

## 4b. Noise Impact

Reason for rejection last time:

*1. The applicants have failed to demonstrate that there would not be an **unacceptable impact on the amenity of nearby residents by virtue of the noise** generated by the proposed turbines, and the proposed development would therefore be contrary to Policies DVT11 and DVT13 of the Torrridge District Local Plan and Policy CO16 of the Devon Structure Plan.*

This chapter shows that, despite it being a requirement of National guidelines PPS22, the applicant has, once again, not considered noise impact at all. Noise impact is a comparison of the existing noise levels at a particular property with the new noise levels once the turbines start operating. It is shown that the noise impact at Dunslund Cross, where the background noise levels are very low, will be unacceptable to residents and will trigger many complaints to Torrridge District Council.

This chapter has 4 sub-sections:

- 4b.1 Non-Assessment of Noise Impact
- 4b.2 Noise Impact of Nordex N80 Turbines at Dunslund Cross
- 4b.3 Noise Impact of Enercon E70 Turbines at Dunslund Cross
- 4b.4 Summary of this Chapter and Recommendation

### 4b.1 Non-Assessment of Noise Impact

4b.1.1 The applicant has not addressed the question of noise impact at all.

4b.1.2 PPS22, paragraph 22, states:

*'Renewable technologies may generate small increases in noise levels (whether from machinery such as aerodynamic noise from wind turbines, or from associated sources – for example, traffic). **Local planning authorities should ensure that renewable energy developments have been located and designed in such a way to minimise increases in ambient noise levels.** Plans may include criteria that set out the minimum separation distances between different types of renewable energy projects and existing developments. **The 1997 report by ETSU for the Department of Trade and Industry should be used to assess and rate noise from wind energy development.**'*

4b.1.3 Thus there are two criteria to be satisfied here. The first is the requirement to minimise the increase in ambient noise. The second is the requirement to assess and rate the noise in accordance with ETSU-R-97. The two tests are separate and must run parallel to each other. They are both national policy. Satisfying one test does not obviate the need to satisfy the other.

4b.1.4 Scotland also has two parallel tests. PAN 56 (Planning and Noise) is the key Scottish guidance for planners with regard to noise. For wind turbines, in paragraph 34 it states 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.'*

PAN 45 (Renewable Energy Technologies) quotes the first paragraph of the ETSU-R-97 Executive Summary, saying it:

*'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.'*

4b.1.5 Wales also has two parallel tests. The guidance there is TAN 8. Paragraph 2.14 of Annex C states:

*'Well designed wind farms should be located so that increases in ambient noise levels around noise-sensitive developments are kept to acceptable levels with relation to existing background noise. This will normally be achieved through good design of the turbines and through allowing sufficient distance between the turbines and any existing noise-sensitive development.'*

Paragraph 2.16 of Annex C of TAN 8 then repeats the first paragraph of the ETSU-R-97 Executive Summary as in PAN 45 in paragraph 4b.1.4 above.

4b.1.6 It is clear that this applicant is trying to ignore the noise impact issue and rely on convincing planners that if the noise levels in ETSU-R-97 are not breached, then the noise impact must, by implication, also be acceptable. This is not correct. Unacceptable noise impacts can still occur even when the ETSU-R-97 limits remain above the predicted turbine noise levels. The loss of amenity can be significant and has resulted in a shift in the decision-making balancing exercise by Inspectors at Public Inquiries. **At earlier Inquiries, Inspector's afforded noise *impact* little or no weight. Now it is regarded as significant.**

4b.1.7 In paragraph 28 of his Decision on Rossie Wind Farm, Auchtermuchty (February 2008) (Ref P/PPA/250/675) the Scottish Reporter, Mr. David Gordon, said:

*'My main conclusion on noise is that, subject to some reservations about AM, the ETSU-R-97 standards would be met. To that extent, the proposal would therefore be acceptable from a noise point of view. However, as the appellant acknowledged, under some conditions, during both day and night, the turbines would result in noticeable increases in noise levels at a large number of properties. This is not relevant in terms of ETSU-R-97 - which is concerned with acceptability, not audibility. However, when people who are opposed to wind farms are able to hear, as well as see, the turbines, I believe that can increase the impact on residential amenity. Given the close proximity of the turbines to a large number of houses, particularly in Auchtermuchty, I attach some weight to this issue.'*

4b.1.8 BS8233 (Paragraph 2.4) states that an increase of 10dB(A) is a doubling of loudness. An increase of 6dB is normally considered to represent a 50% increase in loudness. Mr. Dick Bowdler (one of the country's top acousticians - see paragraph 4a.1.4 in Chapter 4a: *Noise Levels and Methodology*) advises DTOG that, using  $L_{A90}$  figures for turbine noise, BS4142 suggests that an increase of 9dB(A) is likely to cause complaints and that an increase of 5dB(A) is considered 'marginal'. An increase below 3dB, when separated by a suitable time interval, is generally considered as not being significant. Mr. Stigwood (see paragraph 4a.1.4 again), under cross-examination at the Den Brook Inquiry, disagreed with this latter statement. He said that a 3dB change in background noise levels is significant.

## 4b.2 Noise Impact of Nordex N80 Turbines at Dunsland Cross

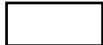



4b.2.1 Using the figures from paragraph 4b.1.8 above, Mr. Bowdler suggests that the magnitude of any impact based on the change of noise level is as shown here:

Minimal	< 4dB
Low	4dB to 6dB
Medium	7dB to 9dB
High	>9dB

4b.2.2 Mr. Bowdler uses integer values as a rule but the applicant has used figures to one decimal place so DTOG will use these impact figures in the tables which follow:

Minimal	< 4dB
Low	4dB to 6.5dB
Medium	6.51dB to 9dB
High	>9dB

4b.2.3 Tables 4b.1 & 4b.3 below show the noise impact for both the daytime and night time periods at Dunsland Cross. The tables compare the UNCORRECTED predicted turbine noise levels with the ambient background noise levels from Tables 4a.8, 4a.3 and 4a.4 in Chapter 4a. Cell colours indicate the following:

	Minimal impact, complaints unlikely
	Low impact, complaints unexpected
	Medium impact, some complaints expected
	High impact, complaints probable

4b.2.4 Tables 4b.2 & 4b.4 show the daytime and night time impacts for the CORRECTED predicted turbine noise levels from Tables 4a.9, 4a.3 and 4a.4 Chapter 4a (see paragraphs 4a.5.26 to 4a.5.32 for an explanation of 'uncorrected' and 'corrected' noise levels).

4b.2.5 The uncorrected daytime table shows that the daytime impact of the Nordex N80 turbines, running in single or double noise-reduced mode, is unlikely to trigger complaints. However, once the *corrected* values for the predicted turbine noise are used, a different picture emerges, even though the turbines are still in their reduced-noise mode of operation. Some complaints can be expected from properties to the south west of the site.

**4b.2.6 At night, the result is stark and completely unacceptable. Using uncorrected figures, noise complaints are probable from 27 non-financially involved properties around the site and can be expected from 10 more. When the corrected figures are used, this rises to 37 properties very likely to complain with 3 more probably doing so.**

4b.2.7 Significantly, it does not matter which direction the wind is blowing. Properties downwind of the site, whichever direction that may be, will be adversely impacted. The impact also extends over the most frequent range of wind speeds so the duration of the impact will be considerable.

