Department for Communities and Local Government

Dawn Bodill
Ecotricity (Next Generation) Ltd
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Our Ref: APP/F2605/A/12/2185306
Your ref:

25 September 2014

Dear Madam

TOWN AND COUNTRY PLANNING ACT 1990 (SECTION 78)
APPEAL BY ECOTRICTY (NEXT GENERATION) LTD
LAND AT WOOD FARM, CHURCH LANE, SHIPDHAM IP25 7JZ
APPLICATION REF: 3PL/2011/0854/F

1. I am directed by the Secretary of State to say that consideration has been given to the report of the Inspector, JP Watson BSc MICE FIHT MCMI, who held an inquiry into your client's appeal under Section 78 of the Town and Country Planning Act 1990 against the decision of Breckland District Council ("the Council") to refuse an application for planning permission for two wind turbines with a maximum overall height of up to 100 metres, together with access tracks, crane pad areas, electricity substation and temporary construction compound, dated 29 July 2011, in accordance with application ref: 3PL/2011/0854/F.

2. The appeal was recovered for the Secretary of State's determination on 11 October 2013, in pursuance of section 79 of, and paragraph 3 of Schedule 6 to, the Town and Country Planning Act 1990 on the grounds that it involves a renewable energy development.

Inspector's recommendation

3. The Inspector recommended that the appeal be dismissed and planning permission refused. For the reasons given below, the Secretary of State agrees with the Inspector's conclusions and recommendation. A copy of the Inspector's report (IR) is enclosed. All references to paragraph numbers, unless otherwise stated, are to that report.

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Procedural Matters

4. The Secretary of State has noted the Inspector's remarks and actions at IR1.

5. At the inquiry three applications for costs were submitted (IR2-4). These applications are the subject of separate decisions letters also being issued today.

6. The Secretary of State notes that since the close of the inquiry the Inspector sought the views of parties on three occasions relating to: (1) publications by Renewable UK: six documents about amplitude modulation of aerodynamic noise from wind turbines; (2) the Court of Appeal judgement issued on 18 February 2014 in the case of Barnwell Manor Wind Energy Limited v East Northamptonshire District Council concerning the weight attached to harm to heritage assets and the overall balancing exercise that decision makers must undertake; and (3) the new national planning guidance published on the 6 March 2014. Comments on all matters were invited from the parties and have been taken into account by the Inspector (IR6), and by the Secretary of State in this decision.

7. The Secretary of State takes account of submissions made at the inquiry, stating additional information should be added, in order for the statement to be deemed 'environmental'. The Inspector issued a notice to this effect (filed as a hearing document), under Regulation 19 of the Town and Country Planning EIA Regulations 1999. The Secretary of State notes that after reconsideration of the information previously submitted, the Inspector concluded this was sufficient for the statement to be regarded as environmental, and in accordance with the Regulations the notice fell away. The Secretary of State has taken into account the submitted Environmental Statement (ES) and Further Environmental Information (FEI) submitted prior to and during the inquiry. Overall, the Secretary of State, like the Inspector (IR319), is satisfied that the ES and FEI comply with the Town and Country Planning (Environmental Impact Assessment) Regulations 2011 and that sufficient information has been provided for him to assess the environmental impact of the planning appeal.

Policy Considerations

8. In deciding this appeal, the Secretary of State has had regard to section 38(6) of the Planning and Compulsory Purchase Act 2004, which requires that proposals be determined in accordance with the development plan unless material considerations indicate otherwise. In this case, the adopted development plan comprises the Breckland Core Strategy and Development Control Policies DPD ("the LDF", adopted December 2009) and saved policies from the Breckland Local Plan (1999). The Secretary of State agrees that the most relevant policies for this case are those set out by the Inspector at IR16. He further agrees with the Inspector (IR323-325) that the Local Development Framework policies agreed should be attributed full weight insofar as they refer to matters relevant to this appeal (IR325).

9. Other material considerations which the Secretary of State has taken into account include the National Planning Policy Framework ("the Framework") and the planning practice guidance published 6 March 2014; the Overarching NPS for Energy (EN-1) and the National Policy Statement (NPS) for Renewable Energy

Infrastructure (EN-3). He has also taken account of the documents to which the Inspector refers at IR19.

10. In accordance with section 66 of the Planning (Listed Buildings and Conservation Areas) Act 1990, the Secretary of State has also paid special regard to the desirability of preserving listed structures or their settings or any features of special architectural 5or historic interest which they may possess.

Main issues

11. The Secretary of State agrees with the Inspector that the main considerations are those set out at IR317.

Landscape and Visual Effects

Effects on landscape character

12. For the reasons given at IR328-331, the Secretary of State agrees with the Inspector that the development would bring about a change to the landscape which the landscape has capacity to accommodate; that the landscape has no special designations; and that the change to this would not be significantly harmful (IR332). He further agrees that the scheme's design has had regard to the Council's Landscape Character Assessment and that the requirements of policy CP11 and DC1 would be met (IR332).

The quality of the development design

13. The Secretary of State has given careful consideration to the Inspector's analysis (IR333-IR335). The Secretary of State agrees with the Inspector (IR334) that the turbines would not have a suburbanising effect and would be of a similar form to other approved turbines in numerous other locations (IR335). He further agrees with the Inspector's conclusions at IR336 that the proposal would meet the requirements of policy CP11 in respect of design.

The visual effect on local amenity

14. The Secretary of State has carefully considered the findings of and Inspector's conclusions on the impact of visual intrusion on residential properties (IR340-341) and agrees with the Inspector that policies DC1 and DC15 would be satisfied and no unacceptable intrusion caused (IR342). He also agrees that the visual amenity of public highways is not intruded upon and that policies DC1 and DC15 are also satisfied in these respects (IR343). He further notes the Inspector's finding that common ground exists between the parties, and no additional significant effect would arise in relation to the proposed development due to cumulative changes to the landscape and visual environment, or designated landscapes and cultural heritage (IR344).

Acoustic Effects of the Development

15. The Secretary of State notes the Inspector's analysis of the noise assessment (IR349-356) and his conclusion that the appellant's assessment of noise from the operation of the turbines properly uses ETSU-R-97 (IR357) whilst taking account of the latest industry good practice. He further agrees with the Inspector that the

appellant's assessment of noise meets the relevant requirements of paragraphs 5.11.4 to 5.11.7 of EN-1, the overarching National Policy Statement for Energy (IR359). The Secretary of State has carefully considered the evidence and Inspector's findings on noise at IR362-378.

The Findings of the Noise Assessment

Tranquillity

16. For the reasons given at IR362-364, the Secretary of State agrees with the Inspector's conclusion at IR364 that the appeal site is prized for its amenity value and tranquillity. He further agrees that the operational noise limits (which are consistent with ETSU-R-97), would allow additional noise from the development, and so the tranquillity of the area would not be protected, contrary to the Framework paragraph 123. Like the Inspector, the Secretary of State attributes moderate weight to this harm.

Amenity and Noise

17. The Secretary of State has taken account of the Inspector's remarks at IR365-367 and agrees that the matter of noise-related amenity is addressed through the use of ETSU-R-97. He further agreed with the Inspector's conclusions at IR373 that if excess amplitude modulation were to arise, that statutory nuisance procedure as a means of dealing with excess amplitude modulation is preferable to assigning a planning condition.

Effects on Health and Elderly People

18. The Secretary of State has given careful consideration to the proposed operation of the appeal scheme and the effects on health of elderly people and conditions in the Shipdham Manor Care Home and the proposed facility at Wood Farm. He agrees with the Inspector's conclusion (IR377) that operation of the appeal scheme would not create noise such as would be likely to prevent sleep.

Overall Weight to be given to Adverse Noise Impacts from the Operation of the Wind Turbines and Construction Noise

19. The Secretary of State agrees with the Inspector's conclusions on the impacts of the proposals (IR379) regarding adverse noise impacts from the operation of the wind turbines. He agrees that a planning condition would be necessary to ensure operational noise levels did not exceed those described in the assessment but that construction noise would be limited and acceptable within the terms of policy DC1 and DC15 (IR379-382).

Other Potentially Harmful Effects

The Settings of Listed Buildings

20. The Secretary of State has had regard to the Inspector's remarks on the setting of listed buildings (IR384). He agrees that the settings of the two listed buildings at Manor Farm: the house and the barn would be affected by the scheme (IR386). The visual relationship between the turbines, the house and the barn would result in a degree of deterioration in the settings of both. The appeal turbines would be

clearly visible in this context and their introduction would be a further step in the process of compromising the setting of the grade II listed buildings (IR387). He further agrees that the nearby countryside, with its farmland character, is an important part of the setting of the house and the barn. The appeal development would significantly alter the character of the landscape in that the turbines would be perceived as a defining characteristic of the landscape at distances of up to approximately 1km (IR388). It is common ground that both the house and barn are inside the zone in which the character of the landscape would significantly change, from its current character drawn from agriculture and the natural environment with farmstead buildings of traditional form, to a character whose defining characteristics would include the appeal wind turbines (IR388).

21. The Secretary of State agrees with the Inspector that while the harm to the setting of the house and barn would be of a degree that should be classified as slight; the change in the landscape character would be to the detriment of the settings of the listed buildings in that the historic associations between the listed buildings and the landscape would be disturbed and diluted (IR388).

22. The Secretary of State agrees with the Inspector's regard to judgement in the Barnwell Manor case (IR391) and his conclusion (IR392) that considerable weight should be given to the desirability of preserving the setting of all listed buildings in this appeal.

Shipdham Conservation Area

23. The Secretary of State also agrees with the Inspector that the Shipdham Conservation Area would be subject to minimal change and slight harm (IR393).

24. The Secretary of State further agrees with the Inspector's analysis and conclusion at IR394 that although neither the Civil Aviation Authority nor the National Air Traffic Service objected to the scheme both perspectives were limited. He notes the Inspector's remarks that Norwich Airport Limited propose changes to the controlled airspace, and that it is likely to concentrate low-level flying directly over Shipdham village creating a possible low level choke point. The Secretary of State agrees this would introduce a hazard to flying and must weigh against the scheme (IR396).

Other Considerations

Renewable Energy

25. The Secretary of State notes the appeal scheme would provide a valuable contribution to cutting greenhouse gas emissions and agrees with the Inspector's attribution of substantial weight (IR397) to this consideration.

Planning Concerns of Local Communities

26. The Secretary of State also agrees that no weighty conclusion should be drawn from responses to the appeal proposal from the local area, as those supporting and those opposed were reportedly divided (IR399). He further agrees with the Inspector and attributes little weight to other development plan policies that were cited by interested parties at the inquiry (IR401).

Conditions

27. The Secretary of State has considered the Inspector's comments at IR402-408 and his recommended conditions as set out in Appendix 1 to his report. The Secretary of State is satisfied that the proposed conditions are reasonable and necessary and would meet the tests of paragraph 206 of the Framework. However, he does not consider that they overcome his reasons for dismissing the appeal.

Overall conclusions

28. The Secretary of State agrees with the Inspector that the scheme's landscape and visual effects would satisfy the requirements of the development plan, LDF policies CP11, CP12, DC1 and DC15, and would be acceptable. Subject to planning conditions, he further agrees that operation of the proposed turbines would not give rise to unacceptable effects on amenity by virtue of either operational or construction noise, and so would comply as appropriate with LDF policies CP12, DC1 and DC15.

29. The Secretary of State agrees with the Inspector that the appeal scheme would provide a valuable contribution to cutting greenhouse gas emissions and attributes substantial weight by virtue of the support in principle given to renewable energy projects by LDF policies CP12 and DC15, the Framework and the overarching National Policy Statements for Energy (EN-1) and Renewable Energy Infrastructure (EN-2). Like the Inspector he also attributes limited weight to the benefit to birds.

30. However, the Secretary of State, like the Inspector has also found considerations that weigh against the scheme. Its effects on the settings of listed buildings while not harmful in a way that is counter to development plan policy DC17, would be harmful to the settings, and in view of section 66(1) of the Planning (Listed Buildings and Conservation Areas) Act 1990, considerable weight is attributed to that harm. The Secretary of State also agrees with the Inspector that the scheme would fail to protect prized tranquillity contrary to paragraph 123 of the Framework, and would also lead to an intensification of risk to aviation by virtue of factors associated with air traffic control and Shipdham airfield; he agrees that moderate weight is attributable to that danger.

31. The Secretary of State agrees with the Inspector that the material considerations that would arise from harm associated with the scheme would outweigh the benefits it would bring. Those material considerations, taken together and including the overarching statutory duty imposed by section 66(1), make unacceptable the impact of the development and are sufficient to overcome the presumption established by section 38(6) of the Planning and Compulsory Purchase Act that determination should be in accordance with the development plan.

Formal Decision

32. Accordingly, for the reasons given above, the Secretary of State agrees with the Inspector's recommendation. He hereby dismisses your client's appeal and refuses planning permission for the erection of two wind turbines with a maximum overall height of up to 100 metres; together with access tracks, crane pad areas, electricity

substation and temporary construction compound, dated 29 July 2011, in accordance with application ref: 3PL/2011/0854/F.

33. This letter serves as the Secretary of State's statement under Regulation 21(2) of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999.

Right to challenge the decision

34. A separate note is attached setting out the circumstances in which the validity of the Secretary of State's decision may be challenged by making an application to the High Court within six weeks from the date of this letter.

35. A copy of this letter has been sent to Breckland District Council, and a notification letter has been sent to all other parties who asked to be informed of the decision.

Yours faithfully

RICHARD WATSON
Authorised by the Secretary of State to sign in that behalf

The Planning Inspectorate

Report to the Secretary of State for Communities and Local Government

by J.P. Watson BSc MICE FIHT MCMI

an Inspector appointed by the Secretary of State for Communities and Local Government

Date: 6 June 2014

Town and Country Planning Act 1990

Breckland District Council

Appeal by Ecotricity (Next Generation) Limited

Inquiry held on 19 November 2013

Land at Wood Farm, Church Lane, Shipdham IP25 7JZ

File Ref(s): APP/F2605/A/12/2185306

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File Ref: APP/F2605/A/12/2185306
Land at Wood Farm, Church Lane, Shipdham IP25 7JZ

- The appeal is made under section 78 of the Town and Country Planning Act 1990 against a refusal to grant planning permission.
- The appeal is made by Ecotricity (Next Generation) Ltd against the decision of Breckland District Council.
- The application Ref 3PL/2011/0854/F, dated 29 July 2011, was refused by notice dated 28 September 2012.
- The development proposed is described as a wind energy development comprising the erection of two wind turbines, each with a maximum overall height of up to 100m together with access tracks, crane pad areas, electricity sub-station and temporary construction compound.

Summary of Recommendation: That the appeal be dismissed.

PROCEDURAL MATTERS

Hearing

1. The appeal was to be the subject of a hearing, which I opened on 6 March 2013. Following procedural representations made at the hearing I concluded that cross-examination was required to ensure a thorough examination of the main issues. Having consulted the appellant and the local planning authority I therefore considered whether the hearing should be closed and an inquiry held instead. In this case the topic of noise includes factors which are technically complex, on which there are differences between witnesses for and against the appeal proposal and on which there should be opportunities for cross examination on the basis of evidence in chief and considered rebuttal evidence. I therefore concluded that the hearing should be closed and an inquiry should be arranged; and I closed the hearing.

Applications for costs

2. An application for costs was made at the inquiry by the appellant against Breckland District Council. This application is the subject of a separate report.

3. An application for costs was made at the inquiry by Campaign Against Turbines in Shipdham and Bradenham ("CATS") against Breckland District Council. This application is the subject of a separate report.

4. An application for costs was made at the hearing by Residents of Daffy Green ("RDG") against the appellant. This application is the subject of a separate report.

Correspondence With The Parties After The Inquiry

5. On three occasions after the close of the Inquiry the view of the appellant, the local planning authority and the two Rule 6 parties were sought, in writing, on newly-published material that I considered relevant to evidence given at the Inquiry. The documents issued in reply are among the inquiry papers and identified in Appendix 3 to this report. The documents that were the subject of invitations to comment in this way were:

   First occasion: Publications by Renewable UK: a series of six documents about amplitude modulation of aerodynamic noise from wind turbines.

Second occasion: Secretary of State's decision letter and Inspector's Report for three planning appeals at Turncole Farm in Maldon District, appeal references APP/X1545/A/12/2174982, APP/X1545/A/12/2179484 and APP/X1545/A/12/2179225; and Appeal Court judgment in the case of Barnwell Manor Wind Energy Limited v East Northamptonshire District Council and others.

Third occasion: the National Planning Practice Guidance.

6. I have taken those documents and correspondence into account in the preparation of this report.

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

7. At the hearing I heard submissions from RDG to the effect that, whereas a statement that was referred to as an environmental statement had been submitted as part of the documentation for the appeal, certain additional information should be added to that statement in order for it to be an environmental statement. Having heard all representations on the point from those present, I concluded that the stated additional information was necessary for the statement to be an environmental statement. I therefore issued a notice to that effect (filed as a "hearing" document) under Regulation 19 of the Town and Country Planning (Environmental Impact Assessment) (England and Wales) Regulations 1999. Subsequently I reconsidered all the detailed information previously submitted and concluded that the information provided was in fact sufficient for the statement to be an environmental statement in accordance with the above Regulations. The Regulation 19 notice I had served therefore fell away.

MAIN ISSUES

8. In opening the inquiry I expressed my view that the main issues in this appeal are as follows. No party expressed a different view at the inquiry.

- The extent to which the proposed development conforms to the development plan;
- The extent to which the proposed development conforms to the National Planning Policy Framework;
- Whether any permission should be subject to conditions and, if so, the form they should take;

… all with particular reference to the landscape and visual effects the development would have, its acoustic effects, and any other harmful or beneficial effects it would have.

THE SITE AND SURROUNDINGS

9. The appeal turbines would stand in an agricultural field a little way north of the village of Shipdham; somewhat closer to some of the properties that together make the scattered settlement of Daffy Green, broadly to the north-east of the turbines site; and about two kilometres to the east of the village of Bradenham. The countryside around those settlements includes individual farmsteads and some isolated dwellings. There is some woodland, and trees in the hedgerows, but the overall impression is of a well-worked, open agricultural landscape. The

topography undulates only gently, and there are long views in various directions from most places that I visited in the area. A line of electricity pylons following a broadly east-west alignment crosses the landscape to the north of the site, and passes within about 2 kilometres[1] of it.

10. Figure 5.10 of the environmental statement shows, among other things, photographs of "existing" views of the site and some of its surroundings. The photographs are dated, variously, March 2011, April 2011, May 2011 and June 2011. Apart from some seasonal variations, the appearance of the area was substantially the same when I made my accompanied site visits on 28 November 2013 as it is shown in the "existing" photographs.

11. As can be seen from figure 5.2 of the environmental statement (which is drawn on an Ordnance Survey mapping base) Shipdham is a largely linear settlement, built along the main road between Dereham and Thetford. Wood Farm and the appeal site take access from Church Lane, which enters the village from the north and passes a small number of properties before arriving on the main road at a crossroads, with All Saints Church to its west and the Shipdham Manor residential care home to its east. Manor Farm is to the north-west of the village, between Bradenham Road and the appeal site. Shipdham Airfield is about a kilometre to the east of the village and figure 5.2 of the environmental statement shows part of the airfield to be within 3km of the southernmost proposed turbine.

SITE VISITS

12. I made an accompanied site visit on 28 November 2013. CATS contributed to the itinerary and also kindly arranged for a blimp to be flown from land at Manor Farm, reportedly about 100m from the nearest turbine site. The altitude of the blimp was nominally 100m but sometimes less; it had a slow leak and was periodically lowered to be topped up with gas. It provided a helpful marker and I made allowance for its position and varying height.

13. During the visit the party called at Swan Lane Allotments (photomontage viewpoint 5), Wyrley Farm, Daffy Green (photomontage viewpoint 3), Brick Kiln Farm and Stable Cottage, Brick Kiln Cottage, Highfields Bungalow, Leys Farm House, Manor Farm, Bradenham Road (photomontage viewpoint 2), Church Lane at Shipdham Manor care home (photomontage viewpoint 4) and the group of dwellings at Wood Farm. We also visited photomontage viewpoints 1, 6, 7, 8 and 9.

14. I made unaccompanied visits on other occasions to view the area from public places, and I also inspected other turbine sites that were mentioned at the inquiry (a group in open country at North Pickenham, an individual turbine in open country close to the A47 near Swaffham and another individual turbine close to an industrial estate at Swaffham).

PLANNING POLICY

The Development Plan

15. The development plan consists of the adopted Breckland Core Strategy and Development Control Policies DPD ("the LDF", adopted December 2009; core

[1] Owen poe, para 35

document A1), and saved policies from the adopted Breckland Local Plan (1999). There was no contention at the inquiry other than that the saved Local Plan contains no relevant policies that have not been superseded by the LDF.

16. The local planning authority drew attention to policies from the LDF, which I summarise as follows:

(i) Core Strategy Policy CP11 (Protection and Enhancement of the Landscape) – the landscape will be protected. Land will be released in ways that have regard to the Council's Landscape Character Assessment ("the LCA") and Settlement Fringe Landscape Assessment in areas where the impact on the landscape is at a minimum; development should be sympathetic to landscape character, and informed by the LCA. Some landscape character types identified in the Policy will be given high protection. All development should be of the highest design quality and should embrace opportunities to enhance the character and appearance of an area and contribute to creating a sense of local distinctiveness.

(ii) Core Strategy Policy CP12 (Energy) – the Local Authority encourages and will support the provision of renewable and low-carbon technologies. Commercial scale renewable energy generation developments will be supported throughout the District. Large scale developments of this type will be subject to a comprehensive environmental assessment which will be based on the individual and unique circumstances of the case. When considering such assessments, regard will be given to the wider environmental benefits of providing energy from renewable sources as well as effects on amenities and the local environment. Where there is the potential to exploit a clear opportunity for the construction of renewable energy infrastructure, and a willing land-owner and developer are in place, the authority will consider making a specific allocation for renewable energy development through subsequent Development Plan Documents.

(iii) Development Control Policy DC1 (Protection of Amenity) – Development will not be permitted where there are unacceptable effects on the amenities of the area or the residential amenity of neighbouring occupants. Regard will be had to (among other things): dominance or overshadowing, noise, important features or characteristics of the area, and the quality of the landscape or townscape.

(iv) Development Control Policy DC15 (Renewable Energy) – Proposals for renewable energy development, including wind turbines, will be supported in principle. Permission will be granted for these developments unless they, or any related infrastructure such as access roads, have a significant detrimental impact or a cumulative detrimental impact on:

(a) Sites of international, national or local nature and heritage conservation importance;

(b) The surrounding landscape and townscape;

(c) Local amenity as a result of noise, fumes, electronic interference or outlook through unacceptable visual intrusion;

(d) Highway safety.

Where development is permitted, mitigation measures will be required as appropriate to minimise any environmental impacts. Such measures will be secured via condition or legal agreement. All development proposals for a renewable energy generation scheme should, as far as is practicable, provide for the site to be reinstated to its former condition should the development cease to be operational.

17. The Council's decision notice refers to one development plan policy. Development Control Policy DC12 (Trees and Landscape) says that:

"Any development that would result in the loss of, or the deterioration in the quality of an important natural feature(s), including protected trees and hedgerows will not normally be permitted. In exceptional circumstances where the benefit of development is considered to outweigh the benefit of preserving natural features, development will be permitted subject to adequate compensatory provision being made. The retention of trees, hedgerows and other natural features *in situ* will always be preferable. Where the loss of such features is unavoidable, replacement provision should be of a commensurate value to that which is lost.

"Appropriate landscaping schemes to mitigate against the landscape impact of and complement the design of new development will be required, where appropriate.

"Conditions and/or planning obligations will be used to secure landscaping schemes and the replacement of trees, hedgerows or other natural features or their protection during the course of development. Where necessary maintenance payments for new landscaping may be sought via planning obligation."

National Planning Policy

18. Reference was made at the inquiry to:

(i) The National Planning Policy Framework ("the Framework", document B3);

(ii) The overarching National Policy Statement for Energy ("EN-1", document B1);

(iii) The National Policy Statement for Renewable Energy Infrastructure ("EN-3", document B2).

Other General Advice and Guidance

19. Reference was made at the inquiry to documents listed in Annex 2 to this report.

PLANNING HISTORY

20. Wind turbine development at this site was first proposed in 2001 (application reference 3PL/2002/0004/F). Two wind turbines with hub heights of 65m and rotor diameters of 70m were proposed. Permission was refused on landscape

and traffic grounds on 17 December 2002. An appeal was made (ref no. APPIF2605/A/03/1109816; document D23; "the 2003 inquiry") which was dismissed on 15 September 2003 on grounds relating to noise disturbance at residential properties.

21. Planning application reference 3PL/2004/0313/F was made in 2004. Two wind turbines with hub heights of 65m and rotor diameters of 70m were proposed. Permission was refused on 20 December 2004 on grounds of aviation safety. An appeal was made and an inquiry held (ref no. APP/F2605/A/05/1174295; document D24; "the 2006 inquiry"), which was initially allowed (on 23 June 2006); but that decision was quashed by order of the High Court and a further inquiry was held on 9 December 2008 (ref no. APP/F2605/A/08/2089810; document D25; "the 2008 inquiry"). On 9 March 2009 the Inspector at that inquiry dismissed the appeal, on the basis of that scheme's effect on living conditions.

22. On 23 December 2009 the Council granted planning permission for the installation of a 70m meteorological monitoring mast at Wood Farm for a period of two years (ref no. 3PL/2009/0459/F; document G14).

THE PROPOSALS

23. An Environmental Statement ("ES") was before the Inquiry as document G6 (with ES Figures, ES Appendices and the ES Non-Technical Summary in the separate documents G7, G8 and G9). ES Chapter 4 describes the project. There would be two wind turbines, each with an overall height of up to 100 metres. The proposed turbines are of the Enercon 2.3MW three-bladed type. They are variable speed, direct drive turbines mounted on a steel tower and have a clockwise blade rotation. The final specification of the turbine to be used is yet to be made known. The Enercon E70 turbine is an example of the type of turbine that is proposed, and its details are in Chapter 4 of the ES[2]. The rotor diameter of the E70 turbine would be 70 metres, and the hub height would be 65 metres. There would be an access track, crane pad areas, and electricity sub station and a temporary construction compound, positioned as shown by Figure 4.1 of the ES. Figure 4.3 shows elevations and a plan view of a typical E70 turbine, and Figure 4.5 shows substation details. The GRP substation option is proposed[3].

24. The finish of the blades and the majority of the tower would be non-reflecting semi-matt off-white, and the lower part of the tower would be painted in green.[4]

25. The site would be accessed via Church Lane, which runs north out of Shipdham. A new access road, in unbound stone, would be built from the site entrance off Church Lane to the turbine positions.

26. Electricity generated at the site would be exported by underground cables, via the substation, to an existing 11kV overhead line. No new pylons or electricity poles would be needed.

[2] ES paragraph 4.15
[3] ES paragraph 4.39
[4] ES paragraph 4.25

STATEMENTS OF COMMON GROUND

27. The following statements of common ground were before the Inquiry:

(i) Between the Appellant and the Residents of Daffy Green ("RDG"): a statement of common ground on noise (document G19). It identifies partial agreement that has been reached in respect of policy and best practice, baseline background noise levels, prediction of operational noise, assessment of noise impact at receptor, noise limits, and low frequency noise infrasound and ground-borne vibration. It is agreed that there is no objection by RDG to the assessment of the noise impact of the development during construction and decommissioning, or to the resulting conclusions. The key areas of disagreement are:

a) The accuracy of the Appellant's noise prediction;

b) The ability of the development to comply with ETSU-R-97[5] noise limits;

c) The means for controlling noise from the development;

d) The assessment of noise impacts of the development on neighbouring dwellings;

e) The adequacy of the appellant's measurements and the wind reference to be used when analysing the impacts and noise limits for the development; and,

f) The interpretation of the statements made in ETSU-R-97 regarding amplitude/aerodynamic modulation (AM), as well as the adequacy of any planning condition or criterion to control elevated levels of AM.

(ii) Between the Appellant and Breckland Council: a statement of common ground (document G20). There is agreement in respect of procedural history and documentation, description of the proposed development and its site, the Statutory Development Plan and the following matters regarding the landscape and visual assessment: methodology and baseline information, residential properties, recreational routes, landscape features and effects, visual effects, and cumulative effects. The Appellant and the Council agree that no additional significant effects would arise in relation to the proposed wind park due to cumulative changes to the landscape and visual environment, that no cumulative effects on designated landscapes would occur and that there would be no cumulative landscape and visual effects on designated cultural heritage. It is agreed between the Appellant and the Council that the material planning issues between them are:

(a) Whether the effects of the proposed development on visual amenity and local landscape character are acceptable; and, if not,

[5] ETSU-R-97: "*The Assessment And Rating Of Noise From Wind Farms*", September 1996; inquiry document F12.

(b) Whether those effects are outweighed by the benefits of the development.

THE CASE FOR ECOTRICITY (NEXT GENERATION) LIMITED

The gist of the evidence was as follows:

National Policy

28. The National Planning Policy Framework ("the Framework") sets out a number of core planning principles in its paragraph 17. Planning should:

"support the transition to a low carbon future in a changing climate … and encourage the use of renewable resources (for example, by the development of renewable energy)".

