Dick Bowdler
Acoustic Consultant

01383 882 644
077 8535 2534
dick@dickbowdler.co.uk

To:	Allan Stewart

Copies:	

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NOISE ASSESSMENT

This memorandum reviews the report by VG Energy of October 2012 for the planning application for a turbine at South Lodge, Neilston. The review is prepared for Mr and Mrs Stewart who live at the neighbouring property of Crofthead House (referred to as High Crofthead House in the VG report).

BASELINE NOISE SURVEY

Paragraph 1.2 of the VG report says that the assessment has been carried out according to ETSU-R-97. This is not the case:

- In 2.1 of the report it says that the wind speed range measured should be from cut-in wind speed to 12m/s. To be exact, on page 99 of ETSU-R-97, it says *It must be ensured that, during the survey period, wind speeds over the range zero to at least 12m/s (10min average at 10m height), and a range of wind directions that are typical of the site, are experienced*. In fact, as Appendix 1 and Appendix 2 show, the maximum wind speed is about 5m/s during the day and 3.2m/s at night. This is so far short of the requirements that it is impossible to draw a reliable best fit curve up to 12m/s as can clearly be seen in the Appendices.

- In 3.1 it says that a noise survey was carried out at High Crofthead House. It is clear from page 84 and elsewhere in ETSU-R-97 that measurements should be made in areas of peoples gardens used for rest and relaxation. This has been emphasised by several reporters and inspectors at planning inquiries who have rejected measurements made in other areas – for example in fields adjacent to properties. I am informed that it is not the case that the survey was carried out at High Crofthead House. From the photographic evidence I have been given it was carried out in a field, very close to undergrowth and trees as shown below.

- In 3.3 it says the equipment was placed away from any bushes!

Although the points above mean that the results of the background noise survey cannot be relied upon they cannot possibly explain the incredibly high noise levels shown in 3.5 and 3.6 of the report. Even at 4m/s wind speed, at which there would be negligible noise from wind, the noise level is 64dB during the day and 67dB at night. To put this into context:

- As an experiment I carried out a measurement just after 9am on a weekday at a point 2m from the kerb of the A985 near Torryburn in Fife. The level (measured as LA90) was 58.5dBA. For comparison the traffic flow on this road is about one and a half times that on the A736 near Neilston.

- I have also looked at background noise measurements made for the Harelaw wind farm application. North Drumboy is about 100m from the M77; at 4m/s the average background noise during the quiet day is 44dBA and at night is 38dB.

- If this noise level had come from a new or modified road then Crofthead House would be entitled to have secondary glazing and other sound insulation measures installed under the Noise Insulation Scotland Regulations 1975.

Why the figures are so high is not clear but I cannot see how they could possibly be in any way representative of background noise levels at Crofthead House. I am most surprised that they are presented in the report without comment. More realistic figures at 4m/s might be those taken for the Harelaw wind farm application at Moyne Moor of 31dB during the day and 29dB at night – about one-tenth of the loudness of those quoted in the noise assessment.

I do not understand what paragraph 5.1 of the VG report means.

TURBINE NOISE CALCULATION

The calculations of turbine noise in the report are based on the measurements of the Polaris P-17-50 turbine reported in the document submitted with the application. Although, on the face of it, the measurements here are in accordance with IEC 61400-11 which is the appropriate standard, there are a number of departures from the standard – some of which are freely admitted in the text and some not. It is worth going through these.

- The microphone was placed closer to the turbine than the standard states. If the noise of the turbine is significantly directional this may affect the measurements. This is acknowledged and an addition has made to allow for the uncertainty of the measurement. This is probably a reasonable approach.

- 10 second averages of noise levels were made not 1 minute to avoid traffic noise on an adjacent road.

- It states that the windshield used was spherical whereas it should be hemispherical. This may mean that the microphone was not hard on the ground board and so the measurements recorded might be wrong, though the difference would be small.

- The wind speed was measured at a height of 10m. This is not an appropriate height for certification purposes – it should be hub height.

- The background noise level data (Figure 2 in Appendix A) is inadequate as there is no data at higher wind speeds.

- The background noise levels used below 5m/s are too close to the total noise with turbines running. That is to say turbine noise cannot be properly separated from the local ambient noise. There is no data at 9 and 10m/s. There are therefore figures for 5, 6, 7 and 8m/s only.

- There are two frequency bands missing from the one-third octave band figures.

- Making a reasonable assumption regarding the missing figures the one-third octave noise levels shown in Tables 5 and 6 do not add up to the same value as the overall figure in Table 3. At 8m/s the figures (assuming they are not A-weighted) in the one third octave bands add up to 52.2dBA instead of the 45.39 in Table 3. (I should explain that the overall noise levels of turbines are given as A-weighted levels, that is to say the various frequencies are weighted to simulate the response of the human ear. When we add up the various frequencies, for example the one-third octave levels, they may or may not be A-weighted and they are added logarithmically – not arithmetically).

- The tonal analysis is not convincing and not carried out in accordance with the standard.

Individually, some of these points may not be of much significance. On the other hand it is impossible to know whether others are significant or not. There are so many mistakes or anomalies in the Polaris test report that it leaves one with no feeling of confidence in the results.

As regards the final calculated noise levels at Crofthead House I see that sections 5.4 and 5.7 say that the level at 10m/s will be 48dB but the map in the Appendix shows a figure of around 42dB.

SUMMARY

The assessment of noise requires accurate measurement of background noise levels and accurate calculations of turbine noise levels so that a comparison of the two can be made. The VG report fulfils neither of these requirements. The background noise levels are incredible and the turbine noise levels are not reliable. It is simply not possible to make any sort of judgement of the impact of this turbine on Crofthead House from the information provided.

Kind regards,

Dick Bowdler