Coom Green Energy Park

Main Questions from Technical Workshop 1 – Noise
May 9th, 2019

When was the noise monitoring / recording data collected and were there seasonal differences in the results?

Eighteen monitoring locations were used to establish baseline background noise. All noise monitors were located adjacent to dwellings. The locations selected were representative of different noise environments in the vicinity of the site as well as being located at some of the closest dwellings to the proposed turbines. The survey methodology used is based on the Institute of Acoustics Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise (May 2013) and the associated supplementary notes relevant to the baseline measurements and analysis.

The Institute of Acoustics (IOA) "A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise" states that background noise surveys may be carried out over any time of the year. The IOA state "there is no compelling evidence that it is necessary to carry out background noise surveys at any particular time of year, or over two or more separate periods. The only common exception is when a measurement position is close to a running watercourse which is a significant noise source." The IOA go on to say "Background noise surveys may be carried out at any time of the year provided that seasonal effects leading to raised noise levels can be excluded by selection of measurement position or by exclusion of non-typical data during analysis." In the case of the background noise surveys undertaken as part of the proposed Coom Green Energy Park Development, the locations selected were done in accordance with the IOA guidelines.

Data was collected for a minimum of two weeks and up to five weeks in some cases until sufficient data had been deemed to be collected. Three rounds of monitoring were undertaken:
24th October 2018 – 14th November 2018
20th December 2018 - 28th January 2019
6th February 2019 – 26th February 2019

What type of turbines will be installed?

The type of turbine that will be installed has not been determined yet and this will not be confirmed until after the planning application process if the project receives planning. Due to the long timeframe between the planning submission and construction and the constant improvements in technology, a more efficient turbine model may be available at the time of purchase. The selection of a turbine model will be dictated by the noise levels and planning conditions as set by the planning authority. Post construction monitoring will take place to assure compliance with all relevant planning conditions.

Was rainfall taken into account when monitoring data was compiled?

A logging rain gauge was installed during the noise surveys. Rainfall data was measured concurrently during the noise surveys. 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.

What will the impact be on night-time noise levels?

This response references the document Information Note, Review of the Wind Energy Development Guidelines 2006, "Preferred Draft Approach" (PDA), published by the Department of Communications, Climate Action & Environment (2017). In relation to noise limits, the PDA proposes noise restriction limits consistent with World Health Organisation standards.

The PDA sets out noise limits from wind energy developments as follows: a relative rated noise limit of 5dB(A) above existing background noise within the range of 35 to 43dB(A), with 43dB(A) being the maximum noise limit permitted, day or night. Therefore, the noise limit will range between 35 and 43dB LA90. Sounds containing certain characteristics specific to wind turbines (e.g. tonal, low frequency and amplitude modulation) are frequently perceived to be more intrusive than those that do not. The rated limit will take account of these certain noise characteristics

and, where identified, permitted noise limits will be further reduced to mitigate for these.

What about low frequency noise, echo and infrasound?

Infrasound is noise occurring at frequencies below that at which sound is normally audible, i.e. at less than about 20 Hz, due to the significantly reduced sensitivity of the ear at such frequencies. In this frequency range, for sound to be perceptible, it has to be at very high amplitude and it is generally considered that when such sounds are perceptible then they can cause considerable annoyance.

The UK Department of Trade and Industry Low Frequency Noise Study, W/45/00656/00/00, The Measurement of Low Frequency Noise at three UK wind farms, concluded that 'infrasound noise emissions from wind turbines are significantly below the recognised threshold of perception for acoustic energy within this frequency range. Even assuming that the most sensitive members of the population have a hearing threshold which is 12 dB lower than the median hearing threshold, measured infrasound levels are well below this criterion'.

It goes on to state that, based on information from the World Health Organisation, 'there is no reliable evidence that infrasound below the hearing threshold produce physiological or psychological effects' and that 'it may therefore be concluded that infrasound associated with modern wind turbines is not a source which may be injurious to the health of a wind farm neighbour'.

The study acknowledges that wind turbine noise may result in an internal noise level that is just above the threshold of audibility. The study goes on to say that the noise could be audible within the dwelling. 'However, at all the measurement sites, low frequency noise associated with traffic movement along local roads has been found to be greater than that from the neighbouring wind farm.'