29. The Framework goes on to say at paragraph 93 that planning plays a key role in meeting the challenge of climate change through helping shape places to secure radical reductions in greenhouse gas emissions, and supporting the delivery of renewable and low carbon energy and associated infrastructure. Paragraph 97 is equally clear; a national policy objective is to increase the use and supply of renewable energy and it is the responsibility of all communities to contribute to energy generation from renewable or low carbon sources.[6] The policy objective is to maximise the delivery of renewable energy through the planning process, provided that adverse impacts are satisfactorily addressed.[7] The overall tone of national guidance is that a greater urgency exists toward the deployment of renewable energy.[8]

30. Part 2 of NPS EN-1 notes at paragraph 2.2.1 that the Government is committed to meeting legally binding targets to cut greenhouse gas emissions by at least 80% by 2050.[9] Part 3 of NPS EN-1 emphasises that the Government is committed to increasing "dramatically" the amount of newable generation capacity and that in the short to medium term much of this new capacity is likely to come from on-shore and off-shore wind. Such increases are essential to enable the UK to meet its commitments under the EU Renewable Energy Directive (document C11), as well as improving energy security. Paragraph 3.4.5 tell us that "it is necessary to bring forward new renewable electricity generating projects as soon as possible. The need for new renewable electricity generation projects is therefore urgent."[10]

31. The UK Renewable Energy Roadmap (document C1) reaffirms the Government's commitment to meet the target to deliver 15% of the UK's energy consumption from renewable sources by 2020.[11] The Government's Update Of The Roadmap (document C5) reiterates unequivocally that renewables will have a pivotal role

[6] Dobson PoE, 6.53
[7] Dobson PoE, 6.55
[8] Dobson PoE, 6.57
[9] Dobson PoE, 6.66
[10] Dobson PoE, 6.67
[11] Dobson PoE, 7.18

to play in the UK energy mix well beyond the initial 2020 target date.[12] "Planning Our Electric Future: a White Paper for Secure Affordable and Low Carbon Electricity" (document C2) recognises that action must be taken now to reach the 15% renewable energy target by 2020, and 80% by 2050.[13]

32. The contribution to be made by schemes such as the appeal proposal is vital to ensure that the targets are met, and exceeded. Significant weight should therefore be given to this matter, and to the benefits which will result from the development. The nature and weight of objections to this proposal should be considered in that context.[14]

33. Comments were invited by the Inspector, after the Inquiry had closed, on the newly published National Planning Practice Guidance and the revoked circulars and other guidance documents. For the purposes of the appeal development, the content of the Guidance is addressed elsewhere in the appellant's evidence. The Noise Guidance points out that, for wind turbines, noise management is considered in the *National Planning Practice Guidance for renewable and low carbon energy including ETSU-R-97*. In their response to the Guidance, RDG rely in large part of the DTI report "The measurement of low frequency noise at three UK wind farms" which explains that wind farm noise complaints arise from amplitude modulation, and RDG go on to explain that such noise would be considered by the NPPG on Noise as causing "significant/unacceptable adverse noise impacts". But the analysis by RDG ignores the effect that an AM condition would have; conditions are proposed by the appellant and by RDG and so the noise issues mentioned in the DTI report would not arise.[15]

Local Policy

34. Document H1 is "Wind Energy Development – A Statement Of Breckland Council Policy", to which some interested parties refer. It was originally intended to be adopted as Supplementary Planning Guidance, but was not adopted for that purpose. It was intended to amplify Policy ENV.25 of the earlier Local Plan, and Section 10 of the document says that its purpose was to inform the determination of planning applications for wind energy development before a revised wind energy policy had been prepared through the LDF process. Document H1 is now superseded by the LDF and has substantially less relevance than the more detailed "Wind Turbine Development: Landscape Assessment Evaluation and Guidance" (2003; document E12), which is referred to in the Core Strategy and therefore has weight as part of the evidence base for the Core Strategy. No significant weight should be attached to document H1.[16]

The Need For The Scheme

35. There are clear imperatives for the UK to meet its statutory obligations in respect of renewable energy, but that will only be achieved if the individual regions and planning authorities deliver an appropriate number of renewable schemes.

[12] Dobson PoE, 7.24
[13] Dobson PoE, 7.32
[14] App16, 6
[15] Appb4, 3, 4
[16] Dobson PoE, 6.40-6.43

36. The revocation of the Regional Strategy means that the policies that formerly set the RS targets are no longer applicable (as confirmed by the recent Planning Practice Guidance), but the Minister has made it clear that the supporting evidence bases used in Regional Strategies may still be seen as relevant.[17]

37. The authorities in the East of England commissioned a report in 2011 identifying the committed capacity (renewable and low carbon energy) as at May 2011. This was then compared with figures from the East of England Plan. The report found 822.7 MW permitted capacity (operational, under construction and sites with planning permission), of which 330.6 MW was wind energy and 481.3 MW was actually operational.[18] The report shows that not only has Norfolk the greatest capacity for the installation of wind energy of any county in the region, but the amount of actual operational capacity in Norfolk was relatively low.

38. Additional information on the extent to which individual RS targets have been met is contained in the report "Renewable Energy Capacity and RSSs" (document C17) which was produced for DECC in 2009. This shows that among the regional targets for 2010, the East of England Region had the second highest target at 820 MW. The region's target for 2020 was 1620MW, and the additional capacity required during the period 2009 to 2020 to meet that target was 1142 MW.[19] The renewable and low-carbon energy generating capacity of the region has been reduced by the closure of the former biomass power station at Tilbury, which is to be decommissioned (document APP/10).

39. In meeting the national targets, the expectation is that the East of England will contribute significantly towards the 2020 targets. Wind power will continue to represent a significant element of that target in the East of England. Therefore, there is a pressing need to release additional sites, such as the appeal site, for wind turbines.[20]

Environmental Statement: Test of Significance

40. Table 2.1 of the ES is a matrix for identifying significant environmental effects, in the terms of the Environmental Impact Assessment (England and Wales) Regulations 1999. Table 2.1 is reproduced below. The shaded boxes represent effects considered to be significant in the terms of the Regulations.

/over

[17] Eco/3/2, 9.13
[18] Eco/3/2, 9.14
[19] Eco/3/2, 9.18-9.19
[20] Eco/3/2, 9.21

Magnitude of Impact	Sensitivity of Receptor			
	Low	Medium	High/Very High	
No change	Insignificant	Insignificant	Insignificant	
Minimal change	Negligible/Minor	Minor	Minor/Moderate	
Very low/Low	Minor	Minor/Moderate	Moderate	
Medium	Minor/Moderate	Moderate	Moderate/Major	
High/Very High	Moderate	Moderate/Major	Major	Extreme
Matrix for Establishing Significance				

Decommissioning

41. The wind turbines are designed to be operational for a limited period of 25 years. They can be decommissioned rapidly and the site would then be easily restored to its pre-development state, a process that can be secured by a planning condition. Consequently the appeal proposal is a reversible form of development, a factor that Government policy (EN1 / EN3) states is a material planning consideration.[21]

Landscape and Visual Issues

42. Chapter 5 of the ES (2011) presents a landscape and visual assessment of the appeal proposal. A further assessment of the appeal site and its surroundings, in relation to the appeal proposal, was carried out during August and September 2013. Figure 5.10 of the ES provides a series of 17 photographs looking toward the appeal site from the locations identified in ES Figure 5.8b, together with photomontage views of the development based on each photograph. ES Figure 5.9 shows on a 1:125000 mapping base the positions of key landscape and visual receptors, and a zone of theoretical visibility.

43. Land use in the area is mainly intensive agriculture with scattered farmsteads and small rural settlements. It is a working landscape, constantly evolving and containing both man-made and natural elements.

44. **The host landscape** is gently undulating arable farmland, relatively open with a degree of enclosure provided by a network of hedgerows, small woodlands and incidental tree planting and other vegetation associated with farmsteads and other settlements. The combination of gently rolling topography and characteristic hedges, trees and woods restricts visibility so that views, although sometimes long-ranging, tend to be interrupted by vegetation.

45. The appeal site is agricultural land managed as an arable farm with biomass and maize crops. The character of the landscape is very much influenced by functional and productive agricultural land uses. The presence of nearby engineered structures such as electricity pylons reinforces this functionality.

[21] G15 statement of case, 3.24

There are no landscape designations covering the site, and none within 10km of it. There are no protected features on the site, such as trees subject to Tree Preservation Orders. Some of the hedgerows on the site are species-rich.[22]

46. The character of the landscape surrounding the appeal site and its capacity for wind energy development are the subjects of two local authority publications: "Breckland District Landscape Character Assessment" (2007; document E11) and "Wind Turbine Development: Landscape Assessment Evaluation and Guidance" (2003; document E12). Reference has been taken from those documents regarding the landscape baseline and the sensitivity and capacity of the host landscape in relation to wind energy development.

47. The appeal site is situated at the transition of two landscape character types (LCT) and areas (LCA) as described in documents E11 and E12. The transition is from:

    LCT10 – Plateaux Farmland and LCA E5 – Central Breckland Plateau

    to:

    LCT11 – Settled Tributary Farmland and LCA B5 – River Wissey Settled Tributary Farmland.

48. The sensitivity of the local landscape to wind energy development and its capacity to accommodate different scales of wind turbine schemes[23] are evaluated by Breckland Council in "Wind Turbine Development: Landscape Survey Evaluation And Guidance" (document E12), which is based on guidance issued by the Countryside Agency and by Scottish Natural Heritage. The method assumes a 1.5-2.0MW turbine with a hub height of at least 67m and a rotor diameter of at least 70m, which equates closely to the appeal proposal's dimensions of 65m hub height and 70m rotor diameter. Landscape sensitivity is defined as "the extent to which the character of the landscape is susceptible to being changed as a result of wind turbine development". It is assessed using specific criteria stated in document E12. The level of sensitivity is gauged according to a three-point scale as follows:

    Low sensitivity – key characteristics of the landscape are robust and would not be adversely affected by turbine development. The landscape would be able to accommodate development without a significant change in character.

    Moderate sensitivity – key characteristics of the landscape are vulnerable and may be adversely affected by turbine development. The landscape may have some ability to absorb types of wind energy development without a significant change in character. Particular attention to siting and design will be required.

    High sensitivity – key characteristics of the landscape would be adversely affected by turbine development. Such development would result in a significant change in character.

49. The capacity of a particular tract of landscape is defined by document E12 as "the extent to which a landscape is able to accommodate development without key

[22] ES 5.51 and figure 5.4
[23] This section see David PoE, 4.33 to 4.42

characteristics of the landscape being adversely affected". It is gauged by document E12 according to the sensitivities of the landscape based on the following three-point scale:

High Sensitivity – Low Capacity to accommodate wind turbine development. Any development would be likely to have a significant impact on landscape character and is therefore not recommended.

Moderate Sensitivity – Moderate Capacity to accommodate wind turbine development, without detriment to landscape character. There are likely to be key sensitivities that must be respected in relation to turbine development. In particular, development must follow guidance on siting, form and cumulative impacts.

Low sensitivity – High Capacity to accommodate wind turbine development. There is an opportunity to locate wind energy development in this area that would not affect key characteristics of the landscape. Guidance on siting, form and cumulative impacts should be followed.

50. In the light of the Council's landscape assessments, chapter 5 of the ES and observations from the field, the assessment finds that the host landscape surrounding and including the appeal site has a low to moderate sensitivity to commercial scale wind turbines, and a high to moderate capacity for the appeal scheme, taking a range of factors into account including other existing and proposed wind energy schemes in the area.

51. The host landscape is therefore an appropriate location, in strategic terms, for a wind energy development of the scale proposed. Furthermore, the inherent capacity of the appeal site for a small scale wind park assisting in minimising the potential impact of the appeal proposal on landscape character and visual amenity, both locally and across the wider landscape.

52. **The scheme's effect on the landscape character** would be to cause a significant change in EIA terms up to approximately 1km from the nearest proposed turbine. Within this distance the wind turbines would be perceived as a defining characteristic of the landscape. Beyond about 1km the change in character, although noticeable, would not be significant and the perceived change would decrease with increasing distance. Notwithstanding the strong presence of the appeal scheme locally, the underlying character of the local landscape (LCA E5 and LCA B5) would remain in place relatively undisturbed for future generations. The wider landscape character of Breckland District and beyond would not be changed significantly.

53. No "valued" landscape would be affected to any significant degree.

54. **Visual amenity** has been assessed at public and private locations, including residential properties, recreation resources and routes, public rights of way and public highways. Significant visual change in EIA terms would occur at a number of properties and certain public routes up to approximately 2km from the nearest proposed turbine.

55. It is a well-established planning principle that there is no right to a private view. However, there comes a point when, by virtue of the proximity, size and scale of a given development, a residential property would be rendered so unattractive a place to live that planning permission should be refused. In determining appeals

relating to wind turbine proposals, Inspectors and the Secretary of State have adopted an approach which considers whether, viewed objectively in the public interest, a property would become an unattractive place in which to live (document C19; DL paragraph 10 and IR 232)[24]. In this context the visual component of residential amenity should be taken "in the round", taking into account factors such as distance from the turbines, the orientation, size and layout of the dwelling, internal circulation, division between primary and secondary rooms, garden and other amenity space, arc of view occupied by the wind turbines, views through the turbines and the availability of screening.

56. Appendix 5.5 of the ES sets out a visual assessment of residential properties within 2km of the development. Visual receptors that would be potentially affected to a significant degree in EIA terms (reported in ES Appendix 5.5 as a medium to high magnitude and of moderate/substantial significance) would include the following approximately 16 properties:[25]

Property	Distance from site (m)
Wood Farm and Court Yard Cottage, Wood Farm	760
Brick Kiln Farm and Stable Cottage	770
Jubys Farm, Jubys Cottage and Jubys Barn	960
Leys Farm	980
Windyridge	1100
Manor Farm Cottages (5 dwellings)	1200
Sycamore Farm Bungalow	1200
Homestead	1200

57. Notwithstanding the significant change in the outlook of those properties, none would experience an unacceptably "overbearing" or "overwhelming" effect on their residential visual amenity such that the property would become an unattractive place in which to live when viewed on an objective basis. Nor would there be unacceptable harm to the visual amenity of settlements at Shipdham, Daffy Green or Bradenham; and residential properties there would continue to be attractive places to live.

58. ES Appendix 5.5 also sets out[26] a consideration of the scheme's visual effect on Manor Farm's residential buildings. They generally face south or west, whereas the turbine site is to their east. Views toward the turbines would be obstructed by a number of large barns and field boundary vegetation, so that views to the turbines from the farmhouse would not be widespread. The scheme's effect on the visual aspects of residential amenity here would be moderate.

[24] Given in XX to Mr Campbell, day 5
[25] David, PoE, 5.73
[26] Appendix page 5.5-2

59. Schedule 1 of Appendix 1 to the proof of evidence of Mr David presents a further assessment of the scheme's visual effects on key properties, including effects on residential visual amenity. Distances are also given; Manor Farm, for example, is 800m from the site.

60. The visual amenity of nearby public highways would not be affected so as to significantly affect people in vehicles or to unacceptably harm their public visual amenity. With regard to impacts on non-vehicular routes, the proposed development would not obstruct or prevent an appreciation of the underlying and surrounding landscape. Nor would it be overly detrimental to the amenity or enjoyment of those routes and tracts of land overall.

61. **The cumulative landscape and visual effects** of the appeal scheme together with existing and proposed wind energy schemes has been assessed. A 30km radius cumulative study area was considered. Within that there are five installations with planning permission, of which two are operational. All have turbines at least 100m high, and the operational site at North Pickenham has planning permission for enlargement from 8 turbines to 10. The North Pickenham site is 10.5km from the appeal site and the others are further away. Table 1 in document ECO/1/2 presents this information, superseding that in Table 5.7 of the ES.

62. Due to the separation distances between the various "cumulative" schemes and the appeal proposal, combined with the landscape context, no significant additional effects would arise in relation to the appeal proposal as a result of cumulative changes to the landscape and visual environment. No cumulative effects on designated landscapes would occur and there would be no cumulative landscape and visual effects on designated cultural heritage.

63. **Previous appeals for wind turbine development at Wood Farm** have resulted in Inspector's conclusions that the landscape and visual effects of such development would be acceptable[27]:

    (i) Appeal reference APP/F2605/A/03/1109816 was the subject of a public inquiry in 2003 (document D23). The proposal was for two F-66 wind turbines with 65m hub height and 70m rotor diameter. The appeal was dismissed on noise grounds. The Inspector found that the impacts of the development on the landscape would not amount to material harm.

    (ii) Appeal reference APP/F2605/A/05/1174295 was the subject of a public inquiry in 2006 (document D24). The proposal was for two E-66 wind turbines with 65m hub height and 70m rotor diameter, positioned as in the previous appeal. The Inspector found that those turbines would appeal large but not overwhelming, that the landscape had the capacity to accommodate the two turbines, and that there would be no significant adverse cumulative visual effect. The appeal was allowed, subject to conditions. A judicial review of the Inspector's decision found one of the noise conditions to be unsound, and the decision was quashed.

[27] David PoE, 7.18 to 7.29

(iii) Appeal reference APP/F2605/A/08/2089810 was heard at a public inquiry in 2008 (document D25). Its purpose was to redetermine the previous appeal. Appeal reference APP/F2605/A/08/2089810 was dismissed on noise grounds. The third Inspector's conclusion regarding landscape and visual matters was "that the proposed turbines would not have a harmful impact on the character and appearance of the area. I note that the 2 previous Inspectors came to the same conclusion."

64. During the 2008 public inquiry the local resident who had lodged the judicial review (Dr Lee Hoare) proposed alternative locations for the two turbines. Dr Hoare's submission was that in these alternative positions the potential noise impacts on residents from the turbines would be minimised. Those locations would provide greater physical separation from adjacent properties. A revised planning application for two turbines in the suggested locations (the subject of the current appeal) was made. The officer report is document G10. The advice to the LPA's Committee in respect of landscape was that "Notwithstanding this modest increased distance [from electricity pylons], the visual relationship would not be significantly different. In addition, no previous Inspector concluded that landscape impact was a reason to dismiss the appeals. Furthermore, as highlighted above, this is supported by information contained in the Landscape Assessment, Evaluation and Guidance report as there are not deemed to be any key characteristics that are highly sensitive to the proposed turbines."

65. **Alignment of the turbines** – The two turbines would be in line with one another and with residential properties at Wood Farm, including the proposed Homes with Care development. It is clear from the design and orientation of the new buildings, including their internal arrangements and windows, and considering the existing landscape features including mature tree and hedge planting, that visibility and views of the appeal turbines would be limited from within the buildings and in the grounds. The visual amenity of the new dwellings would not be significantly affected and there would be no unacceptable effect to the visual amenity of residents or visitors.[28]

Noise

66. **Noise Policy** - The National Planning Policy Framework ("the Framework") confirms at paragraph 3 that the National Policy Statements should form a material consideration in decisions on planning applications. Footnote 17 of the Framework recommends the use of the NPS for Energy ("EN-1") and the NPS for Renewable Energy Infrastructure ("EN-3") in determining planning applications for wind energy development.[29]

67. The guidance of EN-3 includes: "Mitigation should be inherent in good design of a wind farm so that increases in ambient noise levels around developments are kept to acceptable levels in relation to existing background noise."

68. Paragraph 2.7.56 of EN-3 says that the ETSU-R-97 methodology, in accordance with latest industry good practice which should reflect any updated guidance issued in relation to ETSU-R-97 and accepted by Government, should be used to

[28] Eco/3/4, 5.11
[29] Eco/2/2, 3.5

assess whether the noise from the operation of the wind turbines is within acceptable levels, and that "Where the correct methodology has been followed and a wind farm is shown to comply with ETSU-R-97 it should be reasonable for the [decision maker] to conclude that it may give little or no weight to adverse noise impacts from the operation of the wind turbines." That position was confirmed by the Planning Practice Guidance for Renewable and Low Carbon Energy (July 2013; document B4).

69. On 20 May 2013 the Institute of Acoustics' "A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise" was published (document F4; "the GPG"). The GPG has the endorsement of the Secretary of State for Energy and Climate Change. It is therefore relevant good practice guidance as identified by EN-3, and should be taken into account when considering wind farm applications. The GPG is consistent with (but more extensive than) an article published in 2009 in the Institute of Acoustics Noise Bulletin (document F5).

70. As to **construction noise** associated with the development, control can be secured through the Control of Pollution Act 1974. BS 5228-1:2009 and BS 5228-2:2009 (both are document F6) provide guidance on a range of considerations relating to construction noise and vibration. As discussed in the ES, and taking into account the relatively short construction phase of this scheme, significant noise effects associated with the short-term construction activities are not expected.

71. **Assessment Method** – To undertake the assessment of noise impact in accordance with ETSU-R-97, one should[30]:

    (i) measure the background noise levels, as a function of site wind speed, at the nearest noise-sensitive neighbours to the proposed wind farm, or at least a representative sample of those dwellings;

    (ii) determine the day time and night time noise limits with reference to those measured background noise levels;

    (iii) calculate the noise immission levels due to the operation of the wind turbines, as a function of site wind speed, at the nearest neighbours, based on the noise emission characteristics of the wind turbines;

    (iv) compare the calculated wind farm noise immission levels with the derived noise limits.

72. Robust noise conditions can then be set out in line with the derived day-time and night-time noise limits. This method was described in the ES and is presented in further detail in Appendix A of document ECO/2/3 part 1.

73. **Baseline noise measurements and noise limits** – Following consultation with the Council and local residents, background noise levels were measured at four locations over a period of 7 weeks, resulting in at least 30 to 40 days of data at each location; ETSU-R-97 requires at least a week. The work is described in the

[30] Eco/2/2, 4.4

ES, starting at paragraph 10.30. The subsequent analysis had these characteristics:[31]

(i) Analysis of the raw background noise data and derivation of the ETSU-R-97 noise limits as presented in the ES was properly undertaken in accordance with current good practice (GPG section 3).

(ii) The survey results are reasonably representative of the noise environment in the area.

(iii) Measurements made at Brick Kiln Farm were used as representative of the adjacent, non-surveyed property of Brick Kiln Cottages, following the guidance of ETSU-R-97.

(iv) The measurements accounted for the effects of site specific wind shear by using 10m standardised wind speeds derived from wind speeds measured at the hub height of 64m on a 71m tall meteorological mast on the site.

74. Noise limits suitable for the development were then derived in accordance with ETSU-R-97. In particular, ETSU-R-97 requires that the fixed part of the limit during the day-time should lie within the range 35dB(A) to 40dB(A), determined in accordance with different site specific criteria. A limit at the lower end of this range was found to be applicable and appropriate for the development as described in ES paragraph 10.62. For night-time periods, ETSU-R-97 prescribes a fixed lower limit of 43dB(A).

75. It is widely recognised that wind speed varies with height above the ground. This effect is commonly termed "wind shear". The ETSU-R-97 method requires correlation of the noise data with wind speed data measured on the wind farm site at a height of 10m above ground level. This 10m height wind speed can either be derived from measured 10m wind speeds or by calculation from measurements at other heights. It is the hub height wind speed (that is, the wind speed experienced by the rotor of the turbine) that effectively determines the actual sound power radiated by that turbine. Therefore, in the assessment reported in the ES, wind speeds were related directly to those at hub height, which were then converted to the equivalent wind speeds at the 10m reference height assuming the reference correction used when reporting sound power levels of the turbines. This approach is consistent with ETSU-R-97 and current good practice in its application (GPG section 2.6).[32]

76. **Additional consultation with Breckland Council**, and its noise consultant, took place following submission of the ES. Page 63 of ETSU-R-97 says "Where the local authority and the developer are in agreement that the background noise levels do not vary significantly between the amenity periods and the night-time, then a single lower fixed limit of 35-40dB(A) can be imposed based upon background noise levels taken during the amenity periods and the night analysed together."

[31] Eco/2/2, 5.10

[32] Eco/2/2, 5.12 to 5.14

77. Agreement was reached on this point, and prevailing background noise levels were derived based on the combination of the data acquired during the quiet day-time and night-time periods. A single limit was then derived on a conservative basis from the lowest resulting limits obtained between all four measurement locations, with a fixed lower limit of 35dB(A). The resulting agreed noise limit is set out in the following table. Comparison with the noise limits of Tables 10.3 and 10.4 of the ES shows this to be a stringent basis for the control of noise from the development.

Standardised Wind Speed (m/s)											
1	2	3	4	5	6	7	8	9	10	11	12
35	35	35	35	35	35	37	40	43	45	45	45

Operational noise limits for the development (L_{A90},dB) agreed with Breckland Council

78. **Prediction of noise from operating wind turbines** – ETSU-R-97 does not specify the type of noise emission data to consider, or the method to calculate the propagation from source to receptor. The Appellant relies on good practice in the field, derived from relevant research work and practical experience at a number of operational wind farms.[33] Previous installations by Ecotricity are listed in ES Table 1.1; all the 52 installed turbines were made by Enercon.

79. Often, developers cannot secure a preferred turbine supplier until planning permission has been secured; and time taken in securing planning permission can mean that the same turbine will be commercially available when the wind farm is built. In order to show that it will be possible to build a wind farm capable of operating within the derived noise limits it is therefore standard practice to select for this purpose a candidate turbine, typical of those that may be considered for the site. This approach is endorsed by paragraph 4.1.6 of the GPG. The candidate turbine used for the ES is the Enercon E70 2.3MW machine, the acoustic performance of which is representative of the type of turbine being considered for use at the appeal site.

80. The "at source" noise emission levels for the candidate turbine are based on manufacturer's guaranteed data which include a margin to account for measurement uncertainties, all in accordance with sections 4.2-4.3 of the GPG. A further 1dB was added to these values, and the resulting sound power levels and spectral data assumed for the Enercon E70 2.3MW are presented in Tables 10.5 and 10.6 of the ES. The resulting conservative nature of the emission values retained is illustrated by Figure 5.1 of document Eco/2/2; the emission values assumed as a basis for the calculations are 2dB or more greater than typical tested values.

81. **Noise propagation** is commonly modelled by practitioners in various ways.[34] The model used in the current case is based on ISO 9613-2 ("Acoustics – Attenuation of Sound During Propagation Outdoors, Part 2: A General Method Of Calculation", ISO 9613-2:1996, document F7). The use of this standard is

[33] Eco/2/2, 5.18
[34] Eco/2/2, 5.24

agreed with Residents of Daffy Green ("RDG"). The ISO 9613-2 method has mainly been derived to calculate noise levels under conditions favourable to the propagation of sound from the source to the receiver, such as those obtained when downwind of the source. Under other conditions, the received noise level can be significantly lower than that calculated using the ISO 9613-2 procedure. In particular it has been shown that under upwind propagation conditions received noise levels are often more than 10 dB(A) to 15 dB(A) less than the ISO 9613-2 calculated levels.

82. Various parameters are used in the ISO 9613-2 procedure. The GPG recommends the most appropriate values of those parameters for use in the assessment of wind farm noise propagation. All results presented in the ES follow these best practice recommendations. The resulting predictions of operational noise from the development are shown for various locations by Table 10.7 of the ES.

83. One of the most significant factors used in the ISO 9613-2 procedure is that (represented by G) which relates to the effect of the type of ground between the source and the receiver. ISO 9613-2 specifies three categories of reflecting surface. For hard ground (such as concrete, ice, paving, tamped ground and also water) G=0. For porous ground (such as farm land and ground covered by vegetation) G=1. Mixed ground has G between 0 and 1, depending on the fraction of the region that is porous. The assessment in the ES uses a semi-hard ground type (G=0.5) as set out in the GPG. RDG contends that a hard ground assumption should have been used (G=0).

84. When considering the application of ISO 9613-2 to the appeal site, conditions of "porous ground" and a receiver height of 1.5m could be considered. The ground between the turbines and receptors is farm land and therefore "porous" in the terms of ISO 9613-2, and 1.5m is a standard height used in environmental assessments. Such assumptions would typically yield predicted noise levels 5dB(A) lower than those shown in the ES. And the source levels used include a further margin of approximately 2 dB compared to typical test results, as described in paragraph 80 of this report. The predictions in the ES are therefore robust.

85. Research on the subject is described in Appendix B of document ECO/2/3 part 1. It has been found that when conservative emission levels are considered, such as in this case, the use of G=0.5 resulted in realistic predictions of wind turbine noise. Examples of propagation over waterlogged or frozen ground (which may be considered "hard") show the use of G=0 and conservative source levels to result in over-prediction. Therefore when considering such conservative source levels it is wholly appropriate to consider a ground factor of G=0.5, in line with current good practice set out in the GPG.

86. A similar approach has been accepted by Inspectors in several other wind farm planning appeals (documents D5 and D16).[35]

[35] Eco/2/2, 5.31

87. **Noise Impact at Receptors** is the subject of assessment in the ES which compared predicted noise immisson levels with the noise limits derived for each location. Tables 10.8 and 10.9 of the ES show that the predictions for the appeal development complied with the derived limits at all locations and all wind speeds. The following table compares the predicted noise levels for the development (ES Table 10.7) with the agreed noise limits reported in paragraph 77 of this report. The candidate turbine can be set to operate in different "modes". Here the turbines operate in "mode III". The noise levels are below the limits agreed with the Council:

Property	Standardised Wind Speed (m/s)								
	4	5	6	7	8	9	10	11	12
Wood Farm	-14.0	-11.5	-6.7	-4.3	-4.2	-5.4	-7.4	-7.4	-7.4
Manor Farm	-14.9	-12.4	-7.6	-5.2	-5.1	-6.3	-8.3	-8.3	-8.3
Wyrley Farm	-12.4	-9.9	-5.1	-2.7	-2.6	-3.8	-5.8	-5.8	-5.8
Brick Kiln Farm	-13.5	-11.0	-6.2	-3.8	-3.7	-4.9	-6.9	-6.9	-6.9
Brick Kiln Cottages	-15.4	-12.9	-8.1	-5.7	-5.6	-6.8	-8.8	-8.8	-8.8

Comparison of predicted noise levels (mode III) with agreed noise limits (dB).

Negative values indicate the predictions are below the limit.

88. The same turbine can also operate in an alternative "mode II", with reduced noise emissions at the highest wind speeds but increased emissions at lower wind speeds. If "mode II" were to be adopted the noise levels would remain below the limits agreed with the Council, as shown in the following table (document Eco/2/4, table 3):[36]

Property	Standardised Wind Speed (m/s)								
	4	5	6	7	8	9	10	11	12
Wood Farm	-11.6	-8.8	-3.6	-3.0	-4.3	-5.9	-7.9	-7.9	-7.9
Manor Farm	-12.5	-9.7	-4.5	-3.9	-5.2	-6.8	-8.8	-8.8	-8.8
Wyrley Farm	-10.0	-7.2	-2.0	-1.4	-2.7	-4.3	-6.3	-6.3	-6.3
Brick Kiln Farm	-11.1	-8.3	-3.1	-2.5	-3.8	-5.4	-7.4	-7.4	-7.4
Brick Kiln Cottages	-13.0	-10.2	-5.0	-4.4	-5.7	-7.3	-9.3	-9.3	-9.3

Comparison of predicted noise levels (mode II) with agreed noise limits (dB).

Negative values indicate the predictions are below the limit.

