 8.1-2 |
| NML3        | 661653  | 716620   | Located in agricultural field north of a group of dwellings. The location was chosen so it was away from watercourses, trees and vegetation along the boundary. Representing properties east of proposed site, including R228, R212, R440. | Plate 8.1-3 |
| NML4        | 659813  | 714450   | Located in field northeast of a group of residential dwellings.<br>Representing properties south of site. Closest are R44, R46, R58.                                                                                                       | Plate 8.1-4 |
| NML5        | 657688  | 716007   | Located adjacent to dwelling and farmyard, approximately 15m from dwelling façade. Properties west of site, Closest are R13, R36, R41.                                                                                                     | Plate 8.1-5 |
| NML6        | 657773  | 717293   | Located in field adjacent to dwelling and farmyard. Properties North west of the site, including R57, R28, R38.                                                                                                                            | Plate 8.1-6 |
| NML7        | 658838  | 717389   | Located in field adjacent to dwelling, approximately 30m from dwelling facade. Representing properties North of the site, including R1, R5, R9, R67.                                                                                       | Plate 8.1-7 |

**Location NML1** Near boundary of field, adjacent to a cluster of residential properties. This location is 4m from tall hedge to rear of residential gardens. Clear line of site to proposed wind farm. Road traffic noise and residential activities audible. No noise observed from wind in trees/vegetation.





### Plate A8.1-1: Monitoring Location NML1

**Location NML2** Located in a field/paddock area beside residential dwelling. Approximately 20m from dwelling façade and 60m east of farmyard. Frequent road traffic movements on the R419 were audible. This was also the location of the rain gauge.



### Plate A8.1-2: Monitoring Location NML2

**Location NML3** Located in a field approx. 900m north of a group of residential dwellings. The location was chosen as a proxy location for the residential properties, as no access was available for monitoring at the properties. The location was chosen so it was away from watercourses, trees and vegetation along the boundary. Local traffic noise was audible. No noise from wind in trees/vegetation or watercourses observed.



### Plate A8.1-3: Monitoring Location NML3

**Location NML4** Located in field approximately 250m northeast of a group of residential dwellings. Located approximately 5m from boundary hedge with clear line of site towards proposed windfarm. Noise from local traffic movements audible. No noise from wind in trees/vegetation was observed.





**Plate A8.1-4: Monitoring Location NML4**

**Location NML5** Located adjacent to dwelling and farmyard, approximately 15m from dwelling façade. Noise observed from agricultural operations, including livestock and farm machinery. The location has a clear line of sight to proposed wind farm.



**Plate A8.1-5: Monitoring Location NML5**

**Location NML6** Located in field adjacent to dwelling and farmyard, with clear line of sight towards proposed wind farm. Approximately 15m from boundary wall and 25m from dwelling façade. Noise observed from farm machinery and road traffic on the R419.



**Plate A8.1-6: Monitoring Location NML6**

**Location NML7** Located in field adjacent to residential dwelling, approximately 30m from dwelling façade. Noise from agricultural machinery and distant road traffic was audible at this location.



## Plate A8.1-7: Monitoring Location NML7

### Measurement Periods

The IOA GPG states “The duration of a background noise survey is determined only by the need to acquire sufficient valid data over the range of wind speeds. It is unlikely that this requirement can be met in less than 2 weeks. The possibility of equipment malfunction should also be borne in mind.” If insufficient wind data is collected after two weeks, the monitoring period will be extended subject to acquiring sufficient valid data over the range of wind speeds.

Equipment was installed in one lot on 9th February 2023 to 14th March 2023. Noise data up to 28th February 2023 has been used in the assessment, due to rain gauge power failure. Noise data after this date has not been used to ensure a conservative assessment. Sufficient data was captured at all monitoring locations from 9th February 2023 to 28th February 2023. Over two weeks of monitoring data was captured at all monitoring locations, with the exception of location NML5. At location NML5, noise measurements stopped after 11:40 on 20<sup>th</sup> February 2023, due to power failure. Data collected at NML5 from before this period has been used in the assessment as an adequate amount of data was captured, as discussed later in this Appendix.

### Definition of Time Periods

The following periods were analysed for this report:

|                             |                                                                                  |
|-----------------------------|----------------------------------------------------------------------------------|
| Amenity/Quiet Daytime hours | 18:00 – 23:00 Monday to Friday<br>13:00 – 18:00 Saturday<br>07:00 – 18:00 Sunday |
| Night-time hours            | 23:00 – 07:00                                                                    |

### Monitoring Equipment

Baseline noise monitoring was carried out using Svantek Svan 307 and Larson Davis SoundExpert LxT Class 1 sound level meters. Details of the noise monitoring equipment are presented in Table 8.1.3. The sound level meters were fitted with 1/2” microphones. The microphones connected to the Svantek sound level meters were fitted with a SA209 130mm diameter oversized windshields. The Larson Davis meters were fitted with a 90mm diameter windshield surrounded by a secondary windshield. The noise meter set-up used is in keeping with ETSU W/13/00386/REP, Noise Measurements in Windy Conditions and IOA Good Practice Guidelines, 2013. Calibration certificates for each sound level meter are provided in Appendix 8.2.

**Table 8.1.3: Details of Noise Monitoring Equipment**

| Monitoring Location | Meter Type       | Serial Number |
|---------------------|------------------|---------------|
| NML1                | Larson Davis LxT | LD5122        |
| NML2                | Larson Davis LxT | LD4562        |



| Monitoring Location | Meter Type       | Serial Number |
|---------------------|------------------|---------------|
| NML3                | Larson Davis LxT | LD5043        |
| NML4                | Svantek 307      | 104990        |
| NML5                | Svantek 307      | 119173        |
| NML6                | Svantek 307      | 104985        |
| NML7                | Svantek 307      | 119092        |

A Campbell Scientific CR300 Series data logger and ARG100 rain gauge was used to record rainfall and this equipment was located at monitoring location NML2. This meteorological data was acquired every 10 minutes synchronised to the hour, simultaneously with noise data.

### Monitoring Protocol

Baseline noise measurements were undertaken at 7 locations surrounding the proposed wind farm. These measurements included all 7 monitoring locations NML1, NML2, NML3, NML4, NML5, NML6 and NML7.

The following monitoring protocol was carried out at each of the monitoring locations:

1. The sound level meters were calibrated on-site and set to log  $L_{A90}$  statistics on a fast time weighted response every ten minutes.
2. Each sound level meter microphone was mounted at 1.5 m above ground level and fitted with an enhanced windshield. Each microphone was placed at least 3.5 m from reflecting surfaces to obtain 'free field' conditions.
3. Wind speed and wind direction measurements were taken from permanent mast installed on site. Wind speed was measured at a range of heights and data from anemometers at 65 m and 80 m were used to extrapolate the wind speed data up to a hub height of 110 m.

The standardised 10 m wind speed was obtained from the turbine hub height wind speed by correcting it to 10 m height using a ground roughness factor of 0.05 m. Roughness length (or logarithmic) shear profile:

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

where  $U_1$  is the wind speed to be calculated,  $U_2$  is the measured wind speed,  $H_1$  is the height of the measured wind speed to be calculated (10m),  $H_2$  is the height of the measured wind speed and  $z$  is the ground roughness length (m). A roughness length of 0.05m is used to standardise hub height wind speeds to 10m height in the IEC 61400-11:2012 standard.

4. The  $L_{A90}$  statistic measurements were synchronised with the 10 m standardised wind speeds derived from the on-site meteorological mast data.
5. A logging rain gauge was also installed (at Monitoring Location NML2) and similarly logged rainfall events over successive 10-minute intervals, also synchronised to the noise level and wind speed measurements.

6. After the monitoring was completed, the noise meters were re-tested using the calibration noise source to ensure that the meters had not drifted.

### Analysis of the Baseline Data

Following collection of the site data, the following protocol was used to analyse the baseline data:

1. The raw baseline  $L_{A90}$  noise data was reviewed to determine whether there are any periods of non-consistent noise level due to equipment malfunction.
2. The raw noise level data was then correlated with the time synchronised wind speed and rainfall data. Preliminary data analysis was used to remove datasets ( $L_{A90}$ , wind speed and occurrence of rainfall event) which contain a rainfall event as these data sets are required to be removed from further analysis in line with best practice as outlined in the IOA Good Practice Guide and Supplementary Guidance Note 2 on Data Processing.
3. The prevailing background noise during daytime periods uses the amenity/quiet daytime hours. The prevailing background noise during night-time periods excludes early morning periods to remove the dawn chorus which is not prevalent through that whole year, with data recorded between 04:00 and 07:00 was removed from further analysis.
4. Once the rainfall events have been accounted for, the remaining data was graphed using a wind speed based plot to establish whether there are any remaining data outliers, representing atypical noise sources or events.
5. Once the remaining data sets were found to be representative of the noise environment, they were analysed to ensure that sufficient data remained to provide sufficient data coverage over the necessary wind speeds. The prevailing background noise trend was not extended beyond the range covered by adequate data sets. See Section 'Data Available for Determination of Prevailing Background Noise Levels' for details.
6. A 'best fit' trend (not higher than a fourth order polynomial) was then derived to present the prevailing background noise level at each monitoring location. See Section 'Results' for details.

### Data Available for Determination of Prevailing Background Noise Levels

The requirement for the survey duration is dictated by the range of wind speeds to be collected. The IOA Good Practice Guide to the Application of ETSU-R-97<sup>1</sup> for the Assessment and Rating of Wind Turbine Noise, (May 2013) states that *"As a guideline, no fewer than 200 data points should be recorded in each of the amenity hours and night-time periods with no fewer than 5 data points in any 1 m/s wind speed bin."*

The Wind Energy Development Guidelines (Department of Environment, Heritage and Local Government, 2006) do not provide the specific periods which are represented by daytime and night-time hours, therefore the definitions from ETSU-R-97 are taken as 07:00 to 23:00 hrs for daytime and 23:00 to 07:00 hrs for night-time.

Prevailing background noise levels were derived for daytime and night-time periods. The number of datasets at each integer wind speed are shown in Tables 8.1.4 and 8.1.5.

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<sup>1</sup> Department of Trade and Industry (1996), The Assessment and Rating of Noise from Wind Farms Report ETSU-R-97

**Table 8.1.4: Number of Valid Datasets at Standardised 10m Height Wind Speeds Noise Monitoring Locations NML1 – NML7 – Daytime**

| Wind Speed (at standardised 10 m height), m/s <sup>Note 1</sup>                                                                                           | Valid Datasets |      |      |      |      |      |      |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|------|------|------|------|------|------|
|                                                                                                                                                           | NML1           | NML2 | NML3 | NML4 | NML5 | NML6 | NML7 |
| 0                                                                                                                                                         | 0              | 0    | 0    | 0    | 0    | 0    | 0    |
| 1                                                                                                                                                         | 0              | 0    | 0    | 0    | 0    | 0    | 0    |
| 2                                                                                                                                                         | 12             | 12   | 12   | 12   | 0    | 12   | 12   |
| 3                                                                                                                                                         | 88             | 88   | 88   | 88   | 21   | 88   | 88   |
| 4                                                                                                                                                         | 209            | 209  | 209  | 197  | 84   | 209  | 197  |
| 5                                                                                                                                                         | 210            | 210  | 210  | 194  | 122  | 210  | 194  |
| 6                                                                                                                                                         | 138            | 138  | 138  | 136  | 100  | 138  | 136  |
| 7                                                                                                                                                         | 118            | 118  | 118  | 118  | 91   | 118  | 118  |
| 8                                                                                                                                                         | 52             | 52   | 52   | 52   | 51   | 52   | 52   |
| 9                                                                                                                                                         | 21             | 21   | 21   | 21   | 21   | 21   | 21   |
| 10                                                                                                                                                        | 5              | 5    | 5    | 5    | 5    | 5    | 5    |
| 11                                                                                                                                                        | 1              | 1    | 1    | 1    | 1    | 1    | 1    |
| Total Number of Data Points                                                                                                                               | 854            | 854  | 854  | 824  | 496  | 854  | 824  |
| Note 1: Turbine cut-in is at 2 m/s standardised 10m height and the speed at which maximum sound power level is achieved is 10 m/s standardised 10m height |                |      |      |      |      |      |      |

**Table 8.1.5: Number of Valid Datasets at Standardised 10m Height Wind Speeds Noise Monitoring Locations NML1 – NML7 – Night-time**

| Wind Speed (at standardised 10 m height), m/s <sup>Note 1</sup>                                                                                                                                                                                                                                                                    | Valid Datasets <sup>Note 2</sup> |      |      |      |      |      |      |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|------|------|------|------|------|------|
|                                                                                                                                                                                                                                                                                                                                    | NML1                             | NML2 | NML3 | NML4 | NML5 | NML6 | NML7 |
| 0                                                                                                                                                                                                                                                                                                                                  | 0                                | 0    | 0    | 0    | 0    | 0    | 0    |
| 1                                                                                                                                                                                                                                                                                                                                  | 0                                | 0    | 0    | 0    | 0    | 0    | 0    |
| 2                                                                                                                                                                                                                                                                                                                                  | 4                                | 4    | 4    | 4    | 0    | 4    | 4    |
| 3                                                                                                                                                                                                                                                                                                                                  | 57                               | 57   | 57   | 56   | 16   | 57   | 56   |
| 4                                                                                                                                                                                                                                                                                                                                  | 147                              | 147  | 147  | 136  | 59   | 147  | 136  |
| 5                                                                                                                                                                                                                                                                                                                                  | 121                              | 121  | 121  | 106  | 51   | 121  | 106  |
| 6                                                                                                                                                                                                                                                                                                                                  | 61                               | 61   | 61   | 58   | 29   | 61   | 58   |
| 7                                                                                                                                                                                                                                                                                                                                  | 57                               | 57   | 57   | 57   | 36   | 57   | 57   |
| 8                                                                                                                                                                                                                                                                                                                                  | 43                               | 43   | 43   | 43   | 39   | 43   | 43   |
| 9                                                                                                                                                                                                                                                                                                                                  | 20                               | 20   | 20   | 20   | 20   | 20   | 20   |
| 10                                                                                                                                                                                                                                                                                                                                 | 10                               | 10   | 10   | 10   | 10   | 10   | 10   |
| 11                                                                                                                                                                                                                                                                                                                                 | 21                               | 21   | 21   | 21   | 21   | 21   | 21   |
| 12                                                                                                                                                                                                                                                                                                                                 | 5                                | 5    | 5    | 5    | 5    | 5    | 5    |
| 13                                                                                                                                                                                                                                                                                                                                 | 3                                | 3    | 3    | 3    | 3    | 3    | 3    |
| Total Number of Data Points                                                                                                                                                                                                                                                                                                        | 549                              | 549  | 549  | 519  | 289  | 549  | 519  |
| Note 1: Turbine cut-in is at 2 m/s standardised 10m height and the speed at which maximum sound power level is achieved is 10 m/s standardised 10m height<br>Note 2: Shaded areas indicate windspeeds where adequate number of data point less than guideline minimum (5 per windspeed bin within cut-in and maximum sound power). |                                  |      |      |      |      |      |      |

## Results

In this section, the prevailing background noise level in dB  $L_{A90}$  relative to standardised 10 m height wind speeds are provided for each monitoring location as per the requirements of the survey. The prevailing background noise level is plotted as a solid line for each daytime and night-time periods at each monitoring location. In all cases, the highest order of polynomial used is a fourth order polynomials provided lines of best fit to the scatter data.

