

NOISE NUISANCE FROM THE DUNSLAND CROSS WIND TURBINES

WHEN AND HOW TO COMPLAIN

This note is set out as follows:

1. Introduction and background information
2. The Noise Limits applicable
3. Monitoring the problem at your house
4. Making your complaint
5. What happens then
6. If the problem persists...

1. Introduction and background information

The Dunsland Cross Wind Farm gained planning permission from a government Inspector following a Public Inquiry after a 6-year fight by local residents opposing it. Torridge District Council had refused permission twice in that time. Likely noise nuisance from the turbines was a key battleground in the fight.

DTOG, the Dunsland Turbines Opposition Group, raised over £6,000 to pay for an expert acoustician with considerable wind farm expertise to explain to the Inspector why noise from the turbines would be likely to be unacceptable. In his Proof of Evidence, Bob Davis stated:

... Currently, residents living here will experience widely-varying ambient noise levels ... with a low background of distant traffic noise, varying levels of noise from wind in trees and other vegetation, punctuated by intermittent noise from passing vehicles, birdsong, and agricultural and domestic activities. Against this background, wind turbine noise would be audible at these dwellings as a relatively steady 'hum', which may exhibit a 'swishing' or 'pulsing' character. Residents at these dwellings would be aware of noise from the wind farm when they were relaxing in the open areas around their houses during evenings and at weekends. I would expect the level and character of the noise to be such as to cause distraction, loss of concentration on other tasks (such as reading in the garden), and annoyance. (para 8.3)

It is clear that some residents in the vicinity of the proposed Dunsland Cross wind farm would experience a significant increase in background noise levels in this currently tranquil area. Wind turbine noise would be clearly audible outside more than 30 dwellings in some wind conditions during daytime amenity hours (evenings, Saturday afternoons and Sundays). At night, wind turbine noise would be audible in bedrooms, when windows are open, at a level significantly higher than the background noise level from other sources. At some dwellings, noise levels in bedrooms at night are likely to equal or exceed the WHO [World Health Organisation] recommended limit to avoid sleep disturbance. Residents would suffer a substantial loss of amenity. (para 10.8)

In his report granting planning permission, the Inspector stated:

The appellant's [i.e. the developer's] assessment of operational noise reveals that the proposed wind turbines could, under some circumstances, such as downwind conditions when wind speeds are between 5-8m/s, be audible from some neighbouring properties above the prevailing background noise. For some of those currently living within this essentially quite rural area this could disturb and diminish their living conditions. However, that is not to say that the proposal would result in a significant adverse noise impact... (para 54)

The noise impact of the scheme would maintain amenity appropriate to the locality and would be unlikely to result in significant disturbance for neighbours... (para 60)

Strict noise limits apply to all operational wind turbines in the vicinity of residential properties. They are set in relation to the background noise levels which existed in the area before the wind farm was constructed. If the turbines cannot meet these limits then the wind farm cannot go ahead. In some cases, as at Dunslund Cross where the turbines are so close to houses, the limits can only be met by running the turbines in a range of noise-suppressed modes for different wind strengths and directions.

To make turbines quieter they must be made to rotate more slowly. The Dunslund Cross turbines rotate between 11 rpm (when the wind reaches cut-in speed, about 6 mph at ground level) and 17 rpm (when the turbines are going flat out, in winds about 14 mph and upwards at ground level). The noise difference between the two ends of the scale is considerable. The turbines are most likely to breach the limits in wind speeds of 13 - 18 mph when revolving at 14 - 17 rpm. If one or more of the turbines is breaching noise limits at a property when running at, say, 16 rpm, then the operator must feather the blades a little and slow it down until the noise limit is no longer breached.

In the absence of any noise complaints the operator will naturally let the turbines run as fast as possible. The faster they rotate, the more electricity they generate and that means more money for the operator. There is mounting evidence that this is beginning to happen at Dunslund Cross. DTOG has been monitoring rotation speeds since generation began in March 2017. Turbines now appear to rotate faster and faster in wind speeds and directions which previously required greater degrees of noise suppression to meet the noise limits at different houses around the site.

It is generally accepted that wind turbines are noisier downwind than upwind but at Dunslund Cross they are noticeably audible upwind most of the time at the higher wind speeds. It is the nature of the noise which is most irritating. The constant hum and aerodynamic swish of the blades carving into the air cuts through any background noise even when that background noise - the wind rustling the leaves in the trees, for example - is supposed to have become louder than the turbines as the wind speed rises.