89. Clearly, the relative difference between turbine noise levels and background noise levels will influence the likelihood of potential audibility of this source, but it

[36] Eco/2/4, paras 5,6

is not possible to quantify this audibility in a more precise manner. RDG refers to the BS4142 standard in this respect but the scope of application and limitations of that standard, already considered in ETSU-R-97, need to be accounted for. Those factors are at odds with the interpretation of the standard which appears to be suggested by RDG (see document Eco/2/3 part 1 paragraphs A.50 to A.59).[37]

90. ETSU-R-97 recommends that noise limits should be set relative to the existing background noise at nearest noise-sensitive properties, and that those limits should reflect the variations in turbine noise and background noise with wind speed. ETSU-R-97 also considers whether the low noise limits which could result in particularly quiet areas are appropriate, and concludes that:[38]

"It is not necessary to use a margin above background approach in such low noise environments. This would be unduly restrictive on developments which are recognised as having wider national global benefits. Such low limits are, in any event, not necessary in order to offer a reasonable degree of protection to the wind farm neighbour. It is instead proposed to control noise through absolute limits up until wind speeds where the background noise has increased to a level such that relative limits are again appropriate."

91. **Noise Condition** – It is therefore possible to construct conditions to control operational noise from the scheme to the noise limits set out in paragraph 77 of this report, in line with the guidance of ETSU-R-97 and current good practice. A proposed condition was set out before the inquiry in the Council's statement of case (document G16) at draft condition 6.

92. ETSU-R-97 specifies a penalty to be applied for the presence of tonal components in the noise emitted by the turbines. The potential for this characteristic to be emitted is best controlled by way of a penalty applied to overall noise levels and incorporated into the methodology for demonstrating compliance with the noise limits included in the Noise Guidance Notes of the proposed noise condition 6. This is common ground with the Council (document G16) and RDG (document G19).

93. Vibration levels and infrasound noise levels at all noise sensitive receptors will be well below the thresholds of perception.[39]

94. During the Inquiry a revised form of draft condition 6 was submitted by the Appellant (document APP/11). It is in line with conditions imposed upon wind energy permissions, regularly, all over the UK, including by the Secretary of State.

95. Alternatively, and if there was concern about the length and/or certainty of the APP/11 condition, document APP/13 sets out a condition which simply requires that relevant noise limits are not exceeded. The detail of a scheme to investigate and assess the noise from the turbines would be set out in a section 106

[37] Cand PoE, 7.10-7.11
[38] Eco 2/3 para A.54
[39] G19, para 7.1

agreement. The LPA would be free to adopt that approach, or to investigate the noise itself, if complaints were received.[40]

96. In either form of condition, the identification of a breach would not be delegated to the consultant (as RDG suggests). The consultant would present a report to the Council and, if requested, carry out further investigation. It would be for the LPA to determine whether there has been a breach and whether it is expedient to take enforcement action, and what steps must be taken. That is how enforcement of planning conditions works, in the generality.[41]

97. RDG contends that the proposed noise limits would often be exceeded, as shown in Table 3 of Dr Hoare's proof of evidence. The reported exceedences are based on a range of assumptions, some of which are unclear. And, for example, the assumption of using G=0, in combination with the conservative noise emission levels assumed in the ES, would result in predictions approximately 2dB higher than those presented in the ES. Since the ES's predictions are more than 2dB below the noise limits agreed with the Council (see table following paragraph 87 of this report) it cannot be explained how the modelling assumptions could result in a predicted breach of the noise limit. It appears that RDG only reaches the conclusion that the noise levels from the development are excessive based on deviations from established good practice in the application of ETSU-R-97.[42]

98. RDG also contends that the APP/11 condition would give rise to a lengthy process, making it unacceptable and unenforceable. It is not clear to the appellant why RDG considers it would be unenforceable for that reason. Nor does RDG explain how its approach to conditions would be likely to result in a shorter process: it provides no framework for investigation and enforcement of complaints; and there is no explanation of how the process could be significantly shortened or of why the RDG condition would not be unlawful, or unacceptable, when judged in the same way.[43]

99. RDG has proposed a suite of "10 metre measured wind speed planning conditions" (document RDGa11). The Appellant comments[44] that:

    (i) The proposed use of the L_{Aeq} noise index is a clear departure from the ETSU-R-97 methodology. ETSU-R-97 page 55-56 explains a consequence of that departure: L_{Aeq} is typically 5 to 20dB(A) above L_{A90} noise levels. "This might unfairly indicate that the condition is being failed." The difference of 2dB(A) (to which RDG refers) between L_{Aeq} and L_{A90} relates to wind turbine noise, but would not hold at all for normal use in rural areas.

    (ii) Although RDG asserts that "changes in technology" allow spurious noise sources to be excluded it is not clear how an uncorrupted value of a 10-minute L_{Aeq} could be determined from the measured data; nor does the draft condition require such a correction to be applied.

[40] Closing, 33
[41] Closing, 34
[42] Eco 2/4, 25 to 27
[43] Closing, 35
[44] APP/14

(iii) Condition 1 would allow 10m wind speed measurement outside the wind farm site. That would be a clear departure from ETSU-R-97 (page 84, final paragraph). Low height measurement is more prone to corruption from nearby obstacles. As the proposed condition would allow a 10m mast to be placed within 30 to 70m of a building, it would almost certainly be influenced by the buildings or surrounding tall trees. Thus the wind source in question might bear no relation at all to that used to derive the condition's noise limits.

(iv) ETSU-R-97 does not require direct measurements at 10m height. And there are general issues associated with 10m measurements, not least the lack of a source of such data in the appeal scheme (document Eco/2/3 part 1 appendix C).

(v) Condition 1 does not require the noise to be measured in line with ETSU-R-97.

(vi) Because the LPA would have primary responsibility for enforcing compliance with condition 1, it is unclear how requirements to agree in writing a location for measuring wind speeds would be practicable.

(vii) The authority given to the LPA to require that the turbines be stopped on a programmed basis might give rise to arguments as to when this applies and to which condition this relates, and might be exercised unreasonably.

(viii) No time scale is given in condition 2 for the submission of the management scheme.

100. **The GPG** sets out key issues in blue highlighted summary boxes, which are supported by more detailed considerations in the supporting main text of the document. Both with reference to the summary boxes and the more detailed factors in the text, the assessment undertaken in the ES is consistent with current good practice set out in the GPG.

101. **Council Review and Consultation** – Having received the planning application and the ES, the LPA appointed an independent noise expert (Robert Davies Associates, "RDA") to review the ES. A preliminary report was prepared by RDA (ECO/2/3 part 2, starting at page 123), following which further information was provided to RDA by the appellant's noise consultant. Noise limits suitable for the scheme were then agreed. Based on final advice from RDA, the Council officer report (document G10) concluded that "*fundamentally, the noise assessment in the Environmental Statement has been carried out in a generally competent manner and the noise levels from the proposed wind turbine development will comply with published standards and guidance*" and that "*there are no noise grounds to justify a recommendation to refuse this application*."[45]

102. **Potentially audible low frequency noise** is adequately accounted for in the assessment of overall A-weighted noise levels in the ES.

[45] Cand, Eco/2/2, 2.5, 2.6

103. Infrasound and ground-borne vibration from the operation of the development would be well below the thresholds of perception at all noise-sensitive receptors, and therefore would not lead to any adverse effects.

104. The report "The Measurement of Low Frequency Noise At 3 UK Wind Farms", 2006, was produced by the Hayes Mackenzie Partnership for the DTI. It is quite categorical in its findings: infrasound is not the perceived health threat suggested by some observers, nor should it even be considered a potential source of disturbance. "*The document "Community Noise" prepared for the World Health Organisation states that "there is no reliable evidence that infrasound below the hearing threshold produces physiological or psychological effects". Other detection mechanisms of infrasound only occur at levels well above the threshold of audibility. It may therefore be concluded that infrasound associated with modern wind turbines is not a source which will result in noise levels which may be injurious to the health of a wind farm neighbour.*"[46]

105. **Health Effects of Noise and the Elderly** – Research by E Pedersen and others (Project Windfarmperception, EU funded research, final report, 3 June 2008) concludes that "There is no indication that the sound from wind turbines had an effect on respondents' health, except for the interruption of sleep. At high levels of wind turbine sound (more than 45dBA) interruption of sleep was more likely than at low levels." The predicted noise level at Shipdham Manor care home is less than 35dB L_{A90}. The central premise for the setting of appropriate night time noise limits in ETSU-R-97 is for the purpose of sleep protection. For the reasons given in paragraphs A72 to A96 of document ECO/2/3 Part 1, the use of ETSU-R-97 is consistent with the limits now being proposed by WHO ("Night Noise Guidelines For Europe", 2009) with the aim of avoiding adverse effects on sleep, including for the most vulnerable groups including the elderly.[47]

106. When comparing ETSU-R-97 outputs with guideline noise values such as those produced by the WHO, a number of factors should be borne in mind. The latest WHO Guidelines for Community Noise assume an attenuation through an open window of 15 dB(A) between the external and internal L_{AEq} noise levels: the external façade noise level outside an open window should not exceed 45 dB $L_{AEq,T}$ if an internal noise level of 30 dB $L_{AEq,T}$ (the level required for undisturbed sleep) is to be achieved. To compare this with the equivalent guideline nose levels in ETSU-R-97, two corrections must be made; because the WHO guidelines are expressed in terms of the L_{AEq} façade noise levels, whereas the ETSU-R-97 guidelines are expressed in terms of the L_{A90} free field noise levels. Therefore the WHO guideline external level may be expressed as 40 dB L_{A90} free field.[48]

107. Furthermore, the WHO "Night Time Noise Guidelines for Europe" recommends a guideline level of 40 dB L_{night} for the avoidance of any significant adverse effects of sleep disturbance due to noise. The L_{night} descriptor refers to the yearly average of the external free-field night time L_{AEq}. This translates to 38 dB when converted to a free-field external L_{A90}, and is the average of one year's worth of

[46] Cand, Appendix A, para A134
[47] Cand,Eco/2/2, 7.34 to 7.38
[48] Cand, Appendix A, A.80 to A.82

the external night-time L_{Eq}. This allows some variability from night to night, which would arise when the wind blows in different directions. The ETSU-R-97 night time noise limits are based on a "worst case" when the wind blows from the wind farm towards the receiver; but on other occasions the calculated levels would not occur. It would therefore be wholly misleading to compare the worst case calculated wind farm noise immission levels with the "Night Time Noise Guidelines for Europe".[49]

108. **Ecological Effects of Noise** are identified in Table 7.9 of the ES as an operational effect of the development to be assessed. ES Table 7.12 reports operation of the turbines to have no significant effect on protected species, and ES Table 8.9 reports that there would be no operational disturbance effects on birds.

109. **Tranquillity** – CPRE has identified the top ten factors that people consider to contribute to tranquillity, and the top ten factors that detract from it (document Eco/2/3 part 1 section starting at A.110). Of those factors that related to sound, hearing the following contributes to tranquillity (wind turbines were not on either list):

Hearing birdsong, peace and quiet, natural sounds, wildlife, running water;

and hearing the following detracts from tranquillity:

Hearing constant noise from cars, lorries and/or motorbikes, lots of people, low-flying aircraft.

110. Several visits were made to the area, and notes made of what could be heard. At all locations, natural sounds such as wind in the trees, and birdsong, could be heard and so could distant traffic noise, agricultural activity and military aircraft flyover, which detract from the tranquillity of the area. The addition of the proposed wind farm would add to the "soundscape" of the area. But whether that would contribute to (or detract from) tranquillity would depend in part on the level and character of the sound and in part on the predisposition of the listener toward the source and their expectations of the area. And tranquillity will to some extent be related to noise levels. During the quietest periods, when conditions are relatively still, the turbines will either not be operating or will be turning at a very low speed. Other sources such as transport would continue.

111. Given the lack of any objective metrics with which to judge the effect on tranquillity in rural areas due to noise it is not possible to come to firm conclusions about the effects, if any, the proposal may have.[50]

112. **Amplitude/Aerodynamic Modulation** ("AM") – ETSU-R-97 suggests that a certain amount of AM should be considered typical of the characteristics of wind turbine noise, and so its methodology does not propose any additional penalty for the presence of AM. Yet there is clearly a problem, at a small minority of wind farms, with excessive amplitude modulation ("EAM") of the noise being produced by the turbines. That needs to be addressed. The risk – which was unquantified

[49] Cand, Appendix A, A.84 to A.86
[50] Cand, Eco/2/2, 7.33

at the Inquiry by any witness – of that phenomenon occurring at this site, also needs to be addressed.[51]

113. There is no agreed "threshold" for determining what EAM is and when it is occurring. There is only anecdotal evidence as to when or why it might occur. High wind shear is not the cause, but is a factor which contributes to the effect of annoying EAM. The planning condition proposed by RDG is just as "untried and untested" as that proposed by the Appellant, and would in particular be triggered by noise which was not turbine noise.[52]

114. Prior to the Council making its decision on the application, its appointed noise consultant ("RDA") advised the Council that "there is currently no robust basis for constructing a planning condition to address [E]AM if it should occur". The Council officer report (document G10) concluded that:[53]

> "*The issue of Amplitude Modulation (AM) has been researched and the consultant has confirmed that there is a small risk of annoyance from AM occurring. However this is very difficult to predict if it would occur at Shipdham and to what extent. In this respect, there is no reasonable condition that can be imposed. The consultant has reviewed a number of planning appeal decisions which address the problem and acknowledge the risk of AM occurring. However, planning inspectors have not refused permission based upon it. The planning inspectors involved have suggested using statutory nuisance legislation to address AM if it occurs.*"

115. Nevertheless, the Council's statement of case (document G16) includes a draft condition (condition 22) related to Excess Amplitude Modulation. Its wording is imprecise, with no objective criteria proposed; and so the draft condition is inappropriate.[54]

116. RDG argues for the use of a "Den Brook style" EAM condition (see paragraph 201 of this report). The proposed condition is technically flawed, fraught with uncertainty and does not provide a prescriptive and repeatable objective analytical process[55]:

a) It is based on a metric which is particularly prone to corruption from other sources;

b) It requires the measurement practitioner to choose peaks and troughs from the noise record. This process is too arbitrary, as it is open to too great a degree of interpretation;

c) Relatively small variations in this metric will naturally occur in all but the quietest of times, due to a variety of sources. It therefore requires subjective evaluation to recognise potential noise variations due to modulation of wind turbine noise as opposed to other environmental sources, to such an unusual extent that the application of the condition is neither objective not transparent; and,

[51] Closing, 39
[52] Closing, 40
[53] Cand, Eco/2/2, 5.45
[54] Cand, ECO/2/2, 6.4
[55] Cand, Eco/2/2, 5.46, 5.47

d) There is no robust justification of the thresholds set out in the condition.

117. This subject and the proposed planning condition were also considered in detail at several recent wind farm planning appeals. Since the Den Brook appeal where this condition was initially proposed, an increasing number of planning inspectors (and an Examining Authority) have been unconvinced of its merits and have instead referred to statutory nuisance procedures as a means of control. Examples include wind farm proposals at Bradwell (document D1, January 2010), Wadlow (document D12, SoS decision dated 9 November 2009), Cotton Farm (document D5, December 2010) and Brechfa Forest (document D17, December 2012).[56]

118. RDG has not shown why there would be a material risk of EAM occurring at this site, and what level of EAM should trigger a condition to prevent its occurrence. The condition proposed by RDG uses a threshold which is unsatisfactory in that it has not been shown to be a threshold at which unacceptable levels of annoyance will occur.[57]

119. The following was established in examination at the Inquiry[58]. EAM is not understood, cannot be predicted, has no known factors that are clearly causally associated with it, and there is a low likelihood of EAM at this site. But there is a growing body of data and knowledge which points to the view that EAM is not a "freak" event; it is something that should be addressed. An intervention threshold of 3dB, peak to trough, would be reasonable.

120. But, prior to the Inquiry, the Appellant's noise witness was not aware of any commonly accepted criterion for rating EAM which is sufficiently robust, reflects subjective perception, and that is practically enforceable. The application of an arbitrary assessment methodology and penalty rating scheme based on an untried, untested and unproven approach would be neither robust nor fair (Eco/2/3 part 1 paragraph A.163). And it remains the case that there is no universal consensus across the research community on a number of key issues: how to characterise and objectively rate the level of modulation, what constitutes a subjectively acceptable level of EAM, and the prevalence and causes of EAM.[59]

121. But research continues. In December 2013, Renewable UK published the findings of a research programme entitled "Wind Turbine Amplitude Modulation: Research to improve understanding as to its cause and effect" (brief summary at document Xb4). The project aimed to deliver theoretical and experimental investigations into the causes of AM noise from wind turbines, together with the objective assessment of AM noise and the subjective response to it. The work was carried out by a consortium of UK based companies and universities, with additional work by the Dutch National Aerospace Laboratory and by the Danish Technical University.[60] Among other things, the research found that:

[56] Cand, Eco/2/2, 5.51 to 5.54
[57] Closing, 41, 43
[58] Day 3, XX of Cand
[59] APPb1, 1
[60] APPb1, 5

a) EAM is not an inherent feature of wind turbine operation. It can exhibit rises and falls in level of potentially more than 5dB and is sometimes audible at distances of 1km or more. EAM is more impulsive than AM, with greater lower frequency content.[61]

b) The prime candidate for the generation of EAM noise is transient blade stall (that is, stall which occurs over a small area of each turbine blade in one part of the blade's rotation only). This results in a cyclical increase and fall in noise level. [62]

c) The occurrence of transient stall depends on a combination of factors, including the airflow conditions onto the individual blades, the way those conditions may vary across the rotor disc, the design of the blades and the way the turbine is operated. The study notes that techniques developed by turbine makers, such as cyclical blade pitch control systems, could be developed to reduce the risk of transient blade stall which minimising any loss in energy yield.[63]

d) The key feature of EAM that assists in its detection and analysis is that it has a periodic character, rising and falling in level on a regular basis. Signal processing techniques may be used to isolate a systematic periodic variation in level from an otherwise noisy signal. The magnitude of the variation in level of the signal specifically at the frequency of periodic variation of interest (in this case the blade passing frequency) can then be determined in an objective manner. Tests have shown the method to be robust. They provide repeatable results without the need for manual examination of the data. And non-wind-turbine noise sources can be excluded objectively as their rate of variation, determined precisely by the method, would not occur consistently at the blade passing frequency.[64]

e) The methods investigated and developed as part of the Renewable UK study, based on standard Fourier transform techniques, are comparable to the methods used in ETSU-R-97 for the analysis of tonality. The signal processing technique used is also similar to those applied by most key researchers in the field of amplitude modulation of wind turbine noise.[65]

f) Such methods can overcome the concerns that may otherwise arise from approaches (such as that advocated by RDG) based on manual review of instantaneous and highly variable raw noise measurements, which are affected by shorter term and higher level (but unknown) variations in underlying non-wind-farm noise. Manual approaches such as those require a subjective assessment of the variation in the adjacent peaks and troughs in the noise data, which is not precisely defined. Only some form of averaging can suitably accommodate the potentially corrupting effects of extraneous

[61] APPb1, 11
[62] APPb1, 12
[63] APPb1, 14, 15
[64] APPb1, 18, 19
[65] APPb1, 21

"residual" noise; and such an approach has a number of authoritative precedents.[66]

122. The subjective response to EAM was the subject of listening tests at the University of Salford's specialist facility. Subjects were asked to rate simulated wind turbine noise samples that had various characteristics. The strongest effect on annoyance was found to relate to the overall level of the test sounds rather than the depth of amplitude modulation. Nevertheless, the average annoyance from signals containing AM was found to be higher than signals of the same overall noise level with no AM. There was an "onset" of increased annoyance around a modulation depth of 3dB (although no clear threshold was identified), and only a relatively small increase in annoyance as the modulation depth increased further beyond this point. Beyond a certain level, an increasing level of modulation "depth" does not have a significant effect on affective response.[67]

123. In contrast, there appears to be no published evidence for the claimed relationship between the outcome of RDG's proposed condition test and any formally established dose-response relationship. Instead, the proposed threshold and metric appear to be based solely on the personal judgement of their expert witness.[68]

124. **Planning Conditions: Excess Amplitude Modulation Noise** There is a need for a condition aimed at controlling EAM to within an acceptable limit at neighbouring noise-sensitive locations. Such a condition will be lawful only where the test for EAM noise is prescribed with an appropriate degree of objective precision. The nature of EAM noise has been found to be such that, where it occurs, the operator of the offending wind turbine is able to control the presence of EAM noise. The LPA would therefore reasonably police a consent conditioned EAM limit through direct enforcement action.[69]

125. The Renewable UK research has made possible the development of an EAM test and regulation method which, if required, is suitable for implementation as a planning condition. Renewable UK has proposed a template planning condition with a supporting rationale for its development (documents Xb5, Xb6). In summary, this condition derives a decibel penalty based on the level of modulation in the measured turbine noise which is added to the measured levels of the noise. The principle and approach is therefore similar to the procedure to account for tonal noise set out in ETSU-R-97, and the same approach is consistent with standard practice in international and UK standards such as BS4142.[70]

126. The Institute of Acoustics has welcomed the publication of this research and the model condition, but notes that the template planning condition needs a period of testing and validation over the coming months before it can be considered to be good practice. The Secretary of State, in his recent determination of the Turncole wind farm appeal (document Xb7), noted in his paragraph 8 that the model condition "has not yet been reflected in an update to

[66] APPb1, 22
[67] APPb1, 24-26
[68] APPb1, 27
[69] APPb1, 28-29
[70] APPb1, 30-32

the current good practice guide that accompanies ETSU-R-97 and has not been endorsed by Government." Instead, the Secretary of State imposed a condition requiring the submission and approval of a scheme for regulating EAM. At paragraph 18 of the decision letter he says: "… this condition will allow a properly endorsed AM noise assessment and rating methodology to be appropriately incorporated into the AM scheme to be agreed by the Council, taking account of any further advice forthcoming from the UK Institute of Acoustics and/or Government prior to commencement of operation of the development."[71]

127. Therefore, should the Secretary of State be minded to impose a condition to address the possibility of excess or "other" AM occurring at the site, a revised noise condition is submitted as Appendix 2 to document APPb1. The suggested condition requires a scheme to be imposed to assess AM either in line with the Renewable UK template condition or any revised methodology endorsed as good practice by the Institute of Acoustics.[72] That approach is therefore consistent with the approach proposed by the appellant and the LPA at the Inquiry, and follows the Secretary of State's position at Turncole. It is also consistent with the advice of current planning policy, as set out in National Policy Statement EN-3 (paragraph 2.7.55), which advises that ETSU-R-97 methodology, in accordance with latest industry good practice, should be used to assess noise from the operation of wind turbines.[73]

128. The proposed condition would provide the necessary protection against the potential occurrence of EAM at the Shipdham Wind Park and would appropriately accommodate the outcome of the present debate as to the exact form the objective test the assessment and rating of EAM noise should take.

Other Matters Raised In Evidence

129. **Shadow Flicker** is the subject of chapter 13 of the ES. Analysis has found one residential receptor (Wyrley Farm) to be affected by shadow flicked caused by the development. The total duration of that effect would be no more than 11.28 hours per year (if bright sunshine were to occur on every relevant occasion) or 3.384 hours per year if there is the average amount of sunshine throughout those occasions. Mitigation is possible, should there be considered to be a need, as described in ES paragraphs 13.24 to 13.26.

130. Mr Hill has reported that he farms Manor Farm, to the north of the turbine site. He is concerned that shadow flicker could affect the occupant of a tractor when working on that land. Shadow flicker normally applies or is known to affect the interior of individual residential properties and is not considered to be a problem in relation to open land.

131. **Satellite Navigation Systems**, such as are used by Mr Hill in his tractors, are not affected by wind turbines, as demonstrated by tests undertaken by the Maritime and Coastguard Agency and reported in Appendix D of document Eco/3/4.

[71] APPb1, 34, 35
[72] APPb1, 36
[73] APPb1, 37

132. **Disturbance to Care Home residents** at Shipdham Manor Care Home, which abuts Church Lane, may arise due to the passing of construction traffic along Church Lane. However, due to the low vehicle speeds, the low frequency of HGV movements and the limited period for construction, the effect would be minimal. A planning condition is proposed (document APP/15) that would require liaison with the Care Home and prior notification of visits to the site by HGVs and abnormal loads.

133. The overall number of movements along Church Lane by HGVs and abnormal loads associated with the scheme is now estimated to be 752 over a 20 week period. The timing and frequency of trips can be arranged so as to not cause disturbance to residents of the care home. When assessed in accordance with the relevant British Standard (BS 5228-1) the predicted temporary impact of this construction traffic would not be significant. The noise levels generated are likely to be substantially below those mentioned by CATS, since the vehicle speeds along this part of Church Lane will be very low.

134. The new care facility at Wood Farm (planning application reference number 3PL/2012/0770/F) will be set back into its site, further from the road than is Shipdham Manor.

135. **Bat** surveys have been carried out on the site[74]. The overall level of bat activity on the site was low. No active roosts were identified. The species recorded on the site are not believed to be disturbed by lighting (safety lighting may be used in the construction compound). The low levels of activity and the observed location of foraging towards the south of the site indicates that bats would be very unlikely to come into contact with the appeal turbines. The sweep of the turbine blades would be at least 50m from hedgerows and trees likely to be used by foraging bats, in accordance with Natural England guidance TIN051. It is certain that, allowing for the mitigating effect of the turbine locations, there would be no significant negative impact on bat populations as a result of operation of the turbines.[75]

136. **Listed buildings** are among the subjects of Chapter 6 of the ES. There would be no change to the setting of the Church of All Saints, Shipdham. There would be a perceptible change in the wider setting of the 16th century Manor Farmhouse and the 18th century[76] Manor Farm Barn (both Grade II listed), but it should be recognised that this is the lowest of three grades in this form of designation and that the significance of the change would be very low, leaving them legible in the surrounding landscape.[77] The setting of the two listed buildings at Manor Farm is compromised now by the presence of a number of 20th century "industrial scale" buildings along the north east edge of the farm yard.[78] The setting would be defined as the farmyard and those fields located around it, along with the fish ponds in the wood to the north east. The proposed turbines would be clearly visible from this location, on rising ground to the north east.[79]

[74] ES 7.101
[75] ES 7.161
[76] Dates: see ES appendix 6.2 page 9
[77] ES 6.97, 6.114
[78] ES 6.110
[79] ES appendix 6.2 page 9

137. The ES identifies two further listed buildings the settings of which would be changed. The Church of St Mary, Bradenham is some 2km west of the site. There is some visibility towards the development site from near the Church, but the presence of development and vegetation to the east of the Church closes off views to the east from the churchyard, the boundary of which is reinforced by mature trees. The very clear legibility of the Grade I listed building as the parish church of Bradenham would not be compromised. Therefore, despite the intrusion of the proposed wind turbines into a wider landscape that is characterised by open farmland, there would be no more than minimal change to the setting of the Church of St Mary.[80] It is unlikely that the appeal scheme would reduce the legibility or understanding of the parish church, which is functionally, visually and aesthetically linked with the settlement of Bradenham to the west, but there would be a visual relationship with the new wind turbines, which would be prominent on the skyline.[81]

138. The Church of St Andrew at West Bradenham is grade I listed and stands some 3.5km from the turbine site. The turbines would intrude into a landscape presently devoid of modern paraphernalia, but would be sufficiently distant to blend into the background and not cause any loss of significance to the Church. While there would be a change in the wider setting of the Church, this would be minimal in significance.[82] It is unlikely that the development would detract from this Church's role as a focal point for the surrounding agriculturally based parish, and there would be no harm to any important inter-visibility with other assets in the surrounding landscape.[83]

139. **Shipdham Conservation Area** is found by the ES to be the only conservation area where there would be anything other than "no change" to the setting of the conservation area. The existing settlement pattern, and the location of the conservation area within that settlement, are such that visibility toward the appeal site from the conservation area would be limited to views from private spaces in and around existing buildings. Such views would not affect the legibility and understanding of the conservation area as a historic entity. There would be no more than minimal change to the setting of the Shipdham conservation area.[84]

140. The appellant has considered the implications of the Court of Appeal judgement (**Barnwell Manor** Wind Energy Ltd v SoSCLG and others (2014) EWCA Civ 137) and the impact of the scheme on any designated heritage assets. At paragraph 29 of the judgement, Sullivan LJ held "*I agree with Lang J's conclusion that Parliament's intention in enacting section 66(1) [of the Planning (Listed Buildings and Conservation Areas) Act 1990] was decision-makers should give "considerable importance and weight" to the desirability of preserving the setting of listed buildings when carrying out the balancing exercise*." In the present case there is no risk to the fabric of any cultural heritage asset, and no suggestion of substantial harm to the setting of any cultural heritage asset. If the decision maker were to find that there might be an impact upon the setting

[80] ES 6.98 to 6.104
[81] ES appendix 6.2 page 3
[82] ES 6.105 to 6.109
[83] ES appendix 6.2, page 3
[84] ES 6.116 to 6.123

of any listed building or conservation area, although he would be required by section 66(1) to give "considerable importance and weight" to the desirability of preserving that setting, the appellant submits that any such harm would be minimal and clearly outweighed by the renewable energy benefits of the proposed wind turbines.[85]

141. **Aviation** is the subject of Chapter 12 of the ES. The effects of the proposal on air traffic control radar were evaluated by determining whether the turbines would be within line of sight of any such radar facilities and whether the development site is in an area of operational importance to those radars. Potential effects on other aviation interests were evaluated by considering the consultation response from the CAA in the context of the likelihood of identified aviation operators using the airspace in the vicinity of Shipdham and the requirements for obstacle clearance.

142. The Ministry of Defence (Defence Estates), the Civil Aviation Authority, NATS and Norwich International Airport were consulted in the preparation of the ES. No mitigation was required, other than the installation of a 25 candela navigation light on each turbine hub, and there would be no significant residual effect on any aviation interest.

143. **Third-party opinion** – Out of a total of 211 third-party responses to the application, 129 supported the development and 82 objected[86]. Document APP/6 identifies the location of each interested party; 126 were from Shipdham, 74 from elsewhere in Norfolk, and the remainder elsewhere or not stated. Of those that lived in Shipdham, 45 were for the scheme, 80 were against it and 1 raised concerns.