Noise Impact L<sub>A90</sub> - Quiet Daytime (Uncorrected) - Nordex N80

Location relative to Site	PROPERTY	DISTANCE FROM NEAREST TURBINE (metres)		WIND SPEED (m/s) at 10m agl (N80)											
				4	5	6	7	8	9	10	11	12			
SW	Fairlawns	506	T1	3.2	4.8	5.0	3.5	1.6	0.0	0.0	0.0	0.0	0.0		
SW	Little Copse	545	T1	2.7	4.3	4.5	3.0	1.1	0.0	0.0	0.0	0.0	0.0		
SW	The Vale	597	T1	2.8	4.4	4.6	3.1	1.2	0.0	0.0	0.0	0.0	0.0		
SW	*Moyles Moor	602	T1	2.0	3.6	3.8	2.3	0.4	0.0	0.0	0.0	0.0	0.0		
SW	*6 Station Cottages	643	T1	1.6	3.2	3.4	1.9	0.0	0.0	0.0	0.0	0.0	0.0		
SW	*Lyne Akres	647	T2	3.1	4.1	4.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0		
SW	*5 Station Cottages	649	T1	1.5	3.1	3.3	1.8	0.0	0.0	0.0	0.0	0.0	0.0		
SW	*4 Station Cottages	655	T1	1.4	3.0	3.2	1.7	0.0	0.0	0.0	0.0	0.0	0.0		
SW	*3 Station Cottages	661	T1	1.3	2.9	3.1	1.6	0.0	0.0	0.0	0.0	0.0	0.0		
SW	*2 Station Cottages	667	T1	1.2	2.8	3.0	1.5	0.0	0.0	0.0	0.0	0.0	0.0		
SW	*1 Station Cottages	673	T1	1.1	2.7	2.9	1.4	0.0	0.0	0.0	0.0	0.0	0.0		
SW	*1 The Granary	675	T2	2.3	3.3	3.2	1.4	0.0	0.0	0.0	0.0	0.0	0.0		
SW	*2 The Granary	675	T2	2.3	3.3	3.2	1.4	0.0	0.0	0.0	0.0	0.0	0.0		
SSW	View Farm	846	T3	0.3	1.3	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
N	**Consented' House**	375	T1	4.4	5.5	4.4	0.7	0.0	0.0	0.0	0.0	0.0	0.0		
N	**Am. Cons.' House**	350	T1	4.1	5.2	4.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0		
N	*Manor Farm**	350	T1	4.1	5.2	4.1	0.4	0.0	0.0	0.0	0.0	0.0	0.0		
N	Cranmore	501	T1	1.9	3.0	1.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNW	Woodlands	548	T1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNW	*New Buildings	625	T1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNW	*Longfield	685	T1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	Bickford Cottage	625	T2	0.7	1.9	2.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Bickford Arms	635	T2	0.7	1.9	2.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Old Post Office	648	T2	0.4	1.6	1.7	0.2	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*The Nook	659	T2	0.2	1.4	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*The Firs	662	T2	0.1	1.3	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	Bickford Lodge	671	T2	0.1	1.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Miksam Barn	675	T2	0.0	1.1	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*6 The Gardens	702	T2	0.0	1.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	The Laurels	715	T2	0.0	0.7	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*5 The Gardens	717	T2	0.0	0.7	0.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*The Retreat	718	T2	0.0	0.6	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	Temhani	719	T2	0.0	0.6	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Freshfields	721	T2	0.0	0.6	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Eden Park	724	T2	0.0	0.5	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*4 The Gardens	732	T2	0.0	0.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*1 The Gardens	739	T2	0.0	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*2 The Gardens	739	T2	0.0	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*3 The Gardens	740	T2	0.0	0.2	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Oakfield	752	T2	0.0	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Old Chapel	759	T2	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Carley	771	T2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Moorfield House	886	T2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
* = not in applicant's tables			** = financially involved												

Table 4b.1

Noise Impact L<sub>A90</sub> - Quiet Daytime (Corrected) - Nordex N80

Location relative to Site	PROPERTY	DISTANCE FROM NEAREST TURBINE (metres)		WIND SPEED (m/s) at 10m agl											
				4	5	6	7	8	9	10	11	12	(N80)		
SW	Fairlawns	506	T1	5.2	6.8	7.0	5.5	3.6	1.3	0.0	0.0	0.0	0.0		
SW	Little Copse	545	T1	4.7	6.3	6.5	5.0	3.1	0.8	0.0	0.0	0.0	0.0		
SW	The Vale	597	T1	4.8	6.4	6.6	5.1	3.2	0.9	0.0	0.0	0.0	0.0		
SW	*Moyles Moor	602	T1	4.0	5.6	5.8	4.3	2.4	0.1	0.0	0.0	0.0	0.0		
SW	*6 Station Cottages	643	T1	3.6	5.2	5.4	3.9	2.0	0.0	0.0	0.0	0.0	0.0		
SW	*Lyne Akres	647	T2	5.1	6.1	6.0	4.2	2.0	0.0	0.0	0.0	0.0	0.0		
SW	*5 Station Cottages	649	T1	3.5	5.1	5.3	3.8	1.9	0.0	0.0	0.0	0.0	0.0		
SW	*4 Station Cottages	655	T1	3.4	5.0	5.2	3.7	1.8	0.0	0.0	0.0	0.0	0.0		
SW	*3 Station Cottages	661	T1	3.3	4.9	5.1	3.6	1.7	0.0	0.0	0.0	0.0	0.0		
SW	*2 Station Cottages	667	T1	3.2	4.8	5.0	3.5	1.6	0.0	0.0	0.0	0.0	0.0		
SW	*1 Station Cottages	673	T1	3.1	4.7	4.9	3.4	1.5	0.0	0.0	0.0	0.0	0.0		
SW	*1 The Granary	675	T2	4.3	5.3	5.2	3.4	1.2	0.0	0.0	0.0	0.0	0.0		
SW	*2 The Granary	675	T2	4.3	5.3	5.2	3.4	1.2	0.0	0.0	0.0	0.0	0.0		
SSW	View Farm	846	T3	2.3	3.3	3.3	1.5	0.0	0.0	0.0	0.0	0.0	0.0		
N	**Consented' House**	375	T1	6.4	7.5	6.4	2.7	0.0	0.0	0.0	0.0	0.0	0.0		
N	**Am. Cons.' House**	350	T1	6.1	7.2	6.1	2.4	0.0	0.0	0.0	0.0	0.0	0.0		
N	*Manor Farm**	350	T1	6.1	7.2	6.1	2.4	0.0	0.0	0.0	0.0	0.0	0.0		
N	Cranmore	501	T1	3.9	5.0	3.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0		
NNW	Woodlands	548	T1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNW	*New Buildings	625	T1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNW	*Longfield	685	T1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	Bickford Cottage	625	T2	2.7	3.9	4.0	2.5	0.8	0.0	0.0	0.0	0.0	0.0		
NNE	*Bickford Arms	635	T2	2.7	3.9	4.0	2.5	0.8	0.0	0.0	0.0	0.0	0.0		
NNE	*Old Post Office	648	T2	2.4	3.6	3.7	2.2	0.5	0.0	0.0	0.0	0.0	0.0		
NNE	*The Nook	659	T2	2.2	3.4	3.5	2.0	0.3	0.0	0.0	0.0	0.0	0.0		
NNE	*The Firs	662	T2	2.1	3.3	3.4	1.9	0.2	0.0	0.0	0.0	0.0	0.0		
NNE	Bickford Lodge	671	T2	2.1	3.3	3.5	2.0	0.3	0.0	0.0	0.0	0.0	0.0		
NNE	*Miksam Barn	675	T2	1.9	3.1	3.2	1.7	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*6 The Gardens	702	T2	1.8	3.0	3.2	1.7	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	The Laurels	715	T2	1.5	2.7	2.9	1.4	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*5 The Gardens	717	T2	1.5	2.7	2.9	1.4	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*The Retreat	718	T2	1.4	2.6	2.8	1.3	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	Tem bani	719	T2	1.4	2.6	2.8	1.3	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Freshfields	721	T2	1.4	2.6	2.8	1.3	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Eden Park	724	T2	1.3	2.5	2.7	1.2	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*4 The Gardens	732	T2	1.2	2.4	2.6	1.1	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*1 The Gardens	739	T2	1.0	2.2	2.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*2 The Gardens	739	T2	1.0	2.2	2.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*3 The Gardens	740	T2	1.0	2.2	2.4	0.9	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Oakfield	752	T2	0.9	2.1	2.3	0.8	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Old Chapel	759	T2	0.8	2.0	2.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Carley	771	T2	0.7	1.9	2.1	0.6	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Moorfield House	886	T2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
* = not in applicant's tables			** = financially involved												

