

Section 78 Town and Country Planning Act 1990

**Town and Country Planning (Environmental Impact Assessment)
(England and Wales) Regulations 1999**

**Appeal by RES Developments Limited against the refusal of West Devon
Borough Council to grant planning permission for a wind farm at Den Brook**

Planning Inspectorate Reference APP/Q/1153/A/06/2017162

CLOSING SUBMISSIONS ON BEHALF OF THE APPELLANT

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Structure

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1. Main Issues And Other Matters

In my view, following the evidence, the main local environmental issues in this appeal are:

- the landscape and visual effects of the development on the character appearance of the area (including Dartmoor National Park);
- cultural heritage; and
- noise.

In relation to the local environmental issues, there are policy matters to be explored and the need for and benefit of the proposed development.

Before turning to deal with other issues discussed in evidence at the inquiry, I feel that this would be the appropriate point to address you on relevance of the previous appeal decision in relation to this same project.

On 22 March 2007 Inspector David Lavender granted planning permission for the development which is before you (CD27(p)). He did so following a public inquiry which considered in detail each of the issues that have been discussed in this inquiry, except for noise.

In the circumstances which are clear from document CD124 Mr Lavender's decision was challenged in the High Court, ultimately resulting in the quashing of the decision and its remittance to the Planning Inspectorate.

The point that I need to deal with at this stage addresses the extent of your duty when arriving at a decision to have regard to the decision of Mr Lavender and the reasons for that decision given in the 22 March 2007 appeal decision. We are fortunate that the law is tolerably clear in this area. It is sufficiently represented in my view in three cases:

- North Wiltshire DC - the Secretary of State for the Environment (1993) 65 P&CR 137
- J.S. Bloor (Sudbury) Limited - first Secretary of State (2003) EWHC 1898 (Admin)
- R (on the application of Chisnell) -v- Richmond Upon Thames LBC (2005) EWHC 134 (Admin)

I do not think that I need to produce these decisions for you and can adequately summarise the position purely in these submissions.

And I think I can adequately summarise the position by specific reference only to the 2005 case referenced above since this decision referenced (indeed necessarily referenced) the Court of Appeal decision in the North Wiltshire case. The facts of the case are not important to the general observations which I need to make. I can do no better than to record exactly what Newman J. had to say on the point. He noted that the legal argument before him relating to this topic reflected, "as one would expect", a substantial measure of common ground between the parties as to how previous decisions in relation to the same planning site should be treated ..". He said:

"The basic position can be stated as follows:

- (1) The planning history in relation to [the] site is a material consideration in connection with a planning application (see Spackman -v- Secretary of State for the Environment and Another (1977) 1 All ER 257);*
- (2) A previous appeal decision is a material consideration in connection with a planning application including a subsequent appeal to a different Inspector (here he referred to the North Wiltshire case). The reason why previous appeal decisions are a material consideration is, as Mann L.J. (the judge in the North Wiltshire case) pointed out;*

One important reason why previous decisions are capable of being material is that like cases should be decided in a like manner so that there is consistency in the appellate process. Consistency is self-evidently important to both developers and development control authorities .."

Mann L.J. went on to add:

"But it is also important for the purpose of securing public confidence in the operation of the development control system. I do not suggest, and it would be wrong to do so, that like cases must be decided alike. An Inspector must always exercise his own judgment. He is therefore free upon consideration to disagree with the judgment of another but before doing so he ought to have regard to the importance of consistency and to give his reasons for departure from the previous decision."

Thus analysed, the principle is straightforward enough: that in the planning process that previous history in connection with the site, including decisions in connection with the site, are material considerations, but anybody having the power to reach a decision in connection with the site at a subsequent date has a discretion. The discretion must be exercised in accordance with their own

judgment. The requirement for consistency does not mean that they must be slaves to the previous decision and are in any sense bound by it, or must therefore come to the same conclusion. Their judgment and discretion is informed but not fettered by the history.

The principle of consistency comprises a material consideration to be taken account of in reaching a judgment. Because of the importance to be attached to consistency, a decision maker should not depart from it without realising the importance to be attached to it, and when departure occurs reasons for departure from any previous decision must be given."

Newman J. went on to say at a later stage in his judgment that:

"In my judgment there was no justification for the committee being told that there was a need for there to be a material change in circumstances in order to introduce a new ground for refusal. There was a need for the committee to understand the importance of [the] consistency, and a need for the committee to express a reason if it was going to depart from it, which would reflect its own judgment as to whether or not a basis for refusal was to be found in the physical impact upon the neighbouring occupiers [this last phrase is clearly case specific] .."

For the avoidance of doubt, this rehearsal of the law fulfils my promise in my opening statement: "Renewable Energy Systems accept that all issues in the appeal are for your determination. The previous decision is not binding on you. However, I will refer in closing to decisions of the court which make clear the desirability of consistency and decision making, primarily in the interests of predictability and fairness to all participants in the planning process .."

Therefore it is my view that Mr Lavender's appeal decision is merely a material consideration in your decision. The weight that you give to that material

consideration is a matter for you on the evidence. I say at this stage, so as to present the whole of my views on this point at one point, that an element of your judgment on this topic will involve a consideration of the extent to which there has been a material change in planning circumstances since the previous decision, and the influence that any material change may have, based on the evidence. I note at this stage that the Council would not appear to have even considered a material consideration of a previous decision in its evidence, and DBJRG has given scant consideration to the previous appeal decision. On the other hand, the Appellant has provided you with evidence on any changes in material planning circumstances since 22 March 2007 and, if rather prematurely in terms of these submissions, it is my view that the material considerations which are before you, but which were not before Mr Lavender, argue in favour of the grant of a permission rather than that in relation to any evidential topic you should depart from Mr Lavender's decision. There is an exception to the point I make: no substantial noise evidence was before Mr Lavender and I acknowledge that in relation to this issue, the influence of the previous decision is very slight. However, all the other topics debated at the inquiry were before Mr Lavender.

The principal matters debated before you, but not before Mr Lavender (excepting noise) were:

- (1) Developments in progress towards 2010 renewable energy targets set out principally in the Structure Plan (CD8).
- (2) The Energy White Paper 2007 (CD32b).
- (3) The EU Directive on the promotion of renewable energy (CD35).
- (4) The Renewable Energy Strategy (CD32c).

It is my view, as I shall make clear in the closing of these submissions, that each of the fresh material considerations before you argue in favour of the grant

of a planning permission rather than comprising an argument that you should make a different decision from that of Mr Lavender.

Finally, on this point, it is my argument (acknowledged to be mine rather than deriving directly from the decisions which I have rehearsed), that considerable weight should be given to the material consideration of consistency in decision making. In circumstances where (for example), the landscape and visual baseline has not changed from that considered by Mr Lavender, I think that there would have to be particularly good reasons for a different decision to be taken in relation to the landscape and visual impacts of the project, remembering that the project before you is precisely that which was before Mr Lavender.

Against that background I now turn to deal with matters which, although brought in evidence to the inquiry, do not in my view amount to potential determining issues.

I should say at this stage that I do not necessarily refer specifically to all the witnesses who gave evidence at the inquiry. No disrespect is intended, and I have taken account of all the evidence given before making these submissions.

(1) *Bats*

Evidence on this topic came from Dr Holloway and Mr Buxton. Dr Holloway is a professional ecologist with much experience of surveying bat activity. Mr Buxton is not a professional ecologist, but he has a lot of experience in survey work and is well respected. My submissions on the evidence are as follows:

Surveys

- (1) Recent studies referred to by Dr Holloway (but not before the inquiry) disclose that there is much more bat activity at ground level than at a height of even 30m - particularly in respect of pipestrelles.
- (2) Therefore hand held bat detectors at ground level are perfectly sufficient. In any event there are practical difficulties with surveying at height, quite apart from cost. Helium balloons are a possibility, but they need constant refilling and they drift with the wind, and as a result are not very reliable.
- (3) The noctule bat does fly higher than other species, but has a louder echo location call, meaning that its calls can be picked up by hand held detectors.
- (4) Mr Holloway confirmed that the three surveys undertaken during early Summer, Summer and Autumn were perfectly adequate to record bat activity around the site, and that further surveys would not have revealed additional significant data which would have influenced his impact assessment. In this connection Dr Holloway noted that the Andrew McCarthy Associates paper referred to by Mr Buxton and produced by him as an appendix was written to generate discussion on survey methodology, and not as a prescription for surveys.
- (5) There are no particular complexities to explore in respect of the Den Brook site and area such that the three surveys carried out were perfectly appropriate.

- (6) The newest bat roost to Den Brook is 3 km from the survey area, and therefore as a matter of professional judgment is not relevant to the level of survey effort from Den Brook.
- (7) As to the advice from Eurobat (Mr Buxton Appendix 3), this must be seen in context which is that of mainland Europe where there are migratory species for which different survey methodologies are appropriate. As Dr Holloway said, it must be for individual countries to develop their own advice on the appropriate level and type of surveys.
- (8) As to the Natural England Interim Guidance on bats and onshore wind turbines (Appendix 1 to Mr Buxton's evidence), it is indeed interim guidance not final advice. No definitive methodology exists for bat surveys, and I refer again to Dr Holloway's view that the level of the survey effort for this site was adequate for purpose.
- (9) Turning to a particular species, noctules were the only species found during the survey effort which are recognised (see the Natural England guidance) as being of high risk of collision because of flight heights and whose population might be at risk from wind turbine collisions.

Collision Risk

- (10) Dr Holloway gave convincing evidence that current perceptions of collision risk originate in mainland Europe and in the USA and Canada where researchers concentrated on migratory bat species. It is currently considered unlikely that migration takes place between the UK and mainland Europe.

- (11) The survey results at Den Brook showed 10 passes for noctule bats, noting that the record may have been of 10 bats or several passes recorded for fewer bats.
- (12) The majority of noctule bat passes were recorded over habitat at some distance from the proposed wind turbines (9 of the passes were more than 150m from any proposed turbine position).
- (13) Mr Buxton brought evidence that noctule bats may turn off echo location during feeding. Dr Holloway responded that this could be for a very short period if at all because echo location is vital to a bat's navigational ability when in flight. Therefore any such behaviour would be short term and not material to a collision risk assessment.
- (14) It is clear from the survey effort carried out on behalf of RES that the majority of registrations of species relate to populations which (evidence of the Natural England guidance and Dr Holloway in chief) are at low risk in terms of collision.
- (15) The most sensitive turbine in terms of collision risk with bats is T1 (see Environmental Statement Figure 5.6). Dr Holloway evaluated this turbine in evidence and concluded that all of the species recorded in the hedgerows close to this location are recognised to be at low risk of collision because of low flying behaviour.

Barotrauma

- (16) Dr Buxton brought evidence of deaths of bats, primarily in the USA, from barotrauma (resulting from a drop in air pressure immediately proximate to a turbine blade). Dr Holloway noted that deaths from barotrauma will primarily occur within a 1m radius of a blade tip. Mr Buxton drew attention to wake and vortices effects, but Dr Holloway

said that such information must be read with a degree of caution because of the lack of an evidence base for conclusions drawn.

In summary, I commend the evidence of Dr Holloway whose thorough proof fully addressed all relevant issues. There is no evidence before the inquiry that the operation of the wind farm will give rise to any material risk to individual bats, to individual species, or to bat populations generally.