144. **Renewable energy** – It is estimated that the two turbines would generate approximately 11.17GWh per year, enough electricity to meet the annual electricity needs of approximately 3385 typical UK households. This is equivalent to 6.7% of the households in Breckland. In generating electricity from a renewable source the proposed development would prevent the emission of 4803 tonnes of carbon dioxide each year as well as significant quantities of sulphur dioxide and oxides of nitrogen.[87]

Reason for Refusal

145. The Council refused planning permission because, in its view:

> The proposed turbines, by way of their height and siting in an isolated rural location away from other tall manmade structures, would have a detrimental impact on the landscape. The proposal would be contrary to Policy DC12 Trees and Landscape of the adopted Breckland Core Strategy and Development Control Policies DPD.

146. This raises a number of issues[88]:

[85] APPb2
[86] Eco/3/2, para 3.4
[87] ES, 1.4
[88] Eco/3/2, para 8.3

(i) The nature of the landscape and its character. This is the subject of evidence reported in paragraphs 44 to 49 of this report.

(ii) The suitability of the landscape for wind turbines. This is the subject of paragraphs 48 to 51 of this report, which find that the host landscape is an appropriate location, in strategic terms, for a wind energy development of the scale proposed.

(iii) Whether the existence of any other tall man made structures affects the ability of an area to accommodate tall turbines. It is a combination of key landscape characteristics, rather than simply the existence of tall man made structures, which allows conclusions to be drawn on the capacity of a landscape to accommodate turbines.[89]

(iv) How the proposals would impact on Policy DC12. The scheme would not involve the loss of any trees or hedgerows. And, as noted in NPS EN-1 and NPS EN-3, landscape mitigation for wind turbines is difficult if not impossible to achieve. Policy DC12 is therefore not relevant and should be set aside.[90]

THE CASE FOR BRECKLAND DISTRICT COUNCIL

The gist of the evidence was as follows:

Reason for Refusal

147. Planning permission was refused for the following reason:

> The proposed turbines, by way of their height and siting in an isolated rural location away from other tall manmade structures, would have a detrimental impact on the landscape. The proposal would be contrary to Policy DC12 Trees and Landscape of the adopted Breckland Core Strategy and Development Control Policies DPD.

National Planning Policy

148. Attention was drawn to the following:

(i) The National Planning Policy Framework ("the Framework") and its relationship with the National Policy Statements for Energy (EN-1) and for Renewable Energy Infrastructure (EN-3).

(ii) In EN-1, paragraph 5.9.18: the likelihood that energy infrastructure will have visual effects, which should be balanced with other effects of such development.

(iii) In EN-3, paragraph 2.7.6: appropriate distances should be maintained between wind turbines and sensitive visual receptors to protect amenity.

[89] Eco/3/2, 8.29
[90] Eco/3/2, 8.31, 8.32

(iv) In EN-3, paragraphs 2.7.48 and 49: minimising the scale of landscape and visual effects of commercial wind farms, and the need for careful design to minimise effects on the landscape and visual amenity while meeting technical and other constraints.

(v) Framework paragraph 17, with reference to the need for good standards of amenity, recognising the intrinsic character and beauty of the countryside, and encouraging the development of renewable energy.

(vi) Framework paragraph 97: the responsibility of all communities to contribute to energy generation from renewable or low carbon sources while ensuring that adverse impacts are addressed satisfactorily, including cumulative landscape and visual impacts.

(vii) Framework paragraph 98: applicants for energy development should not be required to demonstrate the overall need for renewable or low carbon energy; applications should be approved if the impacts are or can be made acceptable.

(viii) Framework paragraph 99: local plans should take account of climate change over the longer term.

149. Attention was also drawn to Written Ministerial Statements. The need for renewable energy does not automatically override environmental protections and the planning concerns of local communities. Local topography should be a factor in assessing the effect wind turbines have on the landscape. The Government intends to introduce a stronger role for communities, putting them at the heart of decision making.

150. Attention was further drawn to the July 2013 Planning Practice Guidance for Renewable and Low Carbon Energy (document B4)[91] and, in particular:

(i) Paragraph 3: the importance of planning's role in delivering renewable energy infrastructure where the local environmental impact is acceptable.

(ii) Paragraph 5: The need for renewable energy does not automatically override environmental protections and the planning concerns of local communities.

(iii) Paragraph 8: the need to take into account the requirements of renewable energy technology, the potential impacts on the environment while listening to the views of local communities likely to be affected.

(iv) Paragraph 15: the importance of protecting local amenity.

(v) Paragraph 39: the need for separate analyses of cumulative landscape impacts and cumulative visual impacts.

/over

[91] Owen PoE, 18

Local Policy

151. Attention was drawn to LDF policies P11, CP12, DC1 and DC15, all of which are the subjects of paragraph 16 of this report. It was agreed in examination that the reference in the Council's reason for refusal, to Policy DC12, was an error.

152. Document H1 is "Wind Energy Development – A Statement Of Breckland Council Policy". It was never adopted as a formal Council policy; instead it represents a statement by the Council, which was intended to be cancelled when the Core Strategy was adopted. However, that was never formally done. It was never an adopted policy. It refers throughout to now cancelled national and local policy. It can have virtually no weight in the planning process.[92]

Material Changes Since Earlier Proposals

153. The turbines proposed in the appeal scheme would be in different positions to those in previous proposals. The turbines currently proposed would be 1200m and 1440m respectively from the joint settlement boundary and conservation area boundary of Shipdham, whereas the corresponding distances in the previous schemes were 1620m and 1520m. This would result in increased detrimental impact causing harm to local amenity, as a result of loss of outlook through unacceptable visual intrusion.

154. A line of electricity pylons runs from east to west across the landscape, passing some 2000m to the north of the nearest turbine. The current proposal would locate turbines approximately 150m and 350m respectively further from the pylons than previously. This would reinforce the prominence of the turbines and their appearance as isolated structures in the open and sparse landscape in this location.

Visual Amenity and Local Landscape Character

155. Paragraph 5.247 of the ES says that the scheme would bring about a range of residual visual effects on properties within 1km of the turbines. Within 1km, the assessment of effects on visual aspects of residential amenity found that the turbines would be prominent or relatively prominent features. The magnitude of change to residential views would depend on the aspect of an individual property. The ES identifies that some 8 dwellings would experience visual effects of a medium to high magnitude and moderate/substantial significance and would have principal living areas or main parts of gardens facing towards the turbines and for which field margins or garden vegetation would allow more views. Three further dwellings are reported in the ES to experience effects of a medium magnitude and moderate significance.

156. ES paragraph 5.251 predicts that some 8 dwellings between 1km and 2km from the turbines would experience EIA significant effects of a medium to high magnitude and moderate/substantial significance and some 5 dwellings between 1km and 2km from the turbines would experience effects of a medium magnitude and moderate significance.

[92] LPA3

157. The LPA does not agree with the proposition, advanced in the ES, that none of the properties would be affected to the degree of causing unacceptable harm to visual aspects of residential amenity.

158. In the opinion of the LPA, although some hedging provides a degree of screening, in addition to the significant harm by reason of visual dominance to occupiers of dwellings immediately surrounding the site, extensive views across the appeal site are currently available from the Bradenham Road looking north east across the appeal site. The turbine structures would dominate the landscape from viewpoints in this direction. The visual impact would be significant from open views across the wider rural landscape currently enjoyed by residents and visitors alike.

"Wind Turbine Development: Landscape Assessment, Evaluation and Guidance"

159. This study (document E12) aims to articulate which characteristics of the landscape are sensitive to different forms of turbine development and from this provide an overall understanding of capacity. In the terms of the study, the appeal proposal is in a category described as "small scale – a linear or clustered arrangement of 2-12 turbines".

160. The appeal site is partly in the Plateau Farmland landscape character type and partly in the Settled Tributary Farmland. Considered as Plateau Farmland, the landscape has:

(i) A low sensitivity to a small scale group of turbines, in terms of: scale and enclosure, landform and topography, land cover pattern, settlement, skyline and views and connections with adjacent landscapes; and,

(ii) A moderate sensitivity to a small scale group of turbines, in terms of landmarks and visible built structures. While a small scale group could potentially provide a point of focus, more than one turbine could appear dominant and out of balance with the general absence of other "grouped" vertical structures.

161. Considered as Settled Tributary Farmland, the landscape has:

(i) A low sensitivity to a small scale group of turbines, in terms of: scale and enclosure, settlement, views and connections with adjacent landscape types, and remoteness and tranquillity; and

(ii) A moderate sensitivity to a small scale group of turbines, in relation to landform and topography, land cover pattern. Skyline and landmarks and visible structures. The undulating landform is likely to result in turbines at various heights, which could lead to visual confusion. The hedgerow network and shelterbelts provide lines or edges in the land cover to which a small scale group could relate; but the patterning is not so distinct as in other areas. The skyline is tiered with varying heights of tree canopies which added turbines might make more confusing. There are few landmarks or built structures such as village

churches, or other obvious "grouped" features to which a small scale development could relate.[93]

(iii) Overall, a moderate capacity to accommodate a small scale turbine group.

Breckland Council's "Landscape Character Assessment" (2007)

162. This document (document E11) identifies the site as being partly in the River Wissey Settled Tributary Farmland landscape character area and partly in the Central Breckland Plateau landscape character area.

163. The River Wissey Settled Tributary Farmland landscape characteristics are derived from its gently undulating landform interrupted by occasional shallow dry valley and tributaries. Key future development considerations for this landscape character area include monitoring development and boundary treatments to the settlement edges, and discouraging any materials which could have a suburbanising influence on the landscape.

164. The Central Breckland Plateau landscape characteristics are derived from its gently undulating landform providing opportunities for distant views, in addition to intervisibility with other character areas, due to the elevated aspect and the exposed, open character, with relatively little boundary vegetation evident. Key development considerations for this landscape character area are that attention should be paid to the open, elevated and exposed nature of the landscape and to long views/intervisibility with surrounding character areas.

Evaluation

165. The appeal proposals would result in the erection of large-scale metallic structures, comprising a mechanised and industrial type of development in the open countryside. Hedged and treed skylines would be punctuated by these large isolated structures in near and distant views. As a result, the appeal proposals would impact significantly on the openness of the local landscape, giving the site a developed appearance and eroding its character. The height, siting and engineered appearance of the proposed turbines would result in conspicuous and alien features in the landscape, which would appear dominant and out of scale with other developments in the area.

166. Although the existing National Grid overhead lines have affected the appearance of the surrounding rural landscape, the landscape remains sensitive to further infrastructure developments and tall structures owing to its open and generally undeveloped nature. The large metallic structures would impact and have a suburbanising influence on the landscape.

167. There is limited roadside hedging that would help filter views from the National Cycle Network to the north and west of the appeal site. The turbines would be clearly visible above hedgerows and in long-distance views, which would be detrimental to the landscape character of the area. Viewpoints that would be affected by the proposal include (i) the Bradenham Road looking north east towards the appeal site; (ii) Mattishall Road, just off the A47 near Dereham; and

[93] Owen, para 54

(iii) National Cycle Route 13, Shipdham Lane. Viewpoints include those identified by Figure 5.9 of the ES.

168. The turbines would appear dominant and out of balance with the general absence of other "grouped" structures. They are not suited to the landscape, which for the most part has a strong sense of remoteness, and an almost vacant character in places. Additionally, the turbines would not be sufficiently far from settlements and would therefore have an overwhelming and overbearing relationship with the nearest villages and hamlets, which are small in scale and of a traditional character. And residents of a number of dwellings would experience unacceptable harm to visual aspects of residential amenity by virtue of visual dominance resulting in an overwhelming and overbearing impact on their living conditions.[94]

Are The Effects Outweighed By The Benefits Of The Development?

169. National and local planning policies lend substantial support to renewable energy development. And attention has been drawn to the Planning Practice Guidance for Renewable and Low Carbon Energy.

170. The proposed wind park by virtue of the height and siting of the proposed turbines would seriously harm the character and appearance of the surrounding rural landscape and would become a significant and defining characteristic of the landscape. Local communities have opposed the siting of turbines in this location over a significant period and their views must be taken into account.

171. The appeal proposals would seriously conflict with the aims and objectives of paragraphs 17, 97, 98 and 99 of the Framework, with Core Strategy Policies CP11, DC1 and DC15 and with the Planning Practice Guidance for Renewable and Low Carbon Energy. The significant harm which would be caused to the local environment outweighs the general policy support for renewable energy development. The appeal should therefore be dismissed.

Aviation

172. The Council officer report dated 9 July 2012 (document G10) says that air safety is not considered to be an obstacle to the proposal because both the National Air Traffic Service and the Civil Aviation Authority have not objected to the scheme.

Planning Conditions and Excess Amplitude Modulation

173. The Council's statement of case (document G16) proposes that, should the appeal be allowed and planning permission be granted, permission should be subject to 37 conditions as set out in the Statement of Case.

174. Draft conditions 21 and 22, and their attendant Guidance Note No. 5, are intended to safeguard the amenities of residents in the event that noise from the proposed wind turbines exhibits excess amplitude modulation (EAM) and are similar to conditions proposed before the Inquiry by the appellant.

175. Draft conditions 21 and 22 are clarified as follows[95]:

[94] Last sentence Owen PoE para 71
[95] LPA2

a) There is currently no generally accepted objective test to establish "acceptability thresholds" (that is, limits at dwellings above which EAM is deemed excessive) and so in the current state of knowledge an assessment of whether EAM is present would have to rely on the subjective judgement of an experienced Environmental Health Officer or acoustician. Such an approach would be necessary when first investigating claimed EAM and to establish where measures intended to rectify EAM had worked.

b) But at the time of the Inquiry research into EAM was being undertaken by various researchers and it can reasonably be predicted that within the next 12 months robust measurement-based criteria for assessing wind turbine noise amplitude modulation will be available such that the presence of EAM may be objectively established. It is also likely that the causes of EAM will be confirmed so that mitigation schemes can be readily designed and implemented.

c) Draft condition 22 requires the submission of a scheme for the investigation and control of EAM. One might expect that the LPA would approve a Condition 22 scheme if it could be shown to improve current best practice. Therefore condition 22 would provide a way to set objective criteria for establishing the presence of EAM, both before and after mitigation measures were implemented. In a previous appeal at Swinford (APP/F2415/A/09/2096369) the Secretary of State imposed an EAM condition of the same general form as that which the LPA now proposes (document LPA2, page 65, condition 24 and Guidance Note 5), although an assessment based on the Swinford condition would be wholly subjective since the Swinford condition requires a scheme to be approved only in respect of EAM mitigation but not in respect of an investigation to establish whether EAM is present.

Post-Inquiry Correspondence

176. Post-inquiry correspondence is identified in paragraph 5 of this report. The LPA's responses (LPAb1, LPAb2) were that it did not wish to comment on the matters raised, other than in respect of the scheme's effect on designated heritage assets. The LPA did not consider that any impact the scheme might have on designated heritage assets would be unacceptable, and so did not form a reason for refusal by the LPA. In reaching this conclusion, the LPA was mindful of the decision on this issue by the Inspector in the first Inquiry (decision letter at inquiry document D23).

THE CASE FOR RESIDENTS OF DAFFY GREEN

The gist of the evidence was as follows:

Introduction

177. RDG was a Rule 6 party at the Inquiry. RDG called witnesses who gave evidence on Noise and on Planning & Energy.

178. The Appellant's analysis of the noise effects of the appeal scheme is wrong in the following respects:[96]

(i) It uses by far the quietest of the possible candidate turbines which is, in particular, significantly quieter than all the others at the critical wind speeds. It is not a "typical" turbine and its adoption is self-serving and unreliable.

(ii) It adopts a standardisation approach which serves to create additional headroom under the noise conditions at times of high wind shear just when lower limits are required. It re-introduces by a different route an "averaging" of impacts for all wind shears, which is specifically what was successfully attacked at the 2008 inquiry.

(iii) In respect of the ground factor G (used in modelling ground attenuation of sound during propagation outdoors, document F7, paragraph 7.3.1, ISO 9613-2:1996) it introduces a new G=0.5 assumption because it says the use of G=0 is too conservative when on a proper understanding of its own research, the papers on which it relies, data from observations for RDG at a turbine near Swaffham, and other papers even G=0 significantly under-, not over-predicts noise immissions.

(iv) It proposes a planning condition which shows very slight headroom at critical wind speeds on all the above assumptions (candidate turbine, standardisation, G=0.5). The table that follows paragraph 87 of this report conceals rather than illuminates what will be the true impact in high wind shear conditions.

(v) On a correct analysis there would be no headroom and significant exceedences.

(vi) A suite of conditions is therefore necessary to ensure compliance with the ETSU limits. It must be readily and practicably enforceable by the LPA. The core noise condition proposed [APP/11] is even more complex, long-winded, impossible to follow and ineffective than the condition rejected at the 2008 inquiry. It also unlawfully delegates decisions as to breach to a third party.

(vii) Additionally, there is excess amplitude modulation (EAM). This highly annoying and disturbing noise, prevalent in locations such as this at times of high wind shear. It is now common ground between RDG and the Appellant that an EAM condition is necessary.

The Overall Position Of RDG Regarding Noise

179. The overall position of RDG regarding noise is summarised in the following paragraphs, 180 to **Error! Reference source not found.**.

180. Even with the "quietest" candidate turbine, there can be expected to be exceedences of an ETSU-R-97 condition formulated on a correct basis (Dr Hoare's proof of evidence, page 15, table 3).

[96] RDG closing, 4

181. The correct condition limits should be based on wind speeds measured on site at a height of 10m. The standardisation approach to setting condition limits is inappropriate in a high wind shear area for the reasons addressed below. It wrongly serves to "average" out the real world environment, in the way illustrated by the graphs and material in Appendix 1 of "A Critique of the IoA Treatment of Background Noise for Wind Farm Noise Assessments" (document RDG35).

182. On a correct basis (once one gets behind the averages) there is no headroom at the critical wind speeds.

183. This is illustrated at the appellant's figure C6 (document Eco/2/3, part 1, page 86); note:

(i) Figure C6 is constructed for the wrong property. It should relate to Wyrley Farm, the property with two turbines at approximately 700m, (not Brick Kiln Farm) and a 1dB uplift is therefore required.

(ii) Figure C6 includes thin red lines representing 2 standard deviations either side of the average and, since 95% of the sample would be included by those lines (rather than the 68% within 1 standard deviation) reference should be made to the thin red lines.

(iii) This figure assumes that the prediction methodology is robust.

184. In fact, the prediction methodology is not robust. The use of G=0.5, and relying on warranted sound power levels (plus 1dB), under-predicts the noise immissions actually experienced. The evidence on this includes data from a turbine at Swaffham, a proper understanding of HL2009 (document RDG25) and Cooper & Evans (document RDG27); the evidence against relies on the misapplication of HL2009 and Cooper & Evans.

185. There has been no challenge to the percentage breaches (of noise limits, as summarised in Table 3 of Dr Hoare's proof of evidence). That is the key output of the case and has not been shown to be in error.

186. Table 3 of Dr Hoare's proof of evidence was produced in the following way. The source data were anemometry data, background noise levels, and noise condition levels for each of the approximately 155,000 10-minute periods for which there are wind speed data. Propagation was modelled using the ISO 9613 methodology with G=0 and accounting for wind direction. The sound output levels for various models of turbine were used and scenarios were tested based on measured 10m wind speeds and on "standardised" 10m wind speeds.[97] Table 3 shows that, at Wyrley Farm the noise limit would be breached for 1% of the time (E70 turbine, standardised wind speed, ES sound output data) and more in other cases (for example, Vestas V80 turbine with standardised wind speeds would lead to breaches of the noise condition for 32% of the time at Wyrley Farm).

187. There would be major impacts on tranquillity. There is no warrant for assuming a relaxation of the imperative of protecting the tranquillity of rural areas. This area is exceptionally tranquil with background noise levels falling

[97] Hoare PoE 6.1 to 6.3

under 20dB L_{A90} (ES Appendix 10.4 charts D7 and D8; also graphs on page 18 of Dr Hoare's proof of evidence). Save for reliance on ETSU-R-97, the Appellant provides no assessment of the impact on amenity in this exceptionally tranquil area. But Table 4 of Dr Hoare's proof of evidence provides unchallenged evidence of major impacts on tranquillity. Using ES noise data for the candidate turbine, the classification of BS4142 and the wind speed and direction data for 2007 (a typical year), and following the same process as described for testing compliance with noise limits[98] (paragraph 186 of this report), assessment shows Wyrley Farm (for example) would experience a major loss of amenity (margin of turbine noise over background noise of 8dB or more) for 9% of the evening and night time. The four modelled locations would experience either a "major" or a "significant" loss of amenity for, respectively, 33%, 22%, 22% and 9% of the evening and night time.

188. Even on the Appellant's case and using the quietest possible candidate turbine, there is vanishingly small headroom, as shown by Table 5.2 in Eco/2/2 (copied after paragraph 87 of this report). That headroom would disappear if one accepts that G=0.5 is wrong (Dr Hoare's proof of evidence, table 3, page 15 "Standardised" data) or if one moves to a properly typical turbine.

189. It is thus obviously imperative that a readily enforceable suite of conditions are imposed to ensure compliance with ETSU-R-97. But the drafts before the Inquiry do not provide an enforceable mechanism; nor are they actionable by an environmental health officer. It is common ground between RDG and the Appellant that there is no example across the country where these immensely complex conditions have been successfully enforced, despite the large number of sites where there are substantial complaints (Appendix 5 to Mr Stigwood's proof of evidence).

Excess Amplitude Modulation ("EAM")

190. Turbine noise can include two distinct forms of amplitude modulation: (1) AM which is taken into account in ETSU-R-97; and (2) EAM – namely AM over and above that which was taken into account in ETSU-R-97.[99]

191. Wind turbine noise is not always steady and anonymous. The well-known "swish swish" noise arises because the aerodynamic noise at the blade is modulated. This manifests itself as a range of audible features from gentle swishing to low frequency impulse thumping. This noise is the primary cause of complaint for modern wind farms.[100] ETSU-R-97 acknowledges the existence of blade swish noise or AM but assumes it is limited in extent with maximum levels of 2-3dB(A) close to the turbines and diminishing below this value over distance (document F1, page 68).

192. AM noise from modern large turbines differs from that identified in ETSU-R-97, which was based on turbines that existed in the mid-1990s with hub heights of 30m and rotor diameters typically 27m. Modern large turbines, typically of 60-80m hub heights and 80m rotor diameter, have much larger surface area to their

[98] Hoare PoE 7.12
[99] Closing, 20
[100] Stigwood PoE 2.44

blades, have a much bigger swept area and experience winds at greater altitudes.[101]

193. We are concerned with EAM – that is, over and above the AM considered by ETSU-R-97. The ETSU document draws the appropriate balance with respect to amenity. That balance does not envisage any EAM. Any harmful EAM therefore upsets the balance, is beyond ETSU-R-97 and, unless it can be confidently removed, dictates the refusal of permission.[102]

194. The characteristics of EAM include the following (Mr Stigwood's proof of evidence paragraphs 2.5 – 2.18, also ECO/2/3 part 1 paragraphs A146, A149, A152, A159, A160)[103]:

(i) Lower frequency – meaning it is much more audible and disturbing indoors and behind closed windows than is AM;

(ii) Larger peak-to-trough range;

(iii) Acts over larger distances;

(iv) Different characteristics from the swish of ETSU-R-97 – described variously as a thump, impulsive, intermittent, having strong temporal variability.

195. ETSU-R-97 identified EAM as needing further study (document F1, page 68). EAM was identified in a "limited" number of properties in a 2006 study for the DTI (RDG2), the original recommendations of which were clear: EAM was an issue which required a reduction in night time noise threshold and a penalty (RDG3), and further research was required. Following the Salford report (RDG18) the Government (plainly wrongly) decided no more investigations were justified.[104]

196. MAS Environmental, for RDG, has investigated EAM at a turbine near Swaffham (location in document RDG29; data in document RDG30). Noise survey results were presented for the period between 00:24 and 00:34 on 30 September 2013, and the period between 02:22 and 02:32 on 30 September 2013. The times were chosen because experience indicated that EAM was likely to be observed; and so it was. There is no dispute that EAM was recorded. It is neither here nor there that measurements were taken on only one night; no such measurements have been taken by Ecotricity.[105]

197. The Swaffham site is plainly indistinguishable from the appeal site (except that it has only a single turbine). It is within a few miles of the appeal site. Broadly the same high wind shear would be experienced; the terrain is flat in the East of England. EAM of far greater than 3dBA peak to trough is evident in the immissions measured at 470m from the Swaffham turbine. Since EAM in high

[101] Stigwood PoE 2.7
[102] Closing, 23
[103] Closing, 24
[104] Closing 28
[105] Closing 36, 37

wind shear happens at Swaffham, there can be no confidence that the same will not happen at the appeal site.[106]

198. MAS has studied 12 sites (listed in paragraph A3.14 of Mr Stigwood's evidence) and has made the data publicly available. All of those sites exhibit marked EAM. MAS Environmental can completely accurately predict when EAM will be experienced. The conditions are those of high wind shear, at night, especially on flat land in the East of England. A similar predictor was identified by Hayes Mckenzie in their 2006 report for the DTI *The Measurement of Low Frequency Noise At Three UK Wind Farms* (RDG2, page 65).[107]

199. The experience of MAS Environmental is that EAM with a repeated "peak to trough" variation of 3dBA or more can confidently be expected to give rise to complaints[108]. Appendix 5 of Mr Stigwood's proof of evidence lists over 60 wind farms known to be the source of complaints and, through measurement, discussions with the local planning authority, or acousticians, or local residents there is confidence that EAM is the source of complaints at each.[109]

200. It is plain that the noise associated with EAM is seriously harmful to residential amenity. EAM would be highly likely to occur at the appeal site in high wind shear conditions at night. It necessarily follows that a condition must be imposed which serves to remove (not control) EAM quickly if and when it occurs. It must be capable of ready enforcement by Environmental Health officers. Without such a condition, the development would not be acceptable.[110]

201. Document D26 is the appeal decision reference APP/Q1153/A/06/2017162 (December 2009) for a wind farm in the Borough of West Devon at a site which lies in the upper reaches of the Den Brook. The appeal was allowed and planning permission granted, subject to conditions. Condition 20 addresses EAM and has become known as the Den Brook condition. RDG proposes that a variant of the Den Brook condition should be imposed if the current appeal is allowed. Appendix 3 of the proof of evidence of Mr Stigwood presents the condition proposed by RDG to control EAM.

202. The workability, enforceability and effectiveness of the EAM condition is fundamental to the grant of a lawful condition here. It is common ground between RDG, the Council and the appellant's noise witness that the condition wording proposed by the Council is imprecise, with no objective criteria proposed; and that the resulting condition is therefore inappropriate. RDG's "Den Brook" variant tries to fill the gap.[111]

203. The Den Brook condition has been the subject of actions in the High Court and the Appeal Court. That developer's main claim is that the Den Brook EAM condition is breached by noise other than the wind farm and so is susceptible to false positives. To summarise the detailed information in Mr Stigwood's Appendix 3, that claim is unsustainable because the wording of the condition correctly

[106] Closing, 39-41
[107] Closing 42, 43
[108] Stigwood, XX, 12:40 day 2
[109] Stigwood, XX, 2:20 day 2
[110] Closing, 58-63
[111] Closing, 65-66

states the condition applies to wind farm noise only; because filtering noise measurements to remove extraneous noise is a prerequisite of every noise condition which sets decibel limits; and because (in contrast to other industrial noise) correctly identifying wind turbine EAM is straightforward. As EAM is mainly a night time phenomenon, extraneous noise is minimised at times of compliance monitoring, and the periodicity of the noise peaks is related to blade passing frequency.[112]

204. It has also been suggested by others that statutory nuisance proceedings are appropriate as a control of AM. But it is a well-recognised fact that local authorities only implement their nuisance responsibilities in a very small minority of nuisance cases. Evidence of this low level of enforcement is seen in the comparison of the high number of complaints with the number of abatement notices served. And statutory nuisance is subject to the defence that the best practicable means of counteracting the nuisance have been applied, potentially resulting in no abatement of the noise nuisance. Furthermore, any action for statutory nuisance can be appealed and if that appeal fails the appeal can be instigated afresh in the Crown Court. Where this fails there remain other steps to avoid action. In view of the complexity of evidence relating to EAM, such a process could take 3 years and still fail where nuisance was upheld.[113]

The Good Practice Guide

205. In deciding to endorse the GPG, DECC has confirmed (document RDGA6) its understanding that the GPG had been subject to an extensive and rigorous quality assurance process including public consultation and extensive peer review. For that reason it did not do any of its own consultation or expert evaluation. But several well-informed parties made fundamental criticisms of the "standardisation and G=0.5" approach, and those criticisms are not addressed in the GPG. No consultation report was provided to the Government setting out what consultees said and why they were considered to be wrong, and so the Government was therefore not told of the fundamental concerns with the document. Nor was the Government told that the standardisation approach generates additional headroom in high wind shear conditions, therefore increasing ETSU noise limits at those times, and could not therefore have formed a view as to whether this wholly illogical consequence was justified.

206. All of these are, in high wind shear areas such as the appeal site, highly material considerations to weigh against the Government's generic endorsement of the methodology. The adoption of the GPG cannot make immaterial actual impacts on amenity caused by the use of its methodology.[114]

Standardisation

207. Standardisation was proposed in the IoA Bulletin 2009 (document F5) to overcome significant problems (when comparisons are made between background noise levels and wind turbine noise immission levels) under the existing methodology in times of high wind shear. It was meant to provide a means of properly reflecting high wind shear and its effects. In fact, it does the

[112] Stigwood 5.5 to 5.6
[113] Stigwood 5.8 to 5.10
[114] RDG closing, 72-74

opposite. It illogically creates additional headroom in the conditions for wind turbine noise at the time of high windshear – precisely when any reasonable and rational approach would require the opposite. Standardisation applied is legally irrational.

208. ETSU-R-97 does not recognise that wind shear varies over time. This is demonstrated by page 120 of ETSU-R-97 (document F1).

209. ETSU-R-97, on its page 84, sets limits by reference to "measured" 10m high wind speeds ("The limits proposed are set in relation to the existing background noise level at wind speeds up to 12m/s measured on the wind farm site at 10m elevation.") The suggestion that "measured" (in page 84) means "standardised" (as per page 85) is untenable. The standardising process described on page 85 should be used only if directly-measured 10m wind speeds are not available. There is no contention for the Appellant in respect of the RDG approach (which is to measure wind speed directly, at a height of 10m) than that it is compliant with ETSU-R-97. Therefore the Appellant's approach, which results in a very different answer, is not compliant with ETSU-R-97. The same guidance cannot lawfully be interpreted so as to give two different results (as here).