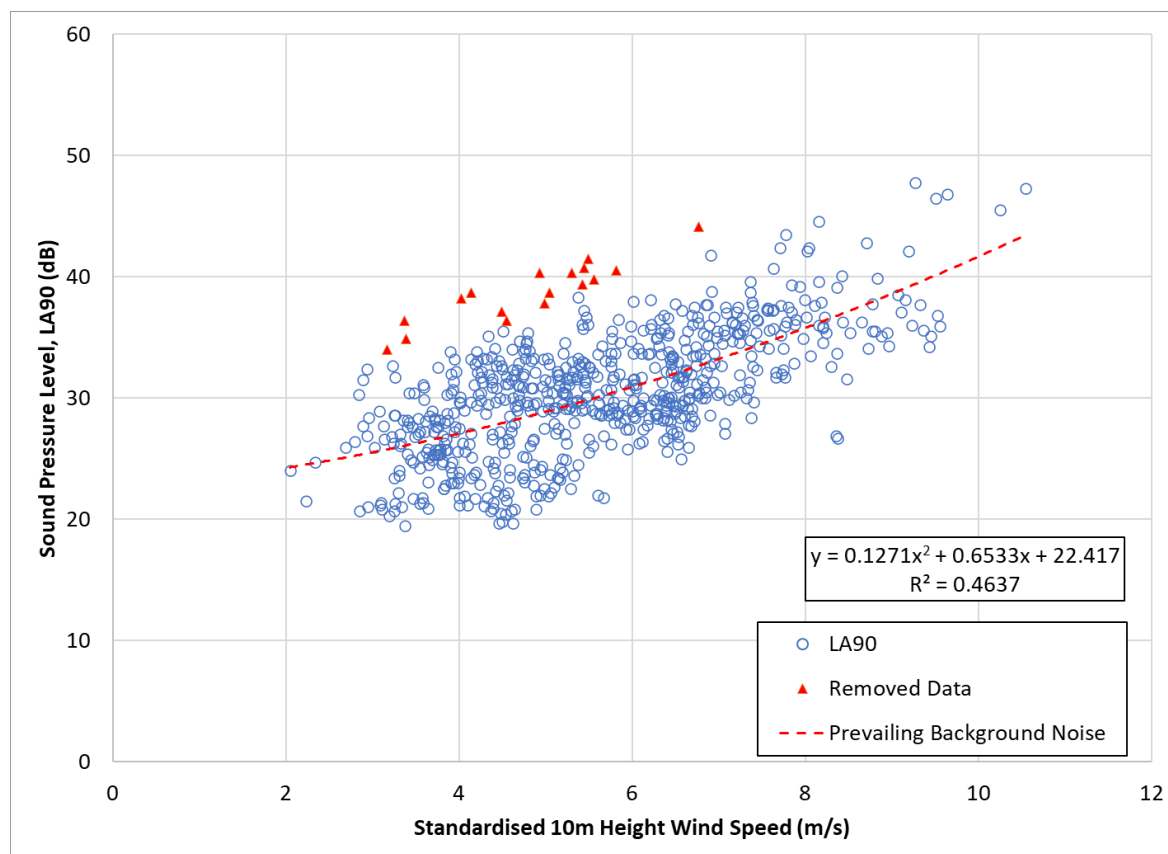


Figure A8.1: Prevailing Daytime Background ( $L_{A90}$ ) Noise Levels at NML1



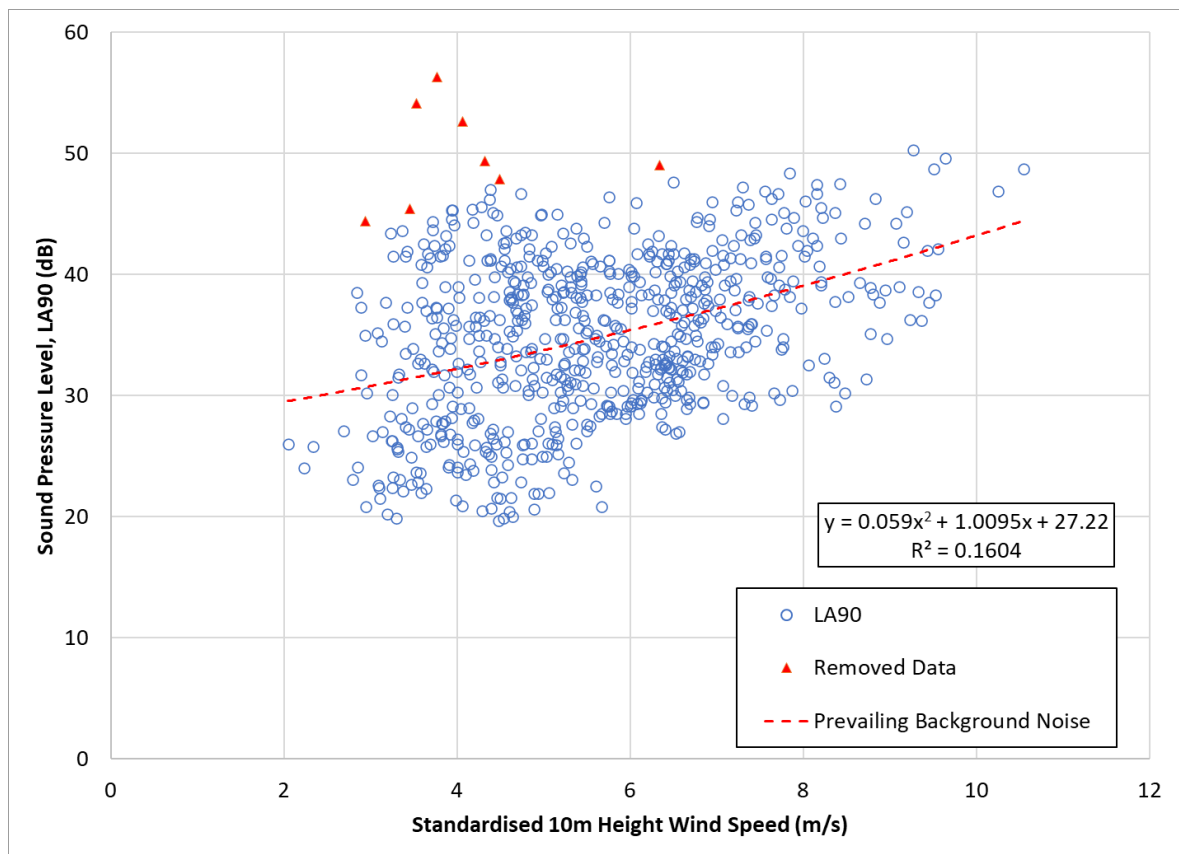


Figure A8.2: Prevailing Daytime Background ( $L_{A90}$ ) Noise Levels at NML2

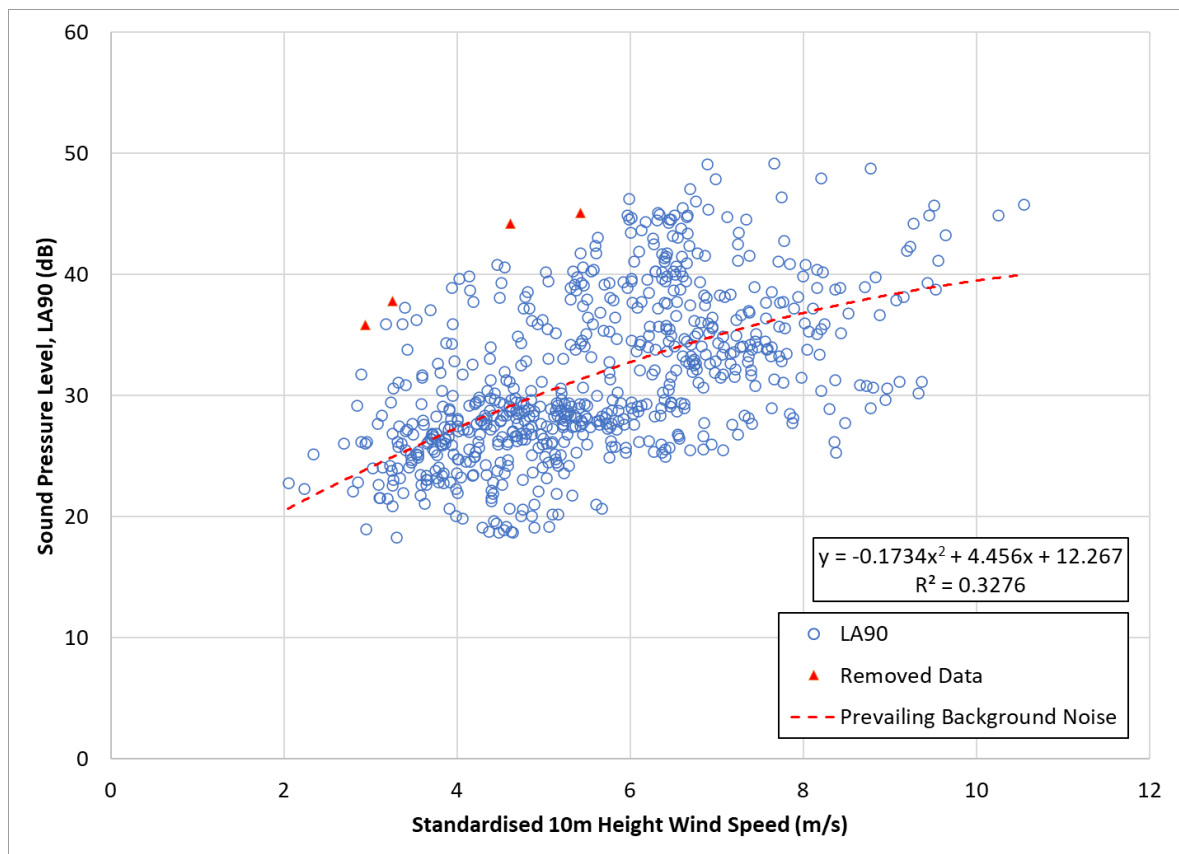


Figure A8.3: Prevailing Daytime Background ( $L_{A90}$ ) Noise Levels at NML3

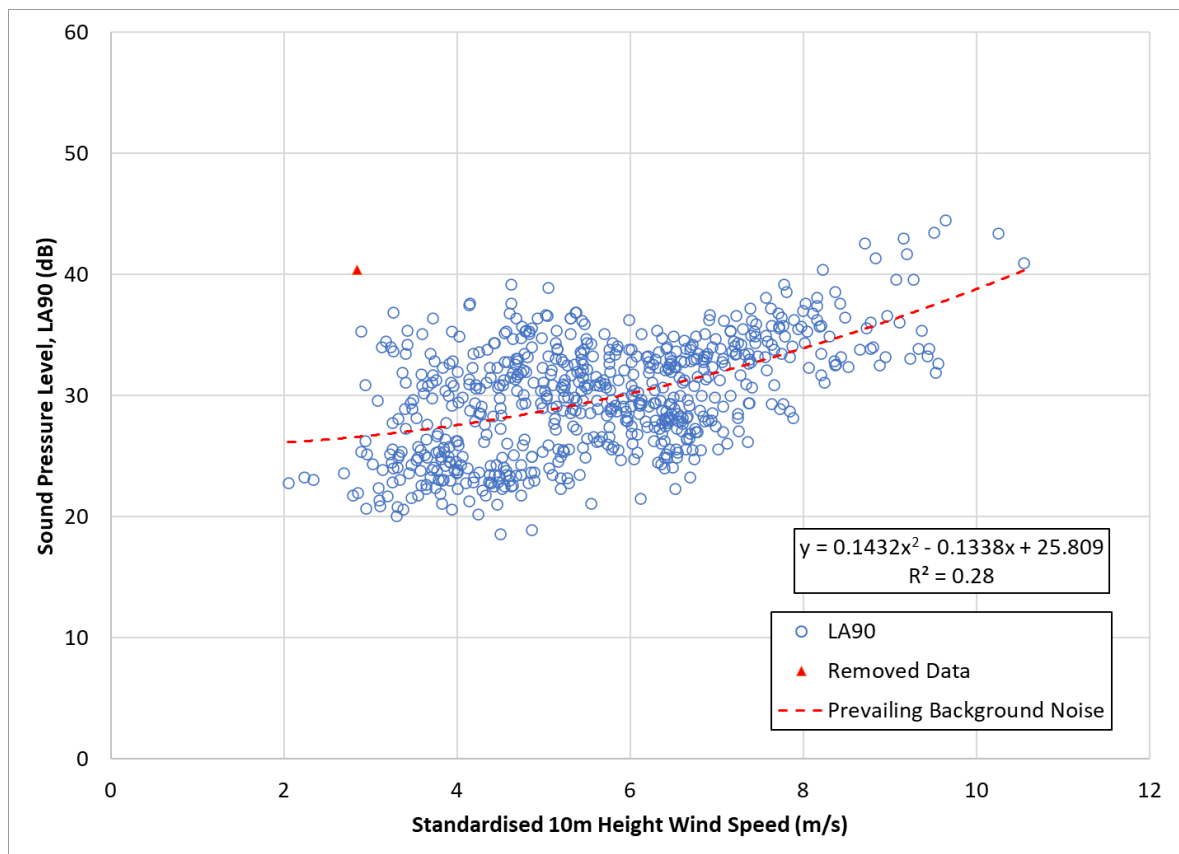


Figure A8.4: Prevailing Daytime Background ( $L_{A90}$ ) Noise Levels at NML4

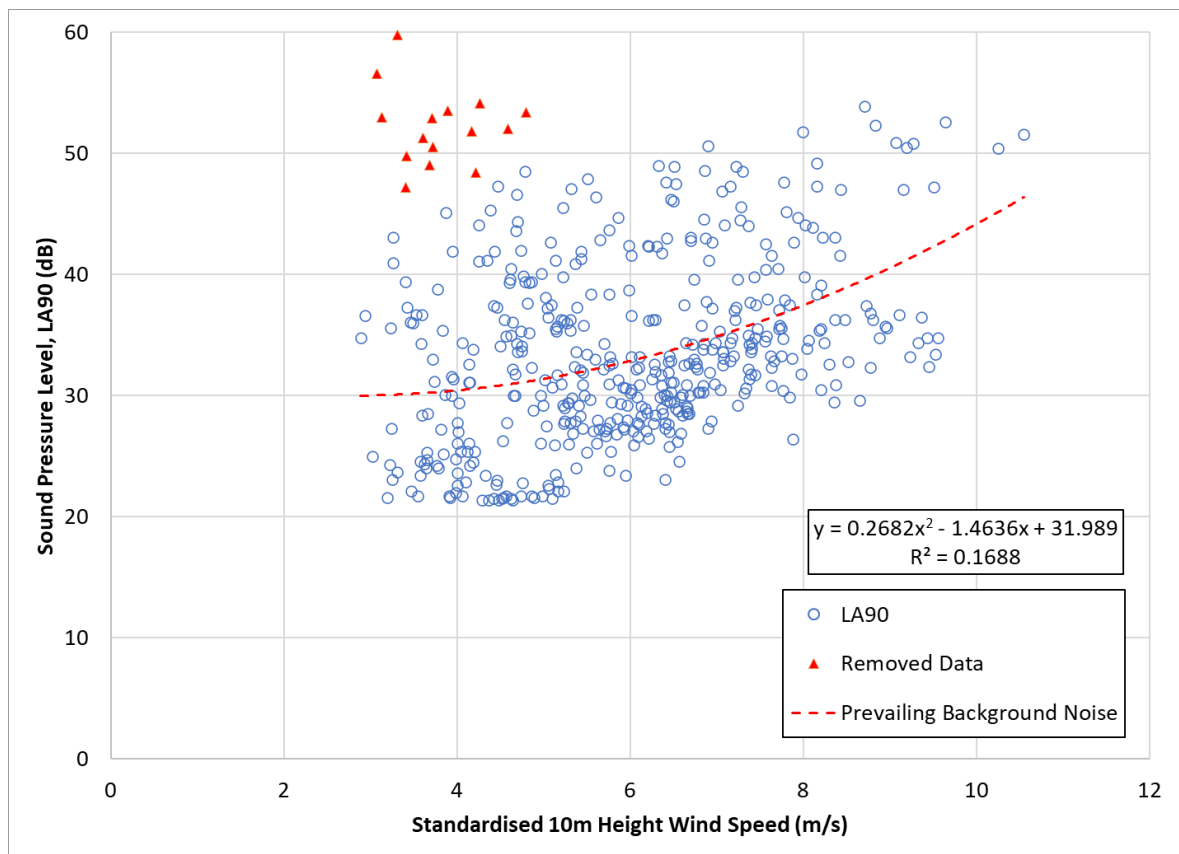


Figure A8.5: Prevailing Daytime Background ( $L_{A90}$ ) Noise Levels at NML5

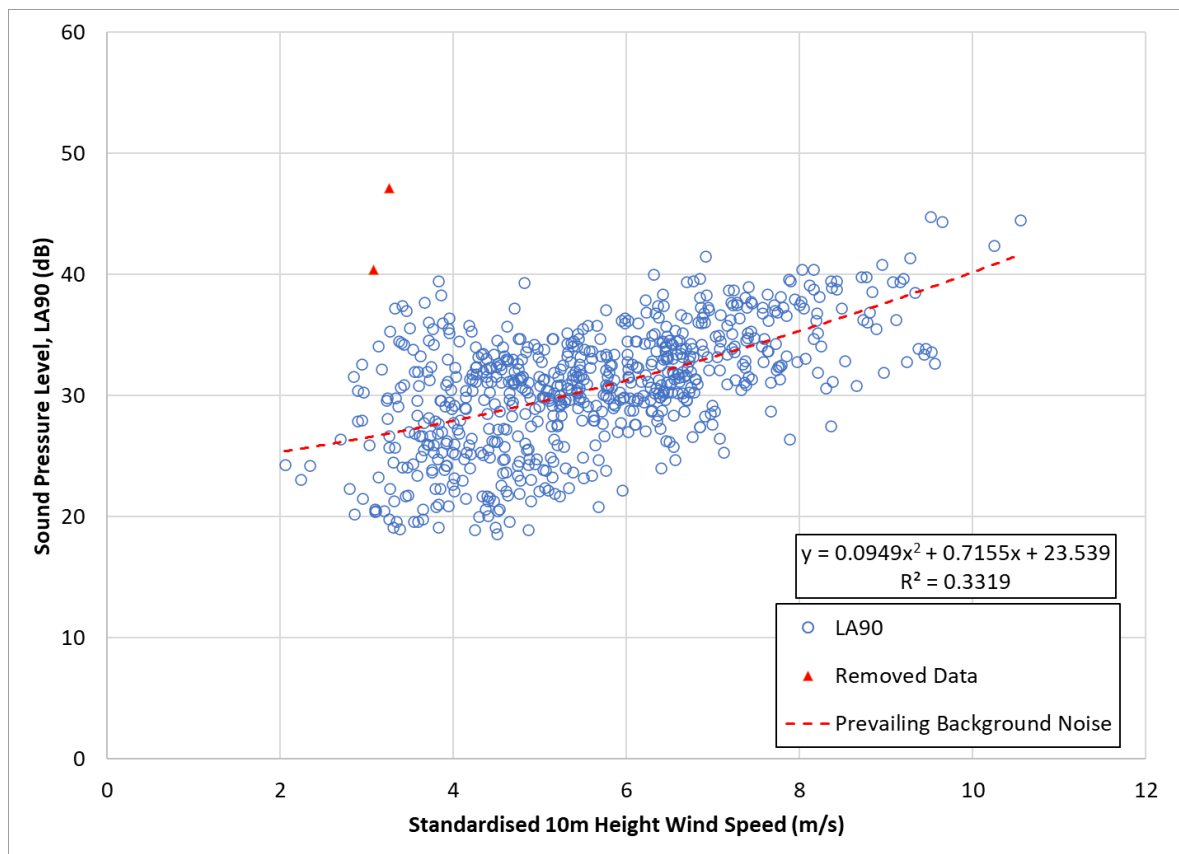


Figure A8.6: Prevailing Daytime Background (LA90) Noise Levels at NML6

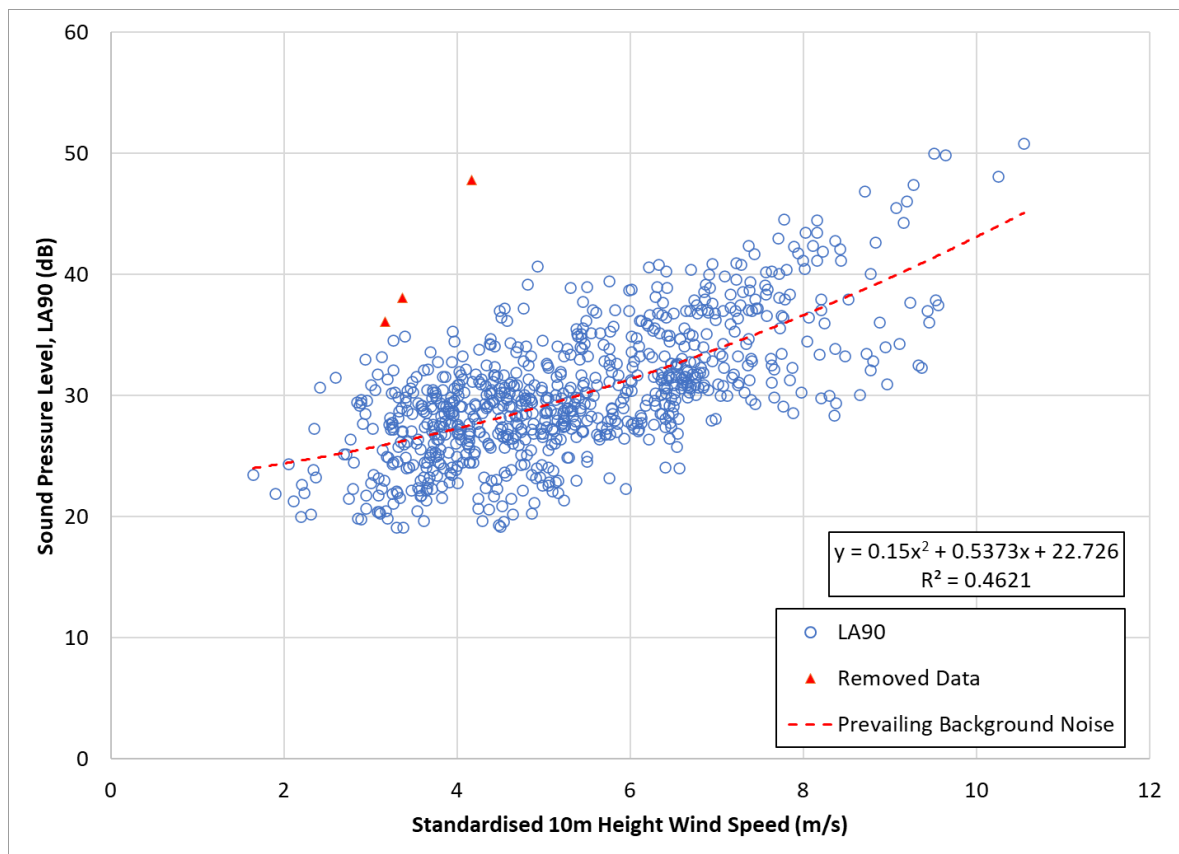


Figure A8.7: Prevailing Daytime Background ( $L_{A90}$ ) Noise Levels at NML7



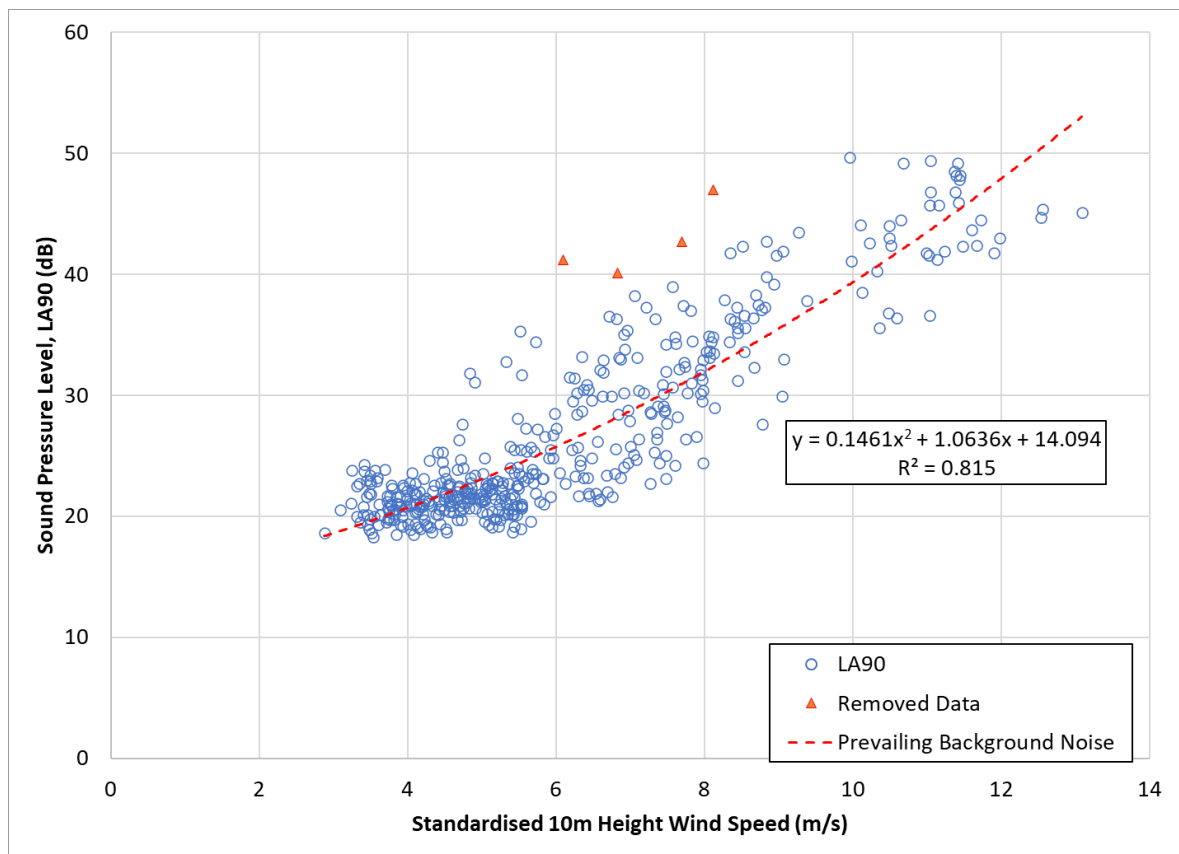


Figure A8.8: Prevailing Night-time Background ( $L_{A90}$ ) Noise Levels at NML1

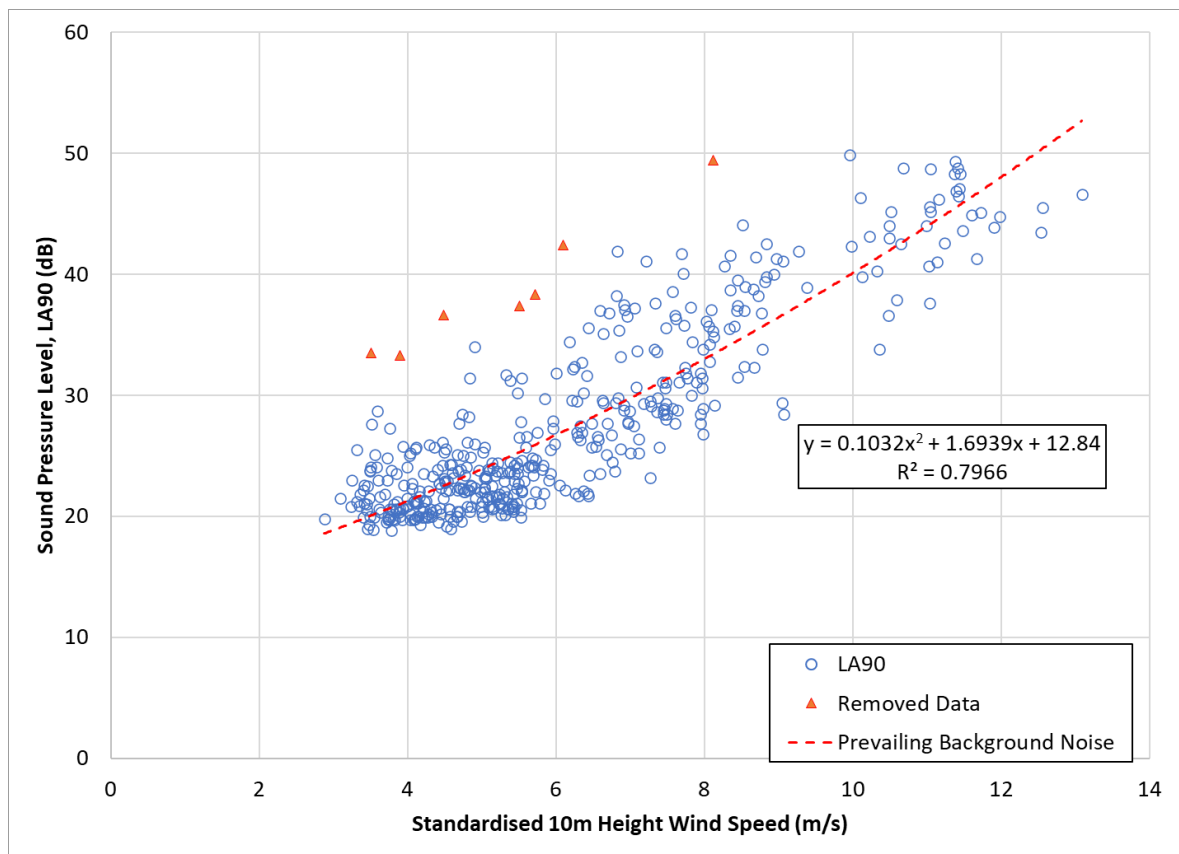


Figure A8.9: Prevailing Night-time Background ( $L_{A90}$ ) Noise Levels at NML2

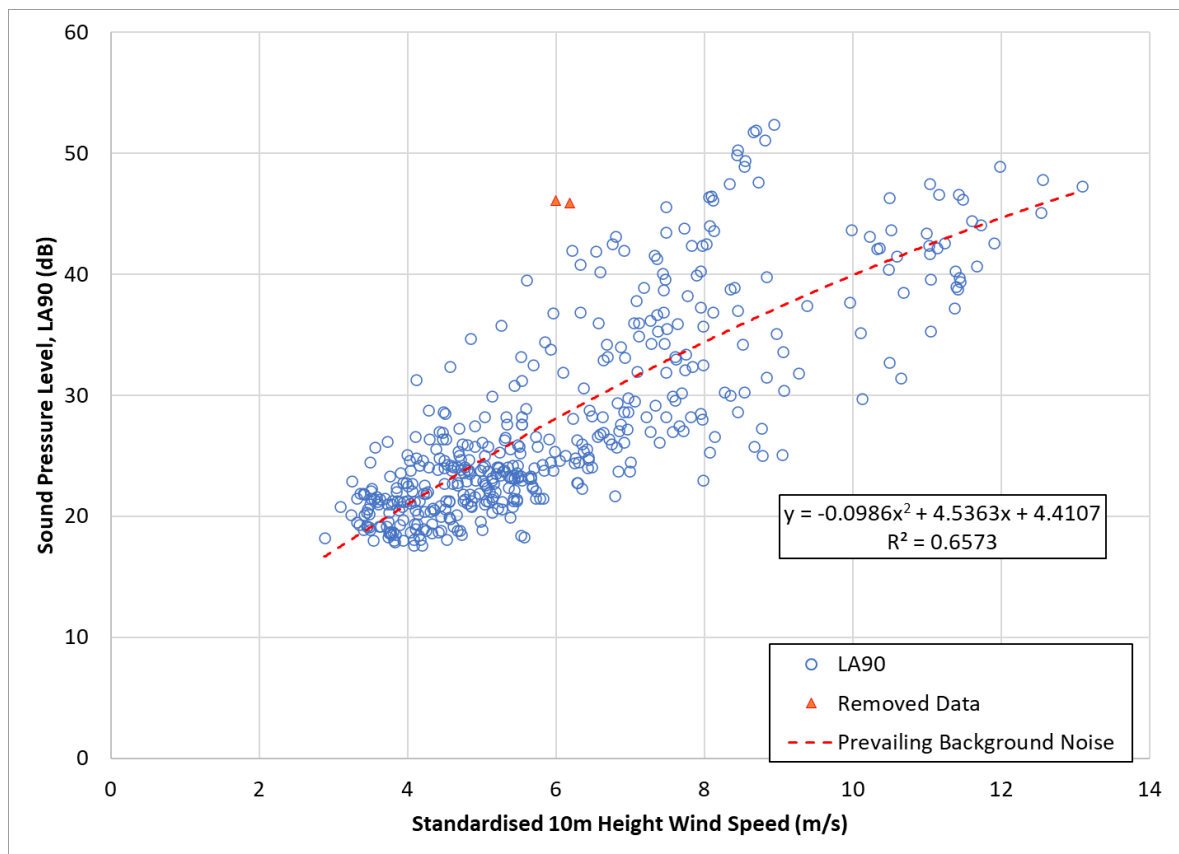


Figure A8.10: Prevailing Night-time Background ( $L_{A90}$ ) Noise Levels at NML3

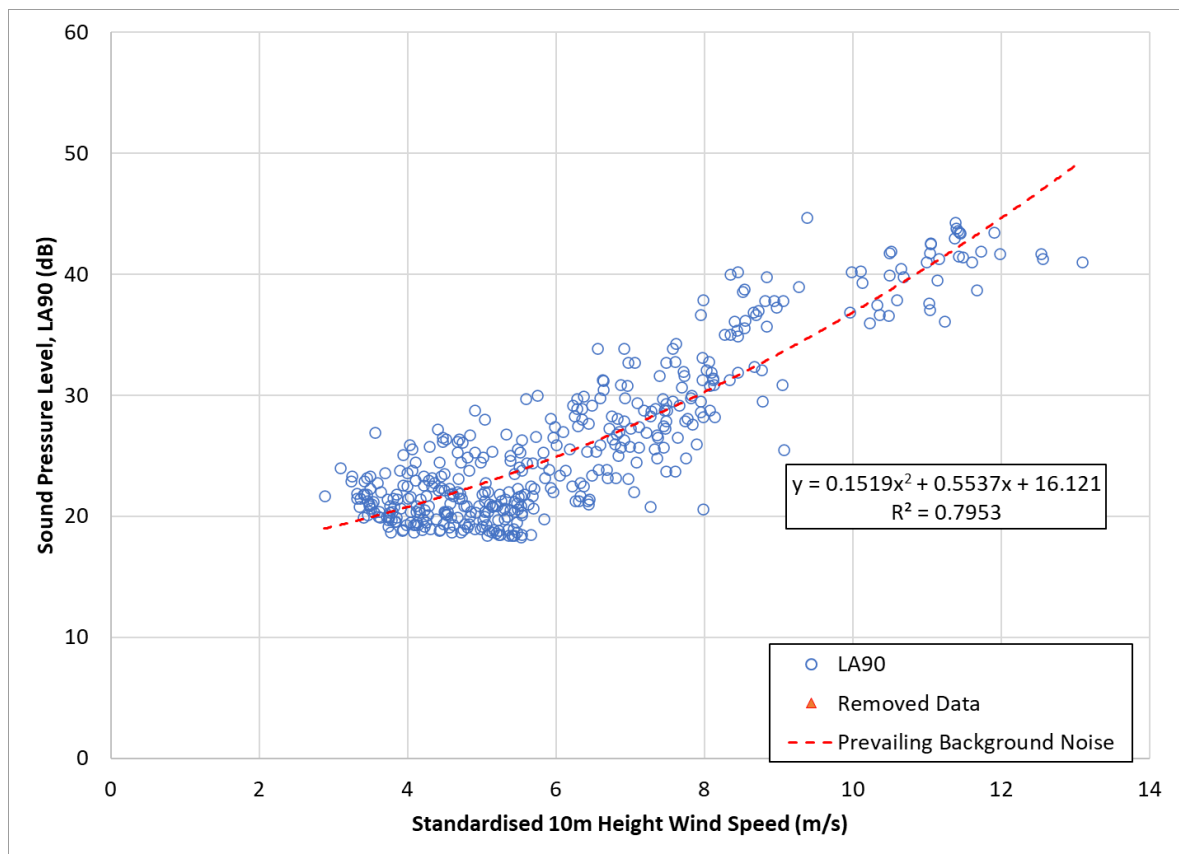


Figure A8.11: Prevailing Night-time Background ( $L_{A90}$ ) Noise Levels at NML4