(2) *Shadow Flicker*

A number of witnesses made contentions in relation to shadow flicker. Quite simply, shadow flicker is a local environmental effect which is well understood and which can be avoided through the deployment of photo sensitive software within the wind turbines. Indeed, the ability to avoid shadow flicker effect was well understood at the time of the previous appeal, and condition 7 imposed by Inspector Lavender addressed the point. There is a similar condition before you which RES invites you to impose. The imposition of this condition will ensure the avoidance of shadow flicker effect and the removal of this issue from consideration.

(3) *Tourism and the local economy*

I deal with this issue briefly in the context of landscape and visual effects.

(4) *Birds*

Although potential for collision between wind turbines and birds was raised at the inquiry, I do not feel I need to make any particular submissions on the topic. Apart from observations of birds in the area of the wind farm, there is no evidence before you of any collision risk, or of the risk of any other adverse interaction between bird populations and the wind farm.

2. Identification of Key Policies

The development plan now comprises RPG10 (CD9), the Devon Structure Plan (CD8) and the West Devon Local Plan (CD14). Mrs Hart confirmed towards the close of evidence on 23 October that the position had not changed since that debated in the session of the inquiry which took place in the summer of 2009. In addition there is a well advanced draft RSS (CD10) which it is common ground should be given considerable weight. Finally, at a regional or local level there is an emerging LDF within West Devon for this is at a very early stage and it is common ground (although not recorded in the Statement of Common Ground) such that you give you weight to this document.

Addressing first the development plan, and within that renewables policies, we have RE6 in RPG10, CO12 in the Structure Plan and PS10 in the Local Plan. RE6 sets regional targets in terms which I need not rehearse and gives advice on content of development plans. Mrs Hart sought to argue (para 5.1.1 of her proof) that, on the basis of advice in para 16 of PPS1 on climate change (CD166) advice on targets in RSS should not be applied directly to individual planning applications. You will remember that in XX I took Mrs Hart to a judgment of the High Court in relation to the proposed Carsington wind farm (CD 164). I commend in closing the reasoning of Carnwath, L.J. in paragraph 42 of his judgment, disagreeing with the submissions of Leading Counsel for the Claimant which reflected Mrs Hart's approach. We can do no better than to commend, with respect, the position of the judge without the need to add more. It flies in the face of any planning logic that RSS advice on targets should not be applied at the project level.

CO12 in the Structure Plan advises that provision should be made for renewables developments in the context of a sub-regional target of 151 MW of electricity production from land based sources by 2010 "subject to the consideration of their

impact upon the qualities and special features of the landscape and upon the conditions of those living or working nearby ..". The policy envisages that priority should be given to locations within the area of search identified in the key diagram. It is clear from paragraph 4.73 of the Structure Plan that the prioritised areas are broadly those outside national designations and AGLVs. Mr Stewart addressed the issue of Areas of Search in his evidence. In reliance on the advice in paras 24 and 25 of PPS7 (CD 16) it seems to be clear that AGLVs will disappear when RSS is adopted where it is my view that even at this stage these regional or local designations should be given less weight and a proper assessment of impact based on landscape character (see here evidence of Mr Goodrum).

In all events, CO12 does not advise that development should be excluded from areas outside the Area of Search. Note that Mr Lavender gave the Area of Search no particular weight in his March 2007 decision, and I concur with his approach.

It seems to me that CO12 is broadly consistent, so far as it goes, with relevant advice in PPS22 (CD21).

Turning to PS10 in the Local Plan, this advises that renewable energy developments should be supported "provided that they have no significant adverse impact upon the qualities and special features of the natural landscape or townscape, upon which conservation or upon the conditions of those living and working nearby ..". In my view this policy is not consistent with the advice in PPS 22 and it does not reflect the realities of wind energy development which will inevitably have some significant impacts on landscape, quite possibly on the visual amenity (stressing here that I do not mean residential amenity) of those living nearby. The test of no significant adverse impact would preclude any proposed wind farm, and in my view weight that might otherwise be given to PS10 as a Development Plan policy should be significantly reduced with this in mind.

Turning to policies within the Development Plan advising on other topics, I will in closing concentrate on those which I feel will attract your attention, as opposed to the many policies referred to by various witnesses which, although theoretically relevant, are unlikely to be helpful.

There are no additional policies to which I wish to refer in the RPG. As to the Structure Plan, CO1 and CO2 require to be considered. CO1 advises that the distinctive qualities and features of Devon's Landscape Character Zones (illustrated in the Structure Plan map) should be sustained and enhanced, and that proposals for development in each part of Devon should be informed by and be sympathetic to landscape character and quality. I make the same submission on CO1 as I made on PS10 on the Local Plan. If the view is taken that the landscape and visual effects of a particular wind energy development are both significant and adverse, then it would be difficult for a development to comply with CO1, but in my view such an approach would not be consistent with PPS22 nor would it be consistent with the approach of the very many appeal decisions which are before you. Likely significant and probably adverse and visual impacts is a factor which cannot be escaped, but which should not of itself be given any particular weight in the decision making process.

Turning to CO2, this advises substantially on development within the Dartmoor National Park, but the last paragraph advises that particular care should be taken that no development is permitted outside the National Park which would damage natural beauty, character and special qualities or otherwise prejudice the achievement of National Park purposes (as set out in the Environment Act 1995). I deal with the advice in the last paragraph of this policy in my submissions on the main issue of landscape and visual effects.

Turning to the Local Plan, NE7 advises on applications for development "on or close to the edge of the Dartmoor National Park". In my view the evidence shows

very clearly that the Den Brook proposal is outside the scope of NE7 and that it could not remotely be described as "on or close to the edge" of the National Park. It is not clear from paragraph 37 and Mr Lavender's decision if he took this view, but he did, in the context of views from the National Park, to the "very distant presence of a lowland wind farm" and I concur with his perception, noting that in my view that necessarily means that NE7 is not engaged.

Turning to NE10 on the Local Plan, this is a standard countryside protection policy relating to developments of all kinds. It requires that any development outside "settlement limits" or "not otherwise in accordance with policies .. in the Plan" must fulfil three criteria. The first relates to the provision of economic or community benefit. The second requires that no unacceptable harm should be called to distinctive landscape character, including views. The third relates to the use of agricultural land (and is clearly not relevant here because the advice is related to maintaining the stock of agricultural land).

This is one of those policies which was written without any regard to wind energy development (not a criticism but just a fact) and in my view it should be given little weight. There is no requirement in PPS22 that economic or community benefit should be provided as a by product of wind energy development (although such benefits may arise during both the construction and the operational period). The criterion relating to landscape character is in fact reasonably consistent with the approach of PPS 22, but I can't have it both ways and my primary argument is that this policy is unlikely to play a major part in your consideration of the proposals. Mr Lavender concluded that any departure from the aims of NE10 would not be overriding. He did not make a finding about the essential applicability of the policy.

Overall in relation to the Development Plan, it has to be said that there is a paucity of really useful advice. The RPG does not engage on local environmental

concerns. The Structure Plan does not engage usefully at a development control level in the renewables policy and gives advice on other policies that is not consistent with PPS 22 (with the exception of the particular care advice in relation to development outside the National Park in CO2). The Local Plan adds nothing really useful to the picture. I suspect that you may find yourself thrown back on national advice more than might usually be the case.

Turning to emerging policies (save for national advice), the draft RSS should as I have already submitted be given significant weight. Relevant advice in the RSS can be found in CD10 and CD10a (the latter comprising revisions to the RSS incorporating the Secretary of State's proposed changes sent out for public consultation in July 2008).

Challenging renewable energy targets are set out in Section 7.3 of the draft RSS and I need not repeat them here. However, I do note that an agreement has been reached between Mr Stewart and the Council in relation to progress that has been made towards draft RSS targets. The position would appear to be that for 2010, set against a regional target of 509 - 611 MW, 154.84 MW was installed as at June 2009, leaving a deficit (wholly unlikely to be addressed) of 354 - 456 MW. For the region for 2020 the target increases to 850 MW, meaning that nearly 700 MW will still require to be consented and built. For Devon the 151 MW target by 2010 has been met to the extent of a paltry 32.8 MW, leaving a deficit of nearly 120 MW. No 2020 targets have yet been established for Devon. It is clear that both the Region and Devon face enormous challenges if 2020 targets are to be met, and I will return to this issue in my final submissions. Generally, I refer to paragraph 7.3 Policy RE1 in the draft RSS.

As to other policies in the RSS, there is one that requires attention. ENV1 addresses a protection and enhancement of the region's natural and historic environment, advising that this should be protected and enhanced, and that

developments which support that positive management will be encouraged. An avoidance, mitigation and compensation pathway is envisaged in ENV1, with priority to be given to international and national designations. ENV2 advises that the distinctive qualities and features of the south west landscape character should be sustained and enhanced. I have to say I am not sure how helpful this advice is. Policies are fairly aspirational and don't really assist at a development control level, even though they are written so that they could be so applied. Repeating what I have already said about the inevitability of significant and quite possibly adverse landscape and visual effects from wind energy development, but noting again the advice on targets in RE1, you may feel that policies ENV1 and ENV2 do not really assist and therefore again, so far as local environmental effects are concerned, you may be thrown back on national advice in PPS7 and PPS22 more than might otherwise be the case.

3. Submission on Main Issues and on Development Plan Compliance

Landscape and Visual Effects

- (1) Evidence was given by many witnesses on this topic and, as noted earlier, while I may not refer to many individual witnesses their thoughts have nevertheless been taken into account in these closing submissions.

Professional landscape and visual evidence was given by Mr Goodrum, Mr Holland and Ms Reynolds.

As to the evidence of Mr Holland and Ms Reynolds, neither addressed at any point the decision of Mr Lavender. This seems to me quite incomprehensible that neither witness appeared to be aware that the

previous decision was a material consideration in this appeal, and the absolute absence of any mention of Mr Lavender's decision in their evidence in my view represents a major weakness in the cases that they have presented.

The evidence of Mr Holland and Miss Reynolds in fact contains very little on impact in terms of landscape character and visual amenity. Both witnesses concentrated heavily on the base line and the cases they presented almost appeared to be that the base line was so sensitive that any development would necessarily be unacceptable.

With regard to landscape impact assessment, Mr Holland did engage, but not fully. The 2008 Landscape Character Assessment of mid-Devon (CD86) completely escaped his attention, as he acknowledged in XX. Given the proximity of areas of mid-Devon to the Appeal Site, this seems to me a major omission.

Looking further at the evidence of Mr Holland, he did partly address the 2008 West Devon Landscape Character Assessment (CD87), but only to the extent of the host landscape type - Farmed Lowland Moorland. He failed to address the very proximate Inland Undulating Uplands. Again I think that this was a major omission.

Turning to the key characteristics of landscape zones/types/areas, you will remember that I cross examined Mr Holland on his approach to assessment. No assessment was made by him of the impact of the development on key characteristics even though he set out those key characteristics (or some of them). My observations here apply to the mid-Devon and West Devon assessments to which I have already referred, and

also to the National Character Areas (CD54) and to the Landscape Character Zones in The Devon Landscape (CD59) which underpins policy CO1 in the Structure Plan.