210. The directly measured 10m wind speeds and measured background noise levels lead to the "ETSU-R-97" condition table in document RDGA5. This would be easy to enforce.

211. To consider merely an average wind speed does not allow the accurate identification of the extent of breaches of a noise condition. Only by looking at the actual wind speed at a particular point in time can significant breaches be identified. Disaggregation of the average allows the extent of any breach to be assessed.

212. The following table (Table 2 of Dr Hoare's proof of evidence) lists two hours of the Appellant's anemometer mast wind speed data on the evening of 6 September 2010. The table allows a comparison between the Appellant's proposed noise condition and an ETSU-R-97 compliant noise conditions.

/over

Time	Actual wind speed, hub height m/s	Standardised 10m wind speed m/s	Proposed condition noise limit dB	Measured 10m wind speed m/s	ETSU condition dB	Increase in noise limit dB
17:00	12.6	9.3	43	5.9	37.5	5.5
17:10	13.0	9.6	45	5.5	37.5	7.5
17:20	13.4	9.9	45	5.6	37.5	7.5
17:30	13.8	10.2	45	5.5	37.5	7.5
17:40	11.5	8.5	43	4.5	35.0	8.0
17:50	12.9	9.5	45	5.2	35.0	10.0
18:00	13.2	9.8	45	5.7	37.5	7.5
18:10	12.4	9.1	43	5.0	35.0	8.0
18:20	12.7	9.4	43	5.5	35.0	8.0
18:30	12.2	9.1	43	5.7	37.5	5.5
18:40	12.6	9.4	43	5.5	37.5	5.5
18:50	11.8	8.7	43	5.9	37.5	5.5
19:00	11.8	8.7	43	5.1	35.0	8.0

213. The sources of other data in the table are explained in paragraphs 4.11 to 4.15 of Dr Hoare's proof of evidence.

214. Consider the line of data for the time of 18:10. The mathematical transformation in the appellant's proposed noise condition results in a "standardised" 10m wind speed of 9.1m/s that attracts a noise limit of 43dB. However, the actual measured 10m wind speed of 5m/s would only attract a noise limit of 35dB under the ETSU guidance. Given the conditions that prevailed at 18:10 on 6 September 2010, the proposed noise condition allows the development to make 8dB more noise than an ETSU-R-97-compliant noise condition.

215. This specific example is based solely on the Appellant's own data. It shows that the proposed noise condition permits more noise than ETSU-R-97. Standardisation creates additional headroom in the planning conditions just at the point where the meteorological conditions (high wind shear) dictate that the condition should be tighter because the impact on amenity is greater.

216. The Appellant now states (for the first time) that data from the Ecotricity wind mast is in error because the 10m anemometer was shielded by the mast. The wind was in the east between 17:00 and 19:00 on 6 September 2010. The point about the IoA condition increasing headroom for more noise can be demonstrated for multiple wind directions; for example, during the period 09:00 to 10:50 on 29 November 2011, with winds just west of south, the IoA standardised methodology condition permits (variously) 2 or 4dB more noise

during each 10-minute period than does ETSU-R-97, as shown in the table at paragraph 6.3 of Dr Hoare's rebuttal of Dr Cand.

217. The figures are stark and (subject to the shielding point) have not been disputed.

Noise Prediction and Sound Power Level

218. The GPG's use of G=0.5 relies on the view that use of G=0 with warranted (plus 1dB) sound power levels over-predicts actual noise immissions. That assertion is based on the papers "Wind Farm Noise Predictions and Comparison with Measurements" (document RDG25) and "Comparison of predicted and measured wind farm noise levels and implications for assessments of new wind farms" (document RDG27). Both, on a correct analysis, show the opposite. The use of even G=0 under-predicts immissions. Section 5 of Dr Hoare's proof of evidence provides the explanation.

219. Sound power level can be either as tested (that is, as measured) or as warranted. Sound power level tests are carried out in daylight and therefore not a times of high wind shear. The actual measured levels will vary for a variety of reasons given by Broneske ("Comparison of Wind Turbine Manufacturer's Noise Data for Use in Wind Farm Assessments"; document RDG22), such as the variability of individual turbines and the impacts of wear and tear over time, increasing sound power levels from those found at test.

220. Section 4 of the Appendix to Dr Hoare's proof of evidence sets out a critique of document RDG25, which has a number of characteristics making it unreliable if applied to the appeal proposal with its two turbines. The work reported in RDG25 was taken from a site with an array of 21 turbines. The sound meter microphone was not equally downwind of all turbines. Wake effects within the group were not accounted for. And minimal data were used; although data was collected for 57 days, only 26 ten-minute data points are used in the key graphs 3b and 3d, that is, 0.3% of the whole. The 26 data points range over hub height wind speeds of 10 to 13m/s, whereas 92% of the hub height wind speeds at Shipdham, measured by the appellant, are less than 10m/s. Such high wind speeds are unlikely to occur at times of high wind shear. The study cannot fairly represent conditions at Shipdham.

221. Warranted sound power levels are provided by the turbine manufacturers. Only generic (rather than site specific) warranties are provided. There is no material correlating what is predicted using the warranties, but that link is necessary if any weight is to be placed on generic warranties. Instead, an arbitrary allowance of 1dB is added to allow for uncertainties between warranty and actual. In terms of the generic warranty, reputed scientists have shown the warranted maximum for the Enercon E66 (103dB) to be a significant understatement; as descried in section 7 of the Appendix to Dr Hoare's proof of evidence, maximum sound power levels of 105dB were found in separate tests by De Napoli, Forssen et al and van den Berg. This alone demonstrates that the "warranted plus 1dB" approach is the opposite of conservative; it can underpredict by 1dB.

Ground Factor, G

222. RDG commissioned measurements at Sporle Road, Swaffham (the nearest and most comparable actual turbine) to see whether the predictions which would arise from the use of "warranted plus 1dB" and "G=0.5" under-predicted or over-predicted. This is an Enercon E66 turbine, as originally proposed for Shipdham. The work is described in part 6 of the Appendix to Dr Hoare's proof of evidence. The findings are expressed as the average values of some 19 data sets, each of two minutes duration. They are:

(i) If G is set equal to 0.5, the resulting predictions understate the actual noise level on average by 5.7 dB; and,

(ii) If G is set equal to 0.0, the resulting predictions understate the actual noise level on average by 4dB.

223. These are serious differences. There was no obvious source problem. A number of queries have been raised on behalf of the Appellant (Eco/2/4 paragraphs 15-18), relating to:

(i) Use of the Leq index, "which tends to be strongly influenced by natural sources in the environment". But there was no noise contamination. The samples were chosen to avoid car noise (the survey was conducted late at night) and the turbine was the overwhelmingly dominant noise source.

(ii) The analysis "is not made in the standard way which is described in ETSU-R-97" which sets out to "establish typical relevant … conditions and tease out the contribution of turbine noise levels from other sources." There is no evidence that conditions were not typical, and none has been produced by the Appellant although the data were provided to it more than a month previously.

(iii) Nor does ETSU-R-97 set out a required method for prediction. Use of L_{Aeq} under ISO 9613-2 is the norm.

(iv) "There were no measurements of the noise emissions of the Swaffham turbine measured simultaneously to the measurements at the far-field location reported by Dr Hoare." Such measurements are unnecessary. RDG used the process set out in RDG25.

224. The Swaffham data offer compelling evidence that in comparable circumstances the Appellant's approach very substantially under-predicts immissions. The result would be that the headroom in the conditions (all other factors not being changed) would be removed and there would be substantial exceedences.

The Result On Predictions

225. Even using the quietest turbine, there is very limited headroom using the Appellant's predictions.

226. Those predictions use G=0.5. It has been shown that G=0.5 seriously under-predicts noise impacts.

227. There is no scope for remedying this under-prediction through any conservatism relating to the sound power level of the turbines because on a correct understanding there is no such conservatism. And, on a correct understanding, warranted sound power level plus 1dB understates sound power level.

228. Putting the G=0.5 point and the sound power level point together, the results from Swaffham show that the Appellant's predictions seriously understate the actual immission which will be experienced in high wind shear conditions. There would be substantial exceedences of the ETSU-R-97 limits, even on a standardised basis.

Overall Conclusion on the Noise Environment

229. Putting the standardisation point and the prediction point together results in a position that is even worse than that considered at the 2008 inquiry. Table 3 of Dr Hoare's proof of evidence summarises the results on analyses of the breaches that would occur with various forms of planning condition. In 2007 wind conditions, the Appellant's "candidate" turbine would breach an ETSU-R-97 condition for 4% of evening hours, and in the case of a typical turbine there would be a breach in 9% of evening hours. The position regarding tranquillity is even worse. And, even using the standardised approach, but correcting for the G=0 errors, there would be substantial exceedences.

"Wind Energy – A Statement of Breckland Council Policy – October 2005"

230. Counsel's Advice was obtained on 29 May 2012 in the matter of the Framework and wind farm noise (starting at page 200 of document G14). A local planning authority is entitled to adopt an approach which is not identical to ETSU-R-97 in order to preserve quiet areas of the countryside valued for their tranquillity. The Breckland wind policy is consistent with the Framework. Full weight can therefore be attached to it. On the developer's own noise assessment, the proposed Shipdham wind farm does not comply with Breckland wind policy.

231. The Advice concludes:

> "32. By paragraph 215 of the Framework the weight to be attached to Breckland's *Wind Energy Development* policy depends on the degree of consistency with the Framework. That has to be considered in the context of the whole documents. ETSU-R-97 is not identified in terms in the Framework but is in the national policy statement which is footnoted in the Framework. In this context consistency with the Framework involves consideration of sustainable development, the reference to national policy and the protection of areas of tranquillity. Since ETSU-R-97 is referred to and particular local circumstances on tranquillity are addressed with no minimum level being imposed on noise conditions, the Breckland wind policy is consistent with the Framework. Full weight can therefore be attached to it."

Noise-related Planning Condition – Document APP/11

232. Document APP/11 contains the Appellant's most recent draft noise condition. RDG comments as follows:

(i) In terms of timing, the draft condition allows

(a) 21 days to appoint an expert from the date of receipt of a request from the LPA (which would already have had to establish whether it wants to report the complaint);

(b) 28 days for a noise assessment protocol to be submitted;

(c) No time limit on approval of the protocol;

(d) 2 months for submission of a report;

(e) 21 days for further assessment if a potential breach is identified.

This amounts to 132 days excluding any unspecified period.

(ii) There is no mechanism as to what happens once a breach is established.

(iii) The draft condition is immensely complex and incapable of being routinely enforced by LPAs with limited resources and limited expertise. The 2008 Inspector took the view in respect of planning conditions that it is "essential they do the job they are intended to do without undue difficulty or delay (document D25, paragraph 48).

(iv) It appears that the expert consultant's report would be effectively binding on the LPA because it is the only route to the finding of a breach. The LPA is not permitted under the condition to find a breach of its own. This is not lawful – a condition cannot allocate or delegate policing functions away from the LPA into the hands of a third party instructed by a developer. The Council's enforcement function cannot be bound at all by the conclusion of a third party, never mind the conclusion of someone who is not their agent or employed and answerable to them.

(v) Since there is no or very limited headroom, the noise condition would have to be enforced frequently. That would be impossible on the ground.

(vi) The position would thus be at least as bad as in 2008 and the position of the independent consultant would add a further layer of illegality.

Outline Planning Obligation: Document APP/13

233. At the inquiry, RDG suggested that the enforcement regime should be simplified through a planning obligation that would establish simple headline noise limits; that data should be provided to the LPA to allow the LPA to investigate complaints under whatever procedure it thought appropriate and, if appropriate, to take enforcement action. The purpose of the suggested Obligation would have been only to ensure that the LPA could afford to do this by making the developer pay for investigation of complaints and to supply to the LPA the necessary information.

234. But the heads of terms for a section 106 agreement in document APP/13 would introduce more, not less, complexity. Everything is put into the section 106. The is not what RDG was suggesting and is unacceptable in principle. The section 106 would fall outside the enforcement regime and would require the LPA to seek a discretionary injunction.

The Renewable UK Amplitude Modulation Research and Noise Condition

235. The RUK work confirms research conclusions advanced by RDG that wind turbine noise containing amplitude modulation (AM) with 3dB peak-to-trough is the appropriate threshold for onset of adverse impact. It also confirms that increasing peak-to-trough results in increased annoyance; and that, although wind farm AM noise is publicly reported as being "a small problem", it is now "too large to ignore".

236. The proposed RUK AM noise condition is not accompanied by any evidence demonstrating its efficacy. It is complex, computationally intensive and it relies on bespoke software written by a wind energy company with underlying source code which is commercially confidential.

237. The proposed condition has not been endorsed by Government, or the Institute of Acoustics, or by the wind industry or, indeed, by some of the members of the RUK AM project team. There has been no consultation regarding its value. It does not treat AM noise as a distinct problem related to the beating character of the noise and thus requiring a standalone noise condition. Instead, it defines a maximum penalty of 5dB to be linked to the standard noise level. This means that where there is 5dB headroom between turbine noise and noise limit, AM noise of any magnitude and for any duration is permitted.

238. Furthermore, the RUK work confirms the extensive research submitted at the Inquiry (RDG02, RDG16, RDG31) that elevated wind shear is a major causal factor for excessive AM and, therefore, the increased headroom permitted by the use of standardised 10m wind speeds at times of high wind shear facilitates compliance with this penalty condition.

239. The logic on which the parameters of the penalty are derived is irrational because:

(i) it relies on the results of a listening test carried out by a tiny number of non-representative participants and which produced acknowledged error results;

(ii) it equates AM peak-to-trough values quantified on a different basis to those used in the listening test; and,

(iii) it unreasonably finds an equivalence between the response of a rural neighbour to a minimum of 200 minutes of real world wind farm AM data and to a test subject hearing 20 seconds of synthesised data.

240. RDG has provided a worked example of the RUK AM condition making use of the Swaffham data presented at the Shipdham inquiry which contains extensive runs of AM with peak-to-trough values between 6 and 12dB and thus should clearly breach a fit-for-purpose AM condition. In fact, the proposed RUK AM condition prescribes a succession of averaging processes (a Fourier transform plus two steps explicitly requiring calculation of an average) and this results in the smallest possible penalty of 3dB for the Swaffham AM of 6 to 12dB. This penalty is insufficient to result in a breach of the noise condition. Furthermore, the wording of the condition permits more noise measurements to be collected which would reduce the average AM metric such that no penalty at all would be imposed.

241. Therefore, the RUK AM noise condition is unlikely to be breached at any site and consequently is not capable of effectively controlling excess AM noise.

242. The RUK AM noise condition is not fit for purpose. The appellant has sought to avoid rigorous testing of the condition and there has been no opportunity for cross examination of the appellant's acoustic experts on it.

Suggested 10 Metre Measured Wind Speed Planning Conditions

243. A condition should be imposed to require compliance with noise limits that are ETSU-R-97 compliant. Document RDGa11 sets out suggested conditions which have these characteristics:

(i) They meet the principles of ETSU-R-97 guidance. Technological change since 1997 (for example, sound level meters that can record and process detailed information) allows the process to be simplified so that the planning obligation approach recommended by ETSU-R-97 is no longer necessary.

(ii) They use a different measurement of noise. ETSU-R-97 adopted limits using the L_{A90} index because of the difficulty in the early 1990s of extracting extraneous noise contributions from the average (L_{Aeq}) levels. Extraneous noise affected the L_{A90} index to a lesser extent. In return, this has created a number of technical problems such as the inability to subtract or add L_{A90} values and to determine what the respective contributions of turbine and other noise are to this statistical value. Historically, the only reason L_{Aeq} was considered inappropriate was that it could be contaminated. That concern is unreal at this site because one would instantly know if the noise readings were contaminated by cars, planes, tractors, working the field, birds, and the like. Noise practitioners (including environmental health officers) are used to this. Any other noise will be windfarm generated.

(iii) The conditions in document RDGa11 replicate the requirement for noise control but remove much of the complication by returning to L_{Aeq} (average noise) and adding back the 2dB(A) assumed as the difference.

(iv) The conditions comply with ETSU-R-97. They are simple and enforceable and provide very little room for argument.

Electricity Generation

244. Paragraph 38 of the Planning Practice Guidance For Renewable And Low Carbon Energy says that knowledge of the likely energy output of wind turbines can be useful, particularly when a decision is finely balanced. This is not such a case. The amenity harm the scheme would cause would be such that permission should be refused irrespective of who is right about electricity generation.

245. This is a very inefficient development, with a capacity factor of only 17.6% (equivalent to ranking in the lowest decile in 2011). It would be of miniscule significance to renewable energy targets: it would generate only 7GWh per year, saving around 6 one-millionths of the carbon dioxide emissions of the UK.

246. It is the wrong proposal in the wrong place. Access constraints limit its height to 100m. It seeks to be high power in an area of low wind speed.

247. The Appellant has seriously over-stated the electricity generated by the scheme. The ES assumes that the UK average capacity factor (27.7%) would apply here, but that factor is skewed by wind farms in areas of high wind speed. RDG's analysis, based on site-specific wind speed data, is set out in Dr Hoare's rebuttal of Mr Dobson. An average capacity factor of 17.6% would yield 7.08 GWh per year, which is less than two thirds of the 11.17 GWh claimed for the proposal. The saving in carbon dioxide emissions would be proportionately less than claimed.

248. Alternatives can readily be found. The same amount of renewable energy could be produced by 24 to 35 acres of solar photovoltaic, or a modest 1.5 MW anaerobic digestion plant.

249. The Appellant's figures for installed capacity of renewables in the UK and the East of England are out of date. Data taken on 7 November 2013 from the DECC renewable energy web site are summarised in Table 3 of Dr Hoare's rebuttal of Mr Dobson. They show that the actual permitted capacity in this region is nearly three times the capacity cited by the Appellant; and that the 2020 regional target of 1620 MW has already been exceeded, even if the biomass plant at Tilbury is excluded.

250. The correct position is that there is plainly no need to allow this appeal in order to achieve the targets.

Post-Inquiry Correspondence

251. Post-inquiry correspondence is identified in paragraph 5 of this report. The gist of RDG's response to the Renewable UK material is reported in paragraphs 235 to 242 of this report. RDG's responses to other matters raised in post-inquiry correspondence are summarised as follows.

252. **Comment on the Turncole Farm decisions** (document Xb7; RDG response in RDGb2): RDG's comments are limited to the apparent suggestion that an AM condtion similar to that at Turncole Farm (APP/X1545/A/12/2174982) could be imposed in the current case. The Turncole decision provides as follows:

"No generation of electricity to the grid from the wind turbines shall take place until a scheme for the regulation of amplitude modulation has been submitted to and approved in writing by the local planning authority. The scheme shall be implemented as approved."

253. First, the turbines will be erected before the scheme is agreed. For a matter as fundamental as AM, this is inappropriate. It is necessary for a lawful and effective AM condition to be in place before any development commences because otherwise the LPA will potentially be faced with a fait accompli. This issue can be overcome by drafting changes ("no development until …"). However, the following issues cannot be overcome.

254. Second, the condition sets no parameters as to what is and what is not acceptable AM. Given the wide disparity of expert evidence on this, leaving this key issue open is plainly inappropriate – the acceptable level of AM goes to the heart of whether this development can operate satisfactorily.

255. Third, it fails to set out what the AM condition must achieve or how it should achieve it – whether by a penalty or by a standalone assessment of AM. It is

therefore impossible for the Secretary of State to know the extent of the AM harm which residents will have to tolerate to go into the planning balance.

256. Fourth, any AM condition will impact on the operation of the turbines. By leaving the parameters for the condition at large, it is impossible to know to what extent compliance with the AM condition will be likely to impact on the amount of electricity generated. On the facts of Shipdham this impact will be likely to be substantial for any effective AM condition and thus tip the planning balance against the grant of permission.

257. Fifth, the condition does not tie the developer or the LPA to any condition approved by the Government. The LPA is free to approve any scheme it deems fit. Thus, for example, in circumstances where the Government finds it impossible to endorse the RUK condition, or there is significant delay, or the developer tries to get agreement in advance of the further work being undertaken on AM, the developer and the Council will have to try to agree amongst themselves. But we already know the following:

i) Breckland Council has proved itself entirely inept at dealing with noise issues;

ii) The industry has taken three years to try to work up an AM condition and the output of this work is plainly not fit for purpose;

iii) The issue is extremely complex – leaving the Council to approve a condition would be to place on it a burden it could not possibly sensibly discharge;

iv) The condition allows for no involvement by third parties in the debate as to the appropriate scheme. The history of this case shows that only RDG has demonstrated consistently the wide-ranging and fundamental flaws in the appellant's noise case. The Council has not noticed them. Yet it would have only the appellant's representations before it when deciding whether to accept the proposed scheme; and,

v) The condition is so bland as to give the Council no guidelines for how and what it can take into account in determining whether to accept a scheme.

258. Sixth, in any event, even if the condition were tied to a draft condition subsequently agreed nationally by the Secretary of State there would still be fundamental flaws in it (in addition to points one, two, three and four above):

i) on timing: there is no basis for confidence that the condition could be discharged within a reasonable time. Given the situation described in 257ii) of this report, the implicit assumption that a (non-"Den Brook") fit for purpose condition will be available within a reasonable time frame is unrealistic;

ii) any generic condition approved by the Secretary of State may not be appropriate on the facts of a particular location, and any adaptation to the generic condition would be left to this Council;

iii) the condition implies that AM issues can necessarily be overcome. RDG has shown that the Den Brook condition overcomes AM issues but that

nothing else on the table does so. It is not lawful to impose a condition in the hope that a workable scheme will crop up at some point in the future; and,

iv) given the history on AM the industry cannot be relied upon to give dispassionate and objective advice to the Secretary of State as to the appropriate schemes to be adopted.

259. RDG's position is that given that (1) this site exhibits all the features which make excessive AM likely, and (2) only the Den Brook model offers a workable condition to control excessive AM, and (3) a Den Brook condition would be likely to significantly impact the renewable energy credentials of this development, permission should be refused. The Secretary of State cannot be satisfied that appropriate living conditions would be delivered. But, if the Secretary of State is otherwise minded to grant permission, he should impose the Den Brook condition because he can be satisfied that that meets the tests for lawful conditions.

260. **Comment in the light of National Planning Practice Guidance**: (document RDGb3) – The NPPG section on Noise includes a new and relevant section under the heading "*How to recognise when noise could be a concern*" which describes adverse effects and how to recognise the crossover point where noise levels become significantly adverse. RDG believes that noise levels created by the proposed wind farm will lie beyond the level identified by DCLG as "significant observed adverse effect level" and will be "noticeable and either disruptive or very disruptive" and so the appeal should be dismissed.

261. The evidence for this conclusion is in the Hayes Mckenzie Partnership report for the DTI on "The Measurement of Low Frequency Noise at Three UK Wind Farms" (document RDG02) which explains that low frequency noise was not the cause of wind farm noise complaints but instead it was AM, particularly at night time, that triggered complaints from wind farm neighbours.[115] Both the external wind farm noise levels and AM depths at Shipdham are reasonably predicted by RDG to exceed those at the wind farm sites studied in the DTI report where noise complaints match the descriptors in the NPPG for developments which should be refused planning permission. Consequently, the NPPG on Noise indicates this appeal should be dismissed on the grounds of significantly adverse noise impacts and failure to preserve a good standard of amenity at this location.[116]

THE CASE FOR CAMPAIGN AGAINST TURBINES IN SHIPDHAM AND BRADENHAM

The gist of the evidence was as follows:

Introduction

262. CATS was a Rule 6 party at the Inquiry. CATS called witnesses who gave evidence on Noise, Landscape, Planning & Energy and other matters.

[115] RDGb3, paras 3 and 4
[116] RDGb3, para 19

Noise: Effect Of The Scheme On Shipdham Residents

263. Shipdham is a rural village with over 2000 residents, half of whom are over 50 years old. Access to the appeal site would be taken via Church Lane, which is a narrow country lane with no footway. Shipdham Manor Care Home stands immediately next to Church Lane, and some residential rooms in the care home have windows that open directly on to Church Lane.

264. The care home accommodates 43 residents. They are frail, elderly people, most of whom have dementia. Residents' median life expectancy is 19.6 months after placement. The home has a hospice function and is involved in end of life care.

265. People with dementia react very differently to noise. They are easily startled. Overstimulation can lead to falls, aggression or withdrawal and fear. Sudden very loud noises have a substantial effect.

266. Sleep deprivation in dementia causes increased confusion and forgetfulness, irritability and aggression, and has a marked effect on cognition. Sleep deprivation increases the risk of delirium in dementia patients. Dementia causes disruption of the sleep/wake cycle; sometimes complete reversal is caused, with agitation and hyperactivity in the evening and sleeping in the daytime. Daytime naps offer the only way to get enough quality sleep, and it is essential that residents of the care home have the opportunity to sleep in the daytime.

267. The World Health Organisation's community noise guidelines say that noise levels above 30dB have a number of effects on sleep, with vulnerable adults and the chronically ill more susceptible. Adverse health effects are observed above 40dB.

268. During construction of the development, heavy goods vehicles and abnormal load movements generated by the development would pass within inches of the care home windows that face Church Lane. Such vehicles are noisy and can emit noise in the 85-90 dB range at 50 feet (about 15 metres). A total of 756 such vehicle movements are expected to pass along Church Lane past the care home during the 5-month construction period. And the nearby junction between Church Lane and the main A1075 road will mean accelerating and decelerating noise, and braking noise. This traffic may startle and agitate residents in the home. It would prevent them sleeping in the daytime. It would not allow them the privacy and dignity they would need if they are dying. It would be difficult for patients to move room in these circumstances, as geographical relocation causes considerable distress to the cognitively impaired elderly.

269. The appellant argues that the timing of trips could be rearranged so as not to disturb residents, but no time of day would be acceptable. The number of HGV/abnormal vehicle trips passing the home during the construction period is estimated in the ES to be 688 one-way movements, subsequently increased by the applicant to 752.

270. Shipdham Manor is not the only care facility that would be affected by the scheme. Planning permission has been granted for eight residential units at Wood Farm, for people with dementia.

271. There is no evidence that medical or epidemiological experts were consulted during the drafting of ETSU-R-97. There is a large body of evidence that

suggests that wind turbines disturb sleep and health at distances and noise limits presently allowed in the UK. Recommendations by several authors suggest a minimum distance of 1.5km, others 2km, to prevent adverse health consequences from wind turbines. Most of Shipdham village is within 1.5km of the proposed turbines.

272. Recent work by Salt and Kaltenbach shows that, although not audible, infrasound from wind turbines could affect people. Activation of subconscious pathways by infrasound (different from those pathways used for audible sound) could disturb sleep. Based on current knowledge of how the ear works, it is quite possible that low frequency sounds at the levels generated by wind turbines could affect those living nearby.

273. It is argued for the appellant that the night time noise limits in ETSU-R-97 are for the protection of sleep, including the medically ill and elderly. But this is not a normal population distribution, with up to 17 residents with dementia sited in accommodation 700m from the turbines.

Noise: General

274. The Inspector at the 2008 Inquiry found that there is a proven very low level of background noise in the area; that noise levels from that scheme would lead to complaints, and that noise associated with that scheme would materially worsen living conditions at Wyrley Farm, Brick Kiln Farm and Stable Cottage.

Noise: Manor Farm

275. The turbines would be close to the boundary with Manor Farm. The maximum noise level predicted for Manor Farm is 55dB. The noise level at the buildings would be in the range 37dB to 42dB. The background noise levels in the area are extremely low and noise levels at Manor Farm would increase hugely. The turbines would be audible inside at night and sleep disturbance is a very real prospect. It is unreasonable to expect that living and working conditions at Manor Farm should be so significantly damaged.[117]

Tranquillity

276. In this ever-increasing noise-polluted world, the tranquillity that this part of Norfolk undoubtedly offers should be cherished; but the turbines would have a visual impact and make a noise, which can carry over a considerable distance.[118] The definition of tranquillity is “free from disturbance”, but the proposed turbines would destroy this tranquillity, both audibly and visually.[119]

Landscape and Visual

277. The line of pylons to which the Council refers in its evidence is largely out of sight.

278. The positions of the two turbines would be such that they would line up when viewed from Wood Farm, from where there would appear to be one turbine with six blades. Thus residents of Wood Farm would be subjected to a particularly

[117] Hill, 9th and 10th paras
[118] Hillier, 3rd & 4th paras
[119] Caro, 2nd para and 7th

unpleasant, significant and unacceptable impact at all times of the day. Intervening vegetation would be insufficient to break the view.[120]

279. The working buildings at Manor Farm would be 800m from the nearest proposed turbine and the house a little over 900m. The impact of the turbines would be significant and contrary to LDF Policy DC1.[121]

280. The visual impact of wind turbines[122] is directly related to the distance from which they are viewed. As one approached the appeal turbines the vertical angle a turbine would subtend at the viewer would begin to increase substantially from about 2000m, and from 1000m the angle would increase dramatically. The majority of the photomontages produced by the appellant are so distant from the site that the turbines appear unobtrusive. CATS has identified eighteen properties that would be most affected, visually, by the scheme; they are those within 1000m of the site. Visual impact on all these properties would be overbearing. Residents of these properties should not be forced to endure any of the distressing effects of such a development. The properties are:

5 dwellings at the Leys Farm complex

3 dwellings at the Jubys Farm complex

Manor Farm

Brick Kiln Cottages

Brick Kiln Farm

Stable Cottage

5 dwellings at Wood Farm

Wyrley Farm.

281. Policy DC1 forbids development "where there are unacceptable effects on … the residential amenity of neighbouring occupants". The supporting text gives little assistance, defining "amenity" only in "public interest" terms. "Unacceptability" of an effect in visual terms is of course a value judgement which should employ much the same type of assessment as is required under Policy DC15.

282. The line of decisions beginning with the Enifer Downs or North Dover decision of Inspector Lavender is relied on as providing a satisfactory standard. But that is not what the development plan, nor is it what any published local or central Government guidance or policy requires. A finding of "unattractiveness" requires a full understanding of the circumstances of the case, the wider landscape, the characteristics of the development and, crucially, its relationship to the receptor.