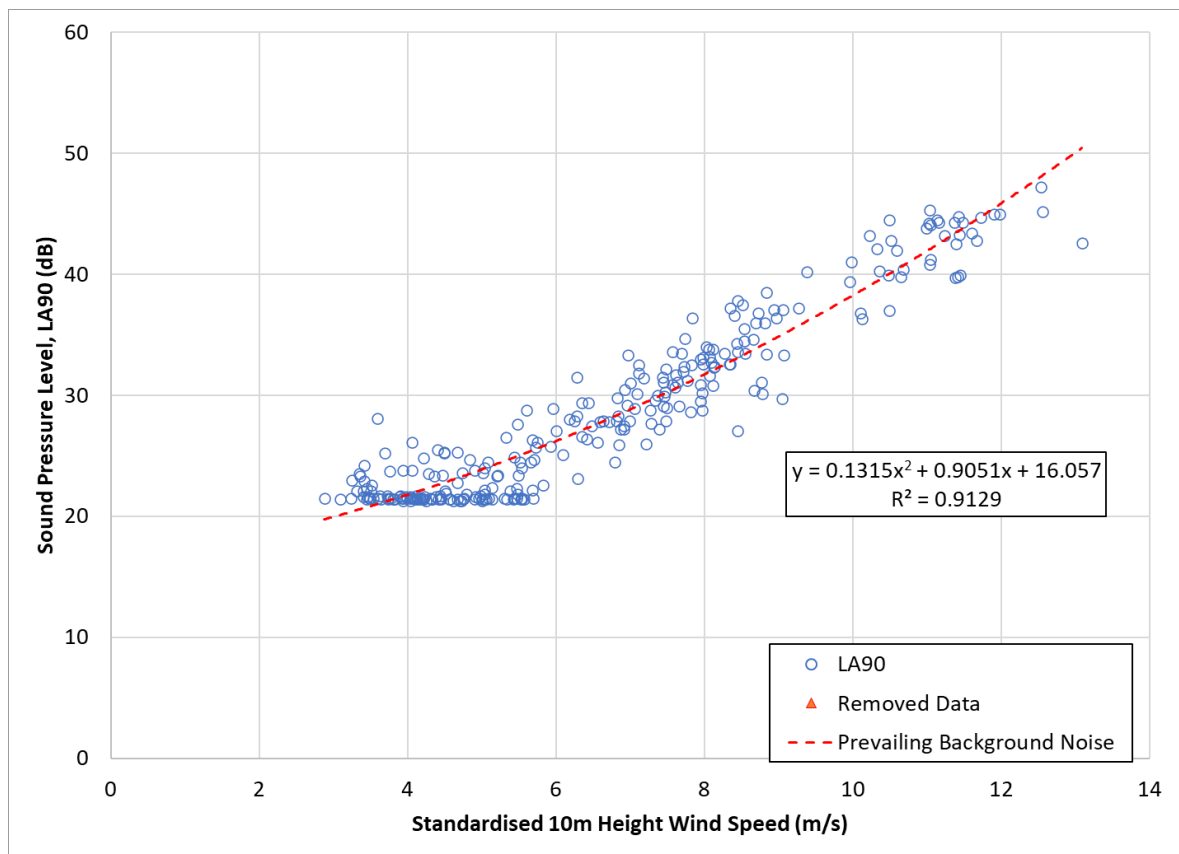


Figure A8.12: Prevailing Night-time Background ( $L_{A90}$ ) Noise Levels at NML5

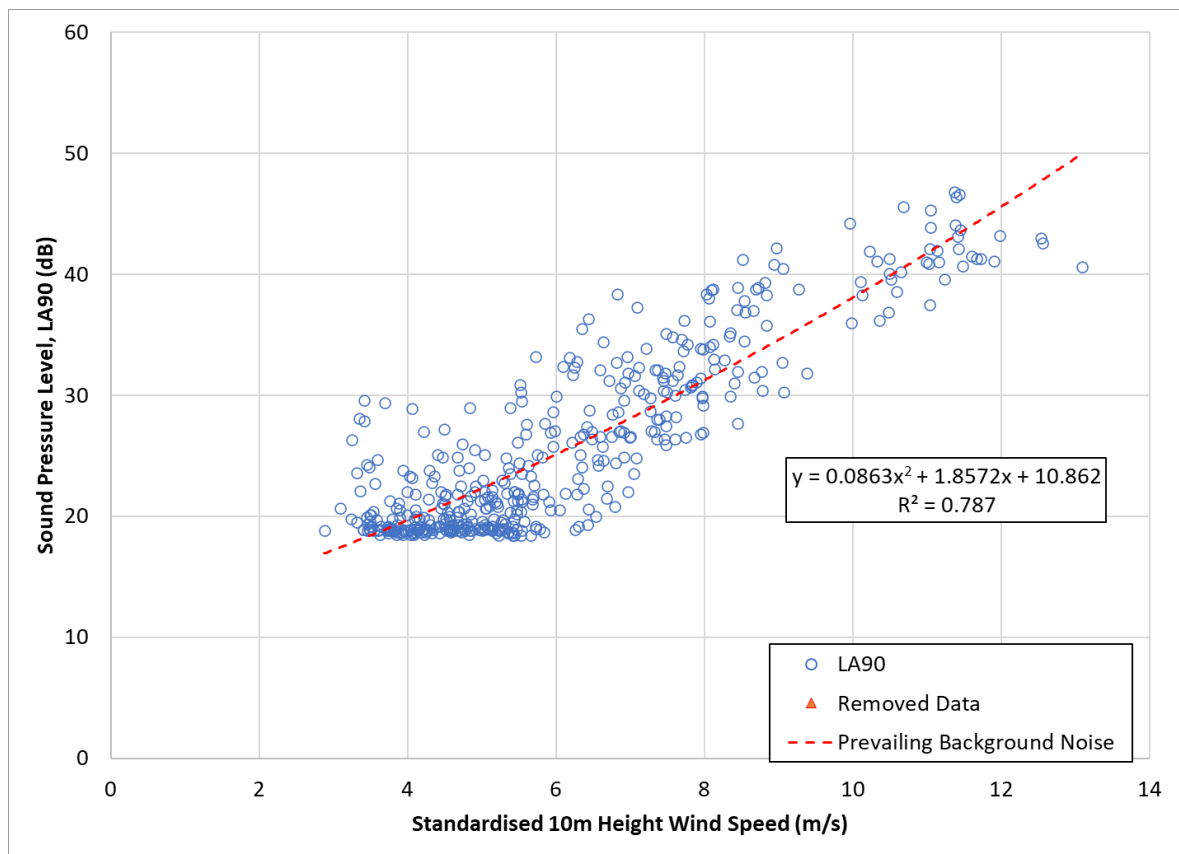


Figure A8.13: Prevailing Night-time Background ( $L_{A90}$ ) Noise Levels at NML6

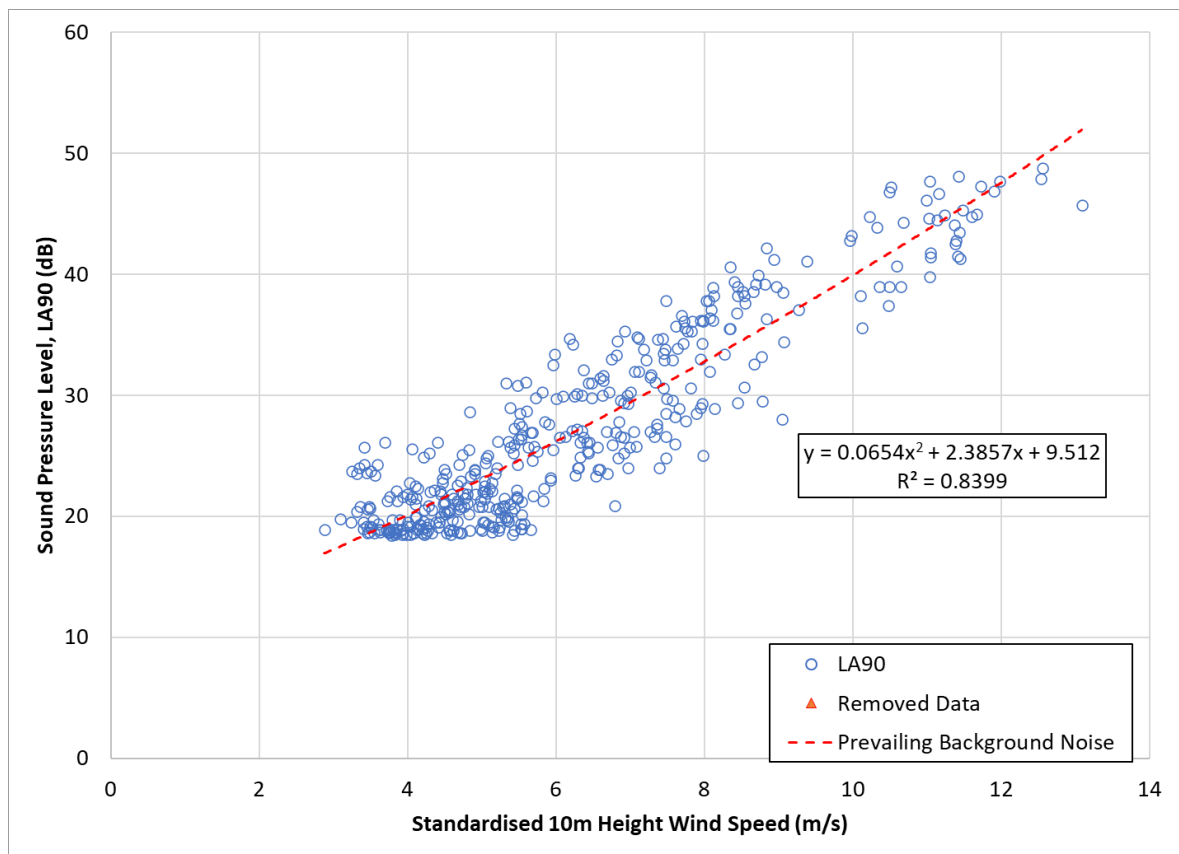


Figure A8.14: Prevailing Night-time Background ( $L_{A90}$ ) Noise Levels at NML7



**Table 8.1.6: Prevailing Background Noise – Daytime Periods**

| Location                                                | Prevailing Background Noise L <sub>A90,10min</sub> (dB) at Standardised 10 m Height Wind Speed (m/s) |      |      |      |      |      |      |      |      |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|------|
|                                                         | 2                                                                                                    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   |
| NML1                                                    | 24.2                                                                                                 | 25.5 | 27.1 | 28.9 | 30.9 | 33.2 | 35.8 | 38.6 | 41.7 |
| NML2                                                    | 29.5                                                                                                 | 30.8 | 32.2 | 33.7 | 35.4 | 37.2 | 39.1 | 41.1 | 43.2 |
| NML3                                                    | 20.5                                                                                                 | 24.1 | 27.3 | 30.2 | 32.8 | 35.0 | 36.8 | 38.3 | 39.5 |
| NML4                                                    | 26.1                                                                                                 | 26.7 | 27.6 | 28.7 | 30.2 | 31.9 | 33.9 | 36.2 | 38.8 |
| NML5                                                    | 30.0*                                                                                                | 30.0 | 30.4 | 31.4 | 32.9 | 34.9 | 37.4 | 40.5 | 44.2 |
| NML6                                                    | 25.3                                                                                                 | 26.5 | 27.9 | 29.5 | 31.2 | 33.2 | 35.3 | 37.7 | 40.2 |
| NML7                                                    | 24.4                                                                                                 | 25.7 | 27.3 | 29.2 | 31.3 | 33.8 | 36.6 | 39.7 | 43.1 |
| § - noise level restricted to the highest derived point |                                                                                                      |      |      |      |      |      |      |      |      |
| * - noise level restricted to lowest derived point      |                                                                                                      |      |      |      |      |      |      |      |      |

**Table 8.1.7: Prevailing Background Noise – Night time Periods**

| Location                                                | Prevailing Background Noise L <sub>A90,10min</sub> (dB) at Standardised 10 m Height Wind Speed (m/s) |      |      |      |      |      |      |      |      |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|------|
|                                                         | 2                                                                                                    | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10   |
| NML1                                                    | 16.8                                                                                                 | 18.6 | 20.7 | 23.1 | 25.7 | 28.7 | 32.0 | 35.5 | 39.3 |
| NML2                                                    | 16.6                                                                                                 | 18.9 | 21.3 | 23.9 | 26.7 | 29.8 | 33.0 | 36.4 | 40.1 |
| NML3                                                    | 13.1                                                                                                 | 17.1 | 21.0 | 24.6 | 28.1 | 31.3 | 34.4 | 37.3 | 39.9 |
| NML4                                                    | 17.8                                                                                                 | 19.1 | 20.8 | 22.7 | 24.9 | 27.4 | 30.3 | 33.4 | 36.8 |
| NML5                                                    | 20.0*                                                                                                | 20.0 | 21.8 | 23.9 | 26.2 | 28.8 | 31.7 | 34.9 | 38.3 |
| NML6                                                    | 14.9                                                                                                 | 17.2 | 19.7 | 22.3 | 25.1 | 28.1 | 31.2 | 34.6 | 38.1 |
| NML7                                                    | 14.5                                                                                                 | 17.3 | 20.1 | 23.1 | 26.2 | 29.4 | 32.8 | 36.3 | 39.9 |
| § - noise level restricted to the highest derived point |                                                                                                      |      |      |      |      |      |      |      |      |
| * - noise level restricted to lowest derived point      |                                                                                                      |      |      |      |      |      |      |      |      |

## APPENDIX 8.2

### Equipment Calibration Certificates





MTS Calibration Ltd,  
The Grange Business Centre,  
Belasis Avenue,  
Billingham TS23 1LG,  
England  
Telephone: 01642 876 410

## CERTIFICATE OF CALIBRATION

Page 1 of 11 pages

Issued by: **MTS Calibration Ltd**

Approved Signatory:

Date of Issue: **23 August 2021** Certificate Number: **36181**

**Tony Sherris**

### Sound Level Meter

### Sound Level Meter Periodic Tests to EN 61672-3: 2013 Class 1

**Client:** Environmental Measurements  
Unit 12, Tallaght Business Centre  
Whitestown Business Park  
Co.Dublin 24, Ireland

**Instrument Make:** Larson Davis  
**Instrument Model:** LxT1L  
**Serial Number:** 0005122

| Associated Equipment   | Make                     | Model    | Serial number |
|------------------------|--------------------------|----------|---------------|
| Preamplifier           | Larson Davis             | PRMLxT1L | 042855        |
| Microphone             | PCB                      | 377B02   | 174426        |
| Calibrator             | Larson Davis             | CAL200   | 9175          |
| Calibrator supplied by | the Client, with the SLM |          |               |

**Test results summary, detailed results are shown on subsequent pages.**

**Periodic tests were performed in accordance with procedures from IEC 61672-3:2013 Class 1**

| Tests performed                       | Section | Results of test | Page | Comments               |
|---------------------------------------|---------|-----------------|------|------------------------|
| Calibration Certificate               | 22      |                 | 1    |                        |
| Additional information                |         |                 | 2    |                        |
| Indication with Calibrator Supplied   | 10      | No Limit        | 3    |                        |
| Self-Generated Noise                  | 11      | No Limit        | 3    |                        |
| Frequency and Time-weightings at 1kHz | 14      | Complies        | 3    |                        |
| Long term stability                   | 15      | Complies        | 3    |                        |
| High stability                        | 21      | Complies        | 3    |                        |
| Acoustic Tests                        | 12      | Complies        | 4    |                        |
| Frequency Weighting A                 | 13      | Complies        | 5    |                        |
| Frequency Weighting C                 | 13      | Complies        | 6    |                        |
| Frequency Weighting Z                 | 13      | Complies        | 7    |                        |
| Level Linearity                       | 16      | Complies        | 8    |                        |
| Level Linearity Range Control         | 17      |                 | n/a  | SLM only has one range |
| Tone-burst Response                   | 18      | Complies        | 9    |                        |
| Peak C sound level                    | 19      | Complies        | 10   |                        |
| Overload indication                   | 20      | Complies        | 11   |                        |

The instrument was within the above specification as received - no modifications were made

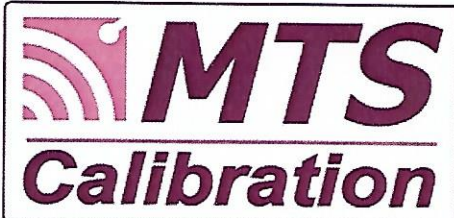
The sound level meter submitted for testing has successfully completed the periodic tests of IEC 61672-3: 2013 for the environmental conditions under which the tests were performed. As evidence was publicly available, from an independent testing organisation responsible for approving the results of pattern 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

#### Additional tests performed

|                                            | Reference |                            |
|--------------------------------------------|-----------|----------------------------|
| Microphone full frequency response         | 36183     | See additional certificate |
| Filter calibration, third octave or octave | 36181F    | See additional certificate |

This certificate is issued in accordance with the laboratory accreditation requirements of the United Kingdom Accreditation Service. It provides traceability of measurement to the SI system of units and/or to units of measurement realised at the National Physical Laboratory or other recognised national metrology institutes. This certificate may not be reproduced other than in full, except with the prior written approval of the issuing laboratory.





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Telephone: 01642 876 410

## CERTIFICATE OF CALIBRATION

Page 1 of 11 pages

Issued by: **MTS Calibration Ltd**

Approved Signatory:

Date of Issue: **15 September 2022** Certificate Number: **37476**

**Tony Sherris**

### Sound Level Meter

### Sound Level Meter Periodic Tests to EN 61672-3: 2013 Class 1

**Client:** Environmental Measurements  
Unit 12, Tallaght Business Centre  
Whitestown Business Park  
Co.Dublin 24, Ireland

**Instrument Make:** Larson Davis  
**Instrument Model:** LxT1L  
**Serial Number:** 0005043

| Associated Equipment   | Make                     | Model    | Serial number |
|------------------------|--------------------------|----------|---------------|
| Preamplifier           | Larson Davis             | PRMLxT1L | 069969        |
| Microphone             | PCB                      | 377B02   | 322959        |
| Calibrator             | Larson Davis             | CAL200   | 9175          |
| Calibrator supplied by | MTS for this calibration |          |               |

The measurements were performed at The Grange Business Centre, Belasis Avenue, TS23 1LD. The results only apply to the items tested.

**Periodic tests were performed in accordance with procedures from IEC 61672-3:2013 Class 1**

**Test results summary, detailed results are shown on subsequent pages.**

| Tests performed                       | Section | Results of test | Page | Comments               |
|---------------------------------------|---------|-----------------|------|------------------------|
| Calibration Certificate               | 22      |                 | 1    |                        |
| Additional information                |         |                 | 2    |                        |
| Indication with Calibrator Supplied   | 10      | No Limit        | 3    |                        |
| Self-Generated Noise                  | 11      | No Limit        | 3    |                        |
| Frequency and Time-weightings at 1kHz | 14      | Complies        | 3    |                        |
| Long term stability                   | 15      | Complies        | 3    |                        |
| High stability                        | 21      | Complies        | 3    |                        |
| Acoustic Tests                        | 12      | Complies        | 4    |                        |
| Frequency Weighting A                 | 13      | Complies        | 5    |                        |
| Frequency Weighting C                 | 13      | Complies        | 6    |                        |
| Frequency Weighting Z                 | 13      | Complies        | 7    |                        |
| Level Linearity                       | 16      | Complies        | 8    |                        |
| Level Linearity Range Control         | 17      |                 | n/a  | SLM only has one range |
| Tone-burst Response                   | 18      | Complies        | 9    |                        |
| Peak C sound level                    | 19      | Complies        | 10   |                        |
| Overload indication                   | 20      | Complies        | 11   |                        |

The instrument was within the above specification as received - no modifications were made

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

#### Additional tests performed

|                                            | Reference |                            |
|--------------------------------------------|-----------|----------------------------|
| Microphone full frequency response         | 37478     | See additional certificate |
| Filter calibration, third octave or octave | 37376F    | See additional certificate |

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Belasis Avenue,  
Billingham TS23 1LG,  
England  
Telephone: 01642 876 410

# CERTIFICATE OF CALIBRATION

Page 1 of 11 pages

Issued by: **MTS Calibration Ltd**

Approved Signatory:

Date of Issue: **03 December 2021** Certificate Number: **36473**

Tony Sherris

## Sound Level Meter

### Sound Level Meter Periodic Tests to EN 61672-3: 2013 Class 1

Client: **Environmental Measurements**  
**Unit 12, Tallaght Business Centre**  
**Whitestown Business Park**  
**Co.Dublin 24, Ireland**

Instrument Make: **Larson Davis**  
Instrument Model: **LxT1L**  
Serial Number: **0004562**

#### Number 1

| Associated Equipment   | Make                     | Model    | Serial number |
|------------------------|--------------------------|----------|---------------|
| Preamplifier           | PCB                      | PRMLxT1L | 042698        |
| Microphone             | PCB                      | 377B02   | 169800        |
| Calibrator             | Larson Davis             | CAL200   | 9175          |
| Calibrator supplied by | MTS for this calibration |          |               |

The measurements were performed at The Grange Business Centre, Belasis Avenue, TS23 1LD. The results only apply to the items tested.

Periodic tests were performed in accordance with procedures from IEC 61672-3:2013 Class 1

Test results summary, detailed results are shown on subsequent pages.

| Tests performed                       | Section | Results of test | Page | Comments               |
|---------------------------------------|---------|-----------------|------|------------------------|
| Calibration Certificate               | 22      |                 | 1    |                        |
| Additional information                |         |                 | 2    |                        |
| Indication with Calibrator Supplied   | 10      | No Limit        | 3    |                        |
| Self-Generated Noise                  | 11      | No Limit        | 3    |                        |
| Frequency and Time-weightings at 1kHz | 14      | Complies        | 3    |                        |
| Long term stability                   | 15      | Complies        | 3    |                        |
| High stability                        | 21      | Complies        | 3    |                        |
| Acoustic Tests                        | 12      | Complies        | 4    |                        |
| Frequency Weighting A                 | 13      | Complies        | 5    |                        |
| Frequency Weighting C                 | 13      | Complies        | 6    |                        |
| Frequency Weighting Z                 | 13      | Complies        | 7    |                        |
| Level Linearity                       | 16      | Complies        | 8    |                        |
| Level Linearity Range Control         | 17      |                 | n/a  | SLM only has one range |
| Tone-burst Response                   | 18      | Complies        | 9    |                        |
| Peak C sound level                    | 19      | Complies        | 10   |                        |
| Overload indication                   | 20      | Complies        | 11   |                        |

The instrument was within the above specification as received - no modifications were made

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

#### Additional tests performed

#### Reference

|                                            |        |                            |
|--------------------------------------------|--------|----------------------------|
| Microphone full frequency response         | 36475  | See additional certificate |
| Filter calibration, third octave or octave | 36473F | See additional certificate |

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ISO9001 certified

## FACTORY CALIBRATION DATA OF THE SV 307 No. 104990

with microphone SVANTEK type ST30A No. 108889

IMEI: 35500109776701

### 1. CALIBRATION (acoustical)

LEVEL METER function; Reference frequency: 1000Hz; Sound Pressure Level: 114.03 dB.

| Characteristic | Correct value [dB] | Indication [dB] | Error [dB] |
|----------------|--------------------|-----------------|------------|
| Z              | 114.03             | 114.07          | 0.04       |
| A              | 114.03             | 114.07          | 0.04       |
| C              | 114.03             | 114.07          | 0.04       |

Calibration measured with the microphone SVANTEK type ST30A No. 108889. Calibration factor: 0.00 dB.