What is most disconcerting is that the turbines can be heard inside houses, even when windows are closed. This can be particularly distressing at night if sleep is being disturbed. It seems that the DTOG acoustician was correct in his predictions and the Inspector was wrong in his response.

2. The Noise Limits applicable

Noise is measured in decibels (dB) and different values are set for daytime hours (0700-2300) and night time hours (2300-0700). The tables below show the limits at Dunslund Cross - you take your limits from the house in the table nearest yours.

Table 1a: Between 07:00 and 23:00 – Noise limits expressed in dB $L_{A90,10 \text{ min}}$ as a function of the standardised wind speed (ms^{-1}) at 10 metre height as determined within the site averaged over 10 minute periods (applicable for turbines with a hub height of up to and including 62m)

	Standardised Wind Speed at 10 m AGL, ms^{-1}										
	2	3	4	5	6	7	8	9	10	11	12
	Noise Limit, dB, $L_{A90,10 \text{ min}}$										
Bickford Cottage	35.1	35.3	36.1	37.4	39.1	41.1	43.3	45.7	48.2	48.2	48.2
Bickford Lodge	38.5	38.9	40.0	41.4	43.2	45.3	47.5	49.7	51.9	51.9	51.9
Cranmore	35.9	36.3	36.6	38.0	40.9	45.1	49.8	53.7	55.0	55.0	55.0
Fairlawns	35.0	35.0	35.0	35.9	37.5	39.5	41.9	44.7	47.7	47.7	47.7
Little Copse	35.0	35.0	35.0	35.9	37.5	39.5	41.9	44.7	47.7	47.7	47.7
Tembani	35.1	35.3	36.1	37.4	39.1	41.1	43.3	45.7	48.2	48.2	48.2
The Laurels	35.1	35.3	36.1	37.4	39.1	41.1	43.3	45.7	48.2	48.2	48.2
The Vale	35.0	35.0	35.0	35.9	37.5	39.5	41.9	44.7	47.7	47.7	47.7
View Farm	35.0	35.0	35.0	35.3	37.2	39.5	42.2	45.0	47.9	47.9	47.9
Woodlands	38.9	38.9	39.8	41.5	43.6	46.2	49.0	52.0	54.8	54.8	54.8

Table 2a: Between 23:00 and 07:00 – Noise limits expressed in dB $L_{A90,10 \text{ min}}$ as a function of the standardised wind speed (ms^{-1}) at 10 metre height as determined within the site averaged over 10 minute periods (applicable for turbines with a hub height of up to and including 62m)

	Standardised Wind Speed at 10 m AGL, ms^{-1}										
	2	3	4	5	6	7	8	9	10	11	12
	Noise Limit, dB, $L_{A90,10\text{min}}$										
Bickford Cottage	40.0	40.0	40.00	40.0	40.0	40.0	42.0	45.7	48.2	48.2	48.2
Bickford Lodge	40.0	40.0	40.0	40.0	40.0	40.6	44.2	47.7	50.7	50.7	50.7
Cranmore	40.0	40.0	40.0	40.0	40.0	41.6	47.1	51.7	55.0	55.0	55.0
Fairlawns	40.0	40.0	40.0	40.0	40.0	40.0	41.5	44.7	47.7	47.7	47.7
Little Copse	40.0	40.0	40.0	40.0	40.0	40.0	41.5	44.7	47.7	47.7	47.7
Tem bani	40.0	40.0	40.0	40.0	40.0	40.0	42.0	45.7	48.2	48.2	48.2
The Laurels	40.0	40.0	40.0	40.0	40.0	40.0	42.0	45.7	48.2	48.2	48.2
The Vale	40.0	40.0	40.0	40.0	40.0	40.0	41.5	44.7	47.7	47.7	47.7
View Farm	40.0	40.0	40.0	40.0	40.0	40.0	42.0	45.0	47.9	47.9	47.9
Woodlands	40.0	40.0	40.0	40.0	40.0	43.0	48.2	52.0	54.8	54.8	54.8

The DTOG acoustician secured two important concessions during the Public Inquiry. He got the night time noise limit reduced from a national minimum of 43dB to 40dB for the Dunsland Cross site and he persuaded the Inspector to add a condition which says that if the turbines are running in noise-suppressed mode during the day, then they must also remain in that same noise-suppressed mode at night if the wind conditions haven't changed. If this latter condition was not in place then there would be a clear increase in turbine noise at 2300 each night in all but the highest wind speeds when the operator allowed the turbines to speed up, knowing that the night time limits are higher than the day time limits.