283. The assessment in Enifer is not a "test" as that term is properly understood; it is a judgement made in that case. In Burnthouse Farm (document D19) the Inspector was assessing visual impact, not attractiveness. The two are not the

[120] Kite, para 8b
[121] Hill, 3rd para
[122] Caro

same thing, and if a measure of "attractiveness" is to be adopted then a proper evaluation requires knowledge, for example, of the receptor's personal preferences. Such a thing should be eschewed as far as possible in a planning decision. This is not a safe way to approach decision-making since language such as "overbearing", "overdominant" and "attractive" mean different things to different people.

284. Rather, these questions should be asked: What is the visual impact? Is it accurately portrayed? Is it significant? If "no" then can it be ignored but if "yes" is it beneficial, neutral or adverse? And if it is adverse, does that "adversity", stemming from size and proximity, require a refusal of permission, or contribute with other factors to a refusal of permission?

285. That is a coherent, logical, dispassionate approach which need not involve the inevitably partial one-sided judgement of expert witnesses. Rather, it is the application of common sense, best exercised by people with the daily experience of living with turbines – such as those turbines at Swaffham and North Pickenham. But at no time has the appellant sought to elicit the views and opinions of the most immediately affected local householders.

286. The overall visual impact from the large and growing number of houses would be not only significant, but adverse to a greater or lesser extent, and it should contribute to a decision to dismiss the appeal.[123]

Planning and Energy

287. The Leader of Breckland Council, Councillor William Nunn, confirmed in a letter to George Freeman MP that Breckland's "Wind Energy Development – A Statement of Breckland Council Policy" (October 2005) "has not been formally revoked". Thus it remains undoubtedly in force. Legal opinion confirms that it does not conflict with the National Planning Policy Framework (RDG37) and so due weight can be attached to it as a material consideration. Paragraph 3.1 of this Policy states that it "will still be afforded weight in the determination of planning applications and appeals by virtue of the fact that it has been subject to considerable public consultation and that it is in accordance with national guidance and Adopted Local Plan Policy." [124]

288. The appeal scheme is contrary to "Wind Energy Development – A Statement of Breckland Council Policy" in the following respects:

(i) Paragraph 17.2.2 of the document (reference document H1) disqualifies this scheme on noise grounds alone. [125]

(ii) The effect the scheme would have on tranquillity, the preservation of which is the subject of Paragraph 17.2.4.[126]

289. This is a case in which the impact on residents strikes forcibly against planning permission being granted. Planning policy supports renewables, but only where they do not have unacceptable levels of environmental impact; and here the

[123] Campbell, closing, 16-23
[124] Kite, para 5
[125] Kite, para 5
[126] Hewitt, 5th paragraph

environmental impact would indeed be unacceptable. Planning policy is also designed to protect residential amenity as a well-established interest. And wind turbines do not fall into a different class of development, exempt from the obligation not to impose their presence on their neighbours.[127]

290. The application and appeal are an attempt to jeopardise the rights of local residents. The proposal must be seen in the light of its history of refusals at all levels in the planning process, which have sought to protect local residents. From a local community perspective, the proposal is in breach of a part of, or all of, Breckland Core strategy and Planning Policies DC1, DC12, DC15, DC17, CP6, CP10 and CP11. It attempts to condition away fundamental deficiencies which will adversely impact on local residents. It is a clear breach of the LPA's own guidance on Wind Energy.[128]

Other Matters

291. **Figure 4.2 of the ES** is incorrect in that the whole of Church Lane is shown as being within the site. The Land Registry has confirmed to CATS on several occasions that Church Lane is not owned by anyone; nor is it adopted. In the absence of ownership there is a general presumption that the owner of the land of whatever tenure adjoining a highway is also owner of the soil of one half-width of it, that is, up to the middle line. The first 35m of Church Lane and a further 55m on one side are bounded by properties not controlled by the appellant.

292. **Analysis of third-party representations** does not show majority support for the scheme among local people, although the appellant claims that there is such local support. Rather, the findings are that 88% of third-party representors who live within sight of the turbines oppose the scheme; 69% of representors who live in Shipdham, Bradenham or Daffy Green oppose the scheme; and 93% of representors who live outside the area support the scheme. It is misleading, and contrary to the concept of localism, to present the views of people who live out of the local area as being indicative of local support.[129]

293. **Bats** have been encouraged in the area by the planting of hedges and woodland at Manor Farm. Some planting is little more than 100m from the proposed turbine site. The proposal damages the potential for wildlife and is contrary to LDF Policy DC10.[130]

294. **Working conditions at Manor Farm** will be affected by the scheme, through shadows and flicker. People working the land will be subject to both, and shadow flicker will also affect safe cattle handling. The tractors are fitted with satellite positioning technology, which might not work properly given the potential interference from the turbines.[131]

/over

[127] Kite, paras 3-4
[128] Hewitt PoE
[129] CATS rebuttal of Mr Dobson & Mr David
[130] Hill, paras 4-5
[131] Hill PoE

Post-Inquiry Correspondence

295. Post-inquiry correspondence is identified in paragraph 5 of this report. The responses made by CATS (documents CATSb1, CATSb2, CATSb3) were as follows:

(i) Renewable UK: The summary report (document Xb1) says on page 9 that "consultants and researchers have sometimes measured marked AM or OAM at around 1000 metres from turbines, and up to around 2000 metres in some cases"; thus there is potential for some 2500 residents of Shipdham and Daffy Green (including the residents of the Manor House Care Home) to be affected by "marked AM or OAM" should it occur. For that reason the appeal should be dismissed. Records of OAM/EAM events are derived from complaints rather than pro-active observation and so the recorded incidence of OAM/EAM is underestimated. The reports are silent about what happens when complaints are upheld; developers prefer to erect turbines and wait and see the outcome, rather than use the science in advance, and they are loath to stop operations when attempting to mitigate noise.

(ii) The National Planning Practice Guidance presents no significant change that bears on the case presented by CATS.

THE CASE FOR CHALLENGE AGAINST NIMBYISM IN SHIPDHAM

The gist of the case was:

296. CANIS exists to give a public voice to those in the community who believe not only in the need for renewable energy but also that the appeal site is thoroughly acceptable. There are no objections to the scheme from English Heritage, Natural England, the RSPB, the Council's Environmental Health consultant, the Council's tree and countryside consultant, the MoD or from Norwich airport.

297. The appeal should be allowed and planning permission granted.

WRITTEN REPRESENTATIONS

298. The gist of additional relevant matters raised in written representations by interested parties was as follows:

299. **Bradenham Parish Council**: (Hearing papers, item 29): The setting of the Grade I listed All Saints Church at Shipdham, with its unique and unusual cupola, as well as the setting of the Grade II listed Manor Farm would be harmed by the scheme, which would therefore contravene Policy DC17.

300. **Norwich Airport Limited**: (document G14, application representations, page 250) requests planning conditions for the protection of aviation. The suggested conditions would (i) identify and impose a scheme for airport safeguarding; (ii) require 6 months notice to be served of the intended construction of the development; (iii) require the developer to give at least 21 days notice of any intended use of mobile or tower cranes; and (iv) require the developer to give at least 21 days notice to Norwich International Airport prior to commencing erection of the development to allow for adequate notification to airspace users. Provided the grant of planning permission is subject to those conditions, Norwich

Airport Limited would offer no aerodrome safeguarding objection to the proposed development.

301. **Shipdham Flying Club**: by letter to the LPA, dated 6 October 2011 (document G14, application representations, page 103): The Club operates Shipdham Airfield. It hoped to start offering pilot training from the Airfield. Norwich International Airport was to extend its controlled airspace to the outskirts of Shipdham, early in 2012. That new airspace would encourage low-level general aviation (under 1500 feet) to move further to the west than at present. In conjunction with the Marham Air Traffic Zone this would create a possible low level choke point directly above Shipdham village and the proposed turbine site.

302. The Club's representation dated 20 April 2003 to the inquiry that was held in that year is more valid now than ever. The Club is concerned by the consequences of an aircraft straying from the precise position of a perfect circuit or approach and being confronted by a structure in its direct line of flight and at the same height. The problem is twofold.

303. Firstly, the proposed positioning of the turbines and their declared height puts them in possible conflict with powered aircraft and gliders using the airfield's main runway. There is also a secondary runway which when used will bring the aircraft using it somewhere between half a mile and a mile closer to the proposed turbine site. The airfield is used for converting pilots from one type of aircraft to another which means that there could frequently be a pilot on his/her first solo flight in a new aircraft in the area of the turbines.

304. Secondly, Shipdham Airfield is a registered Distress and Diversion ("D&D") airfield in accordance with CAP667 9.2(c) and is listed for this purpose in all commercial aeronautical information publications for this purpose. This means that any pilot with a problem could well be required to negotiate these turbines on their way in to the airfield, in an ailing aircraft. In this situation the pilot would normally fly the natural open corridor between Dereham town and Shipdham village but with the turbines in place that option would not be available as a primary choice and any D&D inbound aircraft would be far more likely to prefer to overfly the populated areas as the least hazardous option to the aircraft and its passengers.

305. The Airfield is registered with the CAA and holds an Aeronautical Ground Station Airfield Flight Information Service Radio Licence issued by them.

306. By letter dated 9 November 2012 (document G14, appeal representations, page 57) to the Planning Inspectorate, the Club objects to the development on the basis of its proximity to Shipdham Airfield, which is an active airfield, and the consequent risk to air traffic.

307. **Civil Aviation Authority**: raises no objection. All structures of 91.4m or more should be charted on aeronautical charts (document G14, application representations, page 228).

308. The CAA has no responsibilities for safeguarding sites other than its own property, and a consultation by a Council is taken as a request for clarification of procedural matters. Should the Council still have a specific query, the CAA will help in the clarification of aviation matters and regulatory requirements. Site

operators remain responsible for providing expert testimony as to any impact on their businesses and the lack of a statement of objection or support from the CAA should not be taken to mean that there are no aviation issues, or that a comment from an operator lacks weight.

309. **National Air Traffic Services** confirms that it has no safeguarding objection to the proposal (document G14, application representations, page 243). The report that accompanies its response explains that the appeal proposal was considered in terms of its effects on the infrastructure of radars, communication systems and navigational aids for which NATS is responsible.

310. **Defence Infrastructure Organisation**: By letter dated 15 April 2013 (document G14, appeal representations, page 67): the MoD raises no objection but asks that the turbines are fitted with 25 candela omni-directional red lighting or infrared lighting with an optimised flash pattern of 60 flashes per minute of 200ms to 500ms duration, at the highest point.

311. **Natural England**: (Hearing papers, item 6): Has no objection to the application, and supports the mitigation measures proposed for bats and for birds. A strategy for future monitoring will be required to ensure that the turbines are not impacting bird and bat populations and that any mitigation implemented is successful. Data from such a monitoring strategy will be useful in validating any modelling carried out in support of the application, as well as informing of the relative risks of this type of development to species. Natural England recommends that a post-construction monitoring strategy is made a condition of the grant of planning permission.

312. **English Heritage**: (letter dated 9 November 2011, document reference G21): The proposal will result in change to the setting of a number of highly graded heritage assets in the vicinity of the site and in some instances that change will result in a degree of harm as set out in Policy HE9 of PPS5. However, the degree of harm will not be substantial, as set out in Policy HE 9.2 of PPS5 and, when considered in the light of Policy HE 1.3 of PPS 5, it might be possible to conclude that this harm would be outweighed by the public benefit of mitigating the effects of climate change. If the appeal were to be approved, English Heritage would wish to see a condition requiring the removal of the turbines at the end of their operational life, or when they become redundant, whichever is the sooner.[132]

313. **Environment Agency**: Has no objection to the development, subject to two planning conditions as set out in their letter dated 2 September 2011 (document G14, application representations, page 231). The conditions are for the protection of groundwater quality and for the management of unexpected contaminants found during construction.

CONDITIONS

314. There was a degree of agreement between the Council and the appellant regarding suggested conditions in the event that planning permission was granted. RDG and CATS participated in the without-prejudice round table discussion at the Inquiry about suggested conditions.

[132] Council officer report, G10, page 3

315. Conditions suggested by the LPA are attached to its Statement of Case (document G16). The appellant proposed the conditions in document APP/3 early in the Inquiry and subsequently provided alternative wording in APP/11, also issued to the Inquiry. Document APPb5 explains in post-inquiry correspondence (issued by the appellant on 31 March 2014) the changes the appellant wished to make to its conditions as proposed at the Inquiry. Document APPb6 includes the draft original noise condition (APP/3) together with EAM wording newly proposed by the appellant, and a covering e-mail dated 4 April 2014. RDG suggested individual conditions (paragraphs 201 and 243 of this report).

316. No planning obligation pursuant to section 106 of the Town and Country Planning Act 1990 has been submitted. Document APP/13 sets out heads of terms for a draft obligation being considered by the appellant during the Inquiry with a view to simplifying draft condition 6 but the overall benefit to be gained seemed slight, I did not press the appellant for a full draft obligation or a completed version, and document APPb5 confirms that APP/13 was not taken forward at the Inquiry.

INSPECTOR'S CONCLUSIONS

References in square brackets [x] refer to paragraph numbers in the earlier sections of this report.

Main Considerations

317. These are:

a) The landscape and visual effects the development would have;

b) The acoustic effects the development would have; and,

c) Whether any harmful effects of the development would be outweighed by other considerations.

318. Before setting out my conclusions on the main considerations, I should first consider some general matters arising from the case.

Environmental Information

319. An Environmental Statement was submitted with the planning application for the appeal scheme. Further environmental information was submitted prior to the Inquiry, and during the Inquiry. I have taken all that environmental information into account in the preparation of this report.

"Wind Energy Development – A Statement of Breckland Council Policy" - October 2005

320. It was argued at the Inquiry that "Wind Energy Development – A Statement of Breckland Council Policy" ("document H1") includes provisions that the appeal scheme would not meet [288] and that various amounts of weight should be attributed to it [34, 152, 230-231, 287].

321. The evidence of the LPA and the Appellant is that document H1 was never part of the development plan [152, 34]. Nor was it adopted by the Council as supplementary planning guidance. Its intended purpose had been to amplify Policy ENV.25 of the earlier Local Plan (1999), and that policy has been superseded by the current Breckland Core Strategy and Development Control Policies DPD ("the LDF") [34, 15]. Any weight that Document H1 may have had by association with the 1999 Local Plan has therefore fallen away.

322. Attention is drawn to paragraph 215 of the Framework, which describes the weight to be given to relevant policies in existing plans [231]. Document H1 cannot be described as a policy in an existing plan, and so the consideration in paragraph 215 cannot apply to it. Had the LPA so chosen when preparing the LDF it would have been open to it to include all or part of Document H1 in the new document (so far as that would be consistent with contemporary policy). The decision that was made was to produce the LDF in its current form. I therefore attribute no weight to Document H1.

Development Plan Policies and Paragraph 215 of the National Planning Policy Framework

323. The LDF was adopted in December 2009. In accordance with paragraph 215 of the Framework it is necessary to consider the degree of consistency of relevant policies in the LDF with the Framework.

324. The Council has identified the following LDF policies as relevant: CP11, CP12, DC1 and DC15 [16].

325. I consider that, insofar as they refer to matters relevant to this appeal:

(i) LDF Policy CP11 (Protection and Enhancement of the Landscape) is consistent with the Framework through Framework paragraph 17;

(ii) LDF Policy CP12 (Energy) is consistent with the Framework through Framework paragraphs 17 and 97;

(iii) LDF Policy DC1 (Protection of Amenity) is consistent with the Framework through Framework paragraph 17;

(iv) LDF Policy DC15 (Renewable Energy) is consistent with the Framework through Framework paragraphs 17, 97 and 98.

326. Full weight should therefore be attributed to those policies insofar as they relate to matters relevant to this appeal.

First Main Consideration: The Landscape And Visual Effects The Development Would Have

327. Here I consider:

(i) The extent to which the appeal development would be sympathetic to landscape character, and its design informed by the Council's Landscape Character Assessment ("the LCA"), both as considered by Policy CP11 and Policy DC1 [16];

(ii) The quality of the development design as considered by Policy CP11;

(iii) The effect the appeal development would have on local amenity and/or residential amenity by virtue of dominance or unacceptable visual intrusion, as considered by Policy DC1 and DC15.

Effect on Landscape Character

328. When I visited the site I saw it to be working farmland, gently undulating and with intermittent tree planting and hedgerows. The evidence is that the landscape character here is of the Plateaux Farmland and the Settled Tributary Farmland types – the site is at the transition between the two [47].

329. The LPA has published guidance (document E12) on the capacity of the landscape in Breckland to accommodate wind turbines of about the size proposed [48]. It was produced in accordance with guidance issued by the Countryside Agency and Scottish Natural Heritage, which I regard as reliable. When evaluated in accordance with the LPA's guidance, and on the premise that a group of 2 to 12 turbines is under consideration, the finding of the Appellant and

that of the LPA is that the landscape has a moderate capacity for groups of up to 12 such turbines [49, 159 to 38]. The appeal proposal is for 2 turbines.

330. Having visited the area and viewed the site from numerous distances and directions, I am satisfied that the landscape could accommodate the development without key characteristics of the landscape being adversely affected over more than a limited area. The landscape as experienced at locations within a relatively short distance of the turbines would include the pair of turbines as a defining feature; but when viewed from locations further away the turbines would appear as a smaller component of the landscape, which would retain the same character that it has now.

331. The Appellant estimates that, while there would be a significant change in the landscape character due to the scheme, that change would be limited in extent to within about 1km of the turbines [52]. The Council draws attention to views across the site looking north-east from Bradenham Road [158], in which it says the turbines would dominate the landscape. Such a view is to be found as photomontage viewpoint 2 in figure 5.10 of the ES, in which the distance to the nearest turbine is 1.23km. This is one of the locations from which I viewed the site, and it seems to me to be at the outer limit of the distance within which the development would cause a significant change in the character of the landscape.

332. Within that zone, the development would bring a change to the landscape which the landscape has capacity to accommodate. The landscape has no special designation [45]. I conclude that the change to the character of the landscape would not be significantly harmful. The scheme's design has regard to the findings of the Council's Landscape Character Assessment, and other guidance issued by the Council [46]. The requirements of Policy CP11 and Policy DC1 that relate to the scheme's effects on the landscape would be met.

The Quality Of The Development Design

333. The Council refers to the appeal development as large-scale metallic structures, comprising a mechanised and industrial type of development, with an engineered appearance, and having an alien and suburbanising influence on the landscape [165, 166]. I agree that the two turbines would be of a larger scale than other development in the area; but by virtue of the open nature of the landscape and its capacity to accommodate such development I do not accept that the scale of the turbines would be so great as to be harmful in the landscape. I consider matters of amenity in a subsequent paragraph.

334. The tower would be made of steel but it and the blades would be painted [23, 24] and so there would not be a metallic appearance. Other turbine developments in Breckland that were mentioned at the Inquiry are predominantly in open country [14] and so, in that context, I do not agree that the development would have a suburbanising influence. And, as wind turbines become increasingly common in the countryside, it seems to me increasingly inappropriate to classify them as "alien".

335. It appears to me that the form of the appeal turbines would be appropriate to their scale and function. They would be well-proportioned. Their finishes would complement their setting. Their scale would be suitable for their setting. Overall they would be of a generally similar form to turbines that have been approved at numerous other locations.

336. I therefore conclude that the appeal scheme would meet the requirement of Policy CP11 in respect of design.

The Visual Effect on Local Amenity

337. Policy DC1 forbids development that would have unacceptable effects on the amenities of the area or of residential amenity by virtue of (among other things) dominance. Policy DC15 sets a presumption in favour of wind turbine development subject to various caveats, one of which precludes such development that would have a significant detrimental impact or a cumulative detrimental impact on local amenity as a result of (among other things) outlook through unacceptable visual intrusion [16].

338. CATS points out that both of those policies rely on a value judgement as to the extent to which the effects of development would (or would not) be acceptable [281]. In my experience that is not an uncommon thing for a development plan policy to do. And the approach that CATS suggests, in order to avoid what is termed the "one-sided judgement of expert witnesses", involves the answering of such questions as "Is the visual impact significant?"; another value judgement [281 - 285].

339. Paragraph 4.10.2 of the Overarching National Policy Statement for Energy provides a reminder that the planning system controls the development and use of land in the public interest. In terms of visual amenity, this translates into the long-established principle that there is "no right to a view", meaning that it is not possible to protect a property simply on the basis that an attractive or cherished view would be adversely affected by development. It has become an accepted principle that when turbines would be present in such number, size and proximity that they would become an unpleasantly overwhelming and unavoidable presence in main views from a house or garden, there is every likelihood that the property concerned would come to be widely regarded as an unattractive and thus unsatisfactory (but not necessarily uninhabitable) place in which to live. It may not be in the public interest to create such living conditions where they did not exist before. Private and public interests could coincide in such a way that the outlook from a dwelling would be so harmed as to be generally regarded as unacceptable.[133]

340. My findings in respect of the individual properties within about 1km of the site are as follows:

(i) Wyrley Farm – the appeal site is some 670m west of the house [59]. A main aspect of the house faces north-west. The turbines would be seen from the house's main aspect only in oblique views. Mature trees and other amenity planting in the garden would filter views from the garden toward the turbines. The property would remain an attractive place to live.

(ii) Wood Farm – The nearest turbine would be some 750m north north-west of the dwellings [59]. The dwellings principally face away from the site, toward a pool feature. Small windows look out to the north across a parking area. All but one of the dwellings here are single-

[133] Linked appeals 2181777 and 2184954: document D34

storeyed and the taller one faces broadly east. The bush screen to the north would filter and screen the view of the turbines from the gardens and ground-floor windows. An effect of these factors would be to offset the visual effect mentioned by CATS as being caused by the relative positions of Wood Farm and the two turbines [278]. These properties would remain attractive places to live.

(iii) Brick Kiln Farm and Stable Cottage are neighbouring buildings, some 750m north north-east of the nearest turbine site [59]. The main elevations of the Farm house face broadly east and west but habitable rooms look out of side windows to the south. Windows in the main aspect of Stable Cottage face south. The substantial garden to these properties is largely mature woodland, including the area to the south and south west of the dwellings. The trees would filter and screen views of the turbines from the buildings and from the garden so that these properties would remain attractive places to live.

(iv) Brick Kiln Cottage is some 860m north north-east of the nearest turbine [59]. The main aspect of the house faces south, looking across a main part of the garden to a wooded area and the turbines site. A smaller area of garden in the west of the property has a more open outlook towards the site. The trees would filter and screen views of the turbines from the house and the garden area to its south. The intrusive effect the development would have on the smaller western garden would not be unavoidable. Brick Kiln Cottage would remain an attractive place to live.

(v) Jubys Farm, Jubys Cottage and Jubys Barn are three dwellings some 960m north north-west of the nearest turbine site. The Farm and the Cottage face south, toward the site, and there would be views of the turbines from the garden of the Barn. Due to the intervening land form the full height of the turbines would not be apparent from here. The whole development would subtend a relatively narrow horizontal angle in views from here (some 2 degrees) [59]. Due to its distance and reduced apparent size the development would not be overwhelming at these properties, which would therefore remain attractive places to live.

(vi) Highfields Bungalow was included in the accompanied site visit at the request of its occupier. It is slightly more than a kilometre from the nearest turbine, to the north of Leys Farm. During my visit [13] I saw that the outlook towards the turbines site is from a kitchen window and a bedroom window, and across a parking area in from of the bungalow. The turbines would be partially screened by farm buildings at Leys Farm. The main aspect of the bungalow would not be affected. This would remain an attractive place to live.

(vii) Leys Farm house is some 940m northwest of the nearest turbine site [59]. Views from the main aspect of the house towards the development would be oblique (the house faces south), filtered by trees on the farm and also limited from the garden by farm buildings. This would remain an attractive place to live.

(viii) Manor Farm house is some 800m to the west southwest of the nearest turbine [59]. Its main aspect faces west and the garden is on the

western side of the house. Large farm buildings close to the house would limit the visual impact of the turbines here. Manor Farm house would remain an attractive place to live.

341. I also considered other properties, more than 1000m from the nearest turbine [59], but found none at which the appeal scheme would have such a serious effect on living conditions that the property would cease to be an attractive place to live.

342. I therefore conclude that no residential property would be subjected to unacceptable visual intrusion, and so Policies DC1 and DC15 would be satisfied in that respect.

343. As to the visual amenity of public highways, I am satisfied that there would be no unacceptable effect due to dominance, nor would there be a significant detrimental impact to local amenity as a result of unacceptable visual intrusion. Policies DC1 and DC15 would therefore be satisfied in those respects.

Cumulative Visual Effects

344. The Appellant and the Council agree that no additional significant effects would arise in relation to the proposed wind park due to cumulative changes to the landscape and visual environment, that no cumulative effects on designated landscapes would occur and that there would be no cumulative landscape and visual effects on designated cultural heritage [27]. I find no reason to differ.

The Council's Reason for Refusal of Planning Permission

345. The decision notice [145] refers to the scheme's effect on the landscape, upon which I have concluded, and to Policy DC12 [17]. The reference, in the Notice, to Policy DC12 was agreed by the Council to be an error. It seems to me that no conclusion on my part is necessary here in respect of that. If, however, it was held that Policy DC12 should have a bearing on the outcome of the appeal then the following considerations appear relevant to me.

346. There is no evidence that the appeal scheme would result in the loss of, or deterioration in the quality of, any important natural feature. The scheme would cause no tree or hedge loss and there is no contention that necessary landscaping is omitted from the scheme. Therefore, the appeal scheme would not be at odds with Policy DC12.

Conclusion on Landscape and Visual Effects

347. I conclude that the scheme's landscape and visual effects would satisfy the requirements of the development plan and would be acceptable.

348. I note that previous Inspectors, having considered nearby proposals for similar development, reached similar conclusions.

Second Main Consideration: The Acoustic Effects The Development Would Have

Introduction

349. Policy DC1 of the LDF forbids development that would have unacceptable effects on the amenities of the area or of residential amenity by virtue of (among

other things) noise. Policy DC15 sets a presumption in favour of wind turbine development subject to various caveats, one of which precludes such development that would have a significant detrimental impact or a cumulative detrimental impact on local amenity as a result of (among other things) noise [16].

350. The Framework confirms at paragraph 3 that the National Policy Statements should form a material consideration in decisions on planning applications. Footnote 17 of the Framework recommends the use of the NPS for Energy ("EN-1") and the NPS for Renewable Energy Infrastructure ("EN-3") in determining planning applications for wind energy development. Because they are expressions of national policy, I attribute very substantial weight to the National Policy Statements.

351. Paragraph 2.7.56 of EN-3 says that the applicant's assessment of noise from the operation of the wind turbines should use ETSU-R-97, taking account of the latest industry good practice; and that this should include any guidance on best practice that the Government may from time to time publish.

352. On 20 May 2013 the Institute of Acoustics' "A Good Practice Guide to the Application of ETSU-R-97 for the Assessment and Rating of Wind Turbine Noise" was published (document F4; "the GPG"). The GPG has the endorsement of the Secretary of State for Energy and Climate Change. I consider it to be updated guidance issued in relation to ETSU-R-97, of the sort referred to in paragraph 2.7.56 of EN-3.

353. Paragraph 2.7.57 of EN-3 says that decision makers should use ETSU-R-97 to satisfy themselves that the noise from the operation of the wind turbines is within acceptable levels. Paragraphs 2.7.58, 2.7.59 and 2.7.61 provide for compliance with ETSU-R-97, failure to comply with ETSU-R-97 noise limits, and the use of planning conditions (expressed as "requirements", using the terminology of the Planning Act 2008).

354. I therefore consider:

(i) Whether the Appellant's assessment of noise from the operation of the wind turbines properly uses ETSU-R-97 while taking account of the latest industry good practice set out in the GPG; and, if so,

(ii) The findings of the noise assessment, in the light of EN-3 paragraphs 2.7.57 to 2.7.59 and 2.7.61.

(i) Use Of ETSU-R-97 And The GPG

355. The Appellant's case is that its assessment of noise complies with ETSU-R-97 and takes account of the GPG [71 to 100].

356. Residents of Daffy Green ("RDG") take a different view, in matters which I consider in the following sub paragraphs:

(i) **The candidate turbine** – The noise assessment relies on the use of a turbine type which RDG considers to be too quiet to allow a reliable assessment [178(i)]. The Appellant replies that candidate turbine is representative of the type of turbine being considered for the scheme and that the choice accords with good practice as set out in the GPG

[79, 78]. It seems to me desirable for the promoter of a wind farm to base the noise assessment on the noise made by a turbine similar to that which is expected to be used. To use a noisier turbine could result in unnecessary refusal of planning permission on noise grounds, while to use one that is significantly quieter could lead to expectations of low noise levels that could not be met. And the Appellant's record is that all of the 52 turbines it had installed elsewhere at the time of writing the ES were of the same manufacture as the candidate now proposed [78]. I find no fault in the Appellant's choice of candidate turbine.

(ii) **Standardisation** – ETSU-R-97 requires correlation of noise data with wind speed data. Wind speed varies with height above ground. ETSU-R-97 addresses this in two ways. One way – direct measurement - is stated in the final paragraph of ETSU-R-97 page 84: "The [noise] limits proposed are therefore set in relation to the existing background noise level at wind speeds up to 12m/s measured on the wind farm site at 10m elevation." Another way – standardisation - is stated in the penultimate paragraph of ETSU-R-97 page 85: "We propose that [wind speed] measurements should be corrected should be corrected to a standard height of 10m using the procedure described under "wind shear" in the Glossary. The recommendations for noise limits have been made assuming wind speed measurements corrected to 10m." RDG provided data [207 to 216] from which it is apparent that the standardisation method can result in a planning condition that would permit from 2dB to 4dB more noise than would result from use of direct measurement. This suggests that the two methods in ETSU-R-97 give different results. The point is addressed by paragraph 2.6.2 of the GPG, which includes this: "The standard procedure should be to reference noise data to standardised 10m wind speed. The standardised 10m wind speed is obtained from the turbine hub height wind speed by correcting it to 10m height using a ground roughness factor of 0.05: see Annex A." The evidence is that the applicant has followed this updated guidance and in that respect has taken proper account of the latest industry good practice set out in the GPG.