### 2. LINEARITY TEST (electrical)

LEVEL METER function; Characteristic: A;  $f_{ref}$ = 31.5 Hz

| Nominal result LEQ [dB] | 29.0 | 30.0 | 31.0 | 35.0 | 40.0 | 60.0 | 80.0 | 85.0 |
|-------------------------|------|------|------|------|------|------|------|------|
| Error [dB]              | 0.0  | 0.0  | 0.0  | -0.0 | 0.0  | 0.0  | 0.0  | -0.0 |

LEVEL METER function; Characteristic: A;  $f_{ref}$ = 1000 Hz

| Nominal result LEQ [dB] | 29.0 | 30.0 | 31.0 | 35.0 | 40.0 | 60.0 | 80.0 | 100.0 | 120.0 | 125.0 |
|-------------------------|------|------|------|------|------|------|------|-------|-------|-------|
| Error [dB]              | 0.1  | 0.1  | 0.1  | 0.0  | 0.0  | -0.0 | 0.0  | 0.0   | -0.0  | -0.0  |

LEVEL METER function; Characteristic: A;  $f_{ref}$ = 8000 Hz

| Nominal result LEQ [dB] | 29.0 | 30.0 | 31.0 | 35.0 | 40.0 | 60.0 | 80.0 | 100.0 | 120.0 | 124.0 |
|-------------------------|------|------|------|------|------|------|------|-------|-------|-------|
| Error [dB]              | 0.0  | 0.0  | -0.0 | -0.0 | -0.0 | -0.0 | 0.0  | 0.0   | -0.0  | -0.0  |

### 3. TONE BURST RESPONSE

LEVEL METER function; Characteristic: A;  $f_{ref}$ = 4000 Hz; Burst duration: 2s

Steady level nominal result = 122 dB

| Result | Detector | Duration [ms]   | 1000  | 500   | 200   | 100   | 50    | 20    | 10    | 5     | 2     | 1     | 0.5  | 0.25 |
|--------|----------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
| MAX    | Fast     | Indication [dB] | 122.0 | 121.9 | 121.0 | 119.4 | 117.2 | 113.7 | 110.8 | 107.9 | 104.0 | 101.0 | 97.9 | 94.9 |
|        |          | Error [dB]      | 0.0   | 0.0   | 0.0   | 0.0   | -0.0  | 0.0   | -0.0  | 0.0   | -0.0  | -0.0  | -0.1 | -0.1 |
|        | Slow     | Indication [dB] | 119.9 | 117.9 | 114.5 | 111.7 | 108.8 | 104.8 | 101.9 | 98.9  | 94.9  | -     | -    | -    |
|        |          | Error [dB]      | -0.0  | -0.0  | -0.1  | -0.1  | -0.1  | -0.1  | -0.1  | -0.1  | -0.1  | -     | -    | -    |
| SEL    | -        | Indication [dB] | 122.0 | 119.0 | 115.0 | 112.0 | 109.0 | 105.0 | 102.0 | 99.0  | 95.0  | 91.9  | 88.9 | 85.9 |
|        |          | Error [dB]      | 0.0   | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | 0.0   | -0.0  | -0.0  | -0.0  | -0.1 | -0.1 |

Steady level nominal result = 62 dB

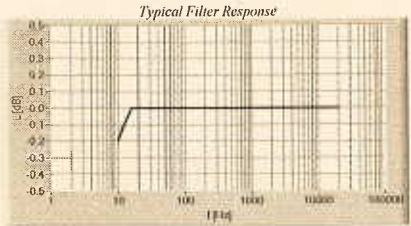
| Result | Detector | Duration [ms]   | 1000 | 500  | 200  | 100  | 50   | 20   | 10   | 5    | 2    |
|--------|----------|-----------------|------|------|------|------|------|------|------|------|------|
| MAX    | Fast     | Indication [dB] | 62.0 | 61.8 | 61.0 | 59.8 | 57.2 | 53.7 | 50.8 | 47.9 | 44.0 |
|        |          | Error [dB]      | -0.0 | 0.0  | 0.0  | -0.0 | -0.0 | -0.0 | -0.0 | 0.0  | -0.0 |
|        | Slow     | Indication [dB] | 59.9 | 57.9 | 54.5 | 51.7 | 48.8 | 44.9 | 41.9 | 38.9 | 34.9 |
|        |          | Error [dB]      | -0.1 | -0.0 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 |
| SEL    | -        | Indication [dB] | 62.0 | 59.0 | 55.0 | 52.0 | 49.0 | 45.0 | 42.0 | 39.0 | 35.0 |
|        |          | Error [dB]      | 0.0  | -0.0 | 0.0  | 0.0  | -0.0 | 0.0  | 0.0  | 0.0  | 0.0  |

Steady level nominal result = 40 dB

| Result | Detector | Duration [ms]   | 1000 | 500  | 200  |
|--------|----------|-----------------|------|------|------|
| MAX    | Fast     | Indication [dB] | 40.0 | 39.9 | 39.0 |
|        |          | Error [dB]      | 0.0  | 0.0  | 0.1  |
|        | Slow     | Indication [dB] | 38.0 | 35.9 | 33.5 |
|        |          | Error [dB]      | -0.0 | 0.0  | -0.1 |
| SEL    | -        | Indication [dB] | 40.0 | 37.0 | 33.1 |
|        |          | Error [dB]      | 0.0  | 0.0  | 0.1  |

4. FREQUENCY RESPONSE (electrical)

LEVEL METER function; Characteristic: Z; Input signal =122 dB;



Measured Filter Response  
(f-frequency, L-level)

| f [Hz] | L [dB] | f [Hz] | L [dB] | f [Hz] | L [dB] |
|--------|--------|--------|--------|--------|--------|
| 10     | -0.1   | 63     | 0.0    | 4000   | -0.0   |
| 12.5   | -0.0   | 125    | -0.0   | 8000   | -0.0   |
| 16     | 0.0    | 250    | 0.0    | 16000  | -0.0   |
| 20     | 0.0    | 500    | 0.0    | 20000  | -0.0   |
| 25     | 0.0    | 1000   | -0.0   |        |        |
| 31.5   | 0.0    | 2000   | -0.0   |        |        |

All frequencies are nominal center values for the 1/3 octave bands

5. FREQUENCY RESPONSE (acoustical)

LEVEL METER function; Characteristic: Z; Input: 90 dB;

| Frequency [Hz]           | 20  | 31.5 | 63  | 125 | 250 | 500 | 800 | 1000 | 2000 |
|--------------------------|-----|------|-----|-----|-----|-----|-----|------|------|
| Pressure Response [dB]   | 0.9 | 0.7  | 0.4 | 0.2 | 0.2 | 0.2 | 0.1 | 0.0  | -0.3 |
| Free Field Response [dB] | 0.9 | 0.7  | 0.4 | 0.2 | 0.2 | 0.2 | 0.1 | 0.0  | 0.0  |

| Frequency [Hz]           | 3150 | 4000 | 5000 | 6300 | 8000 | 10000 | 12500 | 16000 |
|--------------------------|------|------|------|------|------|-------|-------|-------|
| Pressure Response [dB]   | -1.4 | -2.1 | -3.0 | -4.3 | -5.7 | -7.1  | -8.8  | -11.0 |
| Free Field Response [dB] | -0.1 | 0.4  | 0.2  | 0.1  | -0.0 | -0.4  | -1.4  | -3.5  |

6. INTERNAL NOISE LEVEL (electrical - compensated)

LEVEL METER function; Calibration factor: 0dB

| Characteristic | Z   | A   | C   |
|----------------|-----|-----|-----|
| Level [dB]     | ≤23 | ≤15 | ≤15 |

7. INTERNAL NOISE LEVEL (acoustical - compensated)

LEVEL METER function; Characteristic: A;

| Indication [dB] | ≤23 |
|-----------------|-----|
|-----------------|-----|

Noise measured in special chamber, with reference microphone G.R.A.S type 40AN No. 73421

ENVIRONMENTAL CONDITIONS

| Temperature | Relative humidity | Ambient pressure |
|-------------|-------------------|------------------|
| 22 °C       | 40%               | 989 hPa          |

TEST EQUIPMENT

| Item | Manufacturer | Model     | Serial no.    | Description                                        |
|------|--------------|-----------|---------------|----------------------------------------------------|
| 1    | SVANTEK      | SVAN 401  | 100           | Signal generator                                   |
| 2    | SVANTEK      | SVAN 912A | 4369          | Sound & Vibration Analyser                         |
| 3    | RIGOL        | DM1068    | DM30155100773 | Digital multimeter                                 |
| 4    | SVANTEK      | SV33B     | 93171         | Acoustic calibrator                                |
| 5    | G.R.A.S.     | 51AB      | 200368        | Sound Intensity Calibrator                         |
| 6    | G.R.A.S.     | 40BP      | 93396         | 1/2" Pressure Microphone                           |
| 7    | G.R.A.S.     | 40AN      | 73421         | 1/2" Free Field Microphone                         |
| 8    | SVANTEK      | SL307     | -             | Microphone equivalent electrical impedance (1 kΩF) |

CONFORMITY & TEST DECLARATION

1. Herewith Svantek company declares that this instrument has been calibrated and tested in compliance with the internal ISO9001 procedures and meets all specification given in the Manual(s) or respectively surpass them.
2. The acoustic calibration was performed using the Sound Calibrator and is traceable to the GUM (Central Office of Measures) reference standard - sound level calibrator type 4231 No 2292773.
3. The information appearing on this sheet has been compiled specifically for this instrument. This form is produced with advanced equipment & procedures which permit comprehensive quality assurance verification of all data supplied herein.
4. This calibration sheet shall not be reproduced except in full, without written permission of the SVANTEK Ltd.

Calibration specialist: Cezary Dardziński

*Cezary Dardziński*

Test date: 2021-05-05

**Calibration Laboratory  
SVANTEK**04-872 Warsaw, ul. Strzygłowska 81  
**POLAND**Calibration laboratory accredited by  
Polish Center for Accreditation, a signatory to EA MLA and ILAC MRA  
that include recognition of calibration certificates  
Accreditation No AP 146

AP 146

**CALIBRATION CERTIFICATE****Date of issue:** 21<sup>st</sup> November, 2024**Certificate No:** 00096926/02/2024**Page:** 1/6

|                                    |                                                                                                                                                                                                                             |
|------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OBJECT OF CALIBRATION</b>       | Noise monitoring station type SV 307A, number 119173, manufacturer SVANTEK with microphone type ST 30Av2, number 132625, manufacturer SVANTEK.                                                                              |
| <b>APPLICANT</b>                   | Fehily Timoney<br>Unit 3/4, Northwood House, Northwood Cres<br>Northwood Ave, Santry Demesne<br>D09 X899 Dublin 9                                                                                                           |
| <b>PLACE OF CALIBRATION</b>        | Calibration Laboratory SVANTEK<br>04-872 Warsaw, ul. Strzygłowska 81                                                                                                                                                        |
| <b>CALIBRATION METHOD</b>          | Method described in instruction IN-02 "Calibration of the sound level meter", issue number 15 date 23.08.2019, written on the basis of international standard EN IEC 61672-3:2013 Electroacoustics. Part 3: Periodic tests. |
| <b>ENVIRONMENTAL CONDITIONS</b>    | Temperature: (21,8 ± 21,9) °C<br>Ambient pressure: (98,6 ± 98,7) kPa<br>Relative humidity: (49 ± 52) %                                                                                                                      |
| <b>DATE OF CALIBRATION</b>         | 21 <sup>st</sup> November, 2024                                                                                                                                                                                             |
| <b>TRACEABILITY</b>                | This certificate is issued under the agreement EA MLA in the field of calibration and provides traceability of measurement results to the standards maintained in the Central Office of Measures.                           |
| <b>CALIBRATION RESULTS</b>         | The results apply only to the calibrated object and are given on pages 2 ÷ 6 of this certificate including measurement uncertainty.                                                                                         |
| <b>UNCERTAINTY OF MEASUREMENTS</b> | Uncertainty of measurement has been evaluated in compliance with EA-4/02 M:2022. The expanded uncertainty assigned corresponds to a coverage probability of 95 % and the coverage factor $k = 2$ .                          |



Technical and Quality  
Manager  
*Anna Domańska, M. Sc.*







ISO9001 certified

## FACTORY CALIBRATION DATA OF THE SV 307 No. 104985

with microphone SVANTEK type ST30A No. 108881

IMEI: 355001092063493

### 1. CALIBRATION (acoustical)

LEVEL METER function: Reference frequency: 1000Hz; Sound Pressure Level: 114.03 dB.

| Characteristic | Correct value [dB] | Indication [dB] | Error [dB] |
|----------------|--------------------|-----------------|------------|
| Z              | 114.03             | 114.09          | 0.06       |
| A              | 114.03             | 114.09          | 0.06       |
| C              | 114.03             | 114.09          | 0.06       |

Calibration measured with the microphone SVANTEK type ST30A No. 108881. Calibration factor: 0.00 dB.

### 2. LINEARITY TEST (electrical)

LEVEL METER function: Characteristic: A;  $f_{ref}$  = 31.5 Hz.

| Nominal result LEQ [dB] | 29.0 | 30.0 | 31.0 | 35.0 | 40.0 | 60.0 | 80.0 | 85.0 |
|-------------------------|------|------|------|------|------|------|------|------|
| Error [dB]              | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  | 0.0  |

LEVEL METER function: Characteristic: A;  $f_{ref}$  = 1000 Hz.

| Nominal result LEQ [dB] | 29.0 | 30.0 | 31.0 | 35.0 | 40.0 | 60.0 | 80.0 | 100.0 | 120.0 | 125.0 |
|-------------------------|------|------|------|------|------|------|------|-------|-------|-------|
| Error [dB]              | 0.1  | 0.0  | 0.0  | 0.0  | -0.0 | -0.0 | -0.0 | -0.0  | -0.0  | -0.0  |

LEVEL METER function: Characteristic: A;  $f_{ref}$  = 8000 Hz.

| Nominal result LEQ [dB] | 29.0 | 30.0 | 31.0 | 35.0 | 40.0 | 60.0 | 80.0 | 100.0 | 120.0 | 124.0 |
|-------------------------|------|------|------|------|------|------|------|-------|-------|-------|
| Error [dB]              | -0.0 | 0.0  | 0.0  | -0.0 | -0.0 | -0.0 | -0.0 | 0.0   | -0.0  | -0.0  |

### 3. TONE BURST RESPONSE

LEVEL METER function: Characteristic: A;  $f_{ref}$  = 4000 Hz; Burst duration: 2s

Steady level nominal result = 122 dB

| Result | Detector | Duration [ms]   | 1000  | 500   | 200   | 100   | 50    | 20    | 10    | 5     | 2     | 1     | 0.5  | 0.25 |
|--------|----------|-----------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|------|
| MAX    | Fast     | Indication [dB] | 122.0 | 121.9 | 121.0 | 119.4 | 117.2 | 113.7 | 110.8 | 107.9 | 100.0 | 100.9 | 97.9 | 94.9 |
|        |          | Error [dB]      | -0.0  | 0.0   | 0.0   | 0.0   | -0.0  | -0.0  | -0.0  | 0.0   | -0.0  | -0.0  | -0.1 | -0.1 |
|        | Slow     | Indication [dB] | 119.9 | 117.9 | 114.5 | 111.7 | 108.8 | 104.8 | 101.9 | 98.8  | 94.9  | -     | -    | -    |
|        |          | Error [dB]      | -0.3  | -0.0  | -0.1  | -0.1  | -0.1  | -0.1  | -0.1  | -0.1  | -0.1  | -     | -    | -    |
| SEL    | -        | Indication [dB] | 122.0 | 119.0 | 115.0 | 112.0 | 109.0 | 105.0 | 102.0 | 99.0  | 95.0  | 91.0  | 88.0 | 85.8 |
|        |          | Error [dB]      | 0.0   | -0.0  | 0.0   | 0.0   | -0.0  | 0.0   | -0.0  | -0.0  | -0.0  | -0.1  | -0.1 | -0.1 |

Steady level nominal result = 62 dB

| Result | Detector | Duration [ms]   | 1000 | 500  | 200  | 100  | 50   | 20   | 10   | 5    | 2    |
|--------|----------|-----------------|------|------|------|------|------|------|------|------|------|
| MAX    | Fast     | Indication [dB] | 62.0 | 61.9 | 61.0 | 59.4 | 57.2 | 53.7 | 50.8 | 47.9 | 44.0 |
|        |          | Error [dB]      | 0.0  | 0.0  | 0.0  | 0.0  | -0.0 | -0.0 | -0.0 | 0.0  | -0.0 |
|        | Slow     | Indication [dB] | 59.9 | 57.9 | 54.5 | 51.7 | 48.8 | 44.9 | 41.9 | 38.8 | 34.9 |
|        |          | Error [dB]      | -0.1 | -0.0 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 | -0.1 |
| SEL    | -        | Indication [dB] | 62.0 | 59.0 | 55.0 | 52.0 | 49.0 | 45.0 | 42.0 | 39.0 | 35.0 |
|        |          | Error [dB]      | 0.0  | -0.0 | 0.0  | 0.0  | -0.0 | 0.0  | -0.0 | -0.0 | 0.0  |

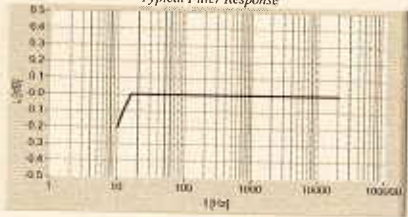
Steady level nominal result = 40 dB

| Result | Detector | Duration [ms]   | 1000 | 500  | 200  |
|--------|----------|-----------------|------|------|------|
| MAX    | Fast     | Indication [dB] | 40.0 | 39.0 | 39.0 |
|        |          | Error [dB]      | 0.0  | 0.0  | 0.0  |
|        | Slow     | Indication [dB] | 37.9 | 35.9 | 32.6 |
|        |          | Error [dB]      | -0.1 | 0.0  | 0.0  |
| SEL    | -        | Indication [dB] | 40.0 | 37.0 | 33.1 |
|        |          | Error [dB]      | 0.0  | 0.0  | 0.1  |

4. FREQUENCY RESPONSE (electrical)

LEVEL METER function; Characteristic: Z; Input signal =122 dB;

Typical Filter Response



Measured Filter Response  
(f-frequency; L-level)

| f [Hz] | L [dB] | f [Hz] | L [dB] | f [Hz] | L [dB] |
|--------|--------|--------|--------|--------|--------|
| 10     | -0.1   | 63     | -0.0   | 4000   | -0.0   |
| 12.5   | -0.0   | 125    | -0.0   | 8000   | -0.0   |
| 16     | 0.0    | 250    | -0.0   | 16000  | -0.0   |
| 20     | 0.0    | 500    | -0.0   | 20000  | -0.0   |
| 25     | 0.0    | 1000   | -0.0   |        |        |
| 31.5   | 0.0    | 2000   | -0.0   |        |        |

All frequencies are nominal center values for the 1/3 octave bands

5. FREQUENCY RESPONSE (acoustical)

LEVEL METER function; Characteristic: Z; Input: 90 dB;

| Frequency [Hz]           | 20   | 31.5 | 63   | 125  | 250  | 500  | 1000 | 2000 |
|--------------------------|------|------|------|------|------|------|------|------|
| Pressure Response [dB]   | -0.8 | -0.6 | -0.3 | -0.2 | -0.2 | -0.2 | -0.1 | -0.5 |
| Free Field Response [dB] | -0.8 | -0.6 | -0.3 | -0.2 | -0.2 | -0.2 | -0.1 | -0.5 |

| Frequency [Hz]           | 3150 | 4000 | 5000 | 6300 | 8000 | 10000 | 12500 | 16000 |
|--------------------------|------|------|------|------|------|-------|-------|-------|
| Pressure Response [dB]   | -1.4 | -2.1 | -3.0 | -4.3 | -5.8 | -7.2  | -9.1  | -11.1 |
| Free Field Response [dB] | -0.1 | 0.4  | 0.2  | 0.0  | -0.1 | -0.3  | -1.7  | -4.0  |

6. INTERNAL NOISE LEVEL (electrical - compensated)

LEVEL METER function; Calibration factor: 0dB

| Characteristic | Z   | A   | C   |
|----------------|-----|-----|-----|
| Level [dB]     | ≤23 | ≤15 | ≤15 |

7. INTERNAL NOISE LEVEL (acoustical - compensated)

LEVEL METER function; Characteristic: A;

| Indication [dB] | ≤23 |
|-----------------|-----|
|-----------------|-----|

Noise measured in special chamber, with reference microphone G.R.A.S type 40AN No. 73421

ENVIRONMENTAL CONDITIONS

| Temperature | Relative humidity | Ambient pressure |
|-------------|-------------------|------------------|
| 21 °C       | 36%               | 989 hPa          |

TEST EQUIPMENT

| Item | Manufacturer | Model     | Serial no.    | Description                                       |
|------|--------------|-----------|---------------|---------------------------------------------------|
| 1    | SVANTEK      | SVAN 401  | 100           | Signal generator                                  |
| 2    | SVANTEK      | SVAN 912A | 4369          | Sound & Vibration Analyser                        |
| 3    | RIGOL        | DM3068    | DM30155100773 | Digital multimeter                                |
| 4    | SVANTEK      | SV33B     | 93171         | Acoustic calibrator                               |
| 5    | G.R.A.S.     | 51AB      | 200368        | Sound Intensity Calibrator                        |
| 6    | G.R.A.S.     | 40BP      | 93296         | 1/4" Pressure Microphone                          |
| 7    | G.R.A.S.     | 40AN      | 73421         | 1/2" Free Field Microphone                        |
| 8    | SVANTEK      | SL307     | -             | Microphone equivalent electrical impedance (10pF) |

CONFORMITY & TEST DECLARATION

1. Herewith Svantek company declares that this instrument has been calibrated and tested in compliance with the internal ISO9001 procedures and meets all specification given in the Manual(s) or respectively surpass them.
2. The acoustic calibration was performed using the Sound Calibrator and is traceable to the GUM (Central Office of Measures) reference standard - sound level calibrator type 4231 No 2292773.
3. The information appearing on this sheet has been compiled specifically for this instrument. This form is produced with advanced equipment & procedures which permit comprehensive quality assurance verification of all data supplied herein.
4. This calibration sheet shall not be reproduced except in full, without written permission of the SVANTEK Ltd.

Calibration specialist: Cezary Dardziński

Test date: 2021-05-05



## FACTORY CALIBRATION DATA OF THE SV 307A No. 119092

with microphone SVANTEK type ST30A No. 125153

IMEI: 352818664350609

### 1. CALIBRATION (acoustical)

LEVEL METER function; Reference frequency: 1000Hz; Sound Pressure Level: 113.99 dB.

| Characteristic | Correct value [dB] | Indication [dB] | Error [dB] |
|----------------|--------------------|-----------------|------------|
| Z              | 113.99             | 114.03          | 0.04       |
| A              | 113.99             | 114.03          | 0.04       |
| C              | 113.99             | 114.03          | 0.04       |

Calibration measured with the microphone SVANTEK type ST30A No. 125153. Calibration factor: 0.00 dB.

### 2. LINEARITY TEST (electrical)

LEVEL METER function; Characteristic: A;  $f_{\text{sin}} = 31.5$  Hz

| Nominal result LEQ [dB] | 29.0 | 30.0 | 31.0 | 35.0 | 40.0 | 60.0 | 80.0 | 85.0 |
|-------------------------|------|------|------|------|------|------|------|------|
| Error [dB]              | -0.0 | -0.0 | -0.0 | -0.0 | 0.0  | 0.0  | -0.0 | 0.0  |

LEVEL METER function; Characteristic: A;  $f_{\text{sin}} = 1000$  Hz

| Nominal result LEQ [dB] | 29.0 | 30.0 | 31.0 | 35.0 | 40.0 | 60.0 | 80.0 | 100.0 | 120.0 | 125.0 |
|-------------------------|------|------|------|------|------|------|------|-------|-------|-------|
| Error [dB]              | -0.0 | -0.0 | -0.0 | -0.0 | -0.0 | -0.0 | 0.0  | 0.0   | -0.0  | 0.0   |

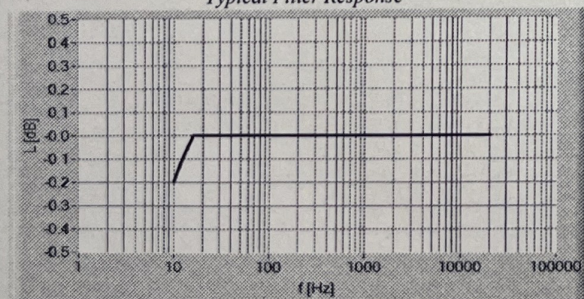
LEVEL METER function; Characteristic: A;  $f_{\text{sin}} = 8000$  Hz

| Nominal result LEQ [dB] | 29.0 | 30.0 | 31.0 | 35.0 | 40.0 | 60.0 | 80.0 | 100.0 | 120.0 | 124.0 |
|-------------------------|------|------|------|------|------|------|------|-------|-------|-------|
| Error [dB]              | -0.1 | -0.1 | -0.1 | -0.1 | -0.0 | -0.0 | -0.0 | 0.0   | -0.0  | -0.0  |

### 3. FREQUENCY RESPONSE (electrical)

LEVEL METER function; Characteristic: Z; Input signal = 122 dB;

*Typical Filter Response*



*Measured Filter Response  
(f-frequency, L-level)*

| f [Hz] | L [dB] | f [Hz] | L [dB] | f [Hz] | L [dB] |
|--------|--------|--------|--------|--------|--------|
| 10     | -0.1   | 63     | -0.0   | 4000   | -0.0   |
| 12.5   | -0.0   | 125    | -0.0   | 8000   | -0.0   |
| 16     | 0.0    | 250    | 0.0    | 16000  | 0.0    |
| 20     | 0.0    | 500    | 0.0    | 20000  | 0.0    |
| 25     | 0.0    | 1000   | -0.0   |        |        |
| 31.5   | 0.0    | 2000   | -0.0   |        |        |

All frequencies are nominal center values for the 1/3 octave bands

### 4. FREQUENCY RESPONSE (acoustical)

LEVEL METER function; Characteristic: Z; Input: 90 dB;

| Frequency [Hz]           | 20  | 31.5 | 63  | 125 | 250 | 500 | 800  | 1000 | 2000 |
|--------------------------|-----|------|-----|-----|-----|-----|------|------|------|
| Pressure Response [dB]   | 0.6 | 0.5  | 0.3 | 0.2 | 0.2 | 0.2 | 0.1  | 0.0  | -0.4 |
| Free Field Response [dB] | 0.6 | 0.5  | 0.3 | 0.2 | 0.1 | 0.0 | -0.0 | 0.0  | 0.1  |

| Frequency [Hz]           | 3150 | 4000 | 5000 | 6300 | 8000 | 10000 | 12500 | 16000 |
|--------------------------|------|------|------|------|------|-------|-------|-------|
| Pressure Response [dB]   | -1.2 | -1.8 | -2.7 | -3.8 | -5.1 | -6.4  | -7.7  | -9.7  |
| Free Field Response [dB] | 0.2  | 0.6  | 0.6  | 0.6  | 0.6  | 0.3   | -0.4  | -2.1  |



## 5. INTERNAL NOISE LEVEL (electrical - compensated)

LEVEL METER function; Calibration factor: 0dB

| Characteristic | Z   | A   | C   |
|----------------|-----|-----|-----|
| Level [dB]     | ≤23 | ≤15 | ≤15 |

## 6. INTERNAL NOISE LEVEL (acoustical - compensated)

LEVEL METER function; Characteristic: A;

|                 |     |
|-----------------|-----|
| Indication [dB] | ≤23 |
|-----------------|-----|

Noise measured in special chamber, with reference microphone G.R.A.S type 40AN No. 73421

### ENVIRONMENTAL CONDITIONS

| Temperature | Relative humidity | Ambient pressure |
|-------------|-------------------|------------------|
| 25 °C       | 46%               | 1000 hPa         |

### TEST EQUIPMENT

| Item | Manufacturer | Model     | Serial no.    | Description                                       |
|------|--------------|-----------|---------------|---------------------------------------------------|
| 1.   | SVANTEK      | SVAN 401  | 84            | Signal generator                                  |
| 2.   | SVANTEK      | SVAN 912A | 15900         | Sound & Vibration Analyser                        |
| 3.   | RIGOL        | DM3068    | DM30155100773 | Digital multimeter                                |
| 4.   | SVANTEK      | SV30A     | 24563         | Acoustic calibrator                               |
| 5.   | G.R.A.S.     | 51AB      | 200368        | Sound Intensity Calibrator                        |
| 6.   | G.R.A.S.     | 40BP      | 93296         | ¼" Pressure Microphone                            |
| 7.   | G.R.A.S.     | 40AN      | 73421         | ½" Free Field Microphone                          |
| 8.   | SVANTEK      | SL307     | -             | Microphone equivalent electrical impedance (18pF) |

### CONFORMITY & TEST DECLARATION

1. Herewith Svantek company declares that this instrument has been calibrated and tested in compliance with the internal ISO9001 procedures and meets all specification given in the Manual(s) or respectively surpass them.
2. The acoustic calibration was performed using the Sound Calibrator and is traceable to the GUM (Central Office of Measures) reference standard - sound level calibrator type 4231 No 2292773.
3. The information appearing on this sheet has been compiled specifically for this instrument. This form is produced with advanced equipment & procedures which permit comprehensive quality assurance verification of all data supplied herein.
4. This calibration sheet shall not be reproduced except in full, without written permission of the SVANTEK Ltd.