Table 4b.2

Noise Impact L<sub>A90</sub> - Night time (Uncorrected) - Nordex N80

Location relative to Site	PROPERTY	DISTANCE FROM NEAREST TURBINE (metres)		WIND SPEED (m/s) at 10m agl											
				4	5	6	7	8	9	10	11	12	(N80)		
SW	Fairlawns	506	T1	11.6	11.3	9.3	5.5	1.7	0.0	0.0	0.0	0.0	0.0		
SW	Little Copse	545	T1	11.1	10.8	8.8	5.0	1.2	0.0	0.0	0.0	0.0	0.0		
SW	The Vale	597	T1	11.2	10.9	8.9	5.1	1.3	0.0	0.0	0.0	0.0	0.0		
SW	*Moyles Moor	602	T1	10.4	10.1	8.1	4.3	0.5	0.0	0.0	0.0	0.0	0.0		
SW	*6 Station Cottages	643	T1	10.0	9.7	7.7	3.9	0.1	0.0	0.0	0.0	0.0	0.0		
SW	*Lyne Akres	647	T2	10.1	9.5	7.4	3.6	0.0	0.0	0.0	0.0	0.0	0.0		
SW	*5 Station Cottages	649	T1	9.9	9.6	7.6	3.8	0.0	0.0	0.0	0.0	0.0	0.0		
SW	*4 Station Cottages	655	T1	9.8	9.5	7.5	3.7	0.0	0.0	0.0	0.0	0.0	0.0		
SW	*3 Station Cottages	661	T1	9.7	9.4	7.4	3.6	0.0	0.0	0.0	0.0	0.0	0.0		
SW	*2 Station Cottages	667	T1	9.6	9.3	7.3	3.5	0.0	0.0	0.0	0.0	0.0	0.0		
SW	*1 Station Cottages	673	T1	9.5	9.2	7.2	3.4	0.0	0.0	0.0	0.0	0.0	0.0		
SW	*1 The Granary	675	T2	9.3	8.7	6.6	2.8	0.0	0.0	0.0	0.0	0.0	0.0		
SW	*2 The Granary	675	T2	9.3	8.7	6.6	2.8	0.0	0.0	0.0	0.0	0.0	0.0		
SSW	View Farm	846	T3	7.3	6.7	4.7	0.9	0.0	0.0	0.0	0.0	0.0	0.0		
N	*'Consented' House**	375	T1	13.8	11.6	7.6	2.2	0.0	0.0	0.0	0.0	0.0	0.0		
N	*'Am. Cons.' House**	350	T1	13.5	11.3	7.3	1.9	0.0	0.0	0.0	0.0	0.0	0.0		
N	*Manor Farm**	350	T1	13.5	11.3	7.3	1.9	0.0	0.0	0.0	0.0	0.0	0.0		
N	Cranmore	501	T1	11.3	9.1	5.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNW	Woodlands	548	T1	7.7	6.1	2.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNW	*New Buildings	625	T1	6.3	4.7	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNW	*Longfield	685	T1	5.1	3.5	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	Bickford Cottage	625	T2	10.3	9.6	7.4	3.6	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Bickford Arms	635	T2	10.3	9.6	7.4	3.6	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Old Post Office	648	T2	10.0	9.3	7.1	3.3	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*The Nook	659	T2	9.8	9.1	6.9	3.1	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*The Firs	662	T2	9.7	9.0	6.8	3.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	Bickford Lodge	671	T2	9.7	9.0	6.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Miksam Barn	675	T2	9.5	8.8	6.6	2.8	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*6 The Gardens	702	T2	9.4	8.7	6.6	2.8	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	The Laurels	715	T2	9.1	8.4	6.3	2.5	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*5 The Gardens	717	T2	9.1	8.4	6.3	2.5	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*The Retreat	718	T2	9.0	8.3	6.2	2.4	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	Tembani	719	T2	9.0	8.3	6.2	2.4	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Freshfields	721	T2	9.0	8.3	6.2	2.4	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Eden Park	724	T2	8.9	8.2	6.1	2.3	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*4 The Gardens	732	T2	8.8	8.1	6.0	2.2	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*1 The Gardens	739	T2	8.6	7.9	5.8	2.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*2 The Gardens	739	T2	8.6	7.9	5.8	2.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*3 The Gardens	740	T2	8.6	7.9	5.8	2.0	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Oakfield	752	T2	8.5	7.8	5.7	1.9	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Old Chapel	759	T2	8.4	7.7	5.6	1.8	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Carley	771	T2	8.3	7.6	5.5	1.7	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	*Moorfield House	886	T2	6.2	5.5	3.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
* = not in applicant's tables			** = financially involved												

Table 4b.3

Noise Impact L<sub>A90</sub> - Night time (Corrected) - Nordex N80

Location relative to Site	PROPERTY	DISTANCE FROM NEAREST TURBINE (metres)		WIND SPEED (m/s) at 10m agl										(N80)
				4	5	6	7	8	9	10	11	12		
SW	Fairlawns	506	T1	13.6	13.3	11.3	7.5	3.7	0.0	0.0	0.0	0.0		
SW	Little Copse	545	T1	13.1	12.8	10.8	7.0	3.2	0.0	0.0	0.0	0.0		
SW	The Vale	597	T1	13.2	12.9	10.9	7.1	3.3	0.0	0.0	0.0	0.0		
SW	*Moyles Moor	602	T1	12.4	12.1	10.1	6.3	2.5	0.0	0.0	0.0	0.0		
SW	*6 Station Cottages	643	T1	12.0	11.7	9.7	5.9	2.1	0.0	0.0	0.0	0.0		
SW	*Lyne Akres	647	T2	12.1	11.5	9.4	5.6	2.0	0.0	0.0	0.0	0.0		
SW	*5 Station Cottages	649	T1	11.9	11.6	9.6	5.8	2.0	0.0	0.0	0.0	0.0		
SW	*4 Station Cottages	655	T1	11.8	11.5	9.5	5.7	1.9	0.0	0.0	0.0	0.0		
SW	*3 Station Cottages	661	T1	11.7	11.4	9.4	5.6	1.8	0.0	0.0	0.0	0.0		
SW	*2 Station Cottages	667	T1	11.6	11.3	9.3	5.5	1.7	0.0	0.0	0.0	0.0		
SW	*1 Station Cottages	673	T1	11.5	11.2	9.2	5.4	1.6	0.0	0.0	0.0	0.0		
SW	*1 The Granary	675	T2	11.3	10.7	8.6	4.8	1.2	0.0	0.0	0.0	0.0		
SW	*2 The Granary	675	T2	11.3	10.7	8.6	4.8	1.2	0.0	0.0	0.0	0.0		
SSW	View Farm	846	T3	9.3	8.7	6.7	2.9	0.0	0.0	0.0	0.0	0.0		
N	**Consented' House**	375	T1	15.8	13.6	9.6	4.2	0.0	0.0	0.0	0.0	0.0		
N	**Am. Cons.' House**	350	T1	15.5	13.3	9.3	3.9	0.0	0.0	0.0	0.0	0.0		
N	*Manor Farm**	350	T1	15.5	13.3	9.3	3.9	0.0	0.0	0.0	0.0	0.0		
N	Cranmore	501	T1	13.3	11.1	7.1	1.7	0.0	0.0	0.0	0.0	0.0		
NNW	Woodlands	548	T1	9.7	8.1	4.7	0.0	0.0	0.0	0.0	0.0	0.0		
NNW	*New Buildings	625	T1	8.3	6.7	3.3	0.0	0.0	0.0	0.0	0.0	0.0		
NNW	*Longfield	685	T1	7.1	5.5	2.1	0.0	0.0	0.0	0.0	0.0	0.0		
NNE	Bickford Cottage	625	T2	12.3	11.6	9.4	5.6	1.8	0.0	0.0	0.0	0.0		
NNE	*Bickford Arms	635	T2	12.3	11.6	9.4	5.6	1.8	0.0	0.0	0.0	0.0		
NNE	*Old Post Office	648	T2	12.0	11.3	9.1	5.3	1.5	0.0	0.0	0.0	0.0		
NNE	*The Nook	659	T2	11.8	11.1	8.9	5.1	1.3	0.0	0.0	0.0	0.0		
NNE	*The Firs	662	T2	11.7	11.0	8.8	5.0	1.2	0.0	0.0	0.0	0.0		
NNE	Bickford Lodge	671	T2	11.7	11.0	8.9	5.1	1.3	0.0	0.0	0.0	0.0		
NNE	*Miksam Barn	675	T2	11.5	10.8	8.6	4.8	1.0	0.0	0.0	0.0	0.0		
NNE	*6 The Gardens	702	T2	11.4	10.7	8.6	4.8	1.0	0.0	0.0	0.0	0.0		
NNE	The Laurels	715	T2	11.1	10.4	8.3	4.5	0.7	0.0	0.0	0.0	0.0		
NNE	*5 The Gardens	717	T2	11.1	10.4	8.3	4.5	0.7	0.0	0.0	0.0	0.0		
NNE	*The Retreat	718	T2	11.0	10.3	8.2	4.4	0.6	0.0	0.0	0.0	0.0		
NNE	Temhani	719	T2	11.0	10.3	8.2	4.4	0.6	0.0	0.0	0.0	0.0		
NNE	*Freshfields	721	T2	11.0	10.3	8.2	4.4	0.6	0.0	0.0	0.0	0.0		
NNE	*Eden Park	724	T2	10.9	10.2	8.1	4.3	0.5	0.0	0.0	0.0	0.0		
NNE	*4 The Gardens	732	T2	10.8	10.1	8.0	4.2	0.4	0.0	0.0	0.0	0.0		
NNE	*1 The Gardens	739	T2	10.6	9.9	7.8	4.0	0.2	0.0	0.0	0.0	0.0		
NNE	*2 The Gardens	739	T2	10.6	9.9	7.8	4.0	0.2	0.0	0.0	0.0	0.0		
NNE	*3 The Gardens	740	T2	10.6	9.9	7.8	4.0	0.2	0.0	0.0	0.0	0.0		
NNE	*Oakfield	752	T2	10.5	9.8	7.7	3.9	0.1	0.0	0.0	0.0	0.0		
NNE	*Old Chapel	759	T2	10.4	9.7	7.6	3.8	0.0	0.0	0.0	0.0	0.0		
NNE	*Carley	771	T2	10.3	9.6	7.5	3.7	0.0	0.0	0.0	0.0	0.0		
NNE	*Moorfield House	886	T2	8.2	7.5	5.4	1.6	0.0	0.0	0.0	0.0	0.0		
* = not in applicant's tables			** = financially involved											