(iii) **Sound power level** – The Appellant contends that its assessment is conservative in respect of the allowance it makes for the noise emission levels for the candidate turbine; the emission value assumed as a basis for the calculations are 2dB or more greater than typical tested values [80]. This provides a margin for uncertainty in accordance with the GPG [80]. RDG argues that the GPG is flawed in that it relies on a misinterpretation of research papers [218 to 221]. But it is not my purpose to examine guidance endorsed by the Government. The evidence is that the noise emission levels for the candidate turbines have been assessed in accordance with the GPG [80], and there is no reason for me to conclude otherwise. The noise assessment is therefore acceptable in that respect.

(iv) **Ground factor, G** – The assessment uses a value of G=0.5, as set out in the GPG [83]. RDG contends that the use of G=0.5 results in significant under-prediction of noise immissions, and brought evidence to support its position [178(iii), 222 to 224] which the Appellant disputes [84, 85]. However, there is no dispute that the Appellant's

noise assessment follows the recommendation of paragraph 4.3.4 of the GPG: "For consistency it is recommended to use a ground factor of G=0.5", and in Summary Box 20 "With the exception of propagation over large bodies of water or in urban areas, it is recommended to use a ground factor of G=0.5, in combination with emission levels which include a margin of uncertainty." The noise assessment is therefore acceptable in that respect.

(v) **"Headroom"** – the margin between predicted noise levels at particular locations, and noise limits that would be set by a planning condition. The tables that follow paragraphs 87 and 88 of this report reproduce the Appellant's assessment of the "headroom" at various locations and in various circumstances. RDG contends that, due to the Appellant's approach in respect of sound power level and the ground factor, the Appellant has very substantially under-predicted immissions and that noise from the development would substantially exceed the limits agreed with the Council [224 to 229]. But, for the reasons given elsewhere in this paragraph, the noise assessment is acceptable in respect of both of those elements. Therefore the analysis which led to the headroom predictions, which relies on the application of those elements in a standard way, is itself acceptable.

357. I therefore find that the Appellant's assessment of noise from the operation of the wind turbines properly uses ETSU-R-97 while taking account of the latest industry good practice set out in the GPG.

(ii) The Findings Of The Noise Assessment

358. The Appellant's noise assessment includes the following:

(i) A description of the noise generating aspects of the development [78 to 80]. Additionally, tonal impulsive and low frequency characteristics of the noise are considered [92, 93, 102, 103].

(ii) Identification of noise-sensitive premises that may be affected [73];

(iii) The characteristics of the existing noise environment [73];

(iv) A prediction of how the noise environment would change with the proposed development

(a) in the shorter term such as during the construction period, including traffic effects in Church Lane [70, 132 to 133], and

(b) in the longer term during the operating life of the development [87, 88], and

(c) at particular times of the day, evening and night as appropriate [76];

(v) An assessment of the effect of predicted changes in the noise environment on any noise sensitive premises [87, 88];

(vi) No measures for mitigating noise, other than the choice of candidate turbine.

(vii) An assessment of operational noise on human receptors, using the guidance of ETSU-R-97 and the GPG.

(viii) An assessment has been made of the effect of noise from the development on protected species and other wildlife [108] and Natural England has been consulted [311].

359. I am therefore satisfied that the Appellant's assessment of noise associated with the appeal proposal meets the relevant requirements of paragraphs 5.11.4 to 5.11.7 of EN-1, the Overarching National Policy Statement for Energy.

360. Operational noise upper limits, derived in compliance with ETSU-R-97, have been identified and agreed between the Appellant and the LPA [76, 77], and I find no fault with those limits. The Appellant's assessment of noise finds that noise immissions would not exceed those limits.

361. Paragraph 2.7.58 of EN-3, the National Policy Statement for Renewable Energy Infrastructure, provides that "Where the correct methodology has been followed and a wind farm is shown to comply with ETSU-R-97 recommended noise limits, the [decision maker] may conclude that it will give little or no weight to adverse noise impacts from the operation of the wind turbines." I therefore consider whether any other consideration has been identified in this case that could influence the exercising of the discretion offered by paragraph 2.7.58. Such considerations will be only those which are not reflected in ETSU-R-97 or the GPG. They were argued to include: tranquillity, amenity, the frequency of likely breaches of a "noise" condition, excess amplitude modulation, and effects on health and elderly people.

362. **Tranquillity** – Background noise levels have been observed in the area to often be unusually low [182], and "peace and quiet" has been identified by CPRE as one of the ten major acoustic contributors to tranquillity [109]. CATS draws attention to "Wind Energy Development – A Statement Of Breckland Council Policy" in this context [288] but, for the reason I have given in my paragraph 322, I attribute no material weight to that document. However, paragraph 123 of the Framework says that planning decisions should protect prized tranquil areas and it is clear to me that the appeal scheme would at times increase noise levels in an area of tranquillity where tranquillity is prized by residents. Such increases would be likely to occur when wind speeds increase, and at those times tranquillity would tend to be reduced even without the scheme; when the air is still the turbines would make no noise. But the evidence of the ES (Appendix 10.4, chart D8, to which RDG refers [187]) is that the "best fit" curve representing night-time background noise levels at Brick Kiln Farm remains below 20 dB(A)L_{90} at wind speeds of up to about 4 metres per second (standardised, 10m); this seems to me to indicate a noise level consistent with tranquillity in conditions in which one might expect a turbine to operate.

363. There is no objective way to measure tranquillity [111] and so it is not directly established that, as a result of the scheme's changes to the noise environment, tranquillity would be appreciably reduced at any prized tranquil location. The appellant refers to CPRE's lists of "top ten" factors relating to tranquillity [109], but the absence of wind turbine sound from those lists does not seem to me to be convincing evidence of the effect of turbines on tranquillity. Nevertheless, it seems to me that noise from the scheme would on at least some occasions lead to a reduction in prized tranquillity, by adding to what the appellant terms the

"soundscape" of the area [110]. RDG calculates that Wyrley Farm (for example) would experience a loss of amenity due to turbine noise for 9% of the evening and night [187]; but the use of G=0 in that calculation is a departure from good practice as stated in the GPG, and detracts from the authority of the finding.

364. The Planning Practice Guidance on Noise says at reference 30-012-20140306 that there are no precise rules relevant to identifying areas of tranquillity, and that for an area to be protected for its tranquillity it is likely to be relatively undisturbed by noise from human caused sources that undermine the intrinsic character of the area. I am in no doubt that the appeal site is in such an area, and that those who live in that area prize it for its amenity value for that reason even though some sounds of human activity can be heard at times [110]. And tranquillity can exist without being numerically defined. The guidance of paragraph 123 of the Framework is that areas of tranquillity, relatively undisturbed by noise and prized for their amenity value for that reason, should be protected. The operational noise limits agreed by the appellant and the Council, which are consistent with ETSU-R-97 [76, 77], would allow additional noise in the area from the development and so the tranquillity of the area would not be protected. That would be contrary to Framework paragraph 123 and so should weigh against the scheme. The current degree of tranquillity is not profound and so I attribute moderate weight to the harm.

365. **Amenity and Noise** – In its consideration of tranquillity, RDG presents an assessment of effects the scheme would have on residential amenity through noise [187, 188]. The case is put that the scheme would cause noise increases at sensitive locations for part of the time during evening and night, of such magnitude that (when considered in the light of BS4142) there would be a "significant" or "major" loss of amenity. It seems to me that an effect of that approach if taken to a logical conclusion would be to establish noise limits on the basis of specific margins above background noise levels.

366. The application of such an approach in low-noise environments is considered in ETSU-R-97. The relevant passage includes this extract, taken from page 63 of ETSU-R-97:

"The Noise Working Group has therefore concluded that in low noise environments the daytime level of the $L_{A90,10min}$ of the wind farm noise should be limited to an absolute level within the range of 35-40dB(A). We believe that limits within this range offer a reasonable degree of protection to wind farm neighbours without placing unreasonable restriction on wind farm development. The levels are low compared to some of the advisory documents reviewed and this is because of our concern to properly protect the external environment. "As the night-time lower fixed limit is greater than the day-time limit, the night-time limit could become superfluous unless background noise levels are less during the night than during the quiet day-time periods. Where the local authority and the developer are in agreement that the background noise levels do not vary significantly between the quiet day-time periods and the night-time, then a single lower fixed limit of 35-40dB(A) can be imposed based upon background noise levels taken during quiet day-time periods and the night analysed together."

367. Such an approach has been taken in this case, and absolute lower fixed limits have been agreed by the Appellant and the LPA [76, 77]. The matter of noise-related amenity is therefore addressed through the use of ETSU-R-97.

368. **Breaches Of Noise Limits** – RDG argue that the application of anemometry records and other data show that the proposed noise condition would be breached, for example at Wyrley Farm for between 1% and 32% of the time, depending on various alternative modelling scenarios [186]. In so doing, RDG have set the ground factor G to be zero, whereas the recommendation of the GPG, and current good practice, is that G=0.5. This difference detracts from the authority of RDG's assessment, and so I attribute little weight to it.

369. **Excess Amplitude Modulation** – The GPG (and through it ETSU-R-97) says in its paragraph 7.2.1 that:

> "The evidence in relation to "Excess" or "Other" Amplitude Modulation is still developing. At the time of writing, current practice is not to assign a planning condition to deal with AM."

370. It was recognised at the Inquiry and in post-Inquiry correspondence that, should EAM arise from the appeal development, a means of control of EAM noise would be necessary to protect living conditions. Opinions differed as to the likelihood of EAM arising here but there was no dispute that it might [124, 174, 197]. Candidate planning conditions were suggested, drawing for example on published research by Renewable UK [125 and 127], on a previous decision in West Devon ["Den Brook", 201], and on an approach which seeks to anticipate developments in the understanding of EAM [174]. Each of these was opposed, on various grounds [236, 115, 202] and the Institute of Acoustics has reportedly noted that the Renewable UK condition lacks testing and validation that would be necessary for it to become recognised as good practice [126].

371. For my part, it is a matter of fact that none of the conditions promoted through the Inquiry to control EAM was shown to be consistent with the GPG (and through it ETSU-R-97). Nor does it seem to me that the suggested conditions have been shown to be enforceable [example at 202], precise [example at 115] and reasonable in all other respects [example at 240/241].

372. Statutory nuisance procedures offer another means of control of EAM associated with wind turbines, and have been relied upon in other cases by (variously) the Secretary of State, Inspectors and at least one Examining Authority [117]. Such an approach is wholly consistent with current good practice expressed in the GPG, notwithstanding the difficulties experienced by some local authorities in taking action under statutory nuisance legislation [204].

373. I therefore conclude that if planning permission were granted for the appeal development, there should be no condition regarding EAM.

374. **Effects on Health and Elderly People** – CATS drew particular attention to the scheme's effects on conditions in the Shipdham Manor Care Home and the proposed residential units (for which planning permission has been granted) at Wood Farm. The effects in question relate to operational noise and to noise during construction of the turbines, access track and other parts of the scheme. The Care Home is used by people with dementia (among others) and the Wood Farm development is expected to do so as well. Dementia causes disruption of

the sleep/wake cycle, so that residents may need to sleep during the day. Guidelines published by the World Health Organisation indicate bedroom noise levels above 30dB affect sleep, with vulnerable adults and the chronically ill most susceptible. Adverse health effects are observed above 40dB [263 to 267, 271 to 273].

375. In this appeal, the same noise limits would be set for all times of day [77]. The WHO "Night Time Noise Guidance for Europe" cannot be expressed in terms that are consistent with ETSU-R-97 [107] and in any event it seems to me that an index based on the average of a year's data might provide only limited comfort to residents who stay at the Home on average for 19.6 months [264]. The WHO Guidelines for Community Noise say that an internal noise level of 30 dB $L_{AEq,T}$ is required for undisturbed sleep [106, 267]. The corresponding external noise level in the terms of ETSU-R-97 may be expressed as 40 dB L_{A90} free field [106]. The predicted external noise level at the Home would be less than 35 dB L_{A90} [105].

376. At Wood Farm, by combining predicted noise level data [87] and operational noise limit data [77] I find that the predicted external noise level with the candidate turbine would not exceed 38 dB L_{A90}.

377. I conclude that operation of the appeal scheme would not create noise such as would be likely to prevent sleep by the residents of the Care Home or the proposed facility at Wood Farm.

378. As to infrasound [104, 272], the evidence of the World Health Organisation is that below the threshold of audibility no physiological or psychological effects are produced, and the unchallenged evidence of the Appellant is that infrasound from the operation of the development would be imperceptible at all noise-sensitive receptors [103]. The scheme would not give rise to harm to health through infrasound at any noise-sensitive receptor.

Overall Weight To Be Given To Adverse Noise Impacts From The Operation Of The Wind Turbines

379. The correct methodology has been followed and it has been shown that the appeal development would comply with ETSU-R-97 recommended noise limits. A planning condition would be necessary to ensure that the operational noise levels from the development do not exceed those described in the assessment. Beyond those considerations, I have found that the scheme would lead to a reduction in prized tranquillity, which would be contrary to paragraph 123 of the Framework. Subject to those provisos, I conclude that no weight should be given to adverse noise impacts from the operation of the wind turbines.

380. I am conscious that two of my three predecessor Inspectors rejected similar schemes on grounds which included noise. It may be that the evidence available to those Inspectors differed from that which was before me. In any event, my conclusion rests on (among other things) current National policy and the GPG, which were not available to previous Inquiries.

Other Acoustic Effects: Construction Noise

381. Traffic associated with the construction of the turbines and the access road would pass along Church Lane periodically over about 20 weeks, and the associated noise could disturb residents of the Scalford Manor Care Home [132,

133, 268]. Although an assessment of construction noise in accordance with BS 5228-1 has found that the effect could be classified as "not significant", many of the Care Home residents are particularly sensitive to noise.

382. A planning condition is proposed which would require the wind farm developer to co-operate with the management of the Care Home in respect of the scheduling and timing of visits along Church Lane by heavy goods vehicles and abnormal loads going to or from the site. The temporary harm to living conditions in the Care Home due to construction traffic would in my view be very limited and, in the terms of Policy DC1 and Policy DC15, acceptable.

Third Main Consideration: Whether Any Harmful Effects Of The Development Would Be Outweighed By Other Considerations

Other Potentially Harmful Effects

383. In addition to the developments landscape and visual effects, and its acoustic effects, various other matters were raised in which there was said to be potential harm.

384. **The Settings Of Listed Buildings** – Bradenham Parish Council contends [299] that the development would harm the settings of All Saints Church at Shipdham (grade I) and Manor Farm (grade II). All Saints Church stands in the heart of Shipdham. The Appellant contends that the development would have no effect on the setting of the Church [136], and I find no reason to disagree.

385. English Heritage was consulted by the Council and considered that, although there would be change to the settings of a number of heritage assets, the degree of harm would not be substantial [312].

386. There are two listed buildings at Manor Farm: the House and the Barn. When I visited [13] I saw that the Barn is a little way closer to the turbine site than is the House. Both are grade II. The setting of each (that is, the surroundings in which each is experienced) would be affected by the scheme [136]. The scheme's effect on the visual aspects of residential amenity here (that is, at the House) is assessed by the Appellant to be "moderate" [58] and it seems to me that the same visual relationship between the turbines and the House would result in a degree of deterioration in the setting of the House. And, because it is so close to the House, the Barn's setting would be similarly affected.

387. The appeal turbines would be clearly visible in this context and their introduction would be a further step in the process of compromising the setting of the two listed buildings that is already under way through the adjacent 20th century development. The presence of those newer buildings (which are of sizes and types not out of place on a working farm such as this) would not take away the harm; nor would the fact that grade II is the lowest grade of Listing [136].

388. It is clear that the nearby countryside, with its farmland character, is an important part of the setting of the House and the Barn. The appeal development would significantly alter the character of the landscape in that the turbines would be perceived as a defining characteristic of the landscape at distances of up to approximately 1km [40, 52]. The House at Manor Farm is assessed by the appellant to be 800m from the development, although an objector considers the Barn to be at that distance and the House to be "a little over 900m" [59, 279]. Thus the House and the Barn are in a zone in which the

character of the landscape would significantly change, from its current character drawn from agriculture and the natural environment with farmstead buildings of traditional form, to a character whose defining characteristics would include the appeal wind turbines. That change in the landscape character would in my view be to the detriment of the settings of the listed buildings in that the historic associations between the listed buildings and the landscape in which they are set would be disturbed and diluted. In my view the harm to the setting of the House and the Barn would of a degree that should be classified as slight.

389. The ES also draws attention to the development's effects on the setting of St Mary's Church, at Bradenham, and the setting of St Andrew's Church at West Bradenham [137, 138]. In each case the turbines would be visual intrusions, small in scale by virtue of the distance, into the landscape which forms part of the visual setting of the Church; but other aspects of the setting of each Church, such as the functional relationship with the nearby settlements (of Bradenham and West Bradenham) would be unchanged. There is no dispute that the harmful effects of the scheme on those settings of grade I listed buildings would be minimal, as the ES finds and, for the reasons given, I agree.

390. Policy DC17 of the LDF ("Historic Environment") includes the following provision, among others: "Where a proposed development will affect the character or setting of a Listed Building, particular regard will need to be given to the protection, preservation and enhancement of any features of historic or architectural interest." No case is put that any feature of historic or architectural interest in the setting of any listed building, or in any listed building, would be affected by the scheme. It therefore seems to me that in that respect the development would satisfy Policy DC17.

391. Having regard to the judgement in the Barnwell Manor case, it seems to me that it does not follow that if the harm to listed buildings or their settings is found to be less than substantial, the subsequent balancing exercise undertaken by the decision maker should ignore the overarching statutory duty imposed by section 66(1) of the Planning (Listed Buildings and Conservation Areas) Act 1990. This provides that:

> "In considering whether to grant planning permission for development which affects a listed building or its setting, the local planning authority or, as the case may be, the Secretary of State shall have special regard to the desirability of preserving the building or its setting or any features of special architectural or historic interest which it possesses."

392. There is therefore a need to give considerable weight to the desirability of preserving the setting of all listed buildings in this appeal, including Grade 2 listed buildings as well as Grade 1 listed buildings.

393. **Shipdham Conservation Area**: the finding of the ES is that the setting of this conservation area would be subject to minimal change [139], which I understand to correspond to minimal harm to the setting of the Conservation Area. That would be contrary to the requirement of LDF policy DC17 that new development will be expected to preserve and enhance the setting of conservation areas. But it seems to me that the harm would be very slight, for the reasons given by the appellant, and I therefore attribute little weight to that harm.

394. **Aviation** – Conditions are suggested by Norwich Airport Limited and by the Defence Infrastructure Organisation which would satisfy their individual interests in respect of air safety [300, 310]. The Council took the view [172] that air safety is not an obstacle to the scheme because neither the National Air Traffic Service or the Civil Aviation Authority had objected to the scheme; but the perspective of NATS was limited to radar, communications systems and navigational aids for which NATS is responsible, while the CAA is clear that the lack of a statement of objection from the CAA should not be understood to mean that there are no aviation issues [309, 307]. In the light of those positions, I consider the written representations put by Shipdham Flying Club [301].

395. Much of those representations would be familiar to the Inspectors who heard the first and second Inquiries. Their reports are presented as documents D23 and D24, and the Club has explained that the evidence it previously gave (regarding the risk of collision the turbines would present to aircraft using the Airfield) is more valid now than ever. That evidence related to airfield use by what I will term "ordinary" flyers, by trainee pilots, and in connection with Shipdham's role as a registered Distress and Diversion airfield. On that basis, the 2003 Inspector concluded that aircraft safety issues were not sufficient to justify refusal of the proposal; and the Inspector in 2006 found the same.

396. Subsequently, proposed changes to the controlled airspace associated with Norwich International Airport are likely to concentrate low-level general aviation traffic (below 1500 feet) directly above Shipdham village and the appeal site so as to create a possible low level choke point [301]. The appeal scheme would introduce a hazard to flying in that area and would thus increase the risk to air traffic to a greater extent than previously considered, and that must weigh against the scheme.

Other Considerations

397. **Renewable Energy** – The appellant, using UK average capacity factors, estimates the annual energy output from the development to be some 11.17GWh and the associated reduction in carbon dioxide emissions to be 4803 tonnes annually [144]. RDG relies on site-specific wind speed data and estimates the output to be 7.08 GWh per year, with a proportionate reduction in carbon dioxide saving [247]. Government policy clearly states that the amount of renewable generation capacity must increase substantially [30 to 32] and the National Planning Policy Framework (in, for example, its paragraphs 17, 93 and 97) emphasises that [28, 29]. I am satisfied that the appeal scheme would provide a valuable contribution to cutting greenhouse gas emissions, and I attribute substantial weight to that.

398. The turbines would have a 25-year life, and would then be removed from the site [41]. Harm associated with them would be limited to that period (subject to a condition). So would the benefit, and they would make no contribution to the long-term target of cutting greenhouse gas emissions by 80% by 2050. It seems to me that, in balancing harms and benefits, no special allowance need be made as a result of the limited life of the turbines.

399. **The planning concerns of local communities** – The need for renewable energy does not automatically override the planning concerns of local communities [149]. Assessments of the spatial distribution of interested parties who supported the appeal, and those who opposed it, were submitted [143;

292]. Over 2000 people are reported to live in Shipdham [263] and respondents also live outside the village. Of those whose views and locations were known, those who live near the appeal site oppose the scheme on the whole, while a majority of those further away support it. Overall, responses to the planning application were reportedly divided; 129 expressed support and 82 objected. I draw no weighty conclusion from that.

400. **Figure 4.2 of the ES** was claimed by objectors to be in error in that the whole of Church Lane is shown to be in the site [291]. I note that the application was accepted by the Council. In any event, no development would take place in the area in question and there was no contention that the Construction Traffic Access Route, which would pass along Church Lane, would not be available.

401. **Other development plan policies** were cited by CATS:

(a) LDF Policy CP6 [290] (document A1) refers to Green Infrastructure (defined in the Reasoned Justification) which will be protected and enhanced, and to which all new development will be expected to contribute. The nature of the contribution is not stated. The scheme would not affect existing Green Infrastructure which, to that extent, would be protected. The Council officer report does not identify Policy CP6 as relevant to this appeal, and no condition relating to the policy was suggested.

(b) LDF Policy CP10 [290] seeks the enhancement of biodiversity and geodiversity, which conditions 22 and 23 would, to my mind, address. Condition 22 refers to section 8.83 of the ES which describes measures to offset harm the development might cause to birds. Condition 23 would secure construction and decommissioning mitigation, and measures for the benefit of birds including small areas of ground left bare for skylarks, beetle banks, allowing some weed growth, and improving existing/creating new hedgerows (ES paragraph 7.182). The extent of those measures is yet to be determined and so I attribute little weight to them.

(c) LDF Policy DC10 [293] is about telecommunications and seems to me to have no connection with the scheme. The context in which this policy is raised is that of wildlife, and it may be that CATS had in mind policy CP10.

Conditions

402. Appendix 1 to this report sets out conditions, relating to the development, that would be compliant with Framework paragraph 206. Those conditions were compiled on the basis of submissions by the parties [315] and representations made at the round-table conditions session at the inquiry. There was a degree of agreement among the parties in respect of most conditions, but there was disagreement as I have reported on some, particularly relating to noise and to EAM [115, 116, 202, 242, 252 to 259]. The reason for each condition in Appendix 1 is set out in the following paragraphs.

403. A commencement period should be defined so as to comply with the Town and Country Planning Act 1990, and 3 years is appropriate in this case (condition 1). Specifying the application drawings is part of best practice since they define the form of the approved development condition 2). Chapter 6 of the ES describes the archaeological resource at the site, and LDF policy DC17 requires measures

to record and where necessary preserve such resources (condition 3). Regulation of piling and other driven foundations is necessary to protect the quality of groundwater in accordance with the Environment Agency's document "Groundwater Protection: Policy and Practice (GP3)" (condition 4); and, if found at the site, contamination should be treated as necessary, for the same reason (condition 5).

404. Noise produced by the development should be regulated in the interest of living conditions at nearby dwellings (condition 6), as should shadow flicker (condition 7). The noise condition reflects document APP/3, which in turn draws on Annex B of the GPG. This would be a temporary permission and a condition would need to specify that it would expire 25 years from the date that electricity was first exported to the grid, in accordance with paragraph 024 of the PPG for renewable and low carbon energy (condition 8). The temporary construction compound should be removed once construction is complete, in the interest of local amenity (condition 9). Failed generators should be removed, to safeguard local amenity and to avoid the retention of large redundant structures in the settings of listed buildings (condition 10).

405. The exact form of the turbines and the substation building should be controlled to safeguard local amenity and to secure a satisfactory form of development (conditions 11 and 12). Turbine blades should rotate in the same direction for visual amenity reasons (condition 13). Arrangements for surface water drainage should be made to minimise the scheme's contribution to local flooding (condition 14). Aviation-safety lighting is necessary in the interest of air safety, and there should be no other external lighting for amenity reasons (condition 15).

406. Cabling between the turbines and the substation should be buried, for visual amenity reasons (condition 16). Construction working hours should be regulated so as to protect local living conditions (condition 17). A construction method statement as described is necessary to avoid environmental harm that may arise from construction work, and in the interest of air safety (condition 18). A scheme for the alleviation of television interference is needed to protect local living conditions (condition 19). A Construction Traffic Management Plan is needed to ensure the safe and expedient movement of construction traffic to and from the site and for the protection of residents of the Shipdham Manor care home (condition 20).

407. Airport safeguarding with respect to Norwich International Airport is necessary in the interest of air safety (condition 21). A biodiversity enhancement plan is needed to mitigate the development's effect on birds, and the measures identified in sections 7.170 to 7.182 are needed to mitigate other ecological effects (conditions 22 and 23).

408. I have omitted suggested conditions which were not necessary, either by virtue of duplication or purpose.

Overall Conclusions

409. I have found that the scheme's landscape and visual effects would satisfy the requirements of the development plan (LDF Policies CP11, CP12, DC1 and DC15) and would be acceptable. I have found that, subject to planning conditions and with the exception of their effect on prized tranquillity, operation of the proposed turbines would not give rise to unacceptable effects on amenity by virtue of noise

and so (with that exception) the requirements of LDF Policies CP12, DC1 and DC15 would be met in respect of operational noise. I have also found that, subject to conditions, the effect of construction noise would be acceptable, and so it would comply as appropriate with LDF Policies CP12, DC1 and DC15.

410. Having reflected on other matters raised, which seem to me to be material considerations, I have found that the appeal scheme would provide a valuable contribution to cutting greenhouse gas emissions, a matter in the scheme's favour to which I attribute substantial weight by virtue of the support in principle given to renewable energy projects by LDF Policies CP12 and DC15, and by virtue of national planning policy to which I referred in my paragraph 397. Additionally, there would be some benefit for birds, and I attribute limited weight to that.

411. I have also found there to be considerations that weigh against the scheme. Its effects on the settings of listed buildings would not be harmful in a way that would be counter to LDF Policy DC17; but there would be harm to the settings nevertheless and, in view of section 66(1) of the Planning (Listed Buildings and Conservation Areas) Act 1990, I attribute considerable weight to that harm.

412. I have found that the scheme would fail to protect tranquillity that is currently prized by residents; such failure would be contrary to paragraph 123 of the Framework, and I attribute moderate weight to it. I have further found that the scheme would lead to an intensification of risk to aviation by virtue of factors associated with air traffic control and Shipdham airfield, and I attribute moderate weight to that danger.

413. Paragraph 98 of the Framework is clear that, when determining planning applications, applications should be approved if their impacts are (or can be made) acceptable; unless material consideration indicate otherwise. In my view, the material considerations that would arise from harm associated with the scheme would outweigh the benefits it would bring. Those material considerations, taken together and including the overarching statutory duty imposed by section 66(1), make unacceptable the impact of the development and are sufficient to overcome the presumption established by section 38(6) of the Planning and Compulsory Purchase Act that determination should be in accordance with the development plan.

414. The appeal should therefore be dismissed.

Recommendations

415. I recommend that the appeal should be dismissed.

416. If the Secretary of State is not minded to dismiss the appeal, but to allow the appeal and grant planning permission, then I recommend that planning permission be subject to the conditions in Appendix 1 to this report.

J.P. Watson

INSPECTOR

APPENDIX 1: RECOMMENDED CONDITIONS

1 The development must be begun not later than the expiration of three years beginning with the date of this decision.

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2 The development hereby permitted shall be carried out only in accordance with the following figures in the Environmental Statement which was submitted as part of application number 3PL/2011/0854/F: figure 4.1, figure 4.2, figure 4.3, figure 4.4, figure 4.5.

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3 No work shall take place within the application site until the applicant, or their agent or successors in title, has secured the implementation of a programme of archaeological work in accordance with a written scheme of investigation which has been submitted by the applicant, or their agent or successors in title, and approved in writing by the local planning authority. The archaeological work shall be carried out as approved.

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4 Piling or any other driven foundation shall not be permitted other than with the written consent of the local planning authority and on those parts of the site for which the local planning authority has confirmed in writing its acceptance of a demonstration that there is no resultant unacceptable risk to groundwater.

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5 If, during development, contamination is found to be present at the site then no further development (unless otherwise agreed in writing with the local planning authority) shall be carried out until the developer has submitted, and obtained written approval from the local planning authority to, a remediation strategy detailing how this unsuspected contamination shall be dealt with. If contamination is found, development shall take place only in accordance with the approved remediation strategy.

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6 The rating level of noise immissions from the combined effects of the wind turbine, (including the application of any tonal penalty) when determined in accordance with the attached Guidance Notes, shall not exceed the values for the relevant integer wind speed set out in Table 1 attached to the planning permission in the noise guidance notes:

A. Prior to the First Export Date the wind farm operator shall submit to the LPA for written approval a list of proposed independent consultants who may undertake compliance measurements in accordance with this

condition. Amendments to the list of approved consultants shall be made only with the prior written approval of the LPA.

B. Upon receipt of a written request of the LPA, following a complaint to it alleging noise disturbance at a dwelling (defined for the purposes of this condition as a building within Use Class C3 or C4 of the Use Classes Order which lawfully exists or had planning permission at the date of this decision), the wind farm operator shall provide to the LPA the information relevant to the complaint as detailed in the written request from the LPA, such data to be logged in accordance with paragraph (G) in the format set out in Guidance Note 1(e). This information shall be provided within 14 days of the written request of the LPA, unless the time limit is otherwise extended in writing with the LPA. Within 21 days from receipt of the written request of the LPA made under this paragraph (B), the wind farm operator shall at its expense employ a consultant approved by the LPA to assess the level of noise immissions from the wind farm at the complainants property in accordance with the procedures described in the attached Guidance Note.