Calibration specialist: Krzysztof Kubel ...  .....

Test date: 2022-07-01

## APPENDIX 8.3

### Noise Sensitive Location Details





| Receptor ID | Description | Easting (ITM) | Northing (ITM) |
|-------------|-------------|---------------|----------------|
| R1          | Residential | 658865        | 717374.4       |
| R2          | Residential | 658335.02     | 717880.05      |
| R3          | Residential | 658309.06     | 717874.55      |
| R4          | Residential | 658267.81     | 717797.63      |
| R5          | Residential | 658286.2      | 717725.6       |
| R6          | Residential | 658376.89     | 717924.54      |
| R8          | Residential | 658503.3      | 717908.2       |
| R9          | Mixed-Use   | 658515.1      | 717849.8       |
| R10         | Residential | 658534.3      | 717938.2       |
| R11         | Residential | 658088.67     | 717727.56      |
| R12         | Residential | 658091.2      | 717640.6       |
| R13         | Mixed-Use   | 657669        | 715995.64      |
| R14         | Residential | 658090.4      | 717609.3       |
| R15         | Residential | 658061.17     | 717713.73      |
| R16         | Residential | 658028.58     | 717695.11      |
| R17         | Residential | 656528.45     | 716514.97      |
| R18         | Residential | 656891.92     | 716497.49      |
| R19         | Residential | 656661.1      | 716465.4       |
| R20         | Mixed-Use   | 656375.97     | 716570.19      |
| R21         | Residential | 657974.11     | 717647.56      |
| R22         | Residential | 656966.07     | 716491.5       |
| R23         | Residential | 656927.29     | 716484.34      |
| R24         | Residential | 656709.49     | 716451.48      |
| R25         | Residential | 656749.45     | 716432.83      |
| R26         | Mixed-Use   | 657190.59     | 716427.17      |
| R27         | Residential | 656273.1      | 716651.2       |
| R28         | Residential | 657395        | 717221.7       |
| R29         | Residential | 656781.69     | 717270.25      |
| R30         | Residential | 657908        | 717571         |
| R31         | Residential | 657031.81     | 716417.41      |
| R32         | Residential | 657070.35     | 716409.03      |
| R33         | Residential | 657119        | 716397.1       |
| R34         | Mixed-Use   | 657112.19     | 717313.07      |
| R35         | Residential | 657860.75     | 717648.32      |
| R36         | Residential | 657380.4      | 716077.1       |
| R37         | Residential | 659527.28     | 714296.12      |
| R38         | Residential | 657857.45     | 717577.6       |
| R39         | Residential | 657825.63     | 717683.41      |
| R40         | Residential | 659467.81     | 714290.47      |
| R41         | Residential | 657348.1      | 716094.8       |
| R42         | Residential | 659583.18     | 714262.67      |
| R43         | Residential | 656956.72     | 717378.64      |
| R44         | Residential | 659635.17     | 714260.66      |
| R45         | Residential | 657815.15     | 717617.67      |

| Receptor ID | Description | Easting (ITM) | Northing (ITM) |
|-------------|-------------|---------------|----------------|
| R46         | Residential | 659593.69     | 714254.9       |
| R47         | Residential | 659525.57     | 714251.94      |
| R48         | Residential | 657359.97     | 716151.76      |
| R49         | Residential | 659564.1      | 714235.51      |
| R50         | Mixed-Use   | 657191.28     | 716285.65      |
| R51         | Residential | 659581.2      | 714229.4       |
| R52         | Residential | 657326.67     | 716168.41      |
| R53         | Residential | 659589.46     | 714226.28      |
| R54         | Residential | 656964.72     | 717423.99      |
| R55         | Residential | 657298.99     | 716131.59      |
| R56         | Residential | 657219.13     | 716237.52      |
| R57         | Residential | 657746.9      | 717309.1       |
| R59         | Residential | 657241.8      | 716183.8       |
| R60         | Residential | 657256.5      | 716163.1       |
| R61         | Residential | 656970.6      | 717474.4       |
| R62         | Mixed-Use   | 657967.7      | 718362.8       |
| R63         | Residential | 656979.19     | 717511.01      |
| R64         | Mixed-Use   | 656084.8      | 716493.5       |
| R65         | Residential | 656972.28     | 717546.65      |
| R66         | Residential | 656035.05     | 716477.37      |
| R67         | Residential | 659442.1      | 717748.8       |
| R68         | Residential | 656787.58     | 717541.71      |
| R69         | Residential | 659325.2      | 717925.5       |
| R70         | Residential | 659356.75     | 717926.69      |
| R71         | Residential | 656015.94     | 716418.22      |
| R72         | Residential | 657547.72     | 717864.06      |
| R73         | Residential | 657525.65     | 717886.66      |
| R74         | Residential | 659298        | 718052.5       |
| R75         | Residential | 659328.9      | 718029.3       |
| R76         | Residential | 659343.75     | 718013.78      |
| R77         | Residential | 656945.21     | 715961.72      |
| R78         | Residential | 656955.2      | 717679.3       |
| R79         | Residential | 657474.99     | 717953.92      |
| R80         | Residential | 656963.86     | 717720.17      |
| R81         | Residential | 657435.75     | 717987.25      |
| R82         | Residential | 655874.75     | 716387.64      |
| R83         | Residential | 657431.11     | 718020.42      |
| R84         | Residential | 656968.11     | 717750.1       |
| R85         | Residential | 657506.56     | 718257.19      |
| R86         | Residential | 657447.88     | 718151.19      |
| R87         | Residential | 659814.1      | 717744.5       |
| R88         | Residential | 657454.4      | 718191.3       |
| R89         | Residential | 659778.74     | 717776.05      |
| R90         | Residential | 659787.53     | 717772.02      |

| Receptor ID | Description | Easting (ITM) | Northing (ITM) |
|-------------|-------------|---------------|----------------|
| R91         | Residential | 659875.35     | 717710.61      |
| R92         | Residential | 659825.6      | 717748.2       |
| R93         | Residential | 659887.46     | 717701.29      |
| R94         | Mixed-Use   | 657753.2      | 718572.2       |
| R95         | Residential | 659768.79     | 717784.97      |
| R96         | Residential | 659869.14     | 717716.5       |
| R97         | Residential | 659896.21     | 717695.18      |
| R98         | Residential | 659810.4      | 717760.3       |
| R99         | Commercial  | 659849.4      | 717733.3       |
| R100        | Residential | 659762.18     | 717791.56      |
| R101        | Residential | 659835.85     | 717750.95      |
| R102        | Residential | 659755.32     | 717802.39      |
| R103        | Residential | 659911.69     | 717693.83      |
| R104        | Residential | 659719.7      | 717828.56      |
| R105        | Residential | 659920.7      | 717695.07      |
| R106        | Residential | 659751.09     | 717814.53      |
| R107        | Residential | 659741.2      | 717824.6       |
| R108        | Residential | 659795.5      | 717794.4       |
| R109        | Mixed-Use   | 655889.04     | 716246.21      |
| R110        | Residential | 659790.55     | 717801.28      |
| R111        | Residential | 659736.57     | 717832.21      |
| R112        | Residential | 659813.15     | 717789.75      |
| R113        | Residential | 659779.7      | 717812.2       |
| R114        | Residential | 659938.11     | 717696.94      |
| R115        | Residential | 659819.74     | 717790.81      |
| R116        | Residential | 655828.56     | 716314.06      |
| R117        | Residential | 659776.88     | 717821.48      |
| R118        | Residential | 659946.43     | 717700.26      |
| R119        | Residential | 659828.19     | 717792.39      |
| R120        | Residential | 659835.05     | 717793.98      |
| R121        | Mixed-Use   | 655884.97     | 716216.78      |
| R122        | Residential | 659772.54     | 717837.33      |
| R123        | Residential | 659842.11     | 717798.22      |
| R124        | Residential | 655825.29     | 716288.31      |
| R125        | Residential | 659957.24     | 717712.33      |
| R126        | Residential | 659848.02     | 717798.83      |
| R127        | Residential | 659775.64     | 717845.41      |
| R128        | Residential | 659856.97     | 717797.41      |
| R129        | Residential | 659757.69     | 713804.68      |
| R130        | Residential | 657436.05     | 718312.17      |
| R131        | Residential | 659962.32     | 717719.33      |
| R132        | Residential | 659865.09     | 717799.45      |
| R133        | Residential | 659788.9      | 717851.7       |
| R134        | Residential | 659872.25     | 717800.39      |

| Receptor ID | Description | Easting (ITM) | Northing (ITM) |
|-------------|-------------|---------------|----------------|
| R135        | Residential | 659880.95     | 717801.94      |
| R136        | Residential | 659968.05     | 717733.31      |
| R137        | Residential | 659967.41     | 717744.76      |
| R138        | Residential | 659896.16     | 717805.67      |
| R139        | Residential | 659906.1      | 717804.42      |
| R140        | Residential | 659963.88     | 717760.93      |
| R141        | Residential | 659961.06     | 717768.91      |
| R142        | Residential | 659921.33     | 717801.94      |
| R143        | Residential | 659930.03     | 717797.91      |
| R144        | Residential | 659951.53     | 717781         |
| R145        | Residential | 659942.76     | 717788.89      |
| R146        | Residential | 659848.2      | 717861.3       |
| R147        | Residential | 659869.6      | 717859.3       |
| R148        | Residential | 659818.15     | 717894.26      |
| R149        | Mixed-Use   | 657056.05     | 717910.19      |
| R150        | Residential | 659887.7      | 717858.7       |
| R151        | Residential | 659902.4      | 717865.1       |
| R152        | Residential | 659856.34     | 717912.83      |
| R153        | Residential | 660034.17     | 717779.72      |
| R154        | Residential | 660051.49     | 717765.76      |
| R155        | Residential | 660060.99     | 717759.16      |
| R156        | Residential | 660103.85     | 717722.69      |
| R157        | Residential | 660075.52     | 717748.87      |
| R158        | Residential | 660084.42     | 717741.39      |
| R159        | Residential | 660032.21     | 717792.69      |
| R160        | Residential | 657216        | 718004.63      |
| R161        | Residential | 660115.7      | 717722.7       |
| R163        | Residential | 657516        | 718595.2       |
| R164        | Residential | 660028.26     | 717809.57      |
| R165        | Residential | 659936.87     | 717884.18      |
| R166        | Residential | 660026.4      | 717820.13      |
| R167        | Residential | 660127        | 717740.4       |
| R168        | Residential | 655570.72     | 716529.28      |
| R169        | Residential | 660021.12     | 717837.57      |
| R170        | Residential | 660068.13     | 717802.45      |
| R171        | Residential | 660018.48     | 717848.39      |
| R172        | Residential | 660132.7      | 717748.4       |
| R173        | Residential | 660065.47     | 717813.01      |
| R174        | Residential | 659974.15     | 717895.63      |
| R175        | Residential | 660015.58     | 717866.34      |
| R176        | Residential | 660062.56     | 717831.23      |
| R177        | Residential | 660012.95     | 717877.69      |
| R178        | Residential | 656959.6      | 718005.6       |
| R179        | Residential | 660059.6      | 717840.76      |

| Receptor ID | Description | Easting (ITM) | Northing (ITM) |
|-------------|-------------|---------------|----------------|
| R180        | Residential | 659992.88     | 717896.7       |
| R181        | Residential | 657533.8      | 718680.4       |
| R182        | Residential | 660054.4      | 717859.22      |
| R183        | Residential | 660053.24     | 717868.09      |
| R184        | Residential | 660048.05     | 717887.71      |
| R185        | Residential | 660046.24     | 717897.96      |
| R186        | Residential | 660117.2      | 717845.93      |
| R187        | Residential | 660104.01     | 717866.13      |
| R188        | Residential | 657408.54     | 718621.18      |
| R189        | Residential | 660143.02     | 717834.12      |
| R190        | Residential | 660149.21     | 717830.73      |
| R191        | Residential | 657451.7      | 718671.6       |
| R193        | Residential | 660171.42     | 717819.52      |
| R194        | Residential | 660097.8      | 717885.14      |
| R195        | Residential | 657774.6      | 718912         |
| R196        | Residential | 660177.44     | 717816.12      |
| R197        | Residential | 657586.69     | 718797.36      |
| R198        | Residential | 657189.21     | 718320.84      |
| R199        | Residential | 660093.99     | 717905.75      |
| R201        | Residential | 657290.41     | 718510.81      |
| R202        | Residential | 657147.55     | 718239.32      |
| R203        | Residential | 657155.79     | 718265.38      |
| R204        | Residential | 657164.54     | 718287.81      |
| R205        | Residential | 657132.6      | 718204.9       |
| R206        | Residential | 657118.15     | 718162.36      |
| R211        | Residential | 657691.7      | 718897.6       |
| R214        | Residential | 657343.91     | 718624         |
| R215        | Residential | 657621.02     | 718867.82      |
| R216        | Residential | 657647.1      | 718884.9       |
| R217        | Residential | 657725.25     | 718934.17      |
| R221        | Residential | 655451.3      | 716446.5       |
| R222        | Residential | 657590.33     | 718856.44      |
| R224        | Residential | 657561.72     | 718839.94      |
| R238        | Residential | 657471.43     | 718809.46      |
| R239        | Residential | 657670.5      | 718959.6       |
| R242        | Residential | 657167.2      | 718494         |
| R248        | Residential | 655388.53     | 716368.8       |
| R249        | Residential | 657154.8      | 718525.2       |
| R250        | Residential | 655371.11     | 716406.2       |
| R255        | Residential | 655351.5      | 716400.3       |
| R258        | Residential | 655333.34     | 716390.64      |
| R260        | Residential | 655340.37     | 716353.97      |
| R262        | Residential | 657260.93     | 718763.65      |
| R266        | Residential | 657231.39     | 718789.97      |

| Receptor ID | Description | Easting (ITM) | Northing (ITM) |
|-------------|-------------|---------------|----------------|
| R275        | Residential | 657209.1      | 718820.1       |
| R284        | Residential | 655215.6      | 716360.19      |
| R285        | Residential | 657192.2      | 718848.2       |
| R288        | Residential | 657180.67     | 718872.5       |
| R289        | Residential | 655182.95     | 716346.68      |
| R290        | Mixed-Use   | 657178.1      | 718903.8       |
| R312        | Mixed-Use   | 657479.2      | 719350.9       |
| R317        | Mixed-Use   | 657389.8      | 719366.7       |
| R1019       | Mixed-Use   | 652981.23     | 718364.39      |
| R1069       | Residential | 653170.6      | 719379.74      |
| R1070       | Residential | 653144.14     | 720029.44      |
| R1071       | Mixed-Use   | 653433.17     | 719827.89      |
| R1072       | Residential | 653212.14     | 719389.03      |
| R1073       | Mixed-Use   | 653151.4      | 719282.96      |
| R1074       | Residential | 653164.46     | 719345.62      |
| R1075       | Residential | 652946.16     | 719243.78      |





## APPENDIX 8.4

### Sound Power Level Data for Wind Turbines



**Table 8.4.1: Wind Turbine (Vestas V162 7.2MW with TES) – Total Sound Power Data at Hub Height Wind Speeds**

| Wind Speed (m/s) | 3  | 4  | 5  | 6  | 7    | 8     | 9     | 10    | 11    | 12    | 13  | 14    | 15 to cut-out |
|------------------|----|----|----|----|------|-------|-------|-------|-------|-------|-----|-------|---------------|
| SO0 7200         | 94 | 94 | 94 | 95 | 98.3 | 101.5 | 104.1 | 104.6 | 104.7 | 104.8 | 105 | 105.3 | 105.5         |

**Table 8.4.2: Wind Turbine (Vestas V162 7.2MW with TES) – Typical 1/1 octave band spectrum for 63 Hz to 8 kHz (15m/s at hub height)**

| 1/1 oct. band, center freq. | 63   | 125 | 250  | 500  | 1000 | 2000 | 4000 | 8000 |
|-----------------------------|------|-----|------|------|------|------|------|------|
| SO0 7200                    | 84.6 | 92  | 96.6 | 98.9 | 98.7 | 99   | 92.4 | 77.4 |



**Table 8.4.3: Wind Turbine (Vestas 162 7.2MW with TES) Third Octave Band Sound Power Levels at Hub Height Wind Speeds (Mode SO0 7200 with TES)**

| Frequency | 3 m/s | 4 m/s | 5 m/s | 6 m/s | 7 m/s | 8 m/s | 9 m/s | 10 m/s | 11 m/s | 12 m/s | 13 m/s | 14 m/s | 15 m/s |
|-----------|-------|-------|-------|-------|-------|-------|-------|--------|--------|--------|--------|--------|--------|
| 6.3 Hz    | 19.8  | 21.6  | 21.2  | 21    | 24.2  | 27.1  | 29.6  | 30.3   | 30.6   | 31.1   | 31     | 30.3   | 29.3   |
| 8 Hz      | 26.3  | 27.9  | 27.6  | 27.5  | 30.8  | 33.7  | 36.2  | 36.9   | 37.1   | 37.6   | 37.5   | 36.9   | 36     |
| 10 Hz     | 32.4  | 33.9  | 33.6  | 33.7  | 37    | 39.9  | 42.5  | 43.1   | 43.3   | 43.8   | 43.7   | 43.2   | 42.4   |
| 12.5 Hz   | 38.2  | 39.6  | 39.3  | 39.5  | 42.8  | 45.8  | 48.4  | 49     | 49.2   | 49.6   | 49.5   | 49.1   | 48.4   |
| 16 Hz     | 44.1  | 45.3  | 45.1  | 45    | 48.3  | 51.3  | 53.9  | 54.5   | 54.7   | 55     | 55     | 54.7   | 54.1   |
| 20 Hz     | 49.6  | 50.7  | 50.5  | 50.5  | 53.9  | 56.5  | 59.1  | 59.7   | 59.9   | 60.2   | 60.1   | 59.9   | 59.3   |
| 25 Hz     | 55.1  | 56    | 55.9  | 55.7  | 59    | 61.7  | 64.3  | 64.9   | 65     | 65.3   | 65.3   | 65.1   | 64.7   |
| 31.5 Hz   | 60.1  | 61    | 60.9  | 60.8  | 64.2  | 66.5  | 69.1  | 69.7   | 69.8   | 70.1   | 70.1   | 70     | 69.6   |
| 40 Hz     | 64.7  | 65.4  | 65.4  | 65.5  | 68.9  | 71.3  | 73.9  | 74.5   | 74.6   | 74.9   | 74.9   | 74.8   | 74.5   |
| 50 Hz     | 68.7  | 69.3  | 69.3  | 69.7  | 73.1  | 75.7  | 78.3  | 78.8   | 79     | 79.2   | 79.2   | 79.2   | 79     |
| 63 Hz     | 72.2  | 72.7  | 72.8  | 73.4  | 76.8  | 79.5  | 82.2  | 82.7   | 82.8   | 83     | 83.1   | 83.1   | 82.9   |
| 80 Hz     | 75.1  | 75.6  | 75.6  | 76.5  | 79.9  | 82.8  | 85.5  | 86     | 86.1   | 86.3   | 86.4   | 86.4   | 86.4   |
| 100 Hz    | 77.5  | 77.9  | 78    | 79.1  | 82.4  | 85.6  | 88.2  | 88.8   | 88.9   | 89     | 89.1   | 89.2   | 89.2   |
| 125 Hz    | 79.4  | 79.7  | 79.8  | 81.1  | 84.5  | 87.8  | 90.5  | 91     | 91.1   | 91.2   | 91.3   | 91.5   | 91.5   |
| 160 Hz    | 80.8  | 81    | 81.1  | 82.6  | 86    | 89.5  | 92.1  | 92.6   | 92.7   | 92.8   | 93     | 93.2   | 93.2   |
| 200 Hz    | 81.8  | 81.9  | 82    | 83.6  | 86.9  | 90.6  | 93.2  | 93.7   | 93.8   | 93.9   | 94.1   | 94.3   | 94.4   |
| 250 Hz    | 82.7  | 82.8  | 82.8  | 84.1  | 87.5  | 91.2  | 93.9  | 94.4   | 94.5   | 94.5   | 94.7   | 95     | 95.1   |
| 315 Hz    | 83.3  | 83.3  | 83.4  | 84.7  | 88    | 91.4  | 94    | 94.5   | 94.6   | 94.7   | 94.9   | 95.2   | 95.4   |
| 400 Hz    | 83.9  | 83.9  | 83.9  | 84.8  | 88.2  | 91.5  | 94.2  | 94.7   | 94.8   | 94.8   | 95     | 95.3   | 95.6   |
| 500 Hz    | 84.2  | 84.1  | 84.2  | 85    | 88.4  | 91.3  | 93.9  | 94.4   | 94.5   | 94.6   | 94.8   | 95.2   | 95.4   |
| 630 Hz    | 84.1  | 84.1  | 84.1  | 84.9  | 88.2  | 91.2  | 93.8  | 94.2   | 94.3   | 94.4   | 94.7   | 95     | 95.3   |
| 800 Hz    | 83.7  | 83.6  | 83.6  | 84.4  | 87.7  | 90.6  | 93.2  | 93.7   | 93.8   | 93.9   | 94.1   | 94.5   | 94.8   |
| 1000 Hz   | 83    | 82.9  | 82.8  | 83.6  | 86.8  | 89.8  | 92.3  | 92.8   | 92.9   | 93     | 93.3   | 93.6   | 93.9   |
| 1250 Hz   | 81.9  | 81.7  | 81.7  | 82.4  | 85.6  | 88.5  | 91    | 91.5   | 91.6   | 91.8   | 92     | 92.4   | 92.7   |
| 1600 Hz   | 80.4  | 80.3  | 80.2  | 80.9  | 84.1  | 86.9  | 89.4  | 89.9   | 90     | 90.2   | 90.5   | 90.8   | 91.1   |
| 2000 Hz   | 78.7  | 78.5  | 78.4  | 79    | 82.1  | 85    | 87.4  | 87.9   | 88.1   | 88.2   | 88.5   | 88.9   | 89.2   |



|          |      |      |      |      |      |       |       |       |       |       |      |       |       |
|----------|------|------|------|------|------|-------|-------|-------|-------|-------|------|-------|-------|
| 2500 Hz  | 76.5 | 76.4 | 76.2 | 76.8 | 79.9 | 82.7  | 85.1  | 85.6  | 85.7  | 85.9  | 86.2 | 86.6  | 86.9  |
| 3150 Hz  | 74.1 | 73.9 | 73.7 | 74.2 | 77.2 | 80    | 82.4  | 82.9  | 83    | 83.3  | 83.6 | 84    | 84.2  |
| 4000 Hz  | 71.2 | 71.1 | 70.8 | 71.3 | 74.3 | 77    | 79.4  | 79.9  | 80    | 80.3  | 80.6 | 81    | 81.2  |
| 5000 Hz  | 68.1 | 68   | 67.6 | 68   | 70.9 | 73.6  | 76    | 76.5  | 76.6  | 76.9  | 77.3 | 77.6  | 77.8  |
| 6300 Hz  | 64.6 | 64.5 | 64.1 | 64.3 | 67.2 | 69.9  | 72.2  | 72.7  | 72.9  | 73.2  | 73.6 | 73.9  | 74.1  |
| 8000 Hz  | 60.7 | 60.7 | 60.2 | 60.4 | 63.2 | 65.8  | 68.1  | 68.6  | 68.8  | 69.1  | 69.5 | 69.9  | 70    |
| 10000 Hz | 56.5 | 56.6 | 56   | 56   | 58.8 | 61.4  | 63.6  | 64.1  | 64.3  | 64.7  | 65.1 | 65.4  | 65.5  |
| 12500 Hz | 52   | 52.1 | 51.4 | 51.3 | 54.1 | 56.6  | 58.8  | 59.3  | 59.5  | 59.9  | 60.4 | 60.6  | 60.7  |
| 16000 Hz | 47.1 | 47.2 | 46.5 | 46.3 | 49   | 51.4  | 53.6  | 54.1  | 54.3  | 54.8  | 55.3 | 55.5  | 55.5  |
| LwA      | 94   | 94   | 94   | 95   | 98.3 | 101.5 | 104.1 | 104.6 | 104.7 | 104.8 | 105  | 105.3 | 105.5 |

**Table 8.4.4: Cushina Wind Farm - Vestas V162 7.2MW Wind Turbine Sound Power Levels, dB L<sub>WA</sub> (with trailing edge serrations) 119m hub height (Standardised to 10m)**

| Turbine           | Standardised 10 m Height Wind Speed (m/s) |    |      |      |       |       |       |       |               |
|-------------------|-------------------------------------------|----|------|------|-------|-------|-------|-------|---------------|
|                   | 2                                         | 3  | 4    | 5    | 6     | 7     | 8     | 9     | 10 to Cut-out |
| Vestas V162 7.2MW | 94                                        | 94 | 94.9 | 99.2 | 103.7 | 104.6 | 104.8 | 105.1 | 105.5         |

**Table 8.4.5: Cushina Wind Farm - Vestas V162 7.2MW Wind Turbine Octave Band Sound Power Levels, dB L<sub>WA</sub> (with trailing edge serrations) 119m hub height (Standardised to 10m)**

| Standardised 10 m Height Wind Speed (m/s) | Sound Power Level (dBA) at Octave Band Centre Frequency (Hz) |      |      |       |      |      |      |      |
|-------------------------------------------|--------------------------------------------------------------|------|------|-------|------|------|------|------|
|                                           | 63                                                           | 125  | 250  | 500   | 1000 | 2000 | 4000 | 8000 |
| 2                                         | 78.0                                                         | 84.5 | 87.5 | 88.8  | 87.6 | 83.4 | 76.3 | 66.3 |
| 3                                         | 78.7                                                         | 85.7 | 88.7 | 89.6  | 88.2 | 83.9 | 76.6 | 66.2 |
| 4                                         | 78.6                                                         | 85.5 | 88.5 | 89.4  | 88.1 | 83.8 | 76.5 | 66.2 |
| 5                                         | 83.0                                                         | 90.3 | 93.3 | 93.9  | 92.4 | 87.9 | 80.4 | 69.8 |
| 6                                         | 87.2                                                         | 94.9 | 98.0 | 98.3  | 96.6 | 92.0 | 84.4 | 73.7 |
| 7                                         | 88.2                                                         | 95.9 | 99.0 | 99.2  | 97.6 | 93.0 | 85.3 | 74.6 |
| 8                                         | 88.5                                                         | 96.0 | 99.1 | 99.4  | 97.7 | 93.2 | 85.6 | 75.0 |
| 9                                         | 88.6                                                         | 96.2 | 99.4 | 99.7  | 98.0 | 93.6 | 86.1 | 75.5 |
| 10 and above                              | 88.5                                                         | 96.4 | 99.8 | 100.2 | 98.7 | 94.2 | 86.6 | 75.9 |

**Table 8.4.6: Cushina Wind Farm – Turbine Coordinates**

| Turbine | ITM Easting | ITM Northing |
|---------|-------------|--------------|
| T1      | 654448      | 719752       |
| T2      | 654473      | 719267       |
| T3      | 654124      | 718828       |
| T4      | 654713      | 718322       |
| T5      | 654797      | 718848       |
| T6      | 655358      | 719285       |

| Turbine | ITM<br>Easting | ITM<br>Northing |
|---------|----------------|-----------------|
| T7      | 655531         | 718865          |
| T8      | 655291         | 718365          |
| T9      | 656101         | 718705          |
| T10     | 655820         | 718184          |
| T11     | 655710         | 717670          |

## APPENDIX 8.5

### Predicted Noise Levels at Nearby Noise Sensitive Locations



Table 8.5.1 presents the predicted noise levels ( $L_{A90}$ ) from wind turbines for the proposed Derrynadarragh Wind Farm at noise sensitive locations for Standardised 10m height wind speeds of 2 m/s to 10 m/s. The numbering is not sequential as only the noise sensitive locations within the 35 dB  $L_{A90}$  noise contour are presented. Commercial receptors (apart from the community hall), derelict and uninhabited dwellings were not considered as part of the assessment.