Turning to the evidence of Ms Reynolds, she gave no attention at all to key landscape characteristics for the purposes of landscape impact assessments. Indeed I had the more general observation that her entire proof had no discernible structure. She did not follow the approach advised in the GLVIA to assessment. Indeed her proof contained almost no impact evidence at all. It was in essence a description of the base line and a rehearsal of its sensitivities. Her section 7 which purported to deal with landscape impact was almost wholly devoid of any impact evidence but for some unreasoned sweeping conclusions.

Against this background I turn to the evidence of Mr Goodrum and make some submissions in closing. Dealing with two preliminary points:

- (a) I commend the approach of Mr Goodrum to the assessment of the impact of the development on key characteristics of the landscape. With regard to the host landscape area or type of approach is that there may be impacts on any of the defined characteristics of the area. With regard to neighbouring or more distant types or areas, he proceeds on the basis that landscape character effects (as opposed to visual effects) could only arise if one of the characteristics of the area in question was defined as views towards the appeal site (or including the appeal site). I commend this approach which is wholly logical.

- (b) With regard to Revision 2020 (CD77), a report by Land Use Consultants, Mr Holland noted that the area of Den Brook was concluded to be of moderate/high sensitivity to development of the scale proposed at Den Brook. However, as explored in XX, in reliance on this degree of sensitivity for the area of Den Brook is, as put to Mr Holland in XX, a song part sung. You may wish in this context to look at Figure 24 in Appendix C to the LUC report. You will note that the whole of Devon is of moderate/high sensitivity to development of this scale. The same applies to Somerset, except for an area of high sensitivity. The same applies to Dorset, except to an area of lower sensitivity near Portland. The same applies to Cornwall, except for two areas of high sensitivity in the far west and an area of lower sensitivity in the Clay district.

Therefore, the area of Den Brook was concluded by Mr Goodrum to be no more sensitive to development of the scale proposed than anywhere else in Devon.

The same sort of point applies in respect of Farmed Lowland Moorland (including the area of Den Brook) defined in the West Devon LCA 2008 (see Mr Holland's Appendix A). The Management Guidelines set out within this document, and relied upon by Mr Holland in terms of landscape sensitivity to wind energy development, advise that development uncharacteristic of this area should be resisted, and that development should reinforce the traditional landscape of the area. Such advice could never be fulfilled by wind energy development. It is singularly negative and unhelpful, and in my view is quite inconsistent with the approach in

PPS22 and noting in this context challenging targets for renewables deployment by 2010 and 2020.

With regard to the evidence of Mr Goodrum, I note on the basis of what I have already said about that of Mr Holland and Ms Reynolds, that Mr Goodrum provides a structured approach and robust and reliable evidence, following the advice in the Guidelines for Landscape and Visual Impact Assessment (CD48). I also note that Mr Goodrum properly engaged with the previous inquiry decision. Section 5 of his evidence describes changes in relevant factors since the previous inquiry.

I also strongly commend Mr Goodrum's evidence on the impacts of climate change on the landscape (and indeed that of Mr Stewart). Relevant evidence can be found at para 5.2 of Mr Goodrum's proof and repays careful attention. In my view the approach we see in the documents canvassed by Mr Stewart and Mr Goodrum in their proofs makes it clear that in assessing the impacts of wind energy development on the landscape, account must be taken of changes that are going to occur as a result of climate change in any case. It is relevant to note that wind energy schemes are a type of development which attracts the support of Government policy in part because they represent a part of a package of measures designed to combat the effects of climate change. This is a material consideration for you to take into account.

I will now summarise my view of the key points to emerge from the evidence of Mr Goodrum, whose evidence I generally commend:

- (a) No material changes have occurred in respect of the landscape and visual base line since the previous appeal decision.

- (b) Significant effects on landscape character will be confined to the Den Brook valley and neighbouring valley sides. Such effects will apply to each of the national, county and local landscape areas that include the area described. Only the Lowland Farmed Moorland (West Devon LCA) will be significantly affected as a whole.

In this respect I commend the findings of Mr Lavender in paragraph 38 of his appeal decision, and in particular his conclusion that "Indeed, within Devon, I have little doubt that this location would (because of, rather than in spite of, its inherent topographical characteristics) rank highly among the landscapes most able to accommodate development of the type, scale and extent proposed".

- (c) With regard to the Dartmoor National Park, no significant landscape or visual effects will arise from the evidence of Mr Goodrum. There could in any event be no prejudice from the development to the natural beauty of the Park itself. There might, however, in some circumstances be damage to the second objective of the National Park (Environment Act 1995) in terms of access and recreation. However, on the evidence of Mr Goodrum such is the distance of the National Park from the appeal site, that there would be no conflict with the second purpose of designation. In this respect I refer to and commend the findings of Mr Lavender in paragraph 37 of the earlier appeal decision.

I have noted that through this inquiry you have asked a number of witnesses questions about the height of the turbines. This is a topic that was covered at various points in his proof by Mr Goodrum. I refer in

particular to what he said at paragraph 6.3.2 in terms of wind farms not currently being a characteristic of any of the landscape character areas. I also refer to his oral evidence on the topic of the scale of the development on the landscape given in chief. You will remember that he took the inquiry to a number of view points in order to demonstrate that the scale of this proposed development is reasonable and acceptable in terms of the local and wider landscape.

In theory it would always be possible to design a wind farm with lower wind turbines. In practice that is neither possible nor necessarily desirable. In terms of possibility, lowland England as a whole is not a region of higher wind speeds. In order to achieve economic viability, hub heights have to be reasonably high. Again, in terms of desirability larger capacity machines deliver more power, meaning that (noting that targets are not a cap), fewer wind turbines will be needed in any given area to reach targets that would be the case with smaller machines, even if such smaller machines were economically viable. To reject a proposal simply because of the scale of the scheme quite simply takes the achievement of Government policy through the attainment of targets up a blind alley, and I strongly submit that this would be neither desirable in terms of the objectives of policy or justified in terms of the evidence placed before you.

- (2) Turning to visual effects, Mr Goodrum noted that the ZTV Study indicated that only 14% of the 30 km radius study area would have theoretical visibility of the wind turbines and in practice visibility would be much less, particularly from roads due to high hedge banks. Mr Goodrum also noted that the turbines would be generally seen set low against the land form, since they are located within a shallow valley.

Mr Goodrum acknowledges likely significant visual effects up to about 3 km from the wind turbines. He also recorded a lack of public footpaths in the near vicinity of the site, meaning that higher sensitivity of receptors would primarily be residents.

I think that it is of particular note that Mr Goodrum's evidence demonstrates a relative lack of representative viewpoints within the 3-6 km zone because of extensive screening by local topography and vegetation. It is partly because of this that Mr Goodrum found that the only viewpoint (within the ES) lying within the 3-6 km zone would not experience significant visual effects.

As to effects on residential properties, Mr Goodrum produced a thorough survey (see Figure 5 in Appendix 1 to his evidence). A review of 107 properties within 3 km of the site demonstrates that 32 would receive significant visual effects. Importantly, none of these effects would be of such intensity as to amount to an impact on residential amenity, as opposed to the visual amenity of the residents. In other words none of the effects would be oppressive or over bearing.

In relation to visual effects, and particularly effects on the living conditions of residents (RFR1 and 2) I note and commend Mr Lavender's observations about private and public interests at paragraph 21 of his appeal decision. I also commend his conclusions in respect of impacts on living conditions in paragraph 23.

Generally, I ask you to accept as robust and correct the evidence of Mr Goodrum on this topic.

- (3) Cumulative effects did receive some consideration in the inquiry, but in my view this is one of those now rare cases where there is no scheme (built, consented or in the planning system) sufficiently close to give rise to even the possibility of significant landscape and visual effects. I refer in this context to the evidence of Mr Goodrum and believe that the position that I have submitted can be seen very clearly from Mr Goodrum's Figure 6.

In summary, in relation to the landscape and visual effects of the development, including impacts on the Dartmoor National Park and on the living conditions of residents, I submit that this scheme would not give rise to any unacceptable effects, and indeed remarkably few significant landscape impacts and visual effects, given the high degree of local screening noted by Mr Goodrum. I ask you to find that the landscape and visual effects of this proposed development will be acceptable.

Cultural Heritage

Evidence on this topic was given by Frances Griffith on behalf of WDBC and Mr Stewart on behalf of RES. Both gave evidence at the first inquiry.

It is notable that Frances Griffith's evidence is, save for some highlighted changes in the summary, in precisely in the same form as that given to the first inquiry. The highlighted sections of the summary simply contend that further historic features have been identified since 2006 in the vicinity of the Henge at Bow. Ms Griffith also tells us in the summary that the monuments at Bow have captured the public imagination and form part of Bow's appreciation of its heritage in character.

The evidence of Ms Griffiths discloses great depth of knowledge of archaeology and a passion for the subject, but it has to be said that there is no real understanding of a planning approach to the issues before you. Her proof

includes a great deal of baseline material on the Bow complex and little text on Broadnymmet Chapel, but little else save for a rehearsal of relevant law and policy. Section 5 of her evidence describes the impacts to be assessed. She confirms that there is no objection to the proposed development upon the basis of direct archaeological impacts, but in relation to indirect facts (ie setting) I can firmly submit that there is no reasoned impact evidence at all. Para 5.4.2 contains a statement that the proposed development will have an unacceptable impact upon the Bow Complex and the understanding and appreciation of its setting, but there is no shred of reasoning within her proof to support the statement. With regard to Broadnymmet Chapel, all we have is a single paragraph referring to a photomontage produced by the Appellant which Ms Griffith says demonstrates that "the visual impact is significant, and, given the importance of the monument, unacceptable ..".

Nowhere does Ms Griffith define the setting of Broadnymmet Chapel, nor the setting of Bow Complex for the purposes of this appeal. Nowhere does Ms Griffith indicate precisely why the proposed development might be seen as within the setting of any particular archaeological remains or the Broadnymmet Chapel and nowhere does Ms Griffith assess the impact the proposed development on the setting of the Bow Complex or Broadnymmet Chapel. I am afraid that her evidence is wholly deficient in providing evidence of assistance to you.

Ms Griffith asks you to make bricks without straw. In comparison Mr Stewart, not an archaeologist, but an experienced planner who indeed used to be Chief Planning Officer in a district containing Avebury, does provide specific material on the setting of archaeological remains and listed buildings (not just those described by Ms Griffith) only Mr Stewart gives impact evidence to assist you and I commend it to you.

As with other Council witnesses, Ms Griffith does not engage with the findings of the previous appeal decision - something I find inexplicable. It may be noted that

Mr Lavender discussed historic landscape issues, following the receipt of evidence from Ms Griffith, at paragraphs 39 - 45 and paragraph 76. He made clear findings:

- the setting of the monuments at Bow would be suitably preserved; and
- the setting of Broadnymnett Chapel would not be preserved.

RES may not agree with Mr Lavender in relation to the chapel and I commend the evidence of Mr Stewart.

Overall, the Council has produced no new baseline material of any relevance and no new impact evidence, as with the first inquiry and so with this inquiry. Ms Griffith has lamentably failed to grapple with the issue of setting an impact, and she has lamentably failed to grapple with Mr Lavender's decision.