It may seem strange that noise limits are higher at night than during the day, but the argument is that people are more likely to be indoors than outdoors so are less exposed to the noise from the turbines. It is the only noise standard in the World to be this way round.

To make sense of the numbers in the tables above, a car going past your house is likely to register 60-75 dB. 'Silence' outside your house in the middle of the night will be around 18-22dB, but the turbines would have to be stopped to get that now. A quiet bedroom at night in this area should be 30-35dB. The WHO recommendation for quiet bedrooms and preservation of sleep patterns has been reduced from 35dB to 30dB in recent times, but this is not being enforced as far as turbine noise is concerned.

3. Monitoring the problem at your house

Being distracted and annoyed by turbine noise does not necessarily mean that the turbines are breaching their noise limit conditions. In order to know whether or not noise limits are being breached outside and inside your house you need to know two things: wind speed and noise level.

You are unlikely to be able to assess the wind speed accurately at 10 metres above the ground on the wind farm site which is what the tables refer to. But the wind farm operator is required to

record these figures (and wind direction) continuously and keep the data for at least two years. He would want this information anyway to see how well the turbines are performing.

You can measure noise levels in your house, however, if you have a smartphone or iPad. Apps such as 'Audio Tools' by Studio Six Digital contain sound meters and have the ability to record the noise and reproduce it and replay it graphically as well as audibly. If you have any technical ability you can set these apps up with the correct parameters (dB(A) scale and Leq, from which you must subtract 2dB to get values comparable to those in the tables) to give you a very good indication as to what the noise levels are in your environment using your device's in-built microphone. Audio Tools costs about £20 and if you want to couple your smartphone or iPad to a £200 professional microphone you will get very accurate results indeed.

Most people will not have the technical ability to use such tools however.

What everyone needs to do, whether using a meter or not, is to keep a diary or log of all the times you are being disturbed by the turbines. You must record the exact date and time and write down a description of the noise you can hear. YOU SHOULD DO THIS FOR AT LEAST ONE MONTH.

4. Making your complaint

If the noise nuisance persists then you must complain. By monitoring the problem for a month you cannot be accused of "crying 'Wolf!'" and triggering an investigation on a whim which ultimately concludes that there is no breach of any noise limits so the wind farm is operating as required.

You should write your letter, enclosing a copy of your diary or log with it, saying that you believe the turbines are exceeding the noise limits set out in Condition 27 of the planning permission, and send it to:

Nigel Marshall
Enforcement Officer
Torrige District Council
Riverbank House
Bideford
Devon
EX39 2QG

and copy it to

Janet Williams
Environmental Health & Community Safety Manager
Torrige District Council
Riverbank House
Bideford
Devon
EX39 2QG

5. What happens then

Torrige District Council must write to the wind farm operator forwarding details of the complaint. The operator then has 21 days to appoint an approved consultant to undertake an investigation which has to follow a set procedure set out in the Inspector's report. This is likely to involve setting up a microphone at your property and leaving it in place for a period long enough to record turbine noise in a range of wind speeds and directions. This is likely to be weeks, not days.

Once the recordings are finished the equipment will be removed and the data analysed to see if a breach of noise limits has occurred or if a more disturbing phenomenon, known as Amplitude Modulation (AM), has been evident. The consultant will send the report to the operator who must forward it to TDC. If a breach of the noise limit (or identification of AM) is confirmed then the operator has a further 21 days to say how the problem will be eliminated and what the timescale for the reprogramming of the turbines will be. Then the turbines will be adjusted and the new settings will have to be maintained for the rest of the life of the wind farm.

6. If the problem persists...

Ultimately, the landowner is liable in tort for any noise pollution nuisance coming from his land. Statutory Nuisance legislation (Environmental Protection Act 1990 (part 3)) can be invoked to sue for damages for breach of your Human Rights (Article 8), namely your right to peaceful enjoyment of your home. If several properties are involved then a class action can be mounted and funded between them.