**Table 8.5.1: Predicted noise levels ( $L_{A90}$ ) from Derrynadarragh Wind Farm at Noise Sensitive Locations for Standardised 10m Wind Speeds of 2 m/s to 10 m/s**

| Receptor ID | Description | Predicted Noise Level (dB $L_{A90}$ ) at Standardised 10m Height Wind Speeds (m/s) |      |      |      |      |      |      |      |              |
|-------------|-------------|------------------------------------------------------------------------------------|------|------|------|------|------|------|------|--------------|
|             |             | 2                                                                                  | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10 - Cut out |
| R1          | Residential | 27.8                                                                               | 27.9 | 28.6 | 33.2 | 37.4 | 38.6 | 38.8 | 39   | 39.5         |
| R2          | Residential | 23.2                                                                               | 23.3 | 24   | 28.7 | 32.8 | 34.1 | 34.2 | 34.5 | 34.9         |
| R3          | Residential | 23.1                                                                               | 23.3 | 24   | 28.6 | 32.8 | 34.1 | 34.2 | 34.5 | 34.9         |
| R4          | Residential | 23.5                                                                               | 23.6 | 24.4 | 29   | 33.2 | 34.4 | 34.5 | 34.8 | 35.2         |
| R5          | Residential | 24                                                                                 | 24.1 | 24.8 | 29.4 | 33.6 | 34.9 | 35   | 35.3 | 35.7         |
| R6          | Residential | 23                                                                                 | 23.1 | 23.9 | 28.5 | 32.7 | 33.9 | 34.1 | 34.3 | 34.8         |
| R8          | Residential | 23.4                                                                               | 23.5 | 24.2 | 28.8 | 33   | 34.3 | 34.4 | 34.7 | 35.1         |
| R9          | Mixed-Use   | 23.7                                                                               | 23.8 | 24.6 | 29.2 | 33.4 | 34.7 | 34.8 | 35   | 35.5         |
| R10         | Residential | 23.2                                                                               | 23.3 | 24.1 | 28.7 | 32.9 | 34.2 | 34.3 | 34.6 | 35           |
| R11         | Residential | 23.4                                                                               | 23.5 | 24.2 | 28.8 | 33   | 34.3 | 34.4 | 34.7 | 35.1         |
| R12         | Residential | 23.9                                                                               | 24   | 24.7 | 29.3 | 33.5 | 34.8 | 34.9 | 35.2 | 35.6         |
| R13         | Mixed-Use   | 27.5                                                                               | 27.6 | 28.4 | 33   | 37.1 | 38.4 | 38.5 | 38.8 | 39.2         |
| R14         | Residential | 24                                                                                 | 24.1 | 24.9 | 29.5 | 33.7 | 35   | 35.1 | 35.4 | 35.8         |
| R15         | Residential | 23.3                                                                               | 23.5 | 24.2 | 28.8 | 33   | 34.3 | 34.4 | 34.7 | 35.1         |
| R16         | Residential | 23.3                                                                               | 23.4 | 24.2 | 28.8 | 33   | 34.3 | 34.4 | 34.7 | 35.1         |
| R17         | Residential | 19.8                                                                               | 20   | 20.8 | 25.4 | 29.6 | 30.9 | 31   | 31.3 | 31.6         |
| R18         | Residential | 21.6                                                                               | 21.8 | 22.5 | 27.2 | 31.4 | 32.6 | 32.7 | 33   | 33.4         |
| R19         | Residential | 20.5                                                                               | 20.6 | 21.4 | 26.1 | 30.3 | 31.5 | 31.6 | 31.9 | 32.3         |
| R20         | Mixed-Use   | 19.1                                                                               | 19.3 | 20   | 24.7 | 28.9 | 30.2 | 30.3 | 30.5 | 30.9         |
| R21         | Residential | 23.4                                                                               | 23.5 | 24.3 | 28.9 | 33.1 | 34.3 | 34.4 | 34.7 | 35.1         |
| R22         | Residential | 22                                                                                 | 22.2 | 22.9 | 27.5 | 31.7 | 33   | 33.1 | 33.4 | 33.8         |
| R23         | Residential | 21.8                                                                               | 22   | 22.7 | 27.4 | 31.6 | 32.8 | 32.9 | 33.2 | 33.6         |
| R24         | Residential | 20.8                                                                               | 20.9 | 21.7 | 26.3 | 30.5 | 31.8 | 31.9 | 32.2 | 32.6         |
| R25         | Residential | 21                                                                                 | 21.1 | 21.9 | 26.5 | 30.7 | 32   | 32.1 | 32.4 | 32.8         |
| R26         | Mixed-Use   | 23.4                                                                               | 23.5 | 24.3 | 28.9 | 33.1 | 34.3 | 34.5 | 34.7 | 35.2         |
| R27         | Residential | 18.6                                                                               | 18.8 | 19.6 | 24.2 | 28.4 | 29.7 | 29.8 | 30   | 30.4         |



| Receptor ID | Description | Predicted Noise Level (dB L <sub>A90</sub> ) at Standardised 10m Height<br>Wind Speeds (m/s) |      |      |      |      |      |      |      |              |
|-------------|-------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|--------------|
|             |             | 2                                                                                            | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10 - Cut out |
| R28         | Residential | 22.6                                                                                         | 22.7 | 23.5 | 28.1 | 32.3 | 33.6 | 33.7 | 34   | 34.4         |
| R29         | Residential | 19.7                                                                                         | 19.9 | 20.7 | 25.3 | 29.5 | 30.8 | 30.9 | 31.1 | 31.5         |
| R30         | Residential | 23.5                                                                                         | 23.6 | 24.4 | 29   | 33.2 | 34.5 | 34.6 | 34.9 | 35.3         |
| R31         | Residential | 22.5                                                                                         | 22.6 | 23.4 | 28   | 32.2 | 33.5 | 33.6 | 33.8 | 34.3         |
| R32         | Residential | 22.7                                                                                         | 22.8 | 23.6 | 28.2 | 32.4 | 33.7 | 33.8 | 34.1 | 34.5         |
| R33         | Residential | 23                                                                                           | 23.1 | 23.9 | 28.5 | 32.7 | 34   | 34.1 | 34.4 | 34.8         |
| R34         | Mixed-Use   | 21                                                                                           | 21.2 | 21.9 | 26.6 | 30.8 | 32   | 32.1 | 32.4 | 32.8         |
| R35         | Residential | 23                                                                                           | 23.1 | 23.8 | 28.5 | 32.6 | 33.9 | 34   | 34.3 | 34.7         |
| R36         | Residential | 25.1                                                                                         | 25.2 | 26   | 30.6 | 34.7 | 36   | 36.1 | 36.4 | 36.8         |
| R37         | Residential | 28.2                                                                                         | 28.3 | 29   | 33.6 | 37.8 | 39   | 39.1 | 39.4 | 39.9         |
| R38         | Residential | 23.3                                                                                         | 23.4 | 24.2 | 28.8 | 33   | 34.2 | 34.4 | 34.6 | 35           |
| R39         | Residential | 22.7                                                                                         | 22.8 | 23.5 | 28.2 | 32.3 | 33.6 | 33.7 | 34   | 34.4         |
| R40         | Residential | 28                                                                                           | 28.1 | 28.8 | 33.4 | 37.6 | 38.8 | 38.9 | 39.2 | 39.7         |
| R41         | Residential | 24.9                                                                                         | 25   | 25.7 | 30.3 | 34.5 | 35.8 | 35.9 | 36.2 | 36.6         |
| R42         | Residential | 28                                                                                           | 28.1 | 28.8 | 33.4 | 37.6 | 38.8 | 38.9 | 39.2 | 39.7         |
| R43         | Residential | 20.2                                                                                         | 20.3 | 21.1 | 25.7 | 29.9 | 31.2 | 31.3 | 31.6 | 32           |
| R44         | Residential | 28.1                                                                                         | 28.1 | 28.9 | 33.5 | 37.6 | 38.9 | 39   | 39.3 | 39.7         |
| R45         | Residential | 22.9                                                                                         | 23   | 23.8 | 28.4 | 32.6 | 33.9 | 34   | 34.3 | 34.7         |
| R46         | Residential | 27.9                                                                                         | 28   | 28.8 | 33.3 | 37.5 | 38.8 | 38.9 | 39.2 | 39.6         |
| R47         | Residential | 27.8                                                                                         | 27.9 | 28.6 | 33.2 | 37.4 | 38.6 | 38.7 | 39   | 39.5         |
| R48         | Residential | 24.9                                                                                         | 25   | 25.7 | 30.3 | 34.5 | 35.8 | 35.9 | 36.2 | 36.6         |
| R49         | Residential | 27.7                                                                                         | 27.8 | 28.5 | 33.1 | 37.3 | 38.5 | 38.7 | 39   | 39.4         |
| R50         | Mixed-Use   | 23.6                                                                                         | 23.7 | 24.5 | 29.1 | 33.3 | 34.5 | 34.7 | 34.9 | 35.4         |
| R51         | Residential | 27.7                                                                                         | 27.8 | 28.5 | 33.1 | 37.3 | 38.5 | 38.6 | 38.9 | 39.4         |
| R52         | Residential | 24.6                                                                                         | 24.7 | 25.5 | 30.1 | 34.3 | 35.5 | 35.7 | 35.9 | 36.4         |
| R53         | Residential | 27.7                                                                                         | 27.8 | 28.5 | 33.1 | 37.3 | 38.5 | 38.6 | 38.9 | 39.4         |
| R54         | Residential | 20.1                                                                                         | 20.2 | 21   | 25.7 | 29.9 | 31.1 | 31.2 | 31.5 | 31.9         |
| R55         | Residential | 24.5                                                                                         | 24.6 | 25.3 | 29.9 | 34.1 | 35.4 | 35.5 | 35.8 | 36.2         |
| R56         | Residential | 23.8                                                                                         | 23.9 | 24.7 | 29.3 | 33.5 | 34.8 | 34.9 | 35.2 | 35.6         |
| R57         | Residential | 24.1                                                                                         | 24.2 | 25   | 29.6 | 33.7 | 35   | 35.1 | 35.4 | 35.8         |
| R59         | Residential | 24.1                                                                                         | 24.2 | 24.9 | 29.5 | 33.7 | 35   | 35.1 | 35.4 | 35.8         |
| R60         | Residential | 24.2                                                                                         | 24.3 | 25   | 29.6 | 33.8 | 35.1 | 35.2 | 35.5 | 35.9         |
| R61         | Residential | 20                                                                                           | 20.1 | 20.9 | 25.5 | 29.8 | 31   | 31.1 | 31.4 | 31.8         |
| R62         | Mixed-Use   | 20                                                                                           | 20.1 | 20.9 | 25.5 | 29.7 | 31   | 31.1 | 31.4 | 31.8         |

| Receptor ID | Description | Predicted Noise Level (dB L <sub>A90</sub> ) at Standardised 10m Height<br>Wind Speeds (m/s) |      |      |      |      |      |      |      |              |
|-------------|-------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|--------------|
|             |             | 2                                                                                            | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10 - Cut out |
| R63         | Residential | 19.9                                                                                         | 20.1 | 20.9 | 25.5 | 29.7 | 31   | 31.1 | 31.3 | 31.7         |
| R64         | Mixed-Use   | 18                                                                                           | 18.2 | 19   | 23.6 | 27.8 | 29.1 | 29.2 | 29.5 | 29.8         |
| R65         | Residential | 19.8                                                                                         | 19.9 | 20.7 | 25.4 | 29.6 | 30.8 | 31   | 31.2 | 31.6         |
| R66         | Residential | 17.8                                                                                         | 18   | 18.8 | 23.4 | 27.6 | 28.9 | 29   | 29.3 | 29.6         |
| R67         | Residential | 24.9                                                                                         | 25   | 25.7 | 30.3 | 34.5 | 35.8 | 35.9 | 36.2 | 36.6         |
| R68         | Residential | 19.1                                                                                         | 19.3 | 20.1 | 24.7 | 28.9 | 30.2 | 30.3 | 30.5 | 30.9         |
| R69         | Residential | 23.8                                                                                         | 23.9 | 24.7 | 29.3 | 33.5 | 34.7 | 34.9 | 35.1 | 35.6         |
| R70         | Residential | 23.8                                                                                         | 23.9 | 24.7 | 29.3 | 33.5 | 34.7 | 34.8 | 35.1 | 35.5         |
| R71         | Residential | 17.8                                                                                         | 17.9 | 18.7 | 23.4 | 27.6 | 28.9 | 29   | 29.2 | 29.6         |
| R72         | Residential | 20.9                                                                                         | 21   | 21.8 | 26.4 | 30.6 | 31.9 | 32   | 32.3 | 32.7         |
| R73         | Residential | 20.7                                                                                         | 20.8 | 21.6 | 26.2 | 30.5 | 31.7 | 31.8 | 32.1 | 32.5         |
| R74         | Residential | 23.1                                                                                         | 23.2 | 23.9 | 28.5 | 32.7 | 34   | 34.1 | 34.4 | 34.8         |
| R75         | Residential | 23.2                                                                                         | 23.3 | 24.1 | 28.7 | 32.9 | 34.1 | 34.2 | 34.5 | 34.9         |
| R76         | Residential | 23.3                                                                                         | 23.4 | 24.1 | 28.8 | 33   | 34.2 | 34.3 | 34.6 | 35           |
| R77         | Residential | 22.4                                                                                         | 22.5 | 23.2 | 27.9 | 32.1 | 33.3 | 33.4 | 33.7 | 34.1         |
| R78         | Residential | 19.4                                                                                         | 19.5 | 20.3 | 24.9 | 29.2 | 30.4 | 30.5 | 30.8 | 31.2         |
| R79         | Residential | 20.3                                                                                         | 20.4 | 21.2 | 25.8 | 30   | 31.3 | 31.4 | 31.7 | 32.1         |
| R80         | Residential | 19.3                                                                                         | 19.4 | 20.2 | 24.9 | 29.1 | 30.3 | 30.5 | 30.7 | 31.1         |
| R81         | Residential | 20                                                                                           | 20.2 | 21   | 25.6 | 29.8 | 31.1 | 31.2 | 31.5 | 31.8         |
| R82         | Residential | 17.3                                                                                         | 17.4 | 18.2 | 22.9 | 27.1 | 28.4 | 28.5 | 28.7 | 29.1         |
| R83         | Residential | 19.9                                                                                         | 20   | 20.8 | 25.5 | 29.7 | 30.9 | 31   | 31.3 | 31.7         |
| R84         | Residential | 19.2                                                                                         | 19.4 | 20.2 | 24.8 | 29   | 30.3 | 30.4 | 30.7 | 31           |
| R85         | Residential | 19.3                                                                                         | 19.4 | 20.2 | 24.8 | 29   | 30.3 | 30.4 | 30.7 | 31.1         |
| R86         | Residential | 19.5                                                                                         | 19.6 | 20.4 | 25   | 29.3 | 30.5 | 30.6 | 30.9 | 31.3         |
| R87         | Residential | 24.5                                                                                         | 24.6 | 25.3 | 30   | 34.1 | 35.4 | 35.5 | 35.8 | 36.2         |
| R88         | Residential | 19.4                                                                                         | 19.5 | 20.3 | 24.9 | 29.1 | 30.4 | 30.5 | 30.8 | 31.2         |
| R89         | Residential | 24.3                                                                                         | 24.4 | 25.2 | 29.8 | 34   | 35.3 | 35.4 | 35.7 | 36.1         |
| R90         | Residential | 24.4                                                                                         | 24.5 | 25.2 | 29.8 | 34   | 35.3 | 35.4 | 35.7 | 36.1         |
| R91         | Residential | 24.6                                                                                         | 24.7 | 25.4 | 30.1 | 34.2 | 35.5 | 35.6 | 35.9 | 36.3         |
| R92         | Residential | 24.4                                                                                         | 24.5 | 25.3 | 29.9 | 34.1 | 35.4 | 35.5 | 35.7 | 36.2         |
| R93         | Residential | 24.6                                                                                         | 24.7 | 25.5 | 30.1 | 34.3 | 35.5 | 35.7 | 35.9 | 36.4         |
| R94         | Mixed-Use   | 18.7                                                                                         | 18.8 | 19.6 | 24.3 | 28.5 | 29.7 | 29.8 | 30.1 | 30.5         |
| R95         | Residential | 24.3                                                                                         | 24.4 | 25.2 | 29.8 | 34   | 35.2 | 35.3 | 35.6 | 36           |
| R96         | Residential | 24.6                                                                                         | 24.7 | 25.4 | 30   | 34.2 | 35.5 | 35.6 | 35.9 | 36.3         |

| Receptor ID | Description | Predicted Noise Level (dB L <sub>A90</sub> ) at Standardised 10m Height<br>Wind Speeds (m/s) |      |      |      |      |      |      |      |              |
|-------------|-------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|--------------|
|             |             | 2                                                                                            | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10 - Cut out |
| R97         | Residential | 24.6                                                                                         | 24.7 | 25.5 | 30.1 | 34.3 | 35.6 | 35.7 | 36   | 36.4         |
| R98         | Residential | 24.4                                                                                         | 24.5 | 25.3 | 29.9 | 34   | 35.3 | 35.4 | 35.7 | 36.1         |
| R99         | Commercial  | 24.5                                                                                         | 24.6 | 25.4 | 30   | 34.1 | 35.4 | 35.5 | 35.8 | 36.2         |
| R100        | Residential | 24.3                                                                                         | 24.4 | 25.1 | 29.7 | 33.9 | 35.2 | 35.3 | 35.6 | 36           |
| R101        | Residential | 24.4                                                                                         | 24.5 | 25.3 | 29.9 | 34.1 | 35.3 | 35.4 | 35.7 | 36.1         |
| R102        | Residential | 24.2                                                                                         | 24.3 | 25.1 | 29.7 | 33.9 | 35.1 | 35.3 | 35.5 | 35.9         |
| R103        | Residential | 24.6                                                                                         | 24.7 | 25.5 | 30.1 | 34.3 | 35.5 | 35.7 | 35.9 | 36.4         |
| R104        | Residential | 24.1                                                                                         | 24.2 | 25   | 29.6 | 33.8 | 35   | 35.1 | 35.4 | 35.8         |
| R105        | Residential | 24.6                                                                                         | 24.7 | 25.5 | 30.1 | 34.3 | 35.5 | 35.6 | 35.9 | 36.3         |
| R106        | Residential | 24.1                                                                                         | 24.2 | 25   | 29.6 | 33.8 | 35.1 | 35.2 | 35.5 | 35.9         |
| R107        | Residential | 24.1                                                                                         | 24.2 | 25   | 29.6 | 33.8 | 35   | 35.1 | 35.4 | 35.8         |
| R108        | Residential | 24.2                                                                                         | 24.3 | 25.1 | 29.7 | 33.9 | 35.1 | 35.2 | 35.5 | 35.9         |
| R109        | Mixed-Use   | 17.4                                                                                         | 17.5 | 18.3 | 23   | 27.2 | 28.5 | 28.6 | 28.9 | 29.2         |
| R110        | Residential | 24.2                                                                                         | 24.3 | 25   | 29.6 | 33.8 | 35.1 | 35.2 | 35.5 | 35.9         |
| R111        | Residential | 24                                                                                           | 24.2 | 24.9 | 29.5 | 33.7 | 35   | 35.1 | 35.4 | 35.8         |
| R112        | Residential | 24.2                                                                                         | 24.3 | 25.1 | 29.7 | 33.9 | 35.1 | 35.2 | 35.5 | 35.9         |
| R113        | Residential | 24.1                                                                                         | 24.2 | 25   | 29.6 | 33.8 | 35   | 35.2 | 35.4 | 35.9         |
| R114        | Residential | 24.5                                                                                         | 24.6 | 25.4 | 30   | 34.2 | 35.5 | 35.6 | 35.9 | 36.3         |
| R115        | Residential | 24.2                                                                                         | 24.3 | 25   | 29.7 | 33.8 | 35.1 | 35.2 | 35.5 | 35.9         |
| R116        | Residential | 17.1                                                                                         | 17.3 | 18.1 | 22.7 | 27   | 28.2 | 28.3 | 28.6 | 29           |
| R117        | Residential | 24.1                                                                                         | 24.2 | 24.9 | 29.5 | 33.7 | 35   | 35.1 | 35.4 | 35.8         |
| R118        | Residential | 24.5                                                                                         | 24.6 | 25.4 | 30   | 34.2 | 35.4 | 35.5 | 35.8 | 36.2         |
| R119        | Residential | 24.2                                                                                         | 24.3 | 25   | 29.6 | 33.8 | 35.1 | 35.2 | 35.5 | 35.9         |
| R120        | Residential | 24.1                                                                                         | 24.2 | 25   | 29.6 | 33.8 | 35.1 | 35.2 | 35.5 | 35.9         |
| R121        | Mixed-Use   | 17.4                                                                                         | 17.5 | 18.3 | 23   | 27.2 | 28.5 | 28.6 | 28.9 | 29.2         |
| R122        | Residential | 24                                                                                           | 24.1 | 24.8 | 29.4 | 33.6 | 34.9 | 35   | 35.3 | 35.7         |
| R123        | Residential | 24.1                                                                                         | 24.2 | 25   | 29.6 | 33.8 | 35   | 35.1 | 35.4 | 35.8         |
| R124        | Residential | 17.1                                                                                         | 17.3 | 18.1 | 22.7 | 27   | 28.2 | 28.3 | 28.6 | 29           |
| R125        | Residential | 24.4                                                                                         | 24.5 | 25.3 | 29.9 | 34.1 | 35.3 | 35.4 | 35.7 | 36.2         |
| R126        | Residential | 24.1                                                                                         | 24.2 | 25   | 29.6 | 33.7 | 35   | 35.1 | 35.4 | 35.8         |
| R127        | Residential | 23.9                                                                                         | 24   | 24.8 | 29.4 | 33.6 | 34.8 | 35   | 35.2 | 35.7         |
| R128        | Residential | 24.1                                                                                         | 24.2 | 24.9 | 29.6 | 33.7 | 35   | 35.1 | 35.4 | 35.8         |
| R129        | Residential | 24.5                                                                                         | 24.6 | 25.3 | 29.9 | 34.1 | 35.4 | 35.5 | 35.8 | 36.2         |
| R130        | Residential | 18.9                                                                                         | 19   | 19.8 | 24.5 | 28.7 | 29.9 | 30.1 | 30.3 | 30.7         |