Table 4b.4

4b.2.8 In his acoustic report on the first Dunslund Cross application, Mr. Dick Bowdler commented in paragraph 8.2:

*'... I have no doubt that the swish of the turbines will be a permanent feature of the noise when it is heard and it will not sound, as is sometimes suggested, like wind in the trees.'*

When the noise impact is as great as that shown in the night time tables above, Mr. Bowdler's comment makes clear why complaints will be almost inevitable.

4b.2.9 The applicant has arrived at the current turbine layout after several iterations prepared and considered in this application and the previous one for the same site. It is very clear from the corrected Daytime Noise Levels table (Table 4a.10 in Chapter 4a) that the noise limits would be exceeded **675 metres** away (The Granary). It is also very clear that even the uncorrected Night time noise impact (Table 4b.3, above) of the turbines would be high as far away as **721 metres** (Freshfields). The corrected figures (Table 4b.4) extend this to **846 metres** (View Farm). **It is precisely for this reason (and visual impact) that Torridge District Council has set a suggested minimum distance of at least 600 metres, as permitted in PPS22 (Paragraph 22), in its Wind Energy Policy.**

4b.2.10 The minimum distance recommended by TDC is modest. Cherwell DC in Oxfordshire is recommending 800 metres as a minimum distance. Northern Ireland's new National PPS18 policy sets a minimum distance of 10 rotor diameters. This would equate to 800 metres for the Nordex N80 turbines proposed for Dunslund Cross (700 metres if Enercon E70s were used).

4b.2.11 Experienced wind farm developers have known for some time that noise problems are unavoidable if turbines are placed too close to occupied houses. That is why Eon will not look at a site less than 700 metres away from houses. That is why Wind Prospect, the current applicant for the Wheeler's Cross Wind Farm at Bradworthy (in Torridge), asks potential site owners for a 750 metres minimum distance. That is why one of the Community Wind Power project managers, on Tuesday, 23rd November, 2010 at the public meeting for the revised Davidstow application in Cornwall, described as 'irresponsible' any applicant trying to site large, modern turbines only 500 metres from properties. Yet this is what the applicant at Dunslund Cross is trying to do. (The first application for Dunslund Cross in 2008 had a turbine only 420 metres from a non-financially-involved property. The current application has 5 properties at 501, 506, 545, 548 and 597 metres from the nearest turbine, sometimes the nearest two turbines.) That is the real reason why nPower and Cornwall Light & Power rejected the Dunslund Cross site 8 or 9 years ago. It was made clear to the current applicant at the time of the last application in 2008 that this site had too many constraints but the applicant has chosen to ignore this obvious fact.

**4b.2.12 It is abundantly clear from the above that the PPS22 requirement to 'ensure that renewable energy developments have been located and designed in such a way to minimise increases in ambient noise levels' has not been satisfied in this application. For this reason alone it must be refused.**

4b.2.13 Whilst DTOG's re-working of the applicant's noise submission (Chapter 4a) has shown non-compliance with ETSU-R-97 limits, the applicant's figures show, predictably, 'compliance' by the narrowest possible margin, ie 0dB, but only if the turbines are operating in 'noise suppression mode'. **The requirement to run in daytime noise-suppression mode would need to be a planning condition, otherwise the eventual wind farm operator (which is unlikely to be the present applicant) will simply run the turbines at full power and wait to see if there are any complaints.** The impact of the turbines operating in full power mode day and night is shown in Tables 4b.5 and 4b.6 below. They show that daytime complaints are inevitable from 3 non-financially involved properties and are very likely from 13 more. At night, all of the properties around the site will have cause for complaint.



Noise Impact L<sub>A90</sub> - Daytime (Corrected, with turbines operating at full power) - Nordex N80

Location relative to Site	PROPERTY	DISTANCE FROM NEAREST TURBINE (metres)		WIND SPEED (m/s) at 10m agl								(N80)
				4	5	6	7	8	9	10	11	
SW	Fairlawns	506	T1	7.7	9.3	9.5	8.0	6.1	3.8	0.8	0.0	0.0
SW	Little Copse	545	T1	7.2	8.8	9.0	7.5	5.6	3.3	1.3	0.0	0.0
SW	The Vale	597	T1	7.3	8.9	9.1	7.6	5.7	3.4	0.9	0.0	0.0
SW	*Moyles Moor	602	T1	6.5	8.1	8.3	6.8	4.9	2.6	0.6	0.0	0.0
SW	*6 Station Cottages	643	T1	6.1	7.7	7.9	6.4	4.5	2.2	0.2	0.0	0.0
SW	*Lyne Akres	647	T2	7.6	8.6	8.5	6.7	4.5	2.2	0.3	0.0	0.0
SW	*5 Station Cottages	649	T1	6.0	7.6	7.8	6.3	4.4	2.1	0.1	0.0	0.0
SW	*4 Station Cottages	655	T1	5.9	7.5	7.7	6.2	4.3	2.0	0.0	0.0	0.0
SW	*3 Station Cottages	661	T1	5.8	7.4	7.6	6.1	4.2	1.9	0.0	0.0	0.0
SW	*2 Station Cottages	667	T1	5.7	7.3	7.5	6.0	4.1	1.8	0.0	0.0	0.0
SW	*1 Station Cottages	673	T1	5.6	7.2	7.4	5.9	4.0	1.7	0.0	0.0	0.0
SW	*1 The Granary	675	T2	6.8	7.8	7.7	5.9	3.7	1.4	0.0	0.0	0.0
SW	*2 The Granary	675	T2	6.8	7.8	7.7	5.9	3.7	1.4	0.0	0.0	0.0
SSW	View Farm	846	T3	4.8	5.8	5.8	4.0	1.8	0.0	0.0	0.0	0.0
N	*'Consented' House**	375	T1	8.9	10.0	8.9	5.2	1.0	0.0	0.0	0.0	0.0
N	*'Am Cons' House**	350	T1	8.6	9.7	8.6	4.9	0.7	0.0	0.0	0.0	0.0
N	*Manor Farm**	350	T1	8.6	9.7	8.6	4.9	0.7	0.0	0.0	0.0	0.0
N	Cranmore	501	T1	6.4	7.5	6.4	2.7	0.0	0.0	0.0	0.0	0.0
NNW	Woodlands	548	T1	1.3	2.1	1.7	0.0	0.0	0.0	0.0	0.0	0.0
NNW	*New Buildings	625	T1	0.0	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0
NNW	*Longfield	685	T1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	Bickford Cottage	625	T2	5.2	6.4	6.5	5.0	3.3	1.4	0.0	0.0	0.0
NNE	*Bickford Arms	635	T2	5.2	6.4	6.5	5.0	3.3	1.4	0.0	0.0	0.0
NNE	*Old Post Office	648	T2	4.9	6.1	6.2	4.7	3.0	1.1	0.0	0.0	0.0
NNE	*The Nook	659	T2	4.7	5.9	6.0	4.5	2.8	0.9	0.0	0.0	0.0
NNE	*The Firs	662	T2	4.6	5.8	5.9	4.4	2.7	0.8	0.0	0.0	0.0
NNE	Bickford Lodge	671	T2	4.6	5.8	6.0	4.5	2.8	0.9	0.0	0.0	0.0
NNE	*Miksam Barn	675	T2	4.4	5.6	5.7	4.2	2.5	0.6	0.0	0.0	0.0
NNE	*6 The Gardens	702	T2	4.3	5.5	5.7	4.2	2.5	0.6	0.0	0.0	0.0
NNE	The Laurels	715	T2	4.0	5.2	5.4	3.9	2.2	0.3	0.0	0.0	0.0
NNE	*5 The Gardens	717	T2	4.0	5.2	5.4	3.9	2.2	0.3	0.0	0.0	0.0
NNE	*The Retreat	718	T2	3.9	5.1	5.3	3.8	2.1	0.2	0.0	0.0	0.0
NNE	Tem bani	719	T2	3.9	5.1	5.3	3.8	2.1	0.2	0.0	0.0	0.0
NNE	*Freshfields	721	T2	3.9	5.1	5.3	3.8	2.1	0.2	0.0	0.0	0.0
NNE	*Eden Park	724	T2	3.8	5.0	5.2	3.7	2.0	0.1	0.0	0.0	0.0
NNE	*4 The Gardens	732	T2	3.7	4.9	5.1	3.6	1.9	0.0	0.0	0.0	0.0
NNE	*1 The Gardens	739	T2	3.5	4.7	4.9	3.4	1.7	0.0	0.0	0.0	0.0
NNE	*2 The Gardens	739	T2	3.5	4.7	4.9	3.4	1.7	0.0	0.0	0.0	0.0
NNE	*3 The Gardens	740	T2	3.5	4.7	4.9	3.4	1.7	0.0	0.0	0.0	0.0
NNE	*Oakfield	752	T2	3.4	4.6	4.8	3.3	1.6	0.0	0.0	0.0	0.0
NNE	*Old Chapel	759	T2	3.3	4.5	4.7	3.2	1.5	0.0	0.0	0.0	0.0
NNE	*Carley	771	T2	3.2	4.4	4.6	3.1	1.4	0.0	0.0	0.0	0.0
NNE	*Moorfield House	886	T2	1.1	2.3	2.5	1.0	0.0	0.0	0.0	0.0	0.0
* = not in applicant's tables			** = financially involved									

Table 4b.5

Noise Impact L<sub>A90</sub> - Night time (Corrected, with turbines operating at full power) - Nordex N80

Location relative to Site	PROPERTY	DISTANCE FROM NEAREST TURBINE (metres)		WIND SPEED (m/s) at 10m agl								(N80)
				4	5	6	7	8	9	10	11	
SW	Fairlawns	506	T1	16.1	15.8	13.8	10.0	6.2	2.5	0.0	0.0	0.0
SW	Little Copse	545	T1	15.6	15.3	13.3	9.5	5.7	2.0	0.0	0.0	0.0
SW	The Vale	597	T1	15.7	15.4	13.4	9.6	5.8	2.1	0.0	0.0	0.0
SW	*Moyles Moor	602	T1	14.9	14.6	12.6	8.8	5.0	1.3	0.0	0.0	0.0
SW	*6 Station Cottages	643	T1	14.5	14.2	12.2	8.4	4.6	0.9	0.0	0.0	0.0
SW	*Lyne Akres	647	T2	14.6	14.0	11.9	8.1	4.5	1.2	0.0	0.0	0.0
SW	*5 Station Cottages	649	T1	14.4	14.1	12.1	8.3	4.5	0.8	0.0	0.0	0.0
SW	*4 Station Cottages	655	T1	14.3	14.0	12.0	8.2	4.4	0.7	0.0	0.0	0.0
SW	*3 Station Cottages	661	T1	14.2	13.9	11.9	8.1	4.3	0.6	0.0	0.0	0.0
SW	*2 Station Cottages	667	T1	14.1	13.8	11.8	8.0	4.2	0.5	0.0	0.0	0.0
SW	*1 Station Cottages	673	T1	14.0	13.7	11.7	7.9	4.1	0.4	0.0	0.0	0.0
SW	*1 The Granary	675	T2	13.8	13.2	11.1	7.3	3.7	0.4	0.0	0.0	0.0
SW	*2 The Granary	675	T2	13.8	13.2	11.1	7.3	3.7	0.4	0.0	0.0	0.0
SSW	View Farm	846	T3	11.8	11.2	9.2	5.4	1.8	0.0	0.0	0.0	0.0
N	*'Consented' House**	375	T1	18.3	16.1	12.1	6.7	1.9	0.0	0.0	0.0	0.0
N	*'Am Cons' House**	350	T1	18.0	15.8	11.8	6.4	1.6	0.0	0.0	0.0	0.0
N	*Manor Farm**	350	T1	18.0	15.8	11.8	6.4	1.6	0.0	0.0	0.0	0.0
N	Cranmore	501	T1	15.8	13.6	9.6	4.2	0.0	0.0	0.0	0.0	0.0
NNW	Woodlands	548	T1	12.2	10.6	7.2	2.3	0.0	0.0	0.0	0.0	0.0
NNW	*New Buildings	625	T1	10.8	9.2	5.8	0.9	0.0	0.0	0.0	0.0	0.0
NNW	*Longfield	685	T1	9.6	8.0	4.6	0.0	0.0	0.0	0.0	0.0	0.0
NNE	Bickford Cottage	625	T2	14.8	14.1	11.9	8.1	4.3	1.0	0.0	0.0	0.0
NNE	*Bickford Arms	635	T2	14.8	14.1	11.9	8.1	4.3	1.0	0.0	0.0	0.0
NNE	*Old Post Office	648	T2	14.5	13.8	11.6	7.8	4.0	0.7	0.0	0.0	0.0
NNE	*The Nook	659	T2	14.3	13.6	11.4	7.6	3.8	0.5	0.0	0.0	0.0
NNE	*The Firs	662	T2	14.2	13.5	11.3	7.5	3.7	0.4	0.0	0.0	0.0
NNE	Bickford Lodge	671	T2	14.2	13.5	11.4	7.6	3.8	0.5	0.0	0.0	0.0
NNE	*Miksam Barn	675	T2	14.0	13.3	11.1	7.3	3.5	0.2	0.0	0.0	0.0
NNE	*6 The Gardens	702	T2	13.9	13.2	11.1	7.3	3.5	0.2	0.0	0.0	0.0
NNE	The Laurels	715	T2	13.6	12.9	10.8	7.0	3.2	0.0	0.0	0.0	0.0
NNE	*5 The Gardens	717	T2	13.6	12.9	10.8	7.0	3.2	0.0	0.0	0.0	0.0
NNE	*The Retreat	718	T2	13.5	12.8	10.7	6.9	3.1	0.0	0.0	0.0	0.0
NNE	Tembani	719	T2	13.5	12.8	10.7	6.9	3.1	0.0	0.0	0.0	0.0
NNE	*Freshfields	721	T2	13.5	12.8	10.7	6.9	3.1	0.0	0.0	0.0	0.0
NNE	*Eden Park	724	T2	13.4	12.7	10.6	6.8	3.0	0.0	0.0	0.0	0.0
NNE	*4 The Gardens	732	T2	13.3	12.6	10.5	6.7	2.9	0.0	0.0	0.0	0.0
NNE	*1 The Gardens	739	T2	13.1	12.4	10.3	6.5	2.7	0.0	0.0	0.0	0.0
NNE	*2 The Gardens	739	T2	13.1	12.4	10.3	6.5	2.7	0.0	0.0	0.0	0.0
NNE	*3 The Gardens	740	T2	13.1	12.4	10.3	6.5	2.7	0.0	0.0	0.0	0.0
NNE	*Oakfield	752	T2	13.0	12.3	10.2	6.4	2.6	0.0	0.0	0.0	0.0
NNE	*Old Chapel	759	T2	12.9	12.2	10.1	6.3	2.5	0.0	0.0	0.0	0.0
NNE	*Carley	771	T2	12.8	12.1	10.0	6.2	2.4	0.0	0.0	0.0	0.0
NNE	*Moorfield House	886	T2	10.7	10.0	7.9	4.1	0.3	0.0	0.0	0.0	0.0
* = not in applicant's tables			** = financially involved									

Table 4b.6

4b.2.14 Running turbines in noise-suppression mode reduces the electrical output and therefore the benefit of the project and its appeal to potential investors. Inspectors at public inquiries will no longer afford weight to this excess noise 'mitigation' tactic as justification for granting an application planning permission, especially when the properties are as close to the turbines and the margins on the noise limits are zero, as they are in the current application for Dunsland Cross. The following comments from Inspectors at three public inquiries make this perfectly clear:

**Langdon (Dover) (March 2009)**

*55. My second (and related) concern is that, given the imprecision inherent in the process of background noise limits in general, some of the third stage noise predictions fail to demonstrate sufficient cushion to fill me with confidence that the margin above background noise determined during the first two stages would not, in practice (or if re-worked on a consensual basis), be exceeded.*

*The predictions also show that the noise environment would variously be either at or only just below the required levels at all three properties during other times, or even with one or more turbines temporarily shut down or operating at reduced power ("mitigation").*

*56. This amply demonstrates the veracity of PPG24 "Noise" advice that the best form of noise mitigation is separation between noise generating and noise sensitive development. "Mitigation" (other than by separation distance) should not, in my judgement, be deployed in this case as a device to provide scope for the Appellant to site turbines closer to places of habitation than would otherwise be acceptable, because the safety margins at the three "representative" properties concerned are of such small order, even after allowing for the manufacturer's recommended "safety factors" for various uncertainties. Those "safety factors" cannot be relied on with confidence when the predictions are based on a "candidate turbine", which may not be the model employed in practice. Moreover, although commenting in the context of day-time limits within the range of 35-40dB(A), ETSU-R-97 says that "the more dwellings there are in the vicinity of a wind farm, the tighter the limits should be as the total environmental impact will be greater". Clearly in this case, if the present noise predictions proved to be inaccurate by only a relatively tiny amount, a greater number of properties within, say, the 500 m – 1 km range could also be at risk of exposure to excess noise with fewer, if any, further post-installation remedial mitigation options remaining available.*

*57. Nor is it, in my estimation, sufficient in this particular case (where the margins are as tight as currently predicted) to rely solely upon planning conditions to deal with excess noise exposure should it occur. Such conditions have become increasingly refined with the passage of time since ETSU-R-97 guidance (which promoted their expression in planning obligations) was published. However, if breaches are alleged, investigation and remediation can still be a lengthy and complex process, not least because of the need to wait for climatic conditions (notably wind speed and direction) at the time of complaint to be replicated and with sufficient forewarning to ensure that the requisite measurement equipment is at hand. The time taken to then investigate and agree potential causes and to assess the effectiveness of practicable solutions must also be added. Clearly, the greater the number of properties close by, the greater will be the potential number both of complaints fed through the Council and needing to be investigated, and of occupiers exposed to excess noise while those investigations are in train. All this in the face of a natural reluctance by the Appellant to forego electricity generation or incur the cost of turbine modification or replacement without clearly demonstrable reason.*

**Shipdham, Norfolk (March 2009)**

75. I have decided that the points in favour of the scheme, listed above, are not sufficient to outweigh my concerns about living conditions. There is not one single factor that makes the proposal unacceptable. It is the accumulation of several factors that has led me to the decision that, on balance, the appeal should be dismissed. They include:

- the turbines' close proximity to dwellings
- the tightness of the margins by which noise limits would be met at other times
- [The appellant's] reliance on conditions to make its scheme acceptable, coupled with the shortcomings of those conditions and the frequency with which they would be triggered.

**Matlock Moor (March 2010)**

86. Whilst there is nothing intrinsically wrong with long and complex planning conditions, such as those discussed at the Inquiry, it is essential that they do the job that they are intended to do without undue difficulty or delay. The low background noise levels, together with the lack of a "safety cushion" between the predicted noise and the noise limits at certain locations, have led me to the view that, if planning permission was granted, the suggested noise conditions might be brought into play with some frequency. At the Inquiry, the Councils were confident that they have the resources to deal effectively with any breaches of condition. However, the necessary investigations would take many weeks to resolve and, during that time, complainants might have to live with a noise problem. If this situation were to arise, it could have a serious impact on their living conditions.

**4b.3 Noise Impact of Enercon E70 Turbines at Dunslund Cross**

4b.3.1 As stated in Chapter 4a, the applicant has, in fact, submitted two separate noise assessments for two different candidate turbines. The noise impact of three Nordex N80 turbines has been dealt with above. The noise impact of three Enercon E70 turbines is dealt with below.

4b.3.2 The assessment assumes the turbines will be running in Mode 2, the applicant's choice, which is essentially the same as the turbines running at full power, since the noise emissions are the same (except for 4m/s) throughout the wind speed range under consideration. As a result the Enercon equivalent of Nordex Tables 4b.5 and 4b.6 above will not be needed.

4b.3.3 The noise impact Tables 4b.7 to 4b.9 below are derived from information in Tables 4a.13 and 4a.14 (daytime and night time background noise levels), and 4a.17 and 4a.18 (uncorrected and corrected turbine noise levels) in Chapter 4a.

4b.3.4 The applicant's uncorrected figures show little daytime noise impact so this table has not been included. Once the figures are corrected in accordance with paragraph 4a.7.4 in Chapter 4a, however, the impact is such that complaints are possible from 3 properties to the south west of the site. This is shown in Table 4b.7 below.

**4b.3.5 The night time impacts are much worse. Table 4b.9 shows that complaints are inevitable from 6 non-involved properties and are possible from a further 29 non-involved properties situated in all directions downwind of the site.**

Noise Impact L<sub>A90</sub> - Quiet Daytime (Corrected) - Enercon E70

Location relative to Site	PROPERTY	DISTANCE FROM NEAREST TURBINE (metres)		WIND SPEED (m/s) at 10m agl									(E70)
				4	5	6	7	8	9	10	11	12	
SW	Fairlawns	506	T1	0.0	2.5	6.3	7.0	6.3	5.0	2.0	0.0	0.0	
SW	Little Copse	545	T1	0.0	2.0	5.8	6.5	5.8	4.5	1.5	0.0	0.0	
SW	The Vale	597	T1	0.0	2.0	5.8	6.5	5.8	4.5	1.5	0.0	0.0	
SW	*Moyles Moor	602	T1	0.0	1.3	5.1	5.8	5.1	3.8	0.8	0.0	0.0	
SW	*6 Station Cottages	643	T1	0.0	0.9	4.7	5.4	4.7	3.4	0.4	0.0	0.0	
SW	*Lyne Akres	647	T2	0.0	2.0	5.3	5.6	4.8	3.4	0.5	0.0	0.0	
SW	*5 Station Cottages	649	T1	0.0	0.8	4.6	5.3	4.6	3.3	0.3	0.0	0.0	
SW	*4 Station Cottages	655	T1	0.0	0.7	4.5	5.2	4.5	3.2	0.2	0.0	0.0	
SW	*3 Station Cottages	661	T1	0.0	0.6	4.4	5.1	4.4	3.1	0.1	0.0	0.0	
SW	*2 Station Cottages	667	T1	0.0	0.5	4.3	5.0	4.3	3.0	0.0	0.0	0.0	
SW	*1 Station Cottages	673	T1	0.0	0.4	4.2	4.9	4.2	2.9	0.0	0.0	0.0	
SW	*1 The Granary	675	T2	0.0	1.2	4.5	4.8	4.0	2.6	0.0	0.0	0.0	
SW	*2 The Granary	675	T2	0.0	1.2	4.5	4.8	4.0	2.6	0.0	0.0	0.0	
SSW	View Farm	846	T3	0.0	0.0	2.4	2.7	1.9	0.5	0.0	0.0	0.0	
N	*'Consented' House**	375	T1	0.0	3.3	5.8	4.4	1.3	0.0	0.0	0.0	0.0	
N	*'Am Cons' House**	350	T1	0.0	3.0	5.5	4.1	1.0	0.0	0.0	0.0	0.0	
N	*Manor Farm**	350	T1	0.0	3.0	5.5	4.1	1.0	0.0	0.0	0.0	0.0	
N	Cranmore	501	T1	0.0	0.8	3.3	1.9	0.0	0.0	0.0	0.0	0.0	
NNW	Woodlands	548	T1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
NNW	*New Buildings	625	T1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
NNW	*Longfield	685	T1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
NNE	Bickford Cottage	625	T2	0.0	0.0	3.2	3.8	3.3	2.3	0.0	0.0	0.0	
NNE	*Bickford Arms	635	T2	0.0	0.0	3.2	3.8	3.3	2.3	0.0	0.0	0.0	
NNE	*Old Post Office	648	T2	0.0	0.0	2.9	3.5	3.0	2.0	0.0	0.0	0.0	
NNE	*The Nook	659	T2	0.0	0.0	2.7	3.3	2.8	1.8	0.0	0.0	0.0	
NNE	*The Firs	662	T2	0.0	0.0	2.6	3.2	2.7	1.7	0.0	0.0	0.0	
NNE	Bickford Lodge	671	T2	0.0	0.0	2.6	3.2	2.7	1.7	0.0	0.0	0.0	
NNE	*Miksam Barn	675	T2	0.0	0.0	2.4	3.0	2.5	1.5	0.0	0.0	0.0	
NNE	*6 The Gardens	702	T2	0.0	0.0	2.3	2.9	2.4	1.4	0.0	0.0	0.0	
NNE	The Laurels	715	T2	0.0	0.0	2.0	2.6	2.1	1.1	0.0	0.0	0.0	
NNE	*5 The Gardens	717	T2	0.0	0.0	2.0	2.6	2.1	1.1	0.0	0.0	0.0	
NNE	*The Retreat	718	T2	0.0	0.0	1.9	2.5	2.0	1.0	0.0	0.0	0.0	
NNE	Temhani	719	T2	0.0	0.0	1.9	2.5	2.0	1.0	0.0	0.0	0.0	
NNE	*Freshfields	721	T2	0.0	0.0	1.9	2.5	2.0	1.0	0.0	0.0	0.0	
NNE	*Eden Park	724	T2	0.0	0.0	1.8	2.4	1.9	0.9	0.0	0.0	0.0	
NNE	*4 The Gardens	732	T2	0.0	0.0	1.7	2.3	1.8	0.8	0.0	0.0	0.0	
NNE	*1 The Gardens	739	T2	0.0	0.0	1.5	2.1	1.6	0.6	0.0	0.0	0.0	
NNE	*2 The Gardens	739	T2	0.0	0.0	1.5	2.1	1.6	0.6	0.0	0.0	0.0	
NNE	*3 The Gardens	740	T2	0.0	0.0	1.5	2.1	1.6	0.6	0.0	0.0	0.0	
NNE	*Oakfield	752	T2	0.0	0.0	1.4	2.0	1.5	0.5	0.0	0.0	0.0	
NNE	*Old Chapel	759	T2	0.0	0.0	1.3	1.9	1.4	0.4	0.0	0.0	0.0	
NNE	*Carley	771	T2	0.0	0.0	1.2	1.8	1.3	0.3	0.0	0.0	0.0	
NNE	*Moorfield House	886	T2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
* = not in applicant's tables			** = financially involved										

Table 4b.7

Noise Impact L<sub>A90</sub> - Night time (Uncorrected) - Enercon E70

Location relative to Site	PROPERTY	DISTANCE FROM NEAREST TURBINE (metres)		WIND SPEED (m/s) at 10m agl									(E70)
				4	5	6	7	8	9	10	11	12	
SW	Fairlawns	506	T1	3.7	6.2	7.7	6.1	3.4	0.6	0.0	0.0	0.0	
SW	Little Copse	545	T1	3.2	5.7	7.2	5.6	2.9	0.1	0.0	0.0	0.0	
SW	The Vale	597	T1	3.2	5.7	7.2	5.6	2.9	0.1	0.0	0.0	0.0	
SW	*Moyles Moor	602	T1	2.5	5.0	6.5	4.9	2.2	0.0	0.0	0.0	0.0	
SW	*6 Station Cottages	643	T1	2.1	4.6	6.1	4.5	1.8	0.0	0.0	0.0	0.0	
SW	*Lyne Akres	647	T2	2.1	4.5	5.9	4.2	1.7	0.0	0.0	0.0	0.0	
SW	*5 Station Cottages	649	T1	2.0	4.5	6.0	4.4	1.7	0.0	0.0	0.0	0.0	
SW	*4 Station Cottages	655	T1	1.9	4.4	5.9	4.3	1.6	0.0	0.0	0.0	0.0	
SW	*3 Station Cottages	661	T1	1.8	4.3	5.8	4.2	1.5	0.0	0.0	0.0	0.0	
SW	*2 Station Cottages	667	T1	1.7	4.2	5.7	4.1	1.4	0.0	0.0	0.0	0.0	
SW	*1 Station Cottages	673	T1	1.6	4.1	5.6	4.0	1.3	0.0	0.0	0.0	0.0	
SW	*1 The Granary	675	T2	1.3	3.7	5.1	3.4	0.9	0.0	0.0	0.0	0.0	
SW	*2 The Granary	675	T2	1.3	3.7	5.1	3.4	0.9	0.0	0.0	0.0	0.0	
SSW	View Farm	846	T3	0.0	1.6	3.0	1.3	0.0	0.0	0.0	0.0	0.0	
N	**Consented' House**	375	T1	6.0	6.7	6.2	2.9	0.0	0.0	0.0	0.0	0.0	
N	*Am Cons' House**	350	T1	5.7	6.4	5.9	2.6	0.0	0.0	0.0	0.0	0.0	
N	*Manor Farm**	350	T1	5.7	6.4	5.9	2.6	0.0	0.0	0.0	0.0	0.0	
N	Cranmore	501	T1	3.5	4.2	3.7	0.4	0.0	0.0	0.0	0.0	0.0	
NNW	Woodlands	548	T1	0.0	1.1	1.2	0.0	0.0	0.0	0.0	0.0	0.0	
NNW	*New Buildings	625	T1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
NNW	*Longfield	685	T1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
NNE	Bickford Cottage	625	T2	2.3	4.5	5.7	4.0	1.5	0.0	0.0	0.0	0.0	
NNE	*Bickford Arms	635	T2	2.3	4.5	5.7	4.0	1.5	0.0	0.0	0.0	0.0	
NNE	*Old Post Office	648	T2	2.0	4.2	5.4	3.7	1.2	0.0	0.0	0.0	0.0	
NNE	*The Nook	659	T2	1.8	4.0	5.2	3.5	1.0	0.0	0.0	0.0	0.0	
NNE	*The Firs	662	T2	1.7	3.9	5.1	3.4	0.9	0.0	0.0	0.0	0.0	
NNE	Bickford Lodge	671	T2	1.7	3.9	5.1	3.4	0.9	0.0	0.0	0.0	0.0	
NNE	*Miksam Barn	675	T2	1.5	3.7	4.9	3.2	0.7	0.0	0.0	0.0	0.0	
NNE	*6 The Gardens	702	T2	1.4	3.6	4.8	3.1	0.6	0.0	0.0	0.0	0.0	
NNE	The Laurels	715	T2	1.1	3.3	4.5	2.8	0.3	0.0	0.0	0.0	0.0	
NNE	*5 The Gardens	717	T2	1.1	3.3	4.5	2.8	0.3	0.0	0.0	0.0	0.0	
NNE	*The Retreat	718	T2	1.0	3.2	4.4	2.7	0.2	0.0	0.0	0.0	0.0	
NNE	Tembani	719	T2	1.0	3.2	4.4	2.7	0.2	0.0	0.0	0.0	0.0	
NNE	*Freshfields	721	T2	1.0	3.2	4.4	2.7	0.2	0.0	0.0	0.0	0.0	
NNE	*Eden Park	724	T2	0.9	3.1	4.3	2.6	0.1	0.0	0.0	0.0	0.0	
NNE	*4 The Gardens	732	T2	0.8	3.0	4.2	2.5	0.0	0.0	0.0	0.0	0.0	
NNE	*1 The Gardens	739	T2	0.6	2.8	4.0	2.3	0.0	0.0	0.0	0.0	0.0	
NNE	*2 The Gardens	739	T2	0.6	2.8	4.0	2.3	0.0	0.0	0.0	0.0	0.0	
NNE	*3 The Gardens	740	T2	0.6	2.8	4.0	2.3	0.0	0.0	0.0	0.0	0.0	
NNE	*Oakfield	752	T2	0.5	2.7	3.9	2.2	0.0	0.0	0.0	0.0	0.0	
NNE	*Old Chapel	759	T2	0.4	2.6	3.8	2.1	0.0	0.0	0.0	0.0	0.0	
NNE	*Carley	771	T2	0.3	2.5	3.7	2.0	0.0	0.0	0.0	0.0	0.0	
NNE	*Moorfield House	886	T2	0.0	0.4	1.6	0.0	0.0	0.0	0.0	0.0	0.0	
	* = not in applicant's tables			** = financially involved									

Table 4b.8

Noise Impact L<sub>A90</sub> - Night time (Corrected) - Enercon E70

Location relative to Site	PROPERTY	DISTANCE FROM NEAREST TURBINE (metres)		WIND SPEED (m/s) at 10m agl								(E70)
				4	5	6	7	8	9	10	11	
SW	Fairlawns	506	T1	6.7	9.2	10.7	9.1	6.4	3.6	0.0	0.0	0.0
SW	Little Copse	545	T1	6.2	8.7	10.2	8.6	5.9	3.1	0.0	0.0	0.0
SW	The Vale	597	T1	6.2	8.7	10.2	8.6	5.9	3.1	0.0	0.0	0.0
SW	*Moyles Moor	602	T1	5.5	8.0	9.5	7.9	5.2	2.4	0.0	0.0	0.0
SW	*6 Station Cottages	643	T1	5.1	7.6	9.1	7.5	4.8	2.0	0.0	0.0	0.0
SW	*Lyne Akres	647	T2	5.1	7.5	8.9	7.2	4.7	2.3	0.0	0.0	0.0
SW	*5 Station Cottages	649	T1	5.0	7.5	9.0	7.4	4.7	1.9	0.0	0.0	0.0
SW	*4 Station Cottages	655	T1	4.9	7.4	8.9	7.3	4.6	1.8	0.0	0.0	0.0
SW	*3 Station Cottages	661	T1	4.8	7.3	8.8	7.2	4.5	1.7	0.0	0.0	0.0
SW	*2 Station Cottages	667	T1	4.7	7.2	8.7	7.1	4.4	1.6	0.0	0.0	0.0
SW	*1 Station Cottages	673	T1	4.6	7.1	8.6	7.0	4.3	1.5	0.0	0.0	0.0
SW	*1 The Granary	675	T2	4.3	6.7	8.1	6.4	3.9	1.5	0.0	0.0	0.0
SW	*2 The Granary	675	T2	4.3	6.7	8.1	6.4	3.9	1.5	0.0	0.0	0.0
SSW	View Farm	846	T3	2.2	4.6	6.0	4.3	1.8	0.0	0.0	0.0	0.0
N	*'Consented' House**	375	T1	9.0	9.7	9.2	5.9	2.2	0.0	0.0	0.0	0.0
N	*'Am Cons' House**	350	T1	8.7	9.4	8.9	5.6	1.9	0.0	0.0	0.0	0.0
N	*Manor Farm**	350	T1	8.7	9.4	8.9	5.6	1.9	0.0	0.0	0.0	0.0
N	Cranmore	501	T1	6.5	7.2	6.7	3.4	0.0	0.0	0.0	0.0	0.0
NNW	Woodlands	548	T1	2.8	4.1	4.2	1.5	0.0	0.0	0.0	0.0	0.0
NNW	*New Buildings	625	T1	1.4	2.7	2.8	0.1	0.0	0.0	0.0	0.0	0.0
NNW	*Longfield	685	T1	0.2	1.5	1.6	0.0	0.0	0.0	0.0	0.0	0.0
NNE	Bickford Cottage	625	T2	5.3	7.5	8.7	7.0	4.5	2.0	0.0	0.0	0.0
NNE	*Bickford Arms	635	T2	5.3	7.5	8.7	7.0	4.5	2.0	0.0	0.0	0.0
NNE	*Old Post Office	648	T2	5.0	7.2	8.4	6.7	4.2	1.7	0.0	0.0	0.0
NNE	*The Nook	659	T2	4.8	7.0	8.2	6.5	4.0	1.5	0.0	0.0	0.0
NNE	*The Firs	662	T2	4.7	6.9	8.1	6.4	3.9	1.4	0.0	0.0	0.0
NNE	Bickford Lodge	671	T2	4.7	6.9	8.1	6.4	3.9	1.4	0.0	0.0	0.0
NNE	*Miksam Barn	675	T2	4.5	6.7	7.9	6.2	3.7	1.2	0.0	0.0	0.0
NNE	*6 The Gardens	702	T2	4.4	6.6	7.8	6.1	3.6	1.1	0.0	0.0	0.0
NNE	The Laurels	715	T2	4.1	6.3	7.5	5.8	3.3	0.8	0.0	0.0	0.0
NNE	*5 The Gardens	717	T2	4.1	6.3	7.5	5.8	3.3	0.8	0.0	0.0	0.0
NNE	*The Retreat	718	T2	4.0	6.2	7.4	5.7	3.2	0.7	0.0	0.0	0.0
NNE	Tembani	719	T2	4.0	6.2	7.4	5.7	3.2	0.7	0.0	0.0	0.0
NNE	*Freshfields	721	T2	4.0	6.2	7.4	5.7	3.2	0.7	0.0	0.0	0.0
NNE	*Eden Park	724	T2	3.9	6.1	7.3	5.6	3.1	0.6	0.0	0.0	0.0
NNE	*4 The Gardens	732	T2	3.8	6.0	7.2	5.5	3.0	0.5	0.0	0.0	0.0
NNE	*1 The Gardens	739	T2	3.6	5.8	7.0	5.3	2.8	0.3	0.0	0.0	0.0
NNE	*2 The Gardens	739	T2	3.6	5.8	7.0	5.3	2.8	0.3	0.0	0.0	0.0
NNE	*3 The Gardens	740	T2	3.6	5.8	7.0	5.3	2.8	0.3	0.0	0.0	0.0
NNE	*Oakfield	752	T2	3.5	5.7	6.9	5.2	2.7	0.2	0.0	0.0	0.0
NNE	*Old Chapel	759	T2	3.4	5.6	6.8	5.1	2.6	0.1	0.0	0.0	0.0
NNE	*Carley	771	T2	3.3	5.5	6.7	5.0	2.5	0.0	0.0	0.0	0.0
NNE	*Moorfield House	886	T2	1.2	3.4	4.6	2.9	0.4	0.0	0.0	0.0	0.0
= not in applicant's tables			** = financially involved									

Table 4b.9

#### **4b.4 Summary of this Chapter and Recommendation**

The applicant is shown not to have considered noise impact at all, despite it being a requirement of PPS22.

DTOG has demonstrated that the noise impact of the turbines would be unacceptable at up to 40 non-involved properties around the site if Nordex N80 turbines are used. This figure would be between 6 - 37 non-involved properties if Enercon E70 turbines are used.

Planning Inspector's decisions identifying unacceptable noise impacts in wind farm applications, where the applicant said there would be none, have been included. These appeals, lodged by wind farm applicants, were dismissed as a result.

#### **Recommendation: REFUSAL**

**ETSU-R-97 requires that any increases in ambient noise is minimised by good design of the wind farm and well located turbines. Since up to 40 non-financially involved properties around the site will suffer high noise impact the applicant has failed to satisfy ETSU-R-97. The amenity of residents will be adversely affected and so policies DVT11, DVT13 and CO16 also fail to be satisfied by this application, which must, therefore, be refused.**