C. The LPA shall issue a written statement to the wind farm operator setting out a protocol for the assessment of the rating level of noise immissions, such protocol to include the conditions described in Guidance Note 2(b) and to include a statement as to whether, in the opinion of the Local Planning Authority, the noise giving rise to the complaint contains or is likely to contain a tonal component.

D. Prior to the commencement of any measurements by the independent consultant to be undertaken in accordance with this condition, the wind farm operator shall submit to the LPA for written approval the proposed measurement locations identified in accordance with the Guidance Notes where measurements for compliance checking purposes shall be undertaken. Measurements to assess compliance with the noise limits set out in the Table attached to these conditions shall be undertaken at the measurement location approved in writing by the LPA.

E. The wind farm operator shall provide to the LPA the independent consultant's assessment of the rating level of noise immissions undertaken in accordance with the Guidance Notes within 2 months of the date of the written protocol of the LPA provided in accordance with paragraph (C), unless the time limit is extended in writing by the LPA. The assessment shall include all data collected for the purposes of undertaking the compliance measurements, such data to be provided in the format set out in Guidance Note 1(e) of the Guidance Notes. The instrumentation used to undertake the measurements shall be calibrated in accordance with the Guidance Note 1(a) and certificates of calibration shall be submitted to the LPA with the independent consultant's assessment of the rating level of noise immissions.

F. Where a further assessment of the rating level of noise immissions from the wind farm is required pursuant to paragraph 4(c) of the attached Guidance Notes, the wind farm operator shall submit a copy of the further assessment within 21 days of submission of the independent consultants

assessment pursuant to paragraph (E) above unless the time limit has been extended in writing by the LPA.

G. The wind farm operator shall continuously log rainfall at the site and shall continuously log power production, nacelle wind speed, nacelle wind direction and nacelle orientation at each wind turbine all in accordance with Guidance Note 1(d). These data shall be retained for a period of not less than 12 months. The wind farm operator shall provide this information in the format set out in Guidance Note 1(e) to the LPA on its request, within 14 days of receipt in writing of such a request.

Guidance Notes for Noise Condition 6

These notes are to be read with and form part of the Noise Condition 6. They further explain the condition and specify the methods to be employed in the assessment of complaints about noise immissions from the wind farm. The rating level at each integer wind speed is the arithmetic sum of the wind farm noise level as determined from the best-fit curve described in Note 2 of these Guidance Notes and any tonal penalty applied in accordance with Note 3. Reference to ETSU-R-97 refers to the publication entitled "The Assessment and Rating of Noise from Wind Farms" (1997) published by the Energy Technology Support Unit (ETSU) for the Department of Trade and Industry (DTI).

Note 1

(a) Values of the $L_{A90,10\text{-}minute}$ noise statistic should be measured at the complainant's property, using a sound level meter of EN 60651/BS EN 60804 Type 1, or BS EN 61672 Class 1 quality (or the equivalent UK adopted standard in force at the time of the measurements) set to measure using the fast time weighted response as specified in BS EN 60651/BS EN 61672-1 (or the equivalent UK adopted standard in force at the time of the measurements). This should be calibrated in accordance with the procedure specified in BS 4142: 1997 (or the equivalent UK adopted standard in force at the time of the measurements). Measurements shall be undertaken in such a manner to enable a tonal penalty to be applied in accordance with Guidance Note 3.

(b) The microphone should be mounted at 1.2-1.5 metres above ground level, fitted with a two-layer windshield or suitable equivalent approved in writing by the LPA, and placed outside the complainant's dwelling. Measurements should be made in "free field" conditions. To achieve this, the microphone should be placed at least 3.5 metres away from the building facade or any reflecting surface except the ground at the approved measurement location. In the event that the consent of the complainant for access to his or her property to undertake compliance measurements is withheld, the wind farm operator shall submit for the written approval of the LPA details of the proposed alternative representative measurements location prior to the commencement of measurements and the measurements shall be undertaken at the approved alternative representative measurement location.

(c) The $L_{A90,10\text{-}minute}$ measurements should be synchronised with measurements of the 10 minute arithmetic mean wind speed and with operational data logged in

accordance with Guidance Note 1(d), including the power generation data from the turbine control systems of the wind farm.

(d) To enable compliance with the conditions to be evaluated, the wind farm operator shall continuously log arithmetic mean nacelle anemometer wind speed, arithmetic mean nacelle orientation, arithmetic mean wind direction as measured at the nacelle and arithmetic mean power generated during each successive 10-minutes period for each wind turbine on the site. The mean wind speed data shall be 'standardised' to a reference height of 10 metres as described in ETSU-R-97 at page 120 using a reference roughness length of 0.05 metres. It is this standardised 10 metre height wind speed data which is correlated with the noise measurements determined as valid in accordance with Note 2(b), such correlation to be undertaken in the manner described in Note 2(c). All 10-minute periods shall commence on the hour and in 10-minute increments thereafter synchronised with Greenwich Mean Time.

(e) Data provided to the LPA in accordance with paragraphs (E), (F) and (G) of the noise condition shall be provided in comma separated values in electronic format, with the exception of audio data which shall be supplied in the format in which it is recorded.

Note 2

(a) The noise measurements should be made so as to provide not less than 20 valid data points as defined in Note 2 paragraph (b).

(b) Valid data points are those measured in the conditions specified by the LPA in its written protocol under paragraph (C) of the noise conditions, but excluding any periods of rainfall measured in the wind farm site. These specified conditions shall include the range of wind speeds, wind directions, times of day, meteorological conditions and power generation. In specifying such conditions the LPA shall have regard to those conditions which prevailed during times when the complainant alleges there was disturbance due to noise or which are considered likely to result in a breach of the limits.

(c) Values of the $L_{A90,10\text{-minute}}$ noise measurements and corresponding values of the 10-minute wind speed, standardised to ten metres height using the procedure specified in Note 1 paragraph (d), for those data points considered valid in accordance with Note 2 paragraph (b) shall be plotted on an XY chart with noise level on the Y-axis and wind speed on the X-axis. A least squares, "best fit" curve of an order deemed appropriate by the independent consultant (but which may not be higher than a fourth order) should be fitted to the data points and define the wind farm noise level at each integer speed.

Note 3

(a) Where, in the opinion of the LPA as advised to the wind farm operator in its written protocol under paragraph (C) of the noise condition, noise immissions at the location or locations where compliance measurements are being undertaken contain or are likely to contain a tonal component, a tonal penalty shall be calculated and applied using the following rating procedure.

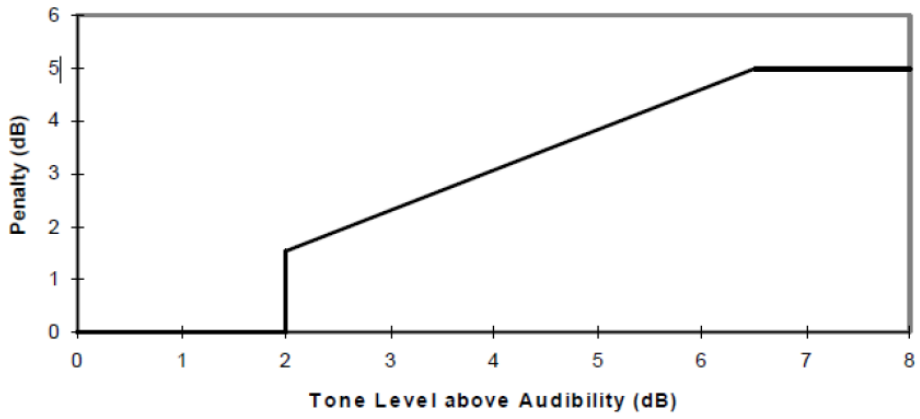
(b) For each 10-minute interval for which $L_{A90,10\text{-minute}}$ data have been determined as valid in accordance with Note 2 a tonal assessment shall be performed on noise immissions duding 2 minutes of each 10-minute period. The 2-minute periods should be spaced at 10-minute intervals provided that uninterrupted uncorrupted data are available ("the standard procedure"). Where uncorrupted data are not available, the first available uninterrupted clean 2-minute period out of the affected overall 10-minute period shall be selected. Any such deviations from the standard procedure shall be reported.

(c) For each of the 2-minute samples the tone level above audibility shall be calculated by comparison with the audibility criterion given in Section 2.1 on pages 104-109 of ETSU-R-97.

(d) The tone level above the audibility shall be plotted against wind speed for each of the 2-minute samples. Samples for which the tones were below the audibility criterion or no tone was identified, a value of zero audibility shall be substituted.

(e) A least squares "best fit" linear regression shall then be performed to establish the average tone level above audibility for each integer wind speed from the value of the "best fit" line fitted to values within ±0.5m/s of each integer wind speed. If there is no apparent trend with wind speed then a simple arithmetic mean shall be used. This process shall be repeated for each integer wind speed for which there is an assessment of overall levels in Note 2.

(f) The tonal penalty is derived from the margin above audibility of the tone according to the figure below.



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Note 4

(a) If a tonal penalty is to be applied in accordance with Note 2 the rating level of the turbine noise at each wind speed is the arithmetic sum of the measured noise level as determined from the best fit curve described in Note 2 and the penalty for tonal noise as derived in accordance with Note 3 at each integer wind speed within the range specified by the LPA in its written protocol under paragraph (C) of the noise condition.

(b) If no tonal penalty is to be applied then the rating level of the turbine noise at each wind speed is equal to the measured noise level as determined form the best fit curve described in Note 2.

(c) In the event that the rating level is above the limit(s) set out in the Table attached to the noise conditions, the independent consultant shall undertake a further assessment of the rating level to correct for background noise so that the rating level relates to wind turbine noise immissions only.

(d) The wind farm operator shall ensure that all wind turbines in the development are turned off for such period as the independent consultant requires to undertake the further assessment. The further assessment shall be undertaken in accordance with the following steps:

i. Repeating the steps in Note 2, with the wind farm switched off, and determining the background noise (L_3) at each integer wind speed within the range requested by the LPA in its written protocol under paragraph (C) of the noise condition.

ii. The wind farm noise (L_1) at this speed shall then be calculated as follows, where L_2 is the measured level with turbines running but without the addition of any tonal penalty:

$$L_1 = 10 \log [10^{L_{2/10}} - 10^{L_{3/10}}]$$

iii. The rating level shall be re-calculated by adding the tonal penalty (if any is applied in accordance with Note 3) to the derived wind farm noise L_1 at that integer wind speed.

iv. If the rating level after adjustment for background noise contribution and adjustment for tonal penalty (if required in accordance with note (iii) above) at any integer wind speed lies at or below the values set out in the Table attached to the conditions then no further action is necessary. If the rating level at any integer wind speed exceeds the values set out in the Table attached to the conditions then the development fails to comply with the conditions.

Table 1 (as referred to in condition 6):

Noise limits expressed in dB ($L_{A90,\ 10\ minute}$) at stated wind speeds.

	Standardised wind speed at 10 metre height (m/s) within the site averaged over 10-minute periods											
Wind speed	1	2	3	4	5	6	7	8	9	10	11	12
Noise limit	35	35	35	35	35	35	37	40	43	45	45	45

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7 Prior to the first generation of electricity by the approved turbines, a written scheme shall have been submitted to and approved in writing by the local planning authority setting out a shadow flicker protocol for the assessment of shadow flicker in the event of any complaint from the owner or occupier of a dwelling (defined for the purposes of this condition as a building within Use Class C3 or C4 of the Use Classes Order) which lawfully exists or had planning permission at the date of this decision. The written scheme shall be based on the mitigation approach detailed in paragraphs 13.22 to 13.26 of the Environmental Statement and shall include remedial measures. The turbines shall be operated in accordance with the approved protocol.

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8 Other than in respect of the temporary construction compounds, the permission hereby granted is for the proposed development to be retained for a period of not more than 25 years from the date when electricity from the development is first exported to the electricity grid (the “First Export Date”). Written confirmation of the First Export Date will be provided to the local planning authority within one month of the First Export Date. By the end of the 25-year period the turbines shall be decommissioned and they and all related above-ground structures shall be removed from the site. No later than six months before the decommissioning of the turbines, a scheme for the restoration of the site shall be submitted to the local planning authority. The scheme shall provide for the removal of all above-ground components plus 1 metre of the turbine bases below ground level and the land shall be returned to agricultural use. Once approved in writing by the local planning authority, the scheme shall be implemented within 6 months of the restoration scheme being approved by the local planning authority (or such other period as the local planning authority may have previously approved in writing), in accordance with its provisions.

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9 The temporary construction compound shall be cleared and removed no later than six months from the First Export Date and the ground restored to its previous condition within six months of such removal.

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10 If any wind turbine generator hereby permitted ceases to export electricity to the grid for a continuous period of 12 months, unless otherwise agreed in

writing with the local planning authority, then a scheme shall be submitted within 3 months of the end of that 12-month period, to the local planning authority for its written approval, for the repair or removal of that turbine. The scheme shall include either a timed programme of remedial works or a timed programme for the removal of the relevant turbine and associated above ground works approved under this permission and the removal of the turbine foundation to a depth of at least 1 metre below ground level and for site restoration measures following the removal of the turbine. The scheme shall be implemented in accordance with the approved details and timetable.

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11 No development shall take place until details of the dimensions, design and external appearance of the turbines have been submitted to and approved in writing by the LPA. The height of the turbines to blade tip at the highest point shall not exceed 100 metres as measured from adjacent ground levels and shall otherwise comply with any other parameters assessed in the ES. The development shall be carried out only in accordance with the approved details and shall not subsequently be changed. No lettering or logo may be attached to the turbines other than those which are necessary to comply with health and safety requirements.

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12 Precise details of the external dimensions, type and external colour of the substation building hereby approved shall be submitted to and approved in writing by the local planning authority before works on the site commence. The substation building shall be built only as approved.

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13 All turbine blades shall rotate in the same direction.

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14 No development shall take place unless surface water drainage details have previously been submitted to and approved in writing by the local planning authority. The surface water drainage system shall be installed in accordance with the approved details.

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15 Every turbine hereby permitted shall be fitted with 25 candela omni-directional red lighting or infra-red lighting with an optimised flash pattern of 60 flashes per minute of 200ms to 500ms duration. The lighting shall be fitted at the highest practicable point on each turbine. No further means of external illumination, other than the aviation-safety lighting referred to above, shall be installed on any turbines hereby permitted.

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16 All electrical and other cabling between the turbines and the substation shall be laid underground.

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17 Construction work shall only take place between the hours of 07:30 to 19:30 on Mondays to Fridays inclusive and 07:30 to 13:00 on Saturdays, with no construction work on a Sunday or public holiday. Outside these hours, work at the site shall be limited to emergency works and dust suppression. The local planning authority shall be informed in writing of emergency works within three working days of the event.

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18 Prior to the commencement of any works, a Construction Method Statement shall be submitted to and approved in writing by the local planning authority. This shall include details of:

(a) The prevention of silt-laden runoff from the site;

(b) The treatment of sediment-laden water;

(c) Site lighting;

(d) The timing of construction of the temporary construction compound, and the parking and storage of related vehicles and machinery as well as loading, off-loading and manoeuvring facilities for vehicles;

(e) Fuel, oil and chemical storage;

(f) The means of construction of any watercourse crossings;

(g) Staff facilities and drainage;

(h) The prevention of mud and debris being tracked onto the highway;

(i) Dust management;

(j) Details of the site restoration measures following completion of construction;

(k) Pollution prevention measures; and

(l) Giving advance notice of the use on the site of mobile or tower cranes.

The development shall be carried out in compliance with the approved Construction Method Statement. The approved measures for site restoration following construction shall be completed within 12 months of the First Export Date.

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19 Prior to any of the hereby approved turbines first operating, a scheme to secure the investigation and mitigation (including a programme of works) of any electromagnetic interference with television reception at a dwelling (defined for the purposes of this condition as a building within use classes C3 or C4 of the Use Classes Order as at the date of this permission) which lawfully exists or had planning permission at the date of this permission which is caused by the operation of the turbines shall be submitted to and approved in writing by the local planning authority. The scheme shall provide for the alleviation of any interference with such television reception caused by the

operation of the wind farm which is notified to the developer within 24 months of the First Export Date. The scheme shall be implemented as approved.

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20 Prior to the commencement of development hereby permitted, a Construction Traffic Management Plan shall be submitted to and approved in writing by the local planning authority. The Construction Traffic Management Plan shall include details of all proposals for:

(a) Construction vehicle routeing ("the Construction Traffic Access Route") and site access;

(b) The management of junctions to and crossings of the public highway;

(c) The scheduling and timing of movements;

(d) Details of escorts for abnormal loads;

(e) Temporary warning signs;

(f) Temporary removal or replacement of highway infrastructure/street furniture;

(g) Reinstatement of any signs, verges or other items displaced by or for construction traffic;

(h) Addressing any abnormal wear and tear to the highway; and,

(i) The control and management of construction traffic using the Construction Traffic Access Route including, in particular, details of liaison with and notification to the Shipdham Manor Care Home of the schedule and timing of HGVs, including abnormal loads, along Church Lane.

The Construction Traffic Management Plan shall be implemented as approved and for the duration of the construction period all construction traffic associated with the development will comply with the Construction Traffic Management Plan and use only the Construction Traffic Access Route and no other local roads unless previously approved in writing by the local planning authority.

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21 Prior to the commencement of development, a scheme to address airport safeguarding with respect to Norwich International Airport shall be submitted to and approved in writing by the local planning authority following consultation with Norwich Airport Limited. The scheme shall include measures to mitigate any adverse impact arising from the operation of the wind turbines hereby approved on the operations of Norwich International Airport and shall demonstrate that such measures will provide continued mitigation during the operational life of the turbines. No turbine shall rotate until the scheme has been implemented as approved and the scheme shall continue to be implemented until the turbines are removed from the site unless otherwise approved in writing by the local planning authority.

22 Before the commencement of work on site, a Biodiversity Enhancement Plan as described in section 8.83 of the Environmental Statement shall be submitted to and approved in writing by the local planning authority. The approved plan shall be implemented as approved.

23 The development shall be carried out in accordance with the mitigation measures and biodiversity enhancements described in sections 7.170 to 7.182 of the Environmental Statement and in accordance with a scheme previously approved in writing by the local planning authority.

APPENDIX 2: APPEARANCES

FOR THE LOCAL PLANNING AUTHORITY: Mr Michael Horn, Solicitor to Breckland Council

He called	Ms Jayne Owen, Senior Development Control Officer, Capita Property and Infrastructure Ltd

FOR THE APPELLANT: Mr Jeremy Pike of Counsel, instructed by Ecotricity

He called	Dr Matthew Cand, Executive Engineer, Hoare Lea Acoustics Mr Gavin David, Landscape Consultant, Ecotricity Mr Mervyn Dobson, Director, Pegasus Planning Group

FOR RESIDENTS OF DAFFY GREEN: Mr David Forsdick of Council, instructed by Richard Buxton Solicitors

He called	Dr Lee Hoare, Planning Director, Renewable Energy Foundation Mr Mike Stigwood, Director and Principal Consultant, MAS Environmental Ltd

FOR CAMPAIGN AGAINST TURBINES IN SHIPDHAM AND BRADENHAM: Mr John Campbell QC, instructed by CATS

He called	Dr Gillian Collighan, Consultant, Norfolk and Suffolk Foundation Trust Mr Julian Reading Mr David Hill Mrs Katy Hillier Dr Adrian Caro Mr Stephen Kite, Chair, CATS Mr Paul Hewett

FOR CHALLENGE AGAINST NIMBYISM IN SHIPDHAM: Mr Geoff Hinchliffe

APPENDIX 3: INQUIRY DOCUMENTS

No.	Document Name
A. DEVELOPMENT PLAN DOCUMENTS	
A1	Breckland District Core Strategy and Development Control Policies Development Plan Document Policies 2009
B. NATIONAL PLANNING POLICY	
B1	Overarching National Policy Statement for Energy EN-1 (July 2011)
B2	National Policy Statement for Renewable Energy Infrastructure EN-3 (July 2011)
B3	National Planning Policy Framework (March 2012)
B4	Planning Practice Guidance for Renewable and Low Carbon Energy (July 2013)
B5	Appraisal of Sustainability for the revised draft National Policy Statement for Renewable Energy Infrastructure (EN-3)
B6	NPSs for Energy Infrastructure: SEA Post Adoption Statement
C. ENERGY AND CLIMATE CHANGE DOCUMENTS	
C1	DECC: UK Renewable Energy Road Map (July 2011)
C2	Planning our Electric Future: a White Paper for Secure Affordable and Low Carbon Electricity (July 2011) (pages 1- 81 only)
C3	East of England Renewable and Low Carbon Energy Capacity Study. AECOM and The Landscape Partnership (2011)
C4	Not used
C5	Roadmap Update 2012
C6	The Coalition's 'Our Programme for Government'
C7	Stern Review (Executive Summary Only)
C8	Energy White Paper 2007 (Executive Summary Only)
C9	Not used
C10	Climate Change Act 2008
C11	Renewable Energy Directive 2009/28/EC 2009
C12	National Renewable Energy Action Plan (pg 1-26, 151-160)
C13	UK Renewable Energy Strategy July 2009 (pg 8-47, 66-92)
C14	UK Low Carbon Transition Plan July 2009 (pg 1-76, 165-178)

C15	SI 2011/243: The Promotion of the Use of Energy from Renewable Sources Regulations 2011
C16.1	Annual Energy Statements 2010
C16.2	Annual Energy Statements 2011
C16.3	Annual Energy Statements 2012
C17	Renewable Energy Capacity and RSSs (pages 1– 33, 59 – 62 and 246 – 263)
D WIND FARM APPEAL DECISIONS	
D1	Hockley Farm, Bradwell-on-Sea (APP/X1545/A/06/2023805) Inspector's Decision Letter dated 25 January 2012
D2	Chiplow (App/V2635/A/11/2154590) and Jack's Lane (APP/V2635/A/11/2158966) Inspector's Decision Letter dated 24 May 2012
D3	Sober Hill (APP/E2001/A/09/2101421) SoS Decision Letter dated 15 March 2012 and Inspector's Report dated 10 February 2010
D4	Spaldington Airfield (APP/E2001/A/10/213761729) Inspector's Decision Letter dated 29 September 2011
D5	Cotton Farm (APP/H0520/A/09/2119385) Inspector's Decision Letter dated 14 December 2010
D6	Batsworthy Cross (APP/X1118/A/11/2162070) and (APP/X1118/A/12/2171005) Inspector's Decision Letter dated 22 October 2012
D7	Winwick (APP/Y2810/A/11/2156527) Inspector's Decision Letter dated 13 July 2012
D8	Chelveston (APP/K0235/A/11/216007) and (APP/G2815/A/11/2160078) Inspector's Decision Letter dated 29 June 2012
D9	Earls Hall Farm (APP/P1560/A.08/2088548) Inspector's Decision Letter dated 19 November 2009
D10	Land at Masters Pit, Puddletown Road, Nr Wareham, Dorset (Alaska) (APP/B1225/A/11/2161905) Inspector's Decision Letter dated 6 July 2012
D11	Kiln Pit Hill (APP/R2928/A/08/2075105) Inspector's Decision Letter dated 12 February 2009
D12	Wadlow Farm (APP/W0530/A/07/2059471) Inspector's Report dated 26 August 2009 and Secretary of State's Decision Letter dated 9 November 2009
D13	Sixpenny Wood (APP/H0520/A/09/2101851) Inspector's Decision Letter dated 8 December 2009
D14	Carland Cross (APP/B0840/A/09/2103026) Inspector's Decision Letter dated 19 January 2010

D15	Land at Cleek Hall, Selby (APP/N2739/A/12/2172629) Inspector's Decision Letter dated 18 September 2012
D16	Biggleswade Wind Farm, Langford, Beds. (APP/P0240/A11/2150950) Decision Letter dated 19 January 2012
D17	Brecha Forest West Wind Farm, Carmarthenshire, Examining Authority's Report of Findings and Conclusions dated 12 December 2012
D18	Woolley Hill (APP/H0520/A/11/2158702) Inspector's Decision Letter dated 23 March 2012
D19	Burnt House Farm (APP/D0515/A/10/2123739) Inspector's Report dated 26 April 2011 and Secretary of State's Decision Letter for 6 July 2011
D20	Bickham Moor, Devon (APP/Y1138/A/08/2084526) Inspector's Decision Letter dated 29 January 2010
D21	Kelmarsh (APP/2810/A/11/2154375) Inspector's Decision Letter dated 19 December 2011
D22	Land at Carlton Grange, Thacker Bank, Nr Louth (APP/D2510/A/12/2176754) Inspector's Decision Letter dated 5 April 2013
D23	Land near Wood Farm, Shipdham (APP/F2605/A/03/1109816) Inspector's Decision letter
D24	Land near Wood Farm, Shipdham (APP/F2605/A/05/11174295) Inspector's Decision Letter
D25	Land near Wood Farm, Shipdham (APP/F2605/A/08/2089810) Inspector's Decision Letter dated 9 March 2009
D26	Land to the south east of North Tawton and South West of Bow (APP/Q1153/A/08/2017162) and Hulme v SoS DCLG and RES [2011]EWCA Civ 638
D27	Land at Rushley Lodge Farm, Middle Moor/Matlock Moor (APP/R1038/A/2107667) Inspector's Decision Letter dated 22 April 2010
D28	In and adjacent to Africa Alive! Wildlife Park, Norfolk (APP/T3535/A/08/2064982) Inspector's Decision Letter dated 1 May 2008
D29	Bridge House Farm, Driffield (APP/E2001/A/11/216814) Inspector's Decision Letter dated 19 March 2012
D30	Barmoor, Toft Hill (APP/P2935/A/08/2078347, APP/P2935/A/08/2079520 and APP/P2935/A/08/2077474) Inspector's Decision Letter dated 19 October 2009
D31	Gorsedd Bran, Nantglyn (APP/R6830/A/08/2074921) and Tegni Cymru Cyf v The Welsh Ministers and Another [2010]EWCA Civ 1635

D32	Land west of Enifer Downs Farm (APP/X2220/A/08/2071880) Inspector's Decision Letter dated 28 April 2009
D33	Harelaw Renewable Energy Park, Report to the Scottish Ministers dated 17 June 2013
D34	Treading wind farm (APP/D0515/A/12/2181777 and APP/A2525/A/12/2184954) Inspector's Report dated 16 July 2013 and Secretary of State's Decision Letter dated 9 October 2013
D35	Land at Airfield Farm, Podington (APP/K0235/A/09/2108506) Inspector's Decision Letter dated 13 August 2012
D36	Land at Inner Farm, Burnham-on-Sea (APP/V3310/A/06/2031158) Inspector's Decision Letter dated 15 January 2008.
D37	Land between West Bourton & Whistley Farm, Silton, Dorset (APP/N1215/A/11/2160839) Inspector's Decision dated 8th November 2012
D38	Land at and Adjacent to Ellough Airfield, Suffolk (APP/T3535/A/13/2193543) Inspector's Report dated 8 July 2013 and Secretary of State's Decision Letter dated 16 October 2013.
E LANDSCAPE AND VISUAL DOCUMENTS	
E1	Guidelines for Landscape and Visual Impact Assessment, Third Edition (GLVIA3). The Landscape Institute and Institute of Environmental Management and Assessment 2013
E2	Visual Assessment of Wind Farms: Best Practice, Scottish Natural Heritage (2002)
E3	Landscape Character Assessment – Guidance for England and Scotland, The Countryside Agency and Scottish Natural Heritage (2002)
E4	Topic Paper 6: Techniques and Criteria for Judging Capacity and Sensitivity (Version 1), The Countryside Agency and Scottish Natural Heritage (2004)
E5	Visual Representation of Windfarms: Good Practice Guidance, Scottish Natural Heritage (2006)
E6	Assessing the Cumulative Effect of Onshore Wind Energy Developments, Scottish Natural Heritage (2012)
E7	Assessing the Environmental Capacity for On-Shore Wind Energy Development - Consultation Draft, Natural England (2009)
E8	Siting and Designing Windfarms in the Landscape – version 1, Scottish Natural Heritage (2009)
E9	Landscape Institute Advice Note 01/11: Photography and Photomontage in Landscape and Visual Impact Assessment (2011)
E10	Landscape Architecture and the Challenge of Climate Change –

	Landscape Institute Position Statement (2008)
E11	Breckland District Landscape Character Assessment, Breckland District Council, prepared by LUC (2007) (Sections 1-6 and LCA B5 and E5)
E12	Wind Turbine Development: Landscape Assessment Evaluation and Guidance, Breckland District Council, prepared by LUC (2003) (pages 1-11,111-129 (LCT 10 and 11), 161-165, 168-169 and Appendices only)
E13	Cumulative Effect of Windfarms: Version 2, Scottish Natural Heritage (2005)
F. NOISE	
F1	ETSU-R-97: The Assessment and Rating of Noise from Wind Turbines (September 1996)
F2	IEC (BS EN) 61400-11 ' Wind Turbine generator systems – Part 11: Acoustic Noise Measurement Techniques'
F3	Noise Policy Statement for England (NPSE)
F4	Institute of Acoustics Good Practice Guide to the Application of ETSU-R 97 for Wind Turbine Noise Assessment 2013
F5	Institute of Acoustics Bulletin 'Prediction and Assessment of Wind Turbine Noise' March/April 2009
F6	BS 5228 Code of Practice for Noise and Vibration Control on Construction and Open Sites, 2009
F7	ISO 9613-2 'Acoustics – Attenuation of sound during propagation outdoors-Part 2: General Method of Calculation', International Standards Organisation, 1996
F8	Hayes McKenzie Partnership Revised EIA (dated 6 August 2008) plus Errata
F9	Proof of Evidence of Dr Hoare for the Shipdham Appeal Hearing, May 2013
G. PLANNING APPLICATION AND APPEAL DOCUMENTS	
G1	Planning Application form and certificate
G2	Planning Statement – see separate document
G3	Design and Access Statement - see separate document
G4	Flood Risk Assessment - see separate document
G5	Application Drawings - see CD G8
G6	Environmental Statement - see separate document
G7	Environmental Statement Figures - see separate document
G8	Environmental Statement Appendices – see separate document
G9	Environmental Statement Non Technical Summary - see separate document

G10	Report to the Council's Planning Committee dated 9 July 2012
G11	Council's Decision Notice dated 20 September 2012
G12	Appeal Form and Grounds of Appeal