| Receptor ID | Description | Predicted Noise Level (dB L <sub>A90</sub> ) at Standardised 10m Height<br>Wind Speeds (m/s) |      |      |      |      |      |      |      |              |
|-------------|-------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|--------------|
|             |             | 2                                                                                            | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10 - Cut out |
| R131        | Residential | 24.4                                                                                         | 24.5 | 25.2 | 29.8 | 34   | 35.3 | 35.4 | 35.7 | 36.1         |
| R132        | Residential | 24.1                                                                                         | 24.2 | 24.9 | 29.5 | 33.7 | 35   | 35.1 | 35.4 | 35.8         |
| R133        | Residential | 23.9                                                                                         | 24   | 24.7 | 29.3 | 33.5 | 34.8 | 34.9 | 35.2 | 35.6         |
| R134        | Residential | 24                                                                                           | 24.1 | 24.9 | 29.5 | 33.7 | 35   | 35.1 | 35.4 | 35.8         |
| R135        | Residential | 24                                                                                           | 24.1 | 24.9 | 29.5 | 33.7 | 34.9 | 35.1 | 35.3 | 35.8         |
| R136        | Residential | 24.3                                                                                         | 24.4 | 25.1 | 29.7 | 33.9 | 35.2 | 35.3 | 35.6 | 36           |
| R137        | Residential | 24.2                                                                                         | 24.3 | 25.1 | 29.7 | 33.9 | 35.1 | 35.2 | 35.5 | 35.9         |
| R138        | Residential | 24                                                                                           | 24.1 | 24.8 | 29.4 | 33.6 | 34.9 | 35   | 35.3 | 35.7         |
| R139        | Residential | 23.9                                                                                         | 24.1 | 24.8 | 29.4 | 33.6 | 34.9 | 35   | 35.3 | 35.7         |
| R140        | Residential | 24.1                                                                                         | 24.2 | 25   | 29.6 | 33.8 | 35   | 35.1 | 35.4 | 35.8         |
| R141        | Residential | 24.1                                                                                         | 24.2 | 24.9 | 29.5 | 33.7 | 35   | 35.1 | 35.4 | 35.8         |
| R142        | Residential | 23.9                                                                                         | 24   | 24.8 | 29.4 | 33.6 | 34.9 | 35   | 35.3 | 35.7         |
| R143        | Residential | 23.9                                                                                         | 24   | 24.8 | 29.4 | 33.6 | 34.9 | 35   | 35.3 | 35.7         |
| R144        | Residential | 24                                                                                           | 24.1 | 24.9 | 29.5 | 33.7 | 34.9 | 35   | 35.3 | 35.7         |
| R145        | Residential | 24                                                                                           | 24.1 | 24.8 | 29.4 | 33.6 | 34.9 | 35   | 35.3 | 35.7         |
| R146        | Residential | 23.7                                                                                         | 23.8 | 24.6 | 29.2 | 33.4 | 34.6 | 34.8 | 35   | 35.5         |
| R147        | Residential | 23.7                                                                                         | 23.8 | 24.6 | 29.2 | 33.4 | 34.6 | 34.7 | 35   | 35.4         |
| R148        | Residential | 23.6                                                                                         | 23.7 | 24.4 | 29   | 33.2 | 34.5 | 34.6 | 34.9 | 35.3         |
| R149        | Mixed-Use   | 19.1                                                                                         | 19.2 | 20   | 24.6 | 28.8 | 30.1 | 30.2 | 30.5 | 30.9         |
| R150        | Residential | 23.7                                                                                         | 23.8 | 24.5 | 29.1 | 33.3 | 34.6 | 34.7 | 35   | 35.4         |
| R151        | Residential | 23.6                                                                                         | 23.7 | 24.5 | 29.1 | 33.3 | 34.5 | 34.6 | 34.9 | 35.3         |
| R152        | Residential | 23.4                                                                                         | 23.5 | 24.3 | 28.9 | 33.1 | 34.3 | 34.4 | 34.7 | 35.1         |
| R153        | Residential | 23.8                                                                                         | 23.9 | 24.7 | 29.3 | 33.5 | 34.8 | 34.9 | 35.2 | 35.6         |
| R154        | Residential | 23.9                                                                                         | 24   | 24.7 | 29.4 | 33.5 | 34.8 | 34.9 | 35.2 | 35.6         |
| R155        | Residential | 23.9                                                                                         | 24   | 24.8 | 29.4 | 33.6 | 34.8 | 34.9 | 35.2 | 35.6         |
| R156        | Residential | 24                                                                                           | 24.1 | 24.9 | 29.5 | 33.7 | 34.9 | 35.1 | 35.3 | 35.8         |
| R157        | Residential | 23.9                                                                                         | 24   | 24.8 | 29.4 | 33.6 | 34.9 | 35   | 35.2 | 35.7         |
| R158        | Residential | 23.9                                                                                         | 24.1 | 24.8 | 29.4 | 33.6 | 34.9 | 35   | 35.3 | 35.7         |
| R159        | Residential | 23.8                                                                                         | 23.9 | 24.6 | 29.2 | 33.4 | 34.7 | 34.8 | 35.1 | 35.5         |
| R160        | Residential | 19.3                                                                                         | 19.4 | 20.2 | 24.9 | 29.1 | 30.3 | 30.4 | 30.7 | 31.1         |
| R161        | Residential | 24                                                                                           | 24.1 | 24.8 | 29.5 | 33.6 | 34.9 | 35   | 35.3 | 35.7         |
| R163        | Residential | 18.1                                                                                         | 18.3 | 19.1 | 23.7 | 27.9 | 29.2 | 29.3 | 29.6 | 29.9         |
| R164        | Residential | 23.7                                                                                         | 23.8 | 24.5 | 29.2 | 33.4 | 34.6 | 34.7 | 35   | 35.4         |
| R165        | Residential | 23.4                                                                                         | 23.5 | 24.3 | 28.9 | 33.1 | 34.4 | 34.5 | 34.8 | 35.2         |

| Receptor ID | Description | Predicted Noise Level (dB L <sub>A90</sub> ) at Standardised 10m Height<br>Wind Speeds (m/s) |      |      |      |      |      |      |      |              |
|-------------|-------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|--------------|
|             |             | 2                                                                                            | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10 - Cut out |
| R166        | Residential | 23.6                                                                                         | 23.7 | 24.5 | 29.1 | 33.3 | 34.6 | 34.7 | 34.9 | 35.4         |
| R167        | Residential | 23.8                                                                                         | 24   | 24.7 | 29.3 | 33.5 | 34.8 | 34.9 | 35.2 | 35.6         |
| R168        | Residential | 16.2                                                                                         | 16.3 | 17.1 | 21.8 | 26   | 27.3 | 27.4 | 27.6 | 28           |
| R169        | Residential | 23.5                                                                                         | 23.6 | 24.4 | 29   | 33.2 | 34.5 | 34.6 | 34.9 | 35.3         |
| R170        | Residential | 23.6                                                                                         | 23.7 | 24.5 | 29.1 | 33.3 | 34.6 | 34.7 | 35   | 35.4         |
| R171        | Residential | 23.5                                                                                         | 23.6 | 24.3 | 29   | 33.2 | 34.4 | 34.5 | 34.8 | 35.2         |
| R172        | Residential | 23.8                                                                                         | 23.9 | 24.7 | 29.3 | 33.5 | 34.7 | 34.8 | 35.1 | 35.5         |
| R173        | Residential | 23.6                                                                                         | 23.7 | 24.4 | 29.1 | 33.3 | 34.5 | 34.6 | 34.9 | 35.3         |
| R174        | Residential | 23.3                                                                                         | 23.4 | 24.2 | 28.8 | 33   | 34.2 | 34.3 | 34.6 | 35           |
| R175        | Residential | 23.4                                                                                         | 23.5 | 24.3 | 28.9 | 33.1 | 34.3 | 34.4 | 34.7 | 35.1         |
| R176        | Residential | 23.5                                                                                         | 23.6 | 24.4 | 29   | 33.2 | 34.4 | 34.5 | 34.8 | 35.2         |
| R177        | Residential | 23.3                                                                                         | 23.4 | 24.2 | 28.8 | 33   | 34.3 | 34.4 | 34.6 | 35.1         |
| R178        | Residential | 18.5                                                                                         | 18.6 | 19.4 | 24.1 | 28.3 | 29.5 | 29.7 | 29.9 | 30.3         |
| R179        | Residential | 23.4                                                                                         | 23.5 | 24.3 | 28.9 | 33.1 | 34.4 | 34.5 | 34.8 | 35.2         |
| R180        | Residential | 23.2                                                                                         | 23.4 | 24.1 | 28.7 | 32.9 | 34.2 | 34.3 | 34.6 | 35           |
| R181        | Residential | 17.9                                                                                         | 18   | 18.8 | 23.4 | 27.7 | 28.9 | 29   | 29.3 | 29.7         |
| R182        | Residential | 23.3                                                                                         | 23.4 | 24.2 | 28.8 | 33   | 34.3 | 34.4 | 34.7 | 35.1         |
| R183        | Residential | 23.3                                                                                         | 23.4 | 24.2 | 28.8 | 33   | 34.2 | 34.3 | 34.6 | 35           |
| R184        | Residential | 23.2                                                                                         | 23.3 | 24.1 | 28.7 | 32.9 | 34.1 | 34.3 | 34.5 | 34.9         |
| R185        | Residential | 23.1                                                                                         | 23.2 | 24   | 28.6 | 32.8 | 34.1 | 34.2 | 34.5 | 34.9         |
| R186        | Residential | 23.3                                                                                         | 23.4 | 24.2 | 28.8 | 33   | 34.2 | 34.3 | 34.6 | 35           |
| R187        | Residential | 23.2                                                                                         | 23.3 | 24.1 | 28.7 | 32.9 | 34.1 | 34.3 | 34.5 | 34.9         |
| R188        | Residential | 17.8                                                                                         | 17.9 | 18.7 | 23.4 | 27.6 | 28.9 | 29   | 29.2 | 29.6         |
| R189        | Residential | 23.3                                                                                         | 23.4 | 24.2 | 28.8 | 33   | 34.2 | 34.3 | 34.6 | 35           |
| R190        | Residential | 23.3                                                                                         | 23.4 | 24.2 | 28.8 | 33   | 34.2 | 34.3 | 34.6 | 35           |
| R191        | Residential | 17.7                                                                                         | 17.9 | 18.7 | 23.3 | 27.5 | 28.8 | 28.9 | 29.2 | 29.5         |
| R193        | Residential | 23.3                                                                                         | 23.4 | 24.2 | 28.8 | 33   | 34.2 | 34.4 | 34.6 | 35           |
| R194        | Residential | 23.1                                                                                         | 23.2 | 24   | 28.6 | 32.8 | 34   | 34.2 | 34.4 | 34.9         |
| R195        | Residential | 17.5                                                                                         | 17.7 | 18.5 | 23.1 | 27.3 | 28.6 | 28.7 | 29   | 29.3         |
| R196        | Residential | 23.3                                                                                         | 23.4 | 24.2 | 28.8 | 33   | 34.2 | 34.4 | 34.6 | 35.1         |
| R197        | Residential | 17.6                                                                                         | 17.7 | 18.5 | 23.2 | 27.4 | 28.6 | 28.8 | 29   | 29.4         |
| R198        | Residential | 18.2                                                                                         | 18.4 | 19.2 | 23.8 | 28   | 29.3 | 29.4 | 29.7 | 30           |
| R199        | Residential | 23                                                                                           | 23.1 | 23.9 | 28.5 | 32.7 | 33.9 | 34.1 | 34.3 | 34.8         |
| R201        | Residential | 17.9                                                                                         | 18   | 18.8 | 23.5 | 27.7 | 28.9 | 29.1 | 29.3 | 29.7         |



| Receptor ID | Description | Predicted Noise Level (dB L <sub>A90</sub> ) at Standardised 10m Height Wind Speeds (m/s) |   |   |   |   |   |   |   |              |
|-------------|-------------|-------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|--------------|
|             |             | 2                                                                                         | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 - Cut out |
| R1070       | Residential | 0                                                                                         | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0            |
| R1071       | Mixed-Use   | 0                                                                                         | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0            |
| R1072       | Residential | 0                                                                                         | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0            |
| R1073       | Mixed-Use   | 0                                                                                         | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0            |
| R1074       | Residential | 0                                                                                         | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0            |
| R1075       | Residential | 0                                                                                         | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0            |

Table 8.5.2 presents the predicted cumulative noise levels (L<sub>A90</sub>) from wind turbines for the proposed Derrynadarragh Wind Farm and Cushina Wind Farm at noise sensitive locations for Standardised 10m height wind speeds of 2 m/s to 10 m/s. The numbering is not sequential as only the noise sensitive locations within the 35 dB L<sub>A90</sub> noise contour are presented. Commercial receptors (apart from the community hall), derelict and uninhabited dwellings were not considered as part of the assessment.

**Table 8.5.2: Predicted cumulative noise levels (L<sub>A90</sub>) from Derrynadarragh Wind Farm and Cushina Wind Farm at Noise Sensitive Locations for Standardised 10m Wind Speeds of 2 m/s to 10 m/s**

| Receptor ID | Description | Predicted Noise Level (dB L <sub>A90</sub> ) at Standardised 10m Height Wind Speeds (m/s) |      |      |      |      |      |      |      |              |
|-------------|-------------|-------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|--------------|
|             |             | 2                                                                                         | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10 - Cut out |
| R1          | Residential | 28.1                                                                                      | 28.2 | 29   | 33.5 | 37.7 | 39   | 39.1 | 39.4 | 39.8         |
| R2          | Residential | 24.6                                                                                      | 24.7 | 25.6 | 30.1 | 34.4 | 35.6 | 35.7 | 36   | 36.4         |
| R3          | Residential | 24.6                                                                                      | 24.8 | 25.6 | 30.1 | 34.4 | 35.6 | 35.7 | 36   | 36.4         |
| R4          | Residential | 24.9                                                                                      | 25   | 25.9 | 30.4 | 34.7 | 35.9 | 36   | 36.3 | 36.7         |
| R5          | Residential | 25.2                                                                                      | 25.3 | 26.2 | 30.7 | 35   | 36.2 | 36.3 | 36.6 | 37           |
| R6          | Residential | 24.5                                                                                      | 24.6 | 25.4 | 30   | 34.3 | 35.4 | 35.6 | 35.8 | 36.2         |
| R8          | Residential | 24.6                                                                                      | 24.7 | 25.5 | 30.1 | 34.4 | 35.6 | 35.7 | 35.9 | 36.4         |
| R9          | Mixed-Use   | 24.8                                                                                      | 25   | 25.8 | 30.4 | 34.6 | 35.8 | 35.9 | 36.2 | 36.6         |
| R10         | Residential | 24.5                                                                                      | 24.6 | 25.4 | 30   | 34.3 | 35.4 | 35.6 | 35.8 | 36.2         |



| Receptor ID | Description | Predicted Noise Level (dB L <sub>A90</sub> ) at Standardised 10m Height<br>Wind Speeds (m/s) |      |      |      |      |      |      |      |              |
|-------------|-------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|--------------|
|             |             | 2                                                                                            | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10 - Cut out |
| R11         | Residential | 25                                                                                           | 25.1 | 26   | 30.5 | 34.8 | 36   | 36.1 | 36.4 | 36.8         |
| R12         | Residential | 25.3                                                                                         | 25.5 | 26.3 | 30.8 | 35.1 | 36.3 | 36.4 | 36.7 | 37.1         |
| R13         | Mixed-Use   | 28                                                                                           | 28.1 | 28.8 | 33.4 | 37.6 | 38.8 | 39   | 39.2 | 39.7         |
| R14         | Residential | 25.4                                                                                         | 25.6 | 26.4 | 30.9 | 35.2 | 36.4 | 36.5 | 36.8 | 37.2         |
| R15         | Residential | 25                                                                                           | 25.2 | 26   | 30.5 | 34.8 | 36   | 36.1 | 36.4 | 36.8         |
| R16         | Residential | 25.1                                                                                         | 25.2 | 26   | 30.6 | 34.9 | 36   | 36.2 | 36.4 | 36.8         |
| R17         | Residential | 24.6                                                                                         | 24.7 | 25.6 | 30.1 | 34.5 | 35.6 | 35.7 | 36   | 36.4         |
| R18         | Residential | 24.6                                                                                         | 24.8 | 25.6 | 30.2 | 34.5 | 35.6 | 35.8 | 36   | 36.4         |
| R19         | Residential | 24.4                                                                                         | 24.6 | 25.5 | 30   | 34.4 | 35.5 | 35.6 | 35.8 | 36.2         |
| R20         | Mixed-Use   | 24.9                                                                                         | 25   | 26   | 30.4 | 34.9 | 35.9 | 36   | 36.3 | 36.7         |
| R21         | Residential | 25.2                                                                                         | 25.3 | 26.1 | 30.7 | 35   | 36.1 | 36.3 | 36.5 | 36.9         |
| R22         | Residential | 24.7                                                                                         | 24.8 | 25.7 | 30.2 | 34.6 | 35.7 | 35.8 | 36.1 | 36.5         |
| R23         | Residential | 24.7                                                                                         | 24.8 | 25.7 | 30.2 | 34.5 | 35.7 | 35.8 | 36.1 | 36.4         |
| R24         | Residential | 24.4                                                                                         | 24.6 | 25.4 | 30   | 34.3 | 35.4 | 35.6 | 35.8 | 36.2         |
| R25         | Residential | 24.4                                                                                         | 24.5 | 25.4 | 29.9 | 34.3 | 35.4 | 35.5 | 35.8 | 36.2         |
| R26         | Mixed-Use   | 25.2                                                                                         | 25.3 | 26.1 | 30.7 | 35   | 36.1 | 36.3 | 36.5 | 36.9         |
| R27         | Residential | 25.4                                                                                         | 25.5 | 26.4 | 30.9 | 35.3 | 36.4 | 36.5 | 36.8 | 37.2         |
| R28         | Residential | 25.4                                                                                         | 25.5 | 26.4 | 30.9 | 35.3 | 36.4 | 36.5 | 36.8 | 37.2         |
| R29         | Residential | 26.5                                                                                         | 26.6 | 27.5 | 31.9 | 36.4 | 37.4 | 37.5 | 37.8 | 38.2         |
| R30         | Residential | 25.3                                                                                         | 25.4 | 26.3 | 30.8 | 35.1 | 36.3 | 36.4 | 36.7 | 37.1         |
| R31         | Residential | 24.8                                                                                         | 24.9 | 25.7 | 30.3 | 34.6 | 35.8 | 35.9 | 36.1 | 36.5         |
| R32         | Residential | 24.8                                                                                         | 25   | 25.8 | 30.4 | 34.7 | 35.8 | 36   | 36.2 | 36.6         |
| R33         | Residential | 25                                                                                           | 25.1 | 25.9 | 30.5 | 34.8 | 35.9 | 36.1 | 36.3 | 36.7         |
| R34         | Mixed-Use   | 25.6                                                                                         | 25.8 | 26.6 | 31.1 | 35.5 | 36.6 | 36.7 | 37   | 37.4         |
| R35         | Residential | 25.1                                                                                         | 25.2 | 26   | 30.6 | 34.9 | 36   | 36.2 | 36.4 | 36.8         |
| R36         | Residential | 26                                                                                           | 26.1 | 26.9 | 31.5 | 35.7 | 36.9 | 37.1 | 37.3 | 37.7         |
| R37         | Residential | 28.2                                                                                         | 28.3 | 29   | 33.6 | 37.8 | 39   | 39.1 | 39.4 | 39.9         |
| R38         | Residential | 25.2                                                                                         | 25.4 | 26.2 | 30.8 | 35.1 | 36.2 | 36.3 | 36.6 | 37           |
| R39         | Residential | 25                                                                                           | 25.1 | 25.9 | 30.5 | 34.8 | 36   | 36.1 | 36.3 | 36.7         |
| R40         | Residential | 28                                                                                           | 28.1 | 28.8 | 33.4 | 37.6 | 38.8 | 38.9 | 39.2 | 39.7         |
| R41         | Residential | 25.8                                                                                         | 25.9 | 26.7 | 31.3 | 35.6 | 36.8 | 36.9 | 37.2 | 37.6         |
| R42         | Residential | 28                                                                                           | 28.1 | 28.8 | 33.4 | 37.6 | 38.8 | 38.9 | 39.2 | 39.7         |
| R43         | Residential | 26.1                                                                                         | 26.2 | 27.1 | 31.6 | 36   | 37.1 | 37.2 | 37.5 | 37.9         |
| R44         | Residential | 28.1                                                                                         | 28.1 | 28.9 | 33.5 | 37.6 | 38.9 | 39   | 39.3 | 39.7         |

| Receptor ID | Description | Predicted Noise Level (dB L <sub>A90</sub> ) at Standardised 10m Height<br>Wind Speeds (m/s) |      |      |      |      |      |      |      |              |
|-------------|-------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|--------------|
|             |             | 2                                                                                            | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10 - Cut out |
| R45         | Residential | 25.1                                                                                         | 25.2 | 26.1 | 30.6 | 34.9 | 36.1 | 36.2 | 36.5 | 36.9         |
| R46         | Residential | 27.9                                                                                         | 28   | 28.8 | 33.3 | 37.5 | 38.8 | 38.9 | 39.2 | 39.6         |
| R47         | Residential | 27.8                                                                                         | 27.9 | 28.6 | 33.2 | 37.4 | 38.6 | 38.7 | 39   | 39.5         |
| R48         | Residential | 25.9                                                                                         | 26   | 26.8 | 31.4 | 35.6 | 36.8 | 36.9 | 37.2 | 37.6         |
| R49         | Residential | 27.7                                                                                         | 27.8 | 28.5 | 33.1 | 37.3 | 38.6 | 38.7 | 39   | 39.4         |
| R50         | Mixed-Use   | 25.1                                                                                         | 25.3 | 26.1 | 30.7 | 34.9 | 36.1 | 36.2 | 36.5 | 36.9         |
| R51         | Residential | 27.7                                                                                         | 27.8 | 28.5 | 33.1 | 37.3 | 38.5 | 38.6 | 38.9 | 39.4         |
| R52         | Residential | 25.7                                                                                         | 25.8 | 26.6 | 31.2 | 35.5 | 36.6 | 36.8 | 37   | 37.5         |
| R53         | Residential | 27.7                                                                                         | 27.8 | 28.5 | 33.1 | 37.3 | 38.5 | 38.6 | 38.9 | 39.4         |
| R54         | Residential | 26.2                                                                                         | 26.3 | 27.2 | 31.7 | 36.1 | 37.1 | 37.3 | 37.6 | 38           |
| R55         | Residential | 25.6                                                                                         | 25.7 | 26.5 | 31.1 | 35.3 | 36.5 | 36.7 | 36.9 | 37.3         |
| R56         | Residential | 25.2                                                                                         | 25.4 | 26.2 | 30.7 | 35   | 36.2 | 36.3 | 36.6 | 37           |
| R57         | Residential | 25.8                                                                                         | 25.9 | 26.7 | 31.3 | 35.5 | 36.7 | 36.8 | 37.1 | 37.5         |
| R59         | Residential | 25.3                                                                                         | 25.5 | 26.3 | 30.8 | 35.1 | 36.3 | 36.4 | 36.7 | 37.1         |
| R60         | Residential | 25.4                                                                                         | 25.5 | 26.3 | 30.9 | 35.2 | 36.3 | 36.5 | 36.7 | 37.1         |
| R61         | Residential | 26.3                                                                                         | 26.4 | 27.3 | 31.8 | 36.2 | 37.2 | 37.4 | 37.6 | 38           |
| R62         | Mixed-Use   | 23.6                                                                                         | 23.7 | 24.6 | 29.1 | 33.5 | 34.6 | 34.7 | 35   | 35.4         |
| R63         | Residential | 26.3                                                                                         | 26.4 | 27.3 | 31.8 | 36.2 | 37.3 | 37.4 | 37.7 | 38.1         |
| R64         | Mixed-Use   | 24.9                                                                                         | 25   | 25.9 | 30.4 | 34.8 | 35.8 | 36   | 36.2 | 36.6         |
| R65         | Residential | 26.4                                                                                         | 26.5 | 27.4 | 31.9 | 36.3 | 37.4 | 37.5 | 37.8 | 38.2         |
| R66         | Residential | 24.8                                                                                         | 24.9 | 25.9 | 30.3 | 34.8 | 35.8 | 35.9 | 36.2 | 36.6         |
| R67         | Residential | 25.3                                                                                         | 25.4 | 26.2 | 30.7 | 35   | 36.2 | 36.3 | 36.6 | 37           |
| R68         | Residential | 27.2                                                                                         | 27.3 | 28.2 | 32.7 | 37.1 | 38.1 | 38.3 | 38.5 | 38.9         |
| R69         | Residential | 24.3                                                                                         | 24.5 | 25.3 | 29.9 | 34.1 | 35.3 | 35.4 | 35.7 | 36.1         |
| R70         | Residential | 24.3                                                                                         | 24.4 | 25.2 | 29.8 | 34.1 | 35.3 | 35.4 | 35.7 | 36.1         |
| R71         | Residential | 24.5                                                                                         | 24.7 | 25.6 | 30.1 | 34.5 | 35.5 | 35.7 | 35.9 | 36.3         |
| R72         | Residential | 24.9                                                                                         | 25.1 | 26   | 30.5 | 34.8 | 35.9 | 36.1 | 36.3 | 36.7         |
| R73         | Residential | 25                                                                                           | 25.1 | 26   | 30.5 | 34.9 | 36   | 36.1 | 36.4 | 36.8         |
| R74         | Residential | 23.7                                                                                         | 23.9 | 24.7 | 29.3 | 33.5 | 34.7 | 34.8 | 35.1 | 35.5         |
| R75         | Residential | 23.8                                                                                         | 23.9 | 24.7 | 29.3 | 33.6 | 34.8 | 34.9 | 35.2 | 35.6         |
| R76         | Residential | 23.9                                                                                         | 24   | 24.8 | 29.4 | 33.6 | 34.8 | 35   | 35.2 | 35.6         |
| R77         | Residential | 24.1                                                                                         | 24.3 | 25.1 | 29.7 | 34   | 35.1 | 35.3 | 35.5 | 35.9         |
| R78         | Residential | 26.7                                                                                         | 26.8 | 27.7 | 32.2 | 36.6 | 37.7 | 37.8 | 38.1 | 38.5         |
| R79         | Residential | 25.1                                                                                         | 25.2 | 26.1 | 30.6 | 35   | 36.1 | 36.2 | 36.5 | 36.8         |