Noise from modern wind turbines is essentially broadband in nature in that it contains similar amounts of acoustic energy in all frequency bands from low to high frequency. As distance from a wind farm site increases the noise level decreases as a result of the spreading out of the sound energy and also due to air absorption which increases with increasing frequency. This means that, although the energy across the whole frequency range is reduced, higher frequencies are reduced more than lower frequencies with the effect that as distance from the site increases the

ratio of low to high frequencies also increases. This effect may be observed with road traffic noise or natural sources, such as the sea, where higher frequency components are diminished relative to lower frequency components at long distances. At such distances, however, the overall noise level is so low that any bias in the frequency spectrum is insignificant.

In the unlikely event that low frequency noise is at a level to cause disturbance, PDA guidelines permitted noise limits will be further reduced to mitigate for low frequency noise.

Echo

The noise impact assessment and in particular the noise predictions assess the site for noise propagation across a valley i.e. a concave ground profile, or where the ground falls away significantly, between the turbine and the receiver location. The procedure followed is in accordance with the Institute of Acoustics (IOA) 'A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise'. Where a criterion in the IOA guidelines relating to potential echo effects is met, a correction of +3 dB is added to the predicted noise levels.

Will the raw data from the wind monitoring be made available to the public?

The Noise and Vibration Chapter and/or supporting Appendices in the Environmental Impact Assessment Report will present the measured noise level data as a function of wind speed at each of the 18 noise monitoring locations. Daytime and night-time data will be presented. All analysis undertaken will be outlined. Raw data has been made available upon request to residents where noise monitors were installed.

How were monitoring locations selected?

A noise model was undertaken to assess the potential impact of the proposed development and to identify the most exposed dwellings. The noise predictions and a desktop survey were used to identify suitable noise monitoring locations which are representative of the different noise environments in the vicinity of the site. A number of locations were identified, and dwelling owners were approached seeking permission to install noise meters. Permission was granted in most cases but there were a number of dwelling owners who refused. In those instances where

permission was refused, alternative equally suitable monitoring locations were identified and again permission from the dwelling owners were sought. In the case of Coom Green Energy Park we received permission at a sufficient number of noise monitoring locations to characterise the noise environment.

Will turbines be removed if they are causing problems for the local community following installation?

The development must comply with all planning conditions attached to consent granted for a development. If the development does not comply, for example, with the permitted noise levels, enforcement proceedings can be initiated which will result in mitigation of the problem.

Does low frequency noise (or other wind turbine effects) impact on livestock?

Coom Green Energy is not aware of any scientific evidence from credible sources of wind energy having any negative impact on livestock. Wind energy by its nature is generally rural-based and so the vast majority of projects are sited alongside and within farmland, where farming can continue right up to and around the base of the turbine.

Is the proposed 750m set back area adequate?

Set back distances are measured from the centre point of the turbine base. There is a mandatory minimum distance of 500 meters (Wind Energy Development Guidelines 2006), with a recommended set back of four times the turbine height (PDA, 2017). A maximum turbine height of 169m is likely to be applied for, therefore a setback distance of 676m would be recommended. A minimum 750m distance between receptors and any turbine is sufficient set back distance and greater than the recommended minimum distance.

Is Design Iteration 2 (DI2) the final layout of the proposed development?

Design Iteration 2 will likely be the final design for planning, however the layout may change slightly as additional surveying and constraints are identified during the EIA process.

Why has the development been reduced from 27 turbines to 22 turbines?

Due to required set back distances, noise constraints, ecological constraints, ground conditions, visual impact, etc, certain areas originally considered for the siting of turbines have been removed.

When will the planning application be submitted?

It is intended that the planning application will be submitted in August 2019.
Note: This date may change

Will further maps be provided showing the changes between DI1 and DI2?

Maps will be provided for residents through public consultation and will be available on the project website.

Can a fund be put in place for removing turbines if the local community has issues after they are installed?

A security bond will be required to be paid to the planning authority prior to the commencement of development to ensure the removal of turbines if required. This is a typical condition of planning for contemporary wind turbine developments and ensures that the removal of turbines and the reinstatement of the site will occur upon cessation of the project or aspects of the project.