I ask you to accept the evidence of Mr Stewart, to find in favour of the Appellant in relation to issues relating to the Bow Complex, and to accept the evidence of David Stewart in relation to Broadnymnett Chapel. Given the complete failure of the Council to properly engage with the issues before you, I need say no more. No case has been made to underpin RFR3.

Noise

In relation to this topic the witnesses were Mrs Davis, Mrs Hodgson, Dr Hoare, Mr Stigwood, Dr Barlow and Dr McKenzie.

Dealing first with Mrs Davis and Mrs Hodgson the latter made some general, locally based observations, and I do not feel that any specific closing submissions are required, although Mrs Hodgson's views are respected. With regard to Mrs Davis it is quite clear that she feels that she is suffering from noise at Deeping St Nicholas, and if that was all that Mrs Davis brought to the Inquiry I would, beyond inviting you to visit her property and hear matters for yourself, leave things there. However, Mrs Davis does in my view make some very extreme assertions in her

proof which may beg questions about her general approach and the weight to be given to her evidence:

- (a) In the Valuation Tribunal decision (CD 105) there are references to the way in which Mrs Davis perceives the noise that she hears from her house and you will remember that I took her to some of her expressions in XX cross examination. I refer to in particular to the phrases "helicopter noise", "enhanced helicopter noise". In XX Mrs Davis said that the wind turbines near to her house sounded like a Chinook helicopter at about 120 metres above her house. You may find, as RES find, that this is a little unbelievable.
- (b) At 3.6 in her evidence Mrs Davis claims that she hears the noise of the nearby wind turbines although a defective car alarm was making a noise at the time and she was wearing ear defenders to shut out the noise of the car alarm. In XX she maintained that this had been the case and confirmed that she had been wearing "industrial quality" ear defenders. Again you may find this evidence a little hard to believe.
- (c) Perhaps less extreme, but nonetheless contended by RES, is Mrs Davis' observation (para 2.3 of her proof) that trees tend to filter out sound, emphasising the noise from the turbines. You and I asked the questions on this point, and it is my view that there is no obvious logic in what Mrs Davis says. Trees may act as some kind of noise barrier or filter, but the wind of noise in the trees itself tend to act as a masking noise.

I also wish to refer to the Valuation Tribunal decision (CD 105). You remember that I took Mrs Davis through this decision in XX, having previously confirmed that the Local Authority had served no Enforcement Notice contending a breach of a

planning condition or an Abatement Noise contending a statutory nuisance. It would seem to me that the Tribunal's decision was based very heavily on the views of Mrs Davis, supported by views from estate agents and the lack of any oral evidence from the Local Authority on the reported views of estate agents supporting the local authority's position. On the face of the decision it is my submission that the evidential basis for the view taken by the Tribunal is not obviously well founded.

Overall I feel that Mrs Davis' evidence is very extreme, and except in terms of her perception of noise from her neighbouring wind farm, seriously lacking credibility. The extremes within her evidence in my view undermine the credibility of the whole. Altogether I ask you to view what she has said with extreme caution, but nonetheless to go to Deeping St Nicholas and hear matters for yourself.

I now turn to the professional witnesses. As a preliminary point I record that Dr Hoare whilst giving expert evidence, is not qualified in acoustics. She is undoubtedly very good at analysing data, but it seemed to me from XX that her approach to acoustics in certain respects betrayed her lack of qualification. For example, I refer to the evidence in Section 7 of her proof involving a calculation of the percentage of time the wind farm would be audible at certain properties. This exercise was clearly deeply flawed and I will turn to it later.

You have before you a lot of immensely detailed evidence, and in closing I will keep to some observations on the main themes explored:

1. Background noise measurements.
2. Wind shear.
3. Noise predictions.

4. Noise Assessment (Amplitude Modulation).

While turning to these topics, I deal briefly with policy. Paragraph 22 of PPS22 (CD21) clearly advises that "The 1997 Report by ETSU for the Department of Trade and Industry should be used to assess and rate noise from wind energy development ..". The ETSU Report is of course CD61. The Companion Guide to PPS22 (CD22) advises in detail on noise paragraphs 41 - 46 (pages 167 - 170). Paragraph 44 repeats the advice in paragraph 22 of PPS22. I also refer to a document produced to the inquiry during the noise evidence, an exchange of letters between Environmental Protection UK and Lord Hunt, Minister of State at DECC August/October 2009. I refer in particular to Lord Hunt's letter of 1 October 2009 which, following a discussion, makes it clear that the Government continues to support the approach set out in PPS22, including "the use of ETSU-R-97 to ensure that renewable energy developments have been located and designed in such a way to minimise increases in ambient noise levels ..". Despite so many assaults on ETSU at recent public inquiries the Government, as you noted in questions to Dr McKenzie, remains very clearly committed to ETSU as the appropriate source of advice on the assessment of rating and noise from wind farms.

Background noise measurements

(a) Background noise measurement locations

You will remember that I explored with Mr Stigwood (MS) in XX the aim of background noise measurement locations. Referring to advice on pages 58 and 84 of ETSU (CD 61) and the evidence of Dr McKenzie it seems to me clear that the aim of making background noise measurements is to obtain

representative information at properties where measurements are taken in terms of all the areas used for external amenity. The exercise does not require the selection of a particular hot spot as opposed to obtaining information properly representative of those parts of the property which may be enjoyed for amenity purposes. As Dr McKenzie has said what is required is robust common sense and the selection of appropriate locations during a site visit. Again, what is clearly required is to make free field measurements (that is to say not closer than 3.5 m from reflective surfaces (page 84 ETSU)).

Again, it may be difficult in a particular case to determine an amenity area. In these circumstances, on the evidence of Dr McKenzie, what is required is to make a practical judgement in order to obtain representative information. In this case such a judgement was required at Ham Farm, where there was no obvious amenity area.

Overall, the exercise requires a sensible and not overly prescriptive approach.

I note in this context that MS gave the views we see in this proof without the benefit of site visits except to Coxmoor and Broadnymett. I regard this as a curious approach on this topic, given MS' extreme attention to detail which we see in his Appendix B.

As to the precise locations selected by RES and Dr McKenzie respectively I am not going to take time making detailed submissions in closing. You will make site visits and you have the evidence. I just ask that you exercise the practical judgement I have advocated on the evidence of Dr McKenzie and that you accept his experienced view of the aim of the exercise.

I do, however, need to deal briefly with the observations of Dr Hoare (Proof 4.2 and 7.2 and Figure 2) to the effect that she had difficulty in accepting that background noise levels would be notably higher at some measured locations than others. She produced no evidence to support her assertion, and I commend the views of Dr McKenzie to the effect that it is dangerous to rely on subjective appreciation as opposed to making the all important measurements.

As to wind direction Dr Hoare made adverse comments on the ETSU procedure at her paragraph 4.4. ETSU requires the aggregation of wind speed and direction data and the construction of a best fit curve through all the data. Dr McKenzie had followed the ETSU approach. You will remember that in XX I drew Dr Hoare's attention to what would be required in terms of compliance measurements, should the need arise to turn off the wind turbines and re-measure background noise. In such circumstances the objective would be to replicate the conditions of the complaint giving rise to the re-measurement exercise and this might well involve making fresh background measurements at another location within a property than that measured at the time of the original survey, and it would certainly require taking into account wind direction, precisely so as to replicate the circumstances of the complaint.

Overall, in my view, RES and Dr McKenzie have presented you with a reliable body of background noise measurement information on which you can rely.

(b) Rain Data

MS contended that all rain affected data had not been removed, Proof 4.67 - 4.72, and see Dr McKenzie at 11.8.

I explore this issue in XX of MS. A rain gauge contains a bucket which tips to record a rain event. If the bucket tips during any given 10 measurement period then the relevant background noise data is excluded for the purposes of analysis since it will be regarded as corrupted.

You will remember that I explored with MS the types of rain to be encountered. Frontal rain may cause a bucket to tip more than once in a 10 minute period. Lighter rain is both unlikely to produce a relevant rain event and unlikely to affect noise recorded by the microphone. You will also note in this respect that Dr McKenzie challenged in evidence in chief the contention by MS that lighter rain could nevertheless cause a wind shield to become waterlogged and distort the data recorded. He made the point that in fact a waterlogged wind shield could mean that the microphone was less likely to pick up noise from further rainfall.

The other issue relating to rain data results from MS' contention that a single rain bucket at Den Brook would be insufficient, since rain might be falling in one part of the site but not another at any given time. He also contended that the rain data from the North Wyke Meteorological Station could not be relied upon since a rain event at North Wyke might not be occurring at the same time on the site (or visa versa). In this respect I ask you to accept the evidence of Dr McKenzie that rain of a type which could cause a bucket to tip in the 10 minute period would be likely to be experienced during the same 10 minute period on all parts of the site, and that the North Wyke Station is sufficiently close to the site that the same would apply. I also record Dr McKenzie's answers to your questions on this topic to the effect that a rain event on the site not recorded at North Wyke will be unlikely to have any material influence on the background noise levels recorded (in fact he made this as a general point). In my view:

- data corrupted by rainfall has been appropriately excluded; and
- the rain bucket at Halse Farm and the data from North Wyke gives you a perfectly adequate appreciation of relevant rain events.

(c) *Wind Shields*

Another seminal debate between MS and Dr McKenzie related to the wind shield deployed by RES around the Rion Type 1 microphone used to measure background noise. In the view of MS the addition of an oversized (200 mm) wind shield to the microphone meant that the ensemble could not be described as a Type 1 piece of apparatus. In evidence in chief Dr McKenzie recorded that he had received confirmation (albeit without documentary evidence before the Inquiry) that the ensemble used by RES represented Type 1 equipment. There was no evidence to counter this proposition. As to the oversized wind shield the Hessler article (CD 99) was raised by me with MS in XX and was referred to by Dr McKenzie. You will see that Dr McKenzie recorded that this article was a rarity in addressing this particular topic. Its conclusions are that "The data show that reasonably good results when measuring in low to moderate wind conditions are possible even with conventional 60 mm windscreens, but that a larger (175 mm) diameter windscreen offers significantly better performance than the lower frequencies ...". This article was written with specific regard to wind turbine background noise measurement and in my view comfortably supports Dr McKenzie's evidence.

It is therefore my view that there is no cogent evidence to counter that of Dr McKenzie that a Rion Type 1 microphone with a 200 mm windshield is an entirely appropriate Type 1 device to record background noise.

(d) *Extraneous Data*

There are a number of individual points to make in relation to this topic:

- (1) You will remember that I explored with Dr Hoare the issue of generator noise at Ham Farm. It was disappointing that I had to do so given paragraph 2.21 of the Statement of Common Ground which recorded that the data had been removed in relation to generator operation at Ham Farm without any caveats relating to data that had not been removed. You will also remember that I explored with Dr Hoare and MS the issue of the data which, respectively, they said could relate to the generator but had not been removed. In my view the evidence of Dr McKenzie is conclusive on this point. Contrary to the views of MS in particular, whether or not the door of the generator shed was opened at any time during the background noise measurements would make no difference since the generator noise would pass through the roof of the shed such that an open door would not influence the position. Again, Dr McKenzie was quite clear that all extraneous data relating to the generator noise had been properly removed.
- (2) With regard to the removal of data at Coxmoor in response to observations made by Mr Hulme, Dr McKenzie said that this was done purely by way of a co-operative response to these observations and not because he had made a judgement that the data in question was corrupt. It seems to me that this is a very constructive approach in terms of discussions with the owners or occupiers of houses where background noise measurements are made, and it should not be a point to be held against Dr McKenzie. Rather the reverse.

- (3) One or two other contentions were made that extraneous data was not removed from background noise measurement data plots. There are two points to explore. Firstly, I refer to MS' para AC.2 at page 80 of his evidence. EC.2 refers to Figures 9, 11, 12, 13, 15 and 17 in the same appendix. The contention of MS was that the data points circled on those figures in his evidence were extraneous and should have been removed. Quite why is not really explained by MS except that they lie well above the best fit background noise curve. He brought no evidence that such data could not be regarded as part of the background noise environment, representing the quietest 10% of the data measured. In my view MS has not made his point.
- (4) Secondly, you will remember extensive XX of MS in relation to the general issue of extraneous data. The advisory background to this topic is within pages 52 and 86 of ETSU in particular.

The broad contention of MS is that the key correlation to achieve in terms of the background noise best fit curve is that between wind related background noise and the recorded data plots. His contention was, at least in daytime hours, non-wind related background noise should be excluded. In my submission, on the evidence of Dr McKenzie, this is an absurd proposition. Background noise is what it is. Dr McKenzie gave an example where background noise measurements had been taken at a location which was close to a major road. To exclude road noise in these circumstances would be to distort the portrayal of normal background noise. The objective must be to portray the normal background noise environment at any property, and in this respect I draw support from page 52 of ETSU ("it is therefore necessary to

derive a background noise level that is indicative of the noise environment at the receiving property for differing windspeeds so that the turbine noise level at any particular windspeed can be compared with the background noise level in the same wind conditions ..."). The wind conditions referred to in this sentence are wind conditions on the wind farm site and not those at the location where background noise measurements have been made. Again, I refer to page 86 of ETSU which notes the various potential sources of background noise. It advises that rainfall data should be removed, and that is accepted. However, it does not advise that other noise sources which record as part of the normal LA90 background noise should be excluded.

This is one of those points which, on the basis of ETSU and pure common sense, seems so obvious that it is really quite difficult to understand MS' logic.

- (5) With regard to under range data the position of MS was that it should not be excluded, but that a microphone should be used capable of recording as low as 15 dB(a). Dr McKenzie noted that Type 1 microphones could record to 17 dB(A) and he made the point that 15 dB(A) was below the human self-noise level, and therefore the data was irrelevant. I ask you to accept Dr McKenzie's position.

In summary, in relation to the first topic that I address in the submissions, RES and Dr McKenzie have correctly recorded background noise at the selected locations and have presented the data recorded in an appropriate way, excluding data plots which should clearly not be retained (eg in relation to rain and generator noise), whilst at the same time presenting a

reliable picture of the normal background noise environment of the relevant properties. This is the true objective of ETSU.

Wind Shear

The evidence in relation to this topic can be seen in MS Appendix D 2.4 - 2.125 and Proof 3.29 - 3.49 and in Dr McKenzie's Proof 5.5 - 5.12. Dr Hoare also engaged on the topic in Sections 3 and 6 of her proof.

In closing I shall start from the position that I don't need to explain what wind shear is and that the real topic for debate is how wind shear should be accounted for in the assessment of noise from a proposed wind farm.

Dealing first with the position of ETSU on wind shear it is clear that the phenomenon was not ignored. By reference to pages 34 (final paragraph), 85 and 120 of ETSU it seems clear to me that wind shear was a topic taken into account. ETSU acknowledges that wind speed measurements might be taken at different heights on the same mast in order to allow for an assessment of wind shear. The difficulty that arises is that ETSU looked at the topic in terms of the effect of ground roughness (e.g. look at page 120), but it did not take into account increases in wind speed with altitude in the way that van den Berg discussed at a later date (see here Dr Hoare 3.3).

The reason for the approach of ETSU to wind shear was that in 1996 it was not necessary to look at the atmospheric considerations examined by van den Berg because wind turbine hub heights in 1996 were taken to be in the order of 30 - 35m, meaning that wind speed measurements at 10m on site could reasonably portray the wind shear position in terms of atmospheric effects. The position is

now very different with taller turbines. I turn later to the Acoustics Bulletin article (CD100) in terms of how a group of experienced acousticians now address the influence of atmospheric effects on wind shear. The point I make now is that ETSU was certainly not flawed in its approach to wind shear. It addressed matters in terms of what was required at the time, but times have changed and the observations of van den Berg in terms of atmospheric effects have been fully absorbed by those who make background noise measurements for proposed wind farms.

As I have said I will deal with the Acoustics Bulletin article later, but at this stage I note that the authors of the article were not simply people who have done consultancy work for wind energy developers. The authors include two people who regularly advise local planning authorities and third party objector groups.

At this stage I turn to the evidence of Dr Barlow, who in my view brought a fresh and convincing approach to the issue of atmospheric effects. Dr Barlow is a true expert on the topic of meteorology, and especially boundary layer meteorology. She has very extensive experience of the topic. The key points that emerged from her evidence were as follows:

- (a) MS discussed at 2.37 and following in his Appendix D issues relating to the atmospheric boundary layer. He contended that there was a possibility that the nocturnal jet could descend to below the tip height of the proposed turbines and even as low at the hub height, meaning that the operation of the power law (to determine wind shear through atmospheric effects) could not be relied upon. Dr Barlow did not seek to argue that there were no circumstances in which the nocturnal jet might descend to heights of relevance to this inquiry, but she drew attention to a PHD study carried out by one of her students at Cardington in Bedfordshire. She noted that for

the nocturnal jet to descend to anything like the height of the wind turbines would require clear skies at night, cold ground conditions and a dry atmosphere cooling strongly. She noted that such conditions could well occur regularly in areas such as Antarctica and Kansas. At Cardington one occasion was recorded when the nocturnal jet descended to well below the height of the tip height of the Den Brook turbines, but this was a single occasion out of 15 nights. Extrapolating this information to a yearly basis she said that one might expect the nocturnal jet to descend to the levels recorded on a single night (or at least to levels of relevance to this inquiry) on about 6 nights a year. She then drew attention to the conditions of Den Brook in terms of ground conditions, and drew the conclusion that occasions when the nocturnal jet descended to relevant levels would be very rare indeed. She acknowledged that there was no empirical evidence to support her conclusions, which were however based in good science and a knowledge of relevant processes. I commend her evidence on this point based on her obviously careful attention to the topic, her qualifications and her experience. In my view the issue of the nocturnal jet can be reasonably set aside in your considerations.

- (b) Dr Barlow also addressed the Ekman layer, a topic discussed by MS at paragraph 2.44 in Appendix D (and see also the figure at page 102). Dr Barlow explained, for detailed reasons which I need not recording in closing, that with stable atmospheric conditions the ground friction effect on wind "switches off" so that the wind at relevant heights does not know the ground. Therefore the Ekman layer is not relevant to stable atmospheric conditions.
- (c) Finally, Dr Barlow gave attention to the power law as a general approach to evaluating wind shear. Taking into account in this context what she

concluded in relation to the nocturnal jet and the Ekman layer, her assessment was that the power law presents a reasonable approximation of the log law near to the ground (using the log law parameters deployed in ETSU). In support of her evidence she produced a figure (attached to her evidence) showing that an extrapolation of wind speed from 50m to hub height based on information obtained from anemometers at 35m and 50m (as at Den Brook) would give rise to differences between the application of the power law and the log law of about 0.1m/s at the hub height of 75m. In my submission the evidence demonstrates that the use of the power law is entirely reasonable and produces information about wind shear of the order of accuracy which is required in terms of its purpose in noise assessment.

Now I turn to more general issues relating to wind shear, against the background of my submissions in relation to Dr Barlow's evidence and those in relation to the approach of ETSU. It is probably useful to give some background to the debate between MS and Dr McKenzie on the issue.

Whilst maybe obscured by the multitude of detailed technical arguments before the Inquiry, there exists in reality one fundamental issue that separates the two parties on the matter of noise and the application of ETSU: what was the intent of the authors of ETSU when setting acceptable limits for wind turbine noise in the context of the pre-existing background noise environment in any given area?

In my submission the answer to this key question is quite clear; ETSU follows the same well established methodology of other environmental noise assessment methodologies. Common sense dictates that the impact of any source of noise will be determined by a comparison between that noise and the typical noise environment into which it is introduced. In other words, it is on the basis of a 'like

for like' comparison: the potential impact of a source that will only operate between the weekday hours of 0900 to 1700 should be assessed against the background noise environment that exists over the same period. This is a long established fundamental principle and the one adopted in BS4142 [CD62] which remains extant today after over 40 years service.

Most notable in the present context is the fact that BS4142 was the foundation on which ETSU was built (see ETSU page 52 final paragraph to page 53, first paragraph). ETSU clearly addresses the main 'complicating' issue that the assessment of wind turbine noise introduces to the basic approach of BS4142; namely that wind turbine noise, as well as background noise, varies with wind speed. Having addressed this issue, the outcome intent of ETSU is, in my submission, quite clear; in addition to adopting the general principle of BS4142 in comparing like with like in terms of times and general conditions of operation (see also ETSU pages 58 from 'The assessment of typical background noise levels' to page 59 first paragraph and quote from PPG24 Annex 3), ETSU adds the requirement that, for wind turbine noise (page 52, last paragraph):

'Measurements of the turbine noise level at a given wind speed should therefore only be compared to background noise measurements taken when weather conditions are similar i.e. the same wind speed.'

There is nothing between the parties that the noise output of a wind turbine depends on the wind seen by the wind turbine's rotor, i.e. the hub height wind speed. This being the case, it was the argument of Dr McKenzie on behalf of the appellants that the only important comparator is the typical background noise level that can reasonably be expected to exist at an assessment location at any given hub height wind speed. In contrast, it was the argument of Mr Stigwood that the relevant wind speed reference should be measured at a height of 10m,

regardless of the hub height of the rotor. The wind speed at 10m height will be different to that at hub height due to the effects of 'wind shear', which means that wind speeds generally increase with increasing height above the ground.

Mr Stigwood appears to have based his argument on the fact that ETSU does, indeed, refer all background noise measurements to a wind speed at 10m height. However, as explained both by Dr McKenzie and by Dr Barlow, the 10m height referred to is an artefact of the assessment process that provides a 'standardised' wind speed at that height, it is not the actual wind speed that would necessarily be experienced at that height.

This 'standardisation' of wind speeds to 10m height is performed in ETSU primarily for compatibility with other standards [IEC61400-11] relating to the specification of the sound power output of wind turbines. These other standards are no different, however, to ETSU in that the actual wind speed of importance always remains that at the hub height of the turbine, as it is this wind speed that controls the sound output of the turbine. It is therefore this wind speed against which the background noise levels at assessment locations must ultimately be correlated (even if via an intermediary 'standardised' 10m height wind speed) if a like for like comparison between background noise and wind turbine noise really is to be achieved.

ETSU advises that wind speed measurements may validly be made using an anemometer on a mast at 10m height (on the wind farm site), and page 87 of ETSU notes a potential additional benefit of using this wind speed measurement height in that the international standard for the measurement of noise emissions from wind turbines (IEC61400-11 CD65)) proposes the standardisation of the sound power level and the sound pressure level of wind turbines to wind speeds expressed at a reference height of 10m.

I agreed with MS and XX that if wind speed is measured at 10m/s on site during background noise measurements and wind turbine noises modelled for neutral atmospheric conditions (i.e. using standard manufacturers data) then the effects of higher wind shear can be modelled on the noise assessment figure by moving the background noise curved to the right or the wind turbine noise curved to the left. Again, if wind speeds are measured at 10m then it would be possible to express an average wind shear for different wind speeds recorded during the wind measurement period, and to adjust background noise or wind turbine noise accordingly. However, that would be an average position and the difficulty is that wind shear may vary minute by minute.

The position of Dr McKenzie is that adopting an average for background noise, is perfectly appropriate because that is what ETSU advises, provided that average background noise can be compared with actual wind turbine noise. However, there is a difficulty if wind turbine noise is adjusted to take account of wind shear because of compliance measurement. This is because (noting indeed the argument on this point in the Acoustics Bulletin article (CD100)) using an average for wind turbine noise means that no account is taken of the fact that there could be unseen exceedences of wind turbine noise over background noise, taking into account actual wind shear at any given time.

As I put it to MS in XX, what gives rise to the debate on wind shear is what to do about the problem I have recorded. There is no agreed approach to modelling average case wind shear or to modelling average case wind turbine noise.

The approach in the Acoustics Bulletin article is to relate background noise to wind speed at hub height rather than the 10m height noted as potentially appropriate in ETSU at page 87. In this case, where anemometers on the mast were deployed

regardless of the hub height of the rotor. The wind speed at 10m height will be different to that at hub height due to the effects of 'wind shear', which means that wind speeds generally increase with increasing height above the ground.

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I agreed with MS and XX that if wind speed is measured at 10m/s on site during background noise measurements and wind turbine noises modelled for neutral atmospheric conditions (i.e. using standard manufacturers data) then the effects of higher wind shear can be modelled on the noise assessment figure by moving the background noise curved to the right or the wind turbine noise curved to the left. Again, if wind speeds are measured at 10m then it would be possible to express an average wind shear for different wind speeds recorded during the wind measurement period, and to adjust background noise or wind turbine noise accordingly. However, that would be an average position and the difficulty is that wind shear may vary minute by minute.

The position of Dr McKenzie is that adopting an average for background noise, is perfectly appropriate because that is what ETSU advises, provided that average background noise can be compared with actual wind turbine noise. However, there is a difficulty if wind turbine noise is adjusted to take account of wind shear because of compliance measurement. This is because (noting indeed the argument on this point in the Acoustics Bulletin article (CD100)) using an average for wind turbine noise means that no account is taken of the fact that there could be unseen exceedences of wind turbine noise over background noise, taking into account actual wind shear at any given time.

As I put it to MS in XX, what gives rise to the debate on wind shear is what to do about the problem I have recorded. There is no agreed approach to modelling average case wind shear or to modelling average case wind turbine noise.

The approach in the Acoustics Bulletin article is to relate background noise to wind speed at hub height rather than the 10m height noted as potentially appropriate in ETSU at page 87. In this case, where anemometers on the mast were deployed

for the purposes of background noise measurements (and for other purposes) at 35m and 50m, all that will be subsequently required will be an extrapolation of wind shear from the anemometer data to hub height, using the power law (see submissions already made on the evidence of Dr Barlow as to the sufficiency of using this approach).

MS does not like the approach of the Acoustics Bulletin article for two reasons:

- it departs from the advice in ETSU with regard to 10m height wind speed measurements on site; and
- the approach advocated in the Acoustics Bulletin article naturally creates a larger scatter in background noise plots when correlated with wind speed, precisely because the background noise/wind speed relationship is more dependant on wind shear when a wind speed is measured at or related to hub height than if wind speeds were measured at 10m height.

Against this background it is worth noting that, on the evidence of Dr McKenzie and on a proper reading of ETSU, the intention of ETSU is to define the amount of wind turbine noise and background noise that could occur at any given time, while accepting the background noise could vary considerably because of different contributors at any receptor location (hence the need to present typical or average values for background noise).

This is the point at which to address the key area of contention between MS and Dr McKenzie in relation to wind shear, and more generally on the correlation to be achieved between wind speeds and background noise. This is an area in relation to which RES have considerable difficulty in understanding any logic in the position of MS. The argument of MS is that measuring wind speeds on site at a height of 10m is essential because it is wind speed at that height which will influence

background noise levels at a background measurement location. The position of Dr McKenzie is that background noise at a measurement location is whatever it happens to be (noting earlier submissions on extraneous noise) and the important objective (and the very obvious one) is to relate the wind speed that the wind turbine sees at hub height (governing as that does the amount of noise produced by the wind turbine) and the background noise recorded at the background noise measurement location. This seems such an obvious point that, as I have said, RES has some difficulty in understanding the logic of MS.

Quite apart from this logic, so well explained in the Acoustics Bulletin article (CD100), you will remember that I explored in XX with MS whether or not wind speed measured at 10m height on the wind farm site was really a determining influence on background noise measurements at a background noise measurement location (whether at pre-planning or compliance stage). In this connection I draw your attention to the figure produced for the purposes of this exercise which so well demonstrates that a wind speed which might be seen at 10m on a wind farm site may be very different from the wind speed which influences or even determines the background noise circumstances of a measurement location. Dr McKenzie drew attention in evidence in chief to cases in Wales where a wind turbine site might be very much higher than a house, such that there could be a considerable difference between wind speed at 10m height on the wind farm site and wind speeds received at the house. MS acknowledged in XX that correlation between the 10m height wind speed on site and wind speeds at receptor locations would not always be good. This was an acknowledgement that he did not make in his evidence in chief and which was only achieved following a very extensive discussion. In my view this small acknowledgement is so important. If there can be difficulties in correlating wind speed at 10m height on site with wind speed at a background noise measurement location, it would be quite wrong to rely on the proposition advanced by MS as a

general principle. In any event, MS acknowledged in XX that he had no evidence that wind speed on the Den Brook site at 10m height correlated with the wind speed at the background noise measurement locations in this case.

In my view the point that I have just explored is very important because, together with the position in respect of extraneous noise (ie the representation of a normal background noise environment), the evidence as it has emerged quite undermines the attack by MS on the approach in the Acoustics Bulletin article which represents a wholly sensible and reliable way of approaching matters, consistent with the principles of ETSU. Finally, I draw attention to a paragraph of ETSU which seemed to escape attention in oral examination. I refer to the first paragraph on page 87 which advises that "To assess wind farm noise levels, measurements are correlated with the operating condition of the wind turbine. This is because the emitted noise from a wind turbine is related to the wind speed that a turbine experiences." This advice could not be clearer or more pertinent to the debate. I also referred to ETSU at page 47 (last paragraph): *"The actual wind speed of the hub height of a wind turbine might be expected to be higher than that shown in [figures within ETSU] by as much as a factor of 1.21, i.e. a wind speed of 10m/s measured at a height of 10m may be expected to be a wind speed of 12.1m/s measured at a hub height of 30m .."*. These extracts from ETSU emphasise that the position taken by Dr McKenzie is correct.

There is one further topic to explore in relation to wind shear, and more generally background noise measurements. This relates to the standardisation of wind speed and turbine noise to 10m which is discussed in ETSU at (eg) page 87. Dr Hoare agreed in XX, and both Dr McKenzie and Dr Barlow made clear in their evidence, that standardisation of wind speed to 10m height is irrelevant to the environmental impact assessment of any wind energy project. It is quite simply a standardisation for purposes unrelated to EIA. I refer particularly here to XX of

Dr Hoare. You will remember that I took her to Dr McKenzie's Supplementary Appendix 3 and the night time figure for Halse Farm (which Figure is in fact irrelevant since this is a general point). We agreed that if the X axis of the figure was changed so as to represent hub height wind speed rather than standardised 10m wind speed, all that would change would be the figures for the X axis (metres per second). The relationship between the background noise curve and the turbine noise curve would not change. Standardisation is irrelevant to environmental assessment of noise impact.

Overall in relation to wind shear, and more generally the approach to comparing the wind speed that a turbine will see with background noise at the same time, and at any given time, I commend the approach of Dr McKenzie based on the Acoustics Bulletin article (CD100). The position of MS is completely illogical, and RES is frankly surprised that he should even try to maintain a correlation between 10m height wind speed on site and the background noise environment of a neighbouring dwelling.

Because (evidence of Dr Barlow) the power law can be reasonably relied upon to project information from 35/50m to hub height, for the reasons explained in the Acoustics Bulletin article, it is my submission that RES has presented to this inquiry a solid body of correlated wind speeds and background noise data entirely sufficient to underpin a reliable assessment of the impact of operational wind farm noise on local houses.

Before moving on to noise predictions, I wish to make one further point. While MS has enthusiastically pursued the case based on a need for absolute precision, notably in terms of wind shear, but also with regard to noise predictions and other topics, his approach to a question asked by you was illuminating. He acknowledged that acoustics was not a precise science and that absolute accuracy

was not possible. We wholly agree. Noting that the human threshold of hearing perception commences at around 3 dB(A) above a masking level, and noting the averaging approach of ETSU, it is not possible to seek absolute precision and it would be inappropriate and unnecessary to do so. What is needed is a level of confidence that what has been predicted will be unlikely to be exceeded in practice, and in respect of this topic I turn to what I say under the heading of noise predictions.

Noise Predictions

This topic was explored by MS (proof 4.5 - 4.27 and Appendix D 2.1.6 - 2.1.41) and by Dr Hoare (proof 5.2 and following).

There are two areas to be considered: the prediction model (not a topic engaged on in ETSU) and the issue of the selection of a candidate turbine.

I can be very brief with regard to ISO9613 (the predictive model used by Dr McKenzie) (CD68). MS did not argue that the use of ISO9613 was inappropriate. Instead his contention is that it is more appropriate to use CADNA software which uses a combination of ISO9613 and the atmospheric conditions element of the CONCAWE model. In brief I commend the evidence of Dr McKenzie to the effect that, for reasons given in evidence in chief, it would be quite inappropriate to combine ISO9613 and CONCAWE in the way envisaged in the CADNA software. And there is no need to do so. I refer to the paper presented by Dr Bullmore and others to the conference on noise in Denmark (CD155) which on the clearest of evidence from Dr McKenzie (and despite the misgivings of MS in terms of the quality of the paper or the fact that it has not been peer reviewed) demonstrates in my view very clearly the success of ISO9613 as a predictive model.

You will recall that Dr McKenzie spent some time in his evidence in chief addressing each of the misgivings of MS, and in my view his evidence was convincing and I commend it to you. However, perhaps the most convincing single piece of evidence presented by Dr McKenzie that highlighted the gulf between him and Mr Stigwood on this matter, was where he applied the various prediction 'errors' and 'margins' proposed by Mr Stigwood to the predicted noise curves presented on the figures contained in CD155. In summary, Dr McKenzie concluded that, using Mr Stigwood's approach, the predicted noise curves would typically be some 9dB(A) higher than those presented in CD155. Just as clear as the evidence that CD155 presents as to the success of ISO9613 as a predictive tool for wind farm noise, the outcome of undertaking this process clearly reveals that Mr Stigwood's approach, based on scientifically unfounded assertions, leads to extreme outcome results that, quite simply, are in no way borne out in reality.

Turning to the issue of candidate wind turbines, Dr McKenzie explained that only in cases where a project was being promoted by a developer and a named manufacturer could a specific model be proposed at a pre-planning stage. This is for very good reasons. Firstly, there are commercial reasons for not seeking to prefer a single manufacturer at a pre-planning stage which you will well understand. Secondly, Dr McKenzie noted that within the lifetime of a planning permission a candidate machine may disappear from the market and other machines may appear, which are suitable for deployment. I put the point this way: the purpose of the EIA exercise is to determine whether or not a machine exists which can perform in such a way that appropriate ETSU rating limits can be achieved in practice. This is an exercise carried out in the public gaze, involving consultation. If planning permission is granted, then how a developer achieves ETSU rating limits in practice is a matter for that developer. The developer must be free to select an appropriate machine. If an appropriate machine is not available (even with constraints on outputs so as to reduce noise levels), then (as

put to MS in XX), the developer may not be able to implement the permission. At all events it would be quite inappropriate to try to regulate the precise model of turbine to be deployed through a condition or other mechanism at the planning stage.

As to source power level information provided by manufacturers, Dr McKenzie explained that he relied on general warranted levels, site specific warranties not being available at the pre-planning stage. And again he explained that test reports were not necessarily available for all configurations of a particular turbine. In this case there is a test report available for the candidate machine. It was explained in XX of Dr McKenzie that the source power level information within the test report (Dr Hoare Appendix 12) would be the same as that for the machine proposed for Den Brook, even though the machine tested at a hub height of 105m. This is because the generator within the machine will deliver the same source power level. However, what has perhaps misled us was that a standardised 10m noise level seen in the test report was different than that for the V90 proposed at this site. This is irrelevant to the function of the difference in hub height. However, Dr McKenzie also explained that it would be extremely unusual for a manufacturer not to be able to at least keep to a general warranty level provided for the purposes of EIA. Indeed, rather the contrary. Dr Hoare produced evidence from the Hempnall site (LH5) showing that Vestas had supplied different source power level information to the promoters of Hempnall. Dr McKenzie explained that with the development of the V90 machine (that proposed at Hempnall and Den Brook) over time had come lower warranted levels. In my view Dr McKenzie perfectly properly relied on the general warranty level for the Vestas V90 with a 75m hub height for the purposes of his assessment. There is nothing unusual in his approach.

I need to deal with one further point in anticipation of something that may be said by Mr Taylor. He may advocate in submissions that RES should be committed to

use the candidate turbine investigated for assessment purposes for reasons relating to the law confirmed by the court in the Rochdale case. (I am sorry that I am not able to give a full reference for this case due to lack of access to relevant sources over the weekend, but Mr Taylor will doubtless provide the case reference). I think that Mr Taylor's point can be dealt with very briefly. First the Rochdale case concerned an EIA development where assessment was made of a master plan, but where permission was subsequently granted which did not tie the developer to the master plan. That was the point of the Rochdale case, and the judgment of Sullivan J. confirmed rather than created law. In this case, the findings of the EIA process will be reflected in the terms of the permission granted, and in the case of noise through the imposition of a noise rating condition. That is the difference between this case and Rochdale. It would not be possible for the developer to implement a project without reference to the noise rating conditions. The difference is extremely clear. This requires that the developer should keep to the noise rating levels. How the developer keeps to those rating levels in terms of the machinery selected is up to the developer, and it would be wholly inappropriate (unnecessary and unreasonable in terms of any condition) to provide otherwise.

Noise Assessment (Amplitude Modulation)

My final topic relates to noise assessment and in particular amplitude modulation. In terms of noise assessment, I need to give some attention to the exercise carried out by Dr Hoare in Section 7 of her evidence, and to the compliance testing evidence in her Section 9.

With regard to her exploration of what she termed Scenarios 1 and 2 in Section 7 (see here 7.11), in 7.14 Dr Hoare explained what she had done in terms of down wind predictions using the approach of ISO9613. However, following XX and

following a discussion between Dr Hoare and Dr McKenzie, it became horribly clear that Dr Hoare (not as I have already noted a qualified acoustician) had carried out anything but a down wind propagation assessment using ISO9613. As agreed with Dr McKenzie, her approach involved including the down wind propagation in cases where only one of the proposed 9 turbines was truly down wind. You will recall the example of a west south west wind blowing towards Crooke Burnell, in circumstances that would mean that, for the purposes of ISO9613, only turbine 9 would deliver propagated noise down wind to the receptor property. Nevertheless, Dr Hoare has for the purposes of her exercise assumed that all the other turbines are also upwind of Crooke Burnell and the sense applies to ISO9613. They were not, and this fatally prejudices the exercise. Of course we do not know how many of Dr Hoare's exercises in propagation are so flawed, indeed those exercises are not before the inquiry for examination. However, the approach is clearly wrong and that itself undermines the exercise.

Of course it may well be that other examples used by Dr Hoare were perfectly valid, but we know no information beyond that in her proof, and that means that percentages which result from the exercise, and which are represented in tables 5 and 6, are hopelessly compromised.

A further more or less fatal error in Dr Hoare's approach is her failure to take into account the absence of any background noise information relating to the day time period outside quiet amenity hours. Since the exercise which culminated in table 5 and 6 fundamentally involves the use of background noise levels determined during the background noise surveys, and since she had no background information for 61 hours out of any week, the percentages quoted for audibility, complaints marginal to likely, and complaints likely in her tables are further undermined. Again, Dr McKenzie drew attention to the lack of any corroborative study linking wind turbine noise to the incidence of complaints following the

advice in BS4142. There is therefore no empirical data to support Dr Hoare's approach to complaints, quite apart from the issues upon which I have already submitted in relation to the percentages of time given. (Parenthetically I may observe that Dr McKenzie recorded in answers to your questions that in the earlier days of wind energy deployment there were many more cases of exceedences of turbine noise over background noise greater than 5 dB(A), without there being any particular rise in complaints, such as might be anticipated following the advice in BS4142).

I ask you to completely discount Dr Hoare's exercise represented within paragraphs 7.11 - 7.19 of her proof. I also ask you to discount for the same reasons her daily impacts assessment in paragraphs 7.20 and 7.21. I say this because, again, of the lack of any day time background information. RES still does not understand how Dr Hoare could have represented background noise within her Figure 5 for the day time period. And again Dr Hoare, for reasons related to generator noise (in turn for reasons already submitted), used background noise levels from another property (Crooke Burnell) for Ham Farm. While background noise levels at these two properties may be similar in terms of a long term average, it could not possibly be said on any empirical basis that that was the case on 3 August 2006 (see Figure 5 of Dr Hoare).

Turning to Dr Hoare's rebuttal proof at para 2, she engaged in the testing of the proposed noise conditions against the data provided by RES. She engaged particularly on the selection of valid data points for compliance purposes. The primary contention was that whether or not compliance with noise conditions could be demonstrated depended on the way that data points were selected, and in 2.5 she used the phrase "cherry picked" in terms of the selection of data. In XX I took her to Note 2 attached to the noise conditions advanced by RES. To be fair to Dr Hoare I am not sure that she had seen this version of the conditions. Note 2 makes it clear that it is for the local authority to specify data point

selection. Note 2 also provides that the developer must provide all data collected to the local authority. She acknowledged that in these circumstances her concerns about cherry picking might not be justified and this acknowledgement in turn undermines the point of her exercise in Section 2 of her rebuttal proof.

In summary, in relation to Dr Hoare's exercises within Section 7 and 9 of her proof, they do not remotely represent a reliable body of material and should be discounted by you.

I note finally in relation to Dr Hoare's sections 7 and 9 the desperate attempts by Mr Taylor in XX of Dr McKenzie to patch up the exercise, attempting to show that some small errors did not invalidate the conclusions. Quite clearly this is incorrect. I think it is common ground that the percentages shown in Tables 5 and 6 within Dr Hoare's evidence are incorrect. How incorrect we don't know, Dr McKenzie's evidence is that the exercise carried out by Dr Hoare is deeply flawed. DBJRG cannot prove to the contrary because there is no data available to the inquiry to do so.

Turning to amplitude modulation, I principally explored this with MS although I discussed with Dr Hoare the concerns about the accuracy of the exploration by Salford University and the data provided to it for the purposes of its study (CD103).

In respect of the last point Dr McKenzie made it clear that Salford University had accessed data from every relevant local authority (that is to say authorities for areas where there were wind farms). He drew attention to the questionnaire sent to all EHOs and which is attached to the Salford Report. He noted the questions that were asked of the EHOs, and in particular he noted the description of amplitude modulation and the final question within the form. From the evidence of Dr McKenzie there is no doubt that the Environmental Health Officers who responded to the questionnaire (100% responded) knew exactly what they were

being asked, and there is no evidence to support a contention that they did not understand the questions that there were being asked. In my submission the Salford University Report represents a reliable body of information in relation to 133 wind farms which existed at the time of the report.

As to the contents of the report, you will remember that I took MS to the Executive Summary of the report. I need not rehearse the contents of the summary, but I note that out of the 133 wind farms in respect of which information was provided by EHOs, Salford University determined that noise complaints at 4 sites could be attributed to amplitude modulation, with possible attribution in respect of a further 8 sites. Only in respect of one site had a statutory notice been determined.

Turning from the Salford Report to the evidence of MS, I refer to his appendices E and F and to his proof within which he addressed the turbines at Swaffham.

In relation to the Swaffham site, I asked MS if he knew whether or not a formal complaint about noise emissions had been made to the local authority. This provoked information that not only did he not know the answer to the question, but that he had not made measurements other than of his own accord and for his own interest. Although RES accepts the evidence of MS to the effect that a peak/trough modulation of 6.5 dB has been demonstrated at Swaffham, it is notable that there is no evidence that this feature has given rise to any complaint to the local authority. Again, in respect of Warboys (evidence in MS Appendix E) peak to trough modulations in the region of 3-5 dB have been recorded, but again MS has no knowledge of any complaint to the local authority for a neighbouring resident, and again he made the measurements of his own accord.

Therefore, in respect of two of the three sites investigated by MS (and in respect of which evidence was before the inquiry) the position is clear. While peak to

trough modulations may have been measured, these sites have (on the evidence before the inquiry) not given rise to any noise complaints.

The remaining site is Deeping St Nicholas where we know there have been noise complaints. However, we also know that the local planning authority have not served any planning enforcement notice and have not served any abatement notice under the Environment Protection Act 1990. This of course is the site close to Mrs Davis' house.

I should also note that, while the measurements made by MS at Warboys and Swaffham were external, those made at Mrs Davis' house were internal, contrary to the advice of ETSU that assessment and rating should be based on external measurements.

In summary, in respect of amplitude modulation, we have the Report of Salford University, and we have the Government's clear response to that report. It made it clear that the Government does not see any current need to make further investigations into amplitude modulation, and that the advice on assessment and rating in ETSU should be adhered to in the evaluation of wind farm projects.

Turning finally to the question of noise conditions and the rating level proposed, it is my submission that prior to day time rating level of 37.5 dB(A) L90 _{10 mins} is wholly appropriate. Firstly, page 65 of ETSU notes the factors that should be considered in selecting a day-time absolute lower limit but those factors are indicated in the most general sense, indeed in respect of the factor entitled "Duration and level of exposure" the ETSU advice is that an approach is difficult to formulate precisely so that "a degree of judgment should be exercised".

Secondly, I note that the Council has agreed the rating level proposed. Thirdly, it is not a case where it could be said that there are very many dwellings in the neighbourhood of the proposed wind farm. This is a rural area with villages and

scattered farms and other dwellings, but the wind farm is not close to many hundreds of houses at comparatively short range. As to the level of exposure and the duration of exposure, Dr McKenzie made the point that the relevant measure was the amount of time that received noise would be above 35 dB(A) L90 10 mins , not the amount of time that noise from the wind farm might be audible. Within this context you refer to the simplified assessment method described on page 66 of ETSU.

In my submission the proposed rating level for quiet amenity hours is perfectly appropriate. I note finally in this context that paragraph 1 of the Executive Summary to ETSU advises that the document 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 ...". Those indicative noise levels include 40 dB(A) L90 10 mins as much as they include 35 dB. It is clear that ETSU does not envisage that 40 dB(A) L90 would be inappropriate.

With regard to Crooke Burnell, Mr Taylor raised the question of what would happen if the property passed into different occupancy, and the subsequent occupier did not have a financial involvement in the project. I make two responses. Firstly, if Crooke Burnell is sold then as a matter of law (replies to pre-contract enquiries) the potential new owners should come to know of the wind farm and its implications for Crooke Burnell. In which case the new occupiers would take Crooke Burnell in the full knowledge of the position with regard to conditions. Secondly, planning conditions will not change simply because Crooke Burnell has a changed occupancy. And that is why the RES approach to this property is important. RES has not requested the higher financially involved rating limit, but only an absolute level during day time hours of 40 dB(A) L90. This is a level which (see submissions just made) ETSU regards as reasonable for

the protection of amenity for any neighbours of the development. In my view the position is perfectly satisfactory.

In conclusion (noise):

My overall submissions are that DBJRG has entirely failed to demonstrate any acoustic basis on which this appeal should be dismissed. In particular:

- (1) RES and Dr McKenzie have provided a reliable body of background noise information.
- (2) In the context of background noise information accurate information on wind shear has been provided through the derivation of wind speed at hub height based on 35m and 50m anemometers.
- (3) Noise predictions have been made using an appropriate methodology, and the appropriateness of this methodology is supported by compliance measurements (CD155).
- (4) It has been demonstrated by Dr McKenzie that, save for a 0.1 dB(A) exceedence at Ham Farm (the property with the generator, but where generator noise has been excluded from the data) noise emissions from a wind farm will be below the ETSU noise rating limits proposed by RES and agreed to by the local planning authority.
- (5) There is no evidence before you of the likelihood of excess amplitude modulation, measured externally, which would justify caution in your approach to compliance with the rating limits.

Therefore, in relation to noise I ask you to accept the position of RES.

Note relating to the new WHO Night Time Noise Guidelines 2009

In connection with the evidence presented by Mrs Jane Davis, a new document was introduced to the Inquiry in the World Health Organisation Night Time Noise Guidelines 2009 [CD172]. The only apparent reason for introducing this document was the fact that it contains a night time noise limit of 40dB L_{Aeq} (which equates to 38dB L_{A90} for wind turbine noise). This compares with the night time noise limit of 43dB L_{A90} contained in ETSU, which was based on previous guidelines published by the World Health Organisation.

Taken at face value, the new guidelines would appear to commend a 5dB(A) reduction in acceptable night time noise levels, but this is not the case. The extensive research that has informed the latest night time noise guidelines has concluded that the impact of noise on health through sleep effects is a cumulative issue. As such, the new recommended night time noise guideline level of 38dB(A) relates to the average level experienced over a whole year of nights, thus allowing for variability from night to night.

In the case of the calculated wind farm noise immission levels from Den Brook Wind Farm, the calculated levels presented by Dr McKenzie are those that may occur under downwind propagation conditions only. Therefore, even if the calculated noise immission levels were to approach the extant ETSU night time noise limits of 43dB(A), they would only do so on nights when the wind was blowing from the wind farm towards the receiver. On occasions when either the wind was not blowing, or it was blowing but in another direction, the calculated levels would not occur. Thus the average night time noise levels over each year would be significantly below the calculated noise levels presented in the evidence of Dr McKenzie. This being the case, it would be wholly

misleading to compare the calculated wind farm noise immission levels with the World Health Organisation limits set out in the new Night Time Noise Guidelines.

I also note the current status of the new guideline noise limits [Page VII, Foreword, Penultimate Paragraph] that they are neither standards nor legally binding criteria, but instead are designed to offer guidance. In terms of their immediate application, I also note the setting of an intermediate target [Page XVII, Table 4] of 55dB(A).

4. Development Plan Compliance

I defined my view of the relevant and useful Development Plan policies in Section 2 of these submissions. I can briefly reach conclusions in relation to the compliance of the project with the Development Plan. Having read through the decision of Mr Lavender following the previous inquiry, I have noted that he reached no clear conclusion in relation to Structure Plan policy CO1 and Local Plan policies NE10 and PS10. I have already said that I feel that NE10 is not helpful to you and I maintain that view. CO1 is clearly relevant, but I have already given my views on the consistency of the policy with PPS22, having regard to the inevitability of significant landscape and visual effects which may be regarded as adverse.

I do not feel that NE7 is engaged since the development is clearly not on or close to the edge of the Dartmoor National Park, and in this respect I note and commend the findings of Mr Lavender in paragraph 37 of his decision.

With regard to CO2 in the Structure Plan, with a view that there would be no breach, having regard to the distance between the appeal site and the National Park, there will be no prejudice to the achievement of National Park purposes. I made detailed submissions on this point in Section 3.

Turning to the renewables policies, the proposed development would clearly be consistent with the aims of RE6 in RPG10, in terms of the need to meet the targets specified (which have so clearly not been met). Turning to CO12 in the Structure Plan, there is no development control test and thus no means of asserting breach or compliance. As to PS10 in the Local Plan, I noted in Section 2 of these submissions that its development control test ("no significant adverse effects") was not consistent with the advice in PPS22. It must be said that the development would probably breach PS10, but I do not feel that material weight should be given to such a finding given the inevitability of significant impacts on the landscape and on visual amenity which may be regarded as adverse.

Looking at the Development Plan as a whole, and noting particularly the targets for generation for Devon by 2010 (which remain important even though the targets are not likely to be met) I conclude that the development would be consistent with the provisions of the Development Plan. If you reach an opposite conclusion, then you need to look at other material considerations, to which I now turn. Equally, however, it may well be (as I forecast in Section 2 of these submissions) that you find the policies in the Development Plan of surprisingly little help in terms of your evaluation of the local environmental issues in this appeal, in which case you will turn to other material considerations for other reasons.

5. Other material considerations and final submissions

The key material considerations in this case, aside from the Development Plan, which should be brought into consideration at this stage are the draft RSS (CD10 and 10a), the EU Directive on Renewable Energy of 2009 (CD35) and the Renewable Energy Strategy (CD32c). I make the following submissions in relation to these material considerations:

- (a) the draft RSS, which in my view should be given considerable weight in this inquiry, proposes targets for 2020 which I have set out in Section 2. Given the complete failure of the region and of Devon to meet its 2010 targets (again see Section 2), those for 2020 are additionally challenging. It is a challenge which Government intends should be met. The targets are not simply there as vague objectives. They represent the ultimate distillation of a huge body of law and policy, some of which is dealt with by Mr Stewart in his evidence in terms of climate change factors and the response of the EU and of the UK to those challenges.
- (b) the draft RSS targets will now need to be reviewed to take account of the consequences of the EU Directive finally issued in March 2009. Rather than set out my views in relation to this Directive and the Renewable Energy Strategy in detail, I incorporate in these submissions the comments that I made in opening on these topics.
- (c) It is of particular importance to note that the UK is under a legal obligation to attain the 15% by 2020 target for renewable energy, which I noted in opening (as it is noted in the Renewable Energy Strategy) translates to a requirement for roughly 30% of electricity needs to come from renewable sources by the required date. Given the distance to go to meet 2020 targets, this is a huge challenge, as is acknowledged in various places in the Renewable Energy Strategy. It is a challenge which is directly relevant to your decision.
- (d) It is also relevant to note the entirely fresh position within the EU Directive, reported in the Renewable Energy Strategy, that the UK Government should report progress towards the required 2020 renewable energy contribution every 2 years. There is a clear emphasis on

maintaining the required trajectory to maintain targets, in comparison with the 2010 position where no such reporting was envisaged by the UK Government in terms of its own policy objectives.

The legal requirements of the EU Directive, and the statements of the UK Government in the Renewable Energy Strategy are powerful material considerations which are new since the last inquiry, and they argue strongly in favour of the grant of a planning permission. I urge you not to do what decision makers so often seem to be tempted to do - to acknowledge the extreme need for and benefits of renewable energy development, but then to express regret that local environmental effects outweigh the need for the development. Rather the approach should I feel be to acknowledge the inevitability of significant, and quite possibly adverse, landscape and visual and perhaps other effects, but then to look at need and benefits. The difference may seem semantic, but psychologically I believe it is important. It is a matter of approach and attitude. All too often (and I will be blunt and refer to your decision produced as CD27(00)) Inspectors seem to me to view the need for new renewables capacity with a material consideration of no obviously greater weight than local environmental effects. Neither is it acknowledged but regretfully set aside because of what may be very local significant landscape and visual effects. I believe that this approach fails to grapple with the message of Government policy. I ask you to note the repeated statements by Government relating to the need for renewable energy and the huge challenge of 2020 targets, which will need to be increased following the EU Directive and the Renewable Energy Strategy. In my view it is simply not good enough in these circumstances to reject proposals simply because of what are inevitable significant landscape and visual effects. There has to be something quite fundamentally and obviously wrong with the proposal to justify a rejection in the national and international policy circumstances in which we find ourselves. In

relation to the issues before this inquiry, and noting especially the noise evidence, it is my view that no such fundamental problems have been demonstrated.

Finally, I commend the previous decision of Mr Lavender which, except in respect of noise which was not really discussed at the first inquiry, represents a well argued decision. No base line considerations have changed since the previous decision and I refer again to the submissions I have made in relation to the desirability of consistency in decision making. With regard to noise, the ETSU rating limits can be met and therefore I am entitled to rely on the advice in PPS22 and submit that there can be no reason to dismiss this appeal on the basis of noise emissions.

Den Brook is a well located, well designed wind farm. No evidence has been produced which would justify a refusal, in the context that I have set out at the end of my submissions. The development is also in a position to proceed at short notice since RES has accepted a grid connection offer. A note to this effect was placed before the inquiry in the July sessions. I ask you to grant planning permission for Den Brook wind farm.

Marcus Trinick and Paul Maile

Eversheds LLP

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