| Receptor ID | Description | Predicted Noise Level (dB L <sub>A90</sub> ) at Standardised 10m Height<br>Wind Speeds (m/s) |      |      |      |      |      |      |      |              |
|-------------|-------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|--------------|
|             |             | 2                                                                                            | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10 - Cut out |
| R80         | Residential | 26.8                                                                                         | 26.9 | 27.8 | 32.2 | 36.7 | 37.7 | 37.8 | 38.1 | 38.5         |
| R81         | Residential | 25.2                                                                                         | 25.3 | 26.2 | 30.7 | 35.1 | 36.2 | 36.3 | 36.6 | 37           |
| R82         | Residential | 24.4                                                                                         | 24.6 | 25.5 | 30   | 34.4 | 35.4 | 35.6 | 35.8 | 36.2         |
| R83         | Residential | 25.2                                                                                         | 25.3 | 26.2 | 30.7 | 35.1 | 36.2 | 36.3 | 36.6 | 37           |
| R84         | Residential | 26.8                                                                                         | 26.9 | 27.8 | 32.3 | 36.7 | 37.7 | 37.9 | 38.1 | 38.5         |
| R85         | Residential | 24.9                                                                                         | 25   | 25.9 | 30.4 | 34.8 | 35.9 | 36   | 36.3 | 36.7         |
| R86         | Residential | 25.1                                                                                         | 25.2 | 26.1 | 30.6 | 35.1 | 36.1 | 36.2 | 36.5 | 36.9         |
| R87         | Residential | 24.8                                                                                         | 24.9 | 25.6 | 30.2 | 34.5 | 35.7 | 35.8 | 36.1 | 36.5         |
| R88         | Residential | 25.1                                                                                         | 25.2 | 26.1 | 30.6 | 35   | 36.1 | 36.2 | 36.5 | 36.9         |
| R89         | Residential | 24.6                                                                                         | 24.7 | 25.5 | 30.1 | 34.3 | 35.6 | 35.7 | 36   | 36.4         |
| R90         | Residential | 24.6                                                                                         | 24.8 | 25.5 | 30.1 | 34.3 | 35.6 | 35.7 | 36   | 36.4         |
| R91         | Residential | 24.8                                                                                         | 25   | 25.7 | 30.3 | 34.5 | 35.8 | 35.9 | 36.2 | 36.6         |
| R92         | Residential | 24.7                                                                                         | 24.8 | 25.6 | 30.2 | 34.4 | 35.7 | 35.8 | 36   | 36.5         |
| R93         | Residential | 24.9                                                                                         | 25   | 25.8 | 30.4 | 34.6 | 35.8 | 35.9 | 36.2 | 36.6         |
| R94         | Mixed-Use   | 23.8                                                                                         | 23.9 | 24.8 | 29.3 | 33.8 | 34.8 | 35   | 35.2 | 35.6         |
| R95         | Residential | 24.6                                                                                         | 24.7 | 25.5 | 30.1 | 34.3 | 35.5 | 35.7 | 35.9 | 36.3         |
| R96         | Residential | 24.8                                                                                         | 24.9 | 25.7 | 30.3 | 34.5 | 35.8 | 35.9 | 36.1 | 36.6         |
| R97         | Residential | 24.9                                                                                         | 25   | 25.8 | 30.4 | 34.6 | 35.8 | 35.9 | 36.2 | 36.6         |
| R98         | Residential | 24.7                                                                                         | 24.8 | 25.6 | 30.2 | 34.4 | 35.6 | 35.7 | 36   | 36.4         |
| R99         | Commercial  | 24.8                                                                                         | 24.9 | 25.7 | 30.2 | 34.5 | 35.7 | 35.8 | 36.1 | 36.5         |
| R100        | Residential | 24.6                                                                                         | 24.7 | 25.5 | 30.1 | 34.3 | 35.5 | 35.6 | 35.9 | 36.3         |
| R101        | Residential | 24.7                                                                                         | 24.8 | 25.6 | 30.2 | 34.4 | 35.6 | 35.7 | 36   | 36.4         |
| R102        | Residential | 24.5                                                                                         | 24.6 | 25.4 | 30   | 34.2 | 35.5 | 35.6 | 35.9 | 36.3         |
| R103        | Residential | 24.9                                                                                         | 25   | 25.8 | 30.4 | 34.6 | 35.8 | 35.9 | 36.2 | 36.6         |
| R104        | Residential | 24.4                                                                                         | 24.5 | 25.3 | 29.9 | 34.1 | 35.4 | 35.5 | 35.8 | 36.2         |
| R105        | Residential | 24.8                                                                                         | 25   | 25.7 | 30.3 | 34.5 | 35.8 | 35.9 | 36.2 | 36.6         |
| R106        | Residential | 24.5                                                                                         | 24.6 | 25.3 | 29.9 | 34.2 | 35.4 | 35.5 | 35.8 | 36.2         |
| R107        | Residential | 24.4                                                                                         | 24.5 | 25.3 | 29.9 | 34.1 | 35.4 | 35.5 | 35.7 | 36.2         |
| R108        | Residential | 24.5                                                                                         | 24.6 | 25.4 | 30   | 34.2 | 35.4 | 35.6 | 35.8 | 36.2         |
| R109        | Mixed-Use   | 23.8                                                                                         | 23.9 | 24.8 | 29.3 | 33.8 | 34.8 | 34.9 | 35.2 | 35.6         |
| R110        | Residential | 24.5                                                                                         | 24.6 | 25.4 | 30   | 34.2 | 35.4 | 35.5 | 35.8 | 36.2         |
| R111        | Residential | 24.4                                                                                         | 24.5 | 25.3 | 29.9 | 34.1 | 35.3 | 35.4 | 35.7 | 36.1         |
| R112        | Residential | 24.5                                                                                         | 24.6 | 25.4 | 30   | 34.2 | 35.4 | 35.6 | 35.8 | 36.3         |
| R113        | Residential | 24.4                                                                                         | 24.5 | 25.3 | 29.9 | 34.1 | 35.4 | 35.5 | 35.8 | 36.2         |

| Receptor ID | Description | Predicted Noise Level (dB L <sub>A90</sub> ) at Standardised 10m Height<br>Wind Speeds (m/s) |      |      |      |      |      |      |      |              |
|-------------|-------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|--------------|
|             |             | 2                                                                                            | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10 - Cut out |
| R114        | Residential | 24.8                                                                                         | 24.9 | 25.7 | 30.3 | 34.5 | 35.7 | 35.9 | 36.1 | 36.5         |
| R115        | Residential | 24.5                                                                                         | 24.6 | 25.4 | 30   | 34.2 | 35.4 | 35.5 | 35.8 | 36.2         |
| R116        | Residential | 24.1                                                                                         | 24.2 | 25.2 | 29.6 | 34.1 | 35.1 | 35.2 | 35.5 | 35.9         |
| R117        | Residential | 24.4                                                                                         | 24.5 | 25.3 | 29.9 | 34.1 | 35.3 | 35.4 | 35.7 | 36.1         |
| R118        | Residential | 24.8                                                                                         | 24.9 | 25.7 | 30.2 | 34.5 | 35.7 | 35.8 | 36.1 | 36.5         |
| R119        | Residential | 24.5                                                                                         | 24.6 | 25.3 | 29.9 | 34.2 | 35.4 | 35.5 | 35.8 | 36.2         |
| R120        | Residential | 24.4                                                                                         | 24.6 | 25.3 | 29.9 | 34.1 | 35.4 | 35.5 | 35.8 | 36.2         |
| R121        | Mixed-Use   | 23.7                                                                                         | 23.8 | 24.7 | 29.2 | 33.6 | 34.7 | 34.8 | 35.1 | 35.5         |
| R122        | Residential | 24.3                                                                                         | 24.4 | 25.2 | 29.8 | 34   | 35.2 | 35.4 | 35.6 | 36           |
| R123        | Residential | 24.4                                                                                         | 24.5 | 25.3 | 29.9 | 34.1 | 35.3 | 35.5 | 35.7 | 36.2         |
| R124        | Residential | 24                                                                                           | 24.1 | 25   | 29.5 | 33.9 | 35   | 35.1 | 35.4 | 35.8         |
| R125        | Residential | 24.7                                                                                         | 24.8 | 25.6 | 30.1 | 34.4 | 35.6 | 35.7 | 36   | 36.4         |
| R126        | Residential | 24.4                                                                                         | 24.5 | 25.3 | 29.9 | 34.1 | 35.3 | 35.4 | 35.7 | 36.1         |
| R127        | Residential | 24.2                                                                                         | 24.4 | 25.1 | 29.7 | 34   | 35.2 | 35.3 | 35.6 | 36           |
| R128        | Residential | 24.4                                                                                         | 24.5 | 25.3 | 29.9 | 34.1 | 35.3 | 35.4 | 35.7 | 36.1         |
| R129        | Residential | 24.5                                                                                         | 24.6 | 25.3 | 29.9 | 34.1 | 35.4 | 35.5 | 35.8 | 36.2         |
| R130        | Residential | 25.1                                                                                         | 25.3 | 26.2 | 30.6 | 35.1 | 36.1 | 36.2 | 36.5 | 36.9         |
| R131        | Residential | 24.6                                                                                         | 24.7 | 25.5 | 30.1 | 34.3 | 35.6 | 35.7 | 35.9 | 36.4         |
| R132        | Residential | 24.4                                                                                         | 24.5 | 25.2 | 29.8 | 34.1 | 35.3 | 35.4 | 35.7 | 36.1         |
| R133        | Residential | 24.2                                                                                         | 24.3 | 25.1 | 29.7 | 33.9 | 35.1 | 35.3 | 35.5 | 35.9         |
| R134        | Residential | 24.3                                                                                         | 24.4 | 25.2 | 29.8 | 34   | 35.3 | 35.4 | 35.7 | 36.1         |
| R135        | Residential | 24.3                                                                                         | 24.4 | 25.2 | 29.8 | 34   | 35.3 | 35.4 | 35.6 | 36.1         |
| R136        | Residential | 24.5                                                                                         | 24.6 | 25.4 | 30   | 34.2 | 35.5 | 35.6 | 35.9 | 36.3         |
| R137        | Residential | 24.5                                                                                         | 24.6 | 25.4 | 30   | 34.2 | 35.4 | 35.5 | 35.8 | 36.2         |
| R138        | Residential | 24.3                                                                                         | 24.4 | 25.2 | 29.8 | 34   | 35.2 | 35.3 | 35.6 | 36           |
| R139        | Residential | 24.2                                                                                         | 24.4 | 25.1 | 29.7 | 34   | 35.2 | 35.3 | 35.6 | 36           |
| R140        | Residential | 24.4                                                                                         | 24.5 | 25.3 | 29.9 | 34.1 | 35.3 | 35.4 | 35.7 | 36.1         |
| R141        | Residential | 24.3                                                                                         | 24.5 | 25.2 | 29.8 | 34   | 35.3 | 35.4 | 35.7 | 36.1         |
| R142        | Residential | 24.2                                                                                         | 24.4 | 25.1 | 29.7 | 33.9 | 35.2 | 35.3 | 35.6 | 36           |
| R143        | Residential | 24.2                                                                                         | 24.3 | 25.1 | 29.7 | 33.9 | 35.2 | 35.3 | 35.6 | 36           |
| R144        | Residential | 24.3                                                                                         | 24.4 | 25.2 | 29.8 | 34   | 35.2 | 35.4 | 35.6 | 36           |
| R145        | Residential | 24.3                                                                                         | 24.4 | 25.2 | 29.8 | 34   | 35.2 | 35.3 | 35.6 | 36           |
| R146        | Residential | 24                                                                                           | 24.2 | 24.9 | 29.5 | 33.7 | 35   | 35.1 | 35.4 | 35.8         |
| R147        | Residential | 24                                                                                           | 24.1 | 24.9 | 29.5 | 33.7 | 35   | 35.1 | 35.4 | 35.8         |

| Receptor ID | Description | Predicted Noise Level (dB L <sub>A90</sub> ) at Standardised 10m Height<br>Wind Speeds (m/s) |      |      |      |      |      |      |      |              |
|-------------|-------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|--------------|
|             |             | 2                                                                                            | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10 - Cut out |
| R148        | Residential | 23.9                                                                                         | 24   | 24.8 | 29.4 | 33.6 | 34.9 | 35   | 35.3 | 35.7         |
| R149        | Mixed-Use   | 26.6                                                                                         | 26.7 | 27.6 | 32.1 | 36.5 | 37.6 | 37.7 | 38   | 38.4         |
| R150        | Residential | 24                                                                                           | 24.1 | 24.9 | 29.5 | 33.7 | 34.9 | 35.1 | 35.3 | 35.7         |
| R151        | Residential | 23.9                                                                                         | 24   | 24.8 | 29.4 | 33.6 | 34.9 | 35   | 35.3 | 35.7         |
| R152        | Residential | 23.7                                                                                         | 23.9 | 24.6 | 29.2 | 33.5 | 34.7 | 34.8 | 35.1 | 35.5         |
| R153        | Residential | 24.1                                                                                         | 24.2 | 25   | 29.6 | 33.8 | 35.1 | 35.2 | 35.5 | 35.9         |
| R154        | Residential | 24.2                                                                                         | 24.3 | 25   | 29.6 | 33.9 | 35.1 | 35.2 | 35.5 | 35.9         |
| R155        | Residential | 24.2                                                                                         | 24.3 | 25.1 | 29.7 | 33.9 | 35.1 | 35.2 | 35.5 | 35.9         |
| R156        | Residential | 24.3                                                                                         | 24.4 | 25.2 | 29.8 | 34   | 35.2 | 35.3 | 35.6 | 36           |
| R157        | Residential | 24.2                                                                                         | 24.3 | 25.1 | 29.7 | 33.9 | 35.1 | 35.3 | 35.5 | 35.9         |
| R158        | Residential | 24.2                                                                                         | 24.3 | 25.1 | 29.7 | 33.9 | 35.2 | 35.3 | 35.6 | 36           |
| R159        | Residential | 24.1                                                                                         | 24.2 | 24.9 | 29.6 | 33.8 | 35   | 35.1 | 35.4 | 35.8         |
| R160        | Residential | 26                                                                                           | 26.1 | 27   | 31.5 | 35.9 | 36.9 | 37.1 | 37.4 | 37.7         |
| R161        | Residential | 24.2                                                                                         | 24.3 | 25.1 | 29.7 | 33.9 | 35.1 | 35.3 | 35.5 | 36           |
| R163        | Residential | 24.6                                                                                         | 24.8 | 25.7 | 30.2 | 34.6 | 35.6 | 35.8 | 36   | 36.4         |
| R164        | Residential | 24                                                                                           | 24.1 | 24.9 | 29.5 | 33.7 | 34.9 | 35   | 35.3 | 35.7         |
| R165        | Residential | 23.8                                                                                         | 23.9 | 24.7 | 29.3 | 33.5 | 34.7 | 34.8 | 35.1 | 35.5         |
| R166        | Residential | 23.9                                                                                         | 24   | 24.8 | 29.4 | 33.6 | 34.9 | 35   | 35.3 | 35.7         |
| R167        | Residential | 24.1                                                                                         | 24.2 | 25   | 29.6 | 33.8 | 35   | 35.1 | 35.4 | 35.8         |
| R168        | Residential | 25.2                                                                                         | 25.3 | 26.2 | 30.7 | 35.1 | 36.1 | 36.3 | 36.6 | 36.9         |
| R169        | Residential | 23.8                                                                                         | 24   | 24.7 | 29.3 | 33.6 | 34.8 | 34.9 | 35.2 | 35.6         |
| R170        | Residential | 23.9                                                                                         | 24   | 24.8 | 29.4 | 33.6 | 34.9 | 35   | 35.3 | 35.7         |
| R171        | Residential | 23.8                                                                                         | 23.9 | 24.7 | 29.3 | 33.5 | 34.7 | 34.9 | 35.1 | 35.5         |
| R172        | Residential | 24                                                                                           | 24.1 | 24.9 | 29.5 | 33.7 | 35   | 35.1 | 35.4 | 35.8         |
| R173        | Residential | 23.9                                                                                         | 24   | 24.8 | 29.4 | 33.6 | 34.8 | 34.9 | 35.2 | 35.6         |
| R174        | Residential | 23.6                                                                                         | 23.7 | 24.5 | 29.1 | 33.3 | 34.6 | 34.7 | 35   | 35.4         |
| R175        | Residential | 23.7                                                                                         | 23.8 | 24.6 | 29.2 | 33.4 | 34.7 | 34.8 | 35   | 35.5         |
| R176        | Residential | 23.8                                                                                         | 23.9 | 24.7 | 29.3 | 33.5 | 34.7 | 34.9 | 35.1 | 35.5         |
| R177        | Residential | 23.6                                                                                         | 23.8 | 24.5 | 29.1 | 33.4 | 34.6 | 34.7 | 35   | 35.4         |
| R178        | Residential | 27.3                                                                                         | 27.4 | 28.3 | 32.7 | 37.2 | 38.2 | 38.3 | 38.6 | 39           |
| R179        | Residential | 23.7                                                                                         | 23.9 | 24.6 | 29.2 | 33.5 | 34.7 | 34.8 | 35.1 | 35.5         |
| R180        | Residential | 23.6                                                                                         | 23.7 | 24.5 | 29.1 | 33.3 | 34.5 | 34.7 | 34.9 | 35.4         |
| R181        | Residential | 24.5                                                                                         | 24.6 | 25.5 | 30   | 34.4 | 35.5 | 35.6 | 35.9 | 36.3         |
| R182        | Residential | 23.7                                                                                         | 23.8 | 24.6 | 29.2 | 33.4 | 34.6 | 34.7 | 35   | 35.4         |

| Receptor ID | Description | Predicted Noise Level (dB L <sub>A90</sub> ) at Standardised 10m Height<br>Wind Speeds (m/s) |      |      |      |      |      |      |      |              |
|-------------|-------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|--------------|
|             |             | 2                                                                                            | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10 - Cut out |
| R183        | Residential | 23.6                                                                                         | 23.7 | 24.5 | 29.1 | 33.3 | 34.6 | 34.7 | 35   | 35.4         |
| R184        | Residential | 23.5                                                                                         | 23.6 | 24.4 | 29   | 33.2 | 34.5 | 34.6 | 34.9 | 35.3         |
| R185        | Residential | 23.5                                                                                         | 23.6 | 24.4 | 29   | 33.2 | 34.4 | 34.6 | 34.8 | 35.2         |
| R186        | Residential | 23.6                                                                                         | 23.7 | 24.5 | 29.1 | 33.3 | 34.5 | 34.7 | 34.9 | 35.3         |
| R187        | Residential | 23.5                                                                                         | 23.6 | 24.4 | 29   | 33.2 | 34.5 | 34.6 | 34.9 | 35.3         |
| R188        | Residential | 25.1                                                                                         | 25.2 | 26.1 | 30.6 | 35   | 36.1 | 36.2 | 36.5 | 36.9         |
| R189        | Residential | 23.6                                                                                         | 23.7 | 24.4 | 29   | 33.3 | 34.5 | 34.6 | 34.9 | 35.3         |
| R190        | Residential | 23.5                                                                                         | 23.7 | 24.5 | 29.1 | 33.3 | 34.5 | 34.6 | 34.9 | 35.3         |
| R191        | Residential | 24.8                                                                                         | 25   | 25.9 | 30.4 | 34.8 | 35.8 | 36   | 36.2 | 36.6         |
| R193        | Residential | 23.6                                                                                         | 23.7 | 24.5 | 29.1 | 33.3 | 34.5 | 34.6 | 34.9 | 35.3         |
| R194        | Residential | 23.4                                                                                         | 23.5 | 24.3 | 28.9 | 33.2 | 34.4 | 34.5 | 34.8 | 35.2         |
| R195        | Residential | 23.3                                                                                         | 23.4 | 24.3 | 28.8 | 33.3 | 34.3 | 34.5 | 34.7 | 35.1         |
| R196        | Residential | 23.6                                                                                         | 23.7 | 24.5 | 29.1 | 33.3 | 34.5 | 34.6 | 34.9 | 35.3         |
| R197        | Residential | 24.1                                                                                         | 24.3 | 25.2 | 29.7 | 34.1 | 35.1 | 35.3 | 35.5 | 35.9         |
| R198        | Residential | 26.3                                                                                         | 26.4 | 27.3 | 31.8 | 36.2 | 37.2 | 37.4 | 37.6 | 38           |
| R199        | Residential | 23.3                                                                                         | 23.4 | 24.2 | 28.8 | 33.1 | 34.3 | 34.4 | 34.7 | 35.1         |
| R201        | Residential | 25.7                                                                                         | 25.9 | 26.8 | 31.2 | 35.7 | 36.7 | 36.8 | 37.1 | 37.5         |
| R202        | Residential | 26.5                                                                                         | 26.6 | 27.5 | 32   | 36.4 | 37.4 | 37.6 | 37.8 | 38.2         |
| R203        | Residential | 26.4                                                                                         | 26.6 | 27.5 | 31.9 | 36.4 | 37.4 | 37.5 | 37.8 | 38.2         |
| R204        | Residential | 26.4                                                                                         | 26.5 | 27.4 | 31.9 | 36.3 | 37.3 | 37.5 | 37.8 | 38.2         |
| R205        | Residential | 26.5                                                                                         | 26.6 | 27.6 | 32   | 36.5 | 37.5 | 37.6 | 37.9 | 38.3         |
| R206        | Residential | 26.6                                                                                         | 26.7 | 27.6 | 32.1 | 36.5 | 37.5 | 37.7 | 37.9 | 38.3         |
| R211        | Residential | 23.6                                                                                         | 23.7 | 24.7 | 29.1 | 33.6 | 34.6 | 34.8 | 35   | 35.4         |
| R214        | Residential | 25.4                                                                                         | 25.5 | 26.4 | 30.9 | 35.3 | 36.4 | 36.5 | 36.8 | 37.2         |
| R215        | Residential | 23.9                                                                                         | 24   | 25   | 29.4 | 33.9 | 34.9 | 35   | 35.3 | 35.7         |
| R216        | Residential | 23.8                                                                                         | 23.9 | 24.8 | 29.3 | 33.7 | 34.8 | 34.9 | 35.2 | 35.6         |
| R217        | Residential | 23.4                                                                                         | 23.6 | 24.5 | 29   | 33.4 | 34.4 | 34.6 | 34.8 | 35.2         |
| R221        | Residential | 24.6                                                                                         | 24.8 | 25.7 | 30.2 | 34.6 | 35.6 | 35.8 | 36   | 36.4         |
| R222        | Residential | 24                                                                                           | 24.2 | 25.1 | 29.6 | 34   | 35   | 35.2 | 35.5 | 35.8         |
| R224        | Residential | 24.2                                                                                         | 24.3 | 25.2 | 29.7 | 34.1 | 35.2 | 35.3 | 35.6 | 36           |
| R238        | Residential | 24.6                                                                                         | 24.7 | 25.7 | 30.1 | 34.6 | 35.6 | 35.7 | 36   | 36.4         |
| R239        | Residential | 23.6                                                                                         | 23.7 | 24.6 | 29.1 | 33.6 | 34.6 | 34.7 | 35   | 35.4         |
| R242        | Residential | 26.4                                                                                         | 26.5 | 27.5 | 31.9 | 36.4 | 37.4 | 37.5 | 37.8 | 38.2         |
| R248        | Residential | 24.2                                                                                         | 24.3 | 25.2 | 29.7 | 34.2 | 35.2 | 35.3 | 35.6 | 36           |

| Receptor ID | Description | Predicted Noise Level (dB L <sub>A90</sub> ) at Standardised 10m Height<br>Wind Speeds (m/s) |      |      |      |      |      |      |      |              |
|-------------|-------------|----------------------------------------------------------------------------------------------|------|------|------|------|------|------|------|--------------|
|             |             | 2                                                                                            | 3    | 4    | 5    | 6    | 7    | 8    | 9    | 10 - Cut out |
| R249        | Residential | 26.5                                                                                         | 26.6 | 27.5 | 32   | 36.4 | 37.4 | 37.6 | 37.8 | 38.2         |
| R250        | Residential | 24.4                                                                                         | 24.5 | 25.4 | 29.9 | 34.3 | 35.4 | 35.5 | 35.8 | 36.1         |
| R255        | Residential | 24.3                                                                                         | 24.4 | 25.4 | 29.8 | 34.3 | 35.3 | 35.4 | 35.7 | 36.1         |
| R258        | Residential | 24.2                                                                                         | 24.4 | 25.3 | 29.8 | 34.2 | 35.2 | 35.4 | 35.6 | 36           |
| R260        | Residential | 24.1                                                                                         | 24.2 | 25.1 | 29.6 | 34.1 | 35.1 | 35.2 | 35.5 | 35.8         |
| R262        | Residential | 25.7                                                                                         | 25.8 | 26.8 | 31.2 | 35.7 | 36.7 | 36.8 | 37.1 | 37.5         |
| R266        | Residential | 25.8                                                                                         | 26   | 26.9 | 31.4 | 35.8 | 36.8 | 37   | 37.2 | 37.6         |
| R275        | Residential | 25.9                                                                                         | 26.1 | 27   | 31.4 | 35.9 | 36.9 | 37   | 37.3 | 37.7         |
| R284        | Residential | 24                                                                                           | 24.1 | 25   | 29.5 | 34   | 35   | 35.1 | 35.4 | 35.7         |
| R285        | Residential | 26                                                                                           | 26.1 | 27.1 | 31.5 | 36   | 37   | 37.1 | 37.4 | 37.8         |
| R288        | Residential | 26                                                                                           | 26.2 | 27.1 | 31.5 | 36   | 37   | 37.1 | 37.4 | 37.8         |
| R289        | Residential | 23.9                                                                                         | 24   | 24.9 | 29.4 | 33.9 | 34.9 | 35   | 35.3 | 35.6         |
| R290        | Mixed-Use   | 26                                                                                           | 26.1 | 27.1 | 31.5 | 36   | 37   | 37.1 | 37.4 | 37.8         |
| R312        | Mixed-Use   | 23.6                                                                                         | 23.8 | 24.7 | 29.2 | 33.6 | 34.6 | 34.8 | 35   | 35.4         |
| R317        | Mixed-Use   | 24                                                                                           | 24.1 | 25   | 29.5 | 34   | 35   | 35.1 | 35.4 | 35.8         |
| R1019       | Mixed-Use   | 24.6                                                                                         | 24.7 | 25.6 | 30.1 | 34.6 | 35.5 | 35.7 | 35.9 | 36.3         |
| R1069       | Residential | 26.1                                                                                         | 26.3 | 27.2 | 31.6 | 36.1 | 37.1 | 37.2 | 37.5 | 37.9         |
| R1070       | Residential | 24.4                                                                                         | 24.5 | 25.4 | 29.9 | 34.3 | 35.3 | 35.5 | 35.7 | 36.1         |
| R1071       | Mixed-Use   | 26.8                                                                                         | 26.9 | 27.9 | 32.3 | 36.8 | 37.7 | 37.9 | 38.2 | 38.6         |
| R1072       | Residential | 26.4                                                                                         | 26.5 | 27.5 | 31.9 | 36.4 | 37.3 | 37.5 | 37.8 | 38.2         |
| R1073       | Mixed-Use   | 26.2                                                                                         | 26.3 | 27.2 | 31.6 | 36.1 | 37.1 | 37.2 | 37.5 | 37.9         |
| R1074       | Residential | 26.2                                                                                         | 26.3 | 27.2 | 31.6 | 36.1 | 37.1 | 37.2 | 37.5 | 37.9         |
| R1075       | Residential | 24.8                                                                                         | 24.9 | 25.9 | 30.3 | 34.8 | 35.7 | 35.9 | 36.2 | 36.6         |





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