

BAILLIE HILL WIND FARM

Summary Precognition of Dick Bowdler

Ref: 4967

2nd March 2009

BAILLIE HILL WIND FARM

Summary Precognition of Dick Bowdler

1 BACKGROUND NOISE DATA

- 1.1 I have concern about the quality of the background noise data. Some of the background noise curves is not typical and show hardly any correlation of noise with wind speed.
- 1.2 The wind monitoring mast used for the noise measurements was not placed at a suitable location. It should have been on the development site and, as a 10 metre mast, kept clear of forestry. The microphone wind shields used were inadequate and some sections of data are missing.

2 BACKGROUND NOISE ANALYSIS

- 2.1 In assessing the impact of wind turbine noise we compare the level of the turbine noise with the level of background noise at each wind speed. A correction is normally made for the effect of wind shear and this has been done by the developer in the document BWL/86 but was not done in the ES or the 2006 Addendum.
- 2.2 The methodology used to correct for wind shear in BWL86 is broadly correct but it appears to have been wrongly applied. The effect is to show background noise levels much higher at any particular wind speed than they should be.
- 2.3 Using the developer's raw data I have I have carried out a re-analysis of the background noise levels making allowance for wind shear where the data is available to do so.

3 TURBINE NOISE

- 3.1 It is generally agreed that International Standard ISO 9613 is an appropriate model for the calculation of turbine noise at noise sensitive properties provided that care is taken in specifying the input parameters. I do not

significantly disagree with the warranted sound power levels used by the developer.

- 3.2 It is generally accepted that the use of mixed ground ($G=0.5$ in the model) with a 4 metres receiver height together with vendor's warranted sound power levels will result in a realistic estimate of the turbine noise level at receivers downwind of wind turbines. This method was used by RPS at the Barmoor wind farm. At Baillie Hill the developer's consultant in the 2006 Addendum appears to have used a method that severely underestimates the real turbine noise. This has been changed in BWL86 but the turbine noise levels are still low.
- 3.3 I have calculated the turbine noise levels at sensitive properties on the basis of best practice and these are about 6dB higher than those in the 2006 Addendum and 1 to 2dB higher than those in BWL86.

4 SETTING THE STANDARD

- 4.1 PAN 56, Planning and Noise says that *Good acoustical design and siting of turbines is essential to ensure there is no significant increase in ambient noise levels as they affect the environment and any nearby noise-sensitive property.*
- 4.2 PAN 45 "Renewable Energy Technologies" says that ETSU-R-97 *describes a framework for the measurement of wind farm noise and gives indicative noise levels thought to offer a reasonable degree of protection to wind farm neighbours, without placing unreasonable restrictions on wind farm development or adding unduly to the costs and administrative burdens on wind farm developers or planning authorities.*
- 4.3 Accordingly there are two tests that need to be applied to wind farm noise levels in order to assess the impact of the proposal.

5 INCREASE IN AMBIENT NOISE

- 5.1 I show in my main precognition that there will be increases in noise level of up to 12dBA during the day and up to 18dBA at night even if the highest background noise levels are used as a baseline. If the developer's lower background noise levels are used then the increase in noise levels during the day is up to 17dBA and at night it is up to 18dBA. Some properties will

therefore have noise levels from the turbines four times as loud as the present background noise level.

6 ETSU-R-97

- 6.1 ETSU-R-97 limits turbine noise to 5dB above the average background noise level or to a fixed lower limit where background noise is low. The developer has accepted that this site requires the day time fixed lower limit of 35dB and a night time fixed lower limit of 38dB. On the most generous assumptions 11 properties fail to meet this day time standard and 15 properties fail to meet this night time standard.
- 6.2 If, on the other hand, the developers lower background noise levels are used then 35 properties fail to meet the day time standard and 30 fail to meet the night time standard.
- 6.3 If another turbine were chosen then the levels would almost certainly be even higher. Even if all the turbines could be run at reduced power all the time such that the sound power could be reduced by 3dB there would still be a major failure to meet ETSU-R-97 day and night.
- 6.4 For most noise generating developments local authorities are not willing to permit a lower standard of amenity for any property merely because there is some financial connection with the developer but ETSU-R-97 permits a higher level of noise at properties where the **occupant** has a financial **involvement** in the development. For financial involvement to be applicable the person must play an active and direct part in the development.
- 6.5 It is necessary for the Inquiry to know the form of the financial involvement claimed at any property so as to come to a proper conclusion as to whether it applies each case. A mere assertion that this is the correct standard to be applied is not sufficient.
- 6.6 In any case, even if every property were classified as financially involved, three properties at Bardnaheigh, one at Hillcrest and two at 6 Skiall would still fail the much higher ETSU-R-97 test available for financially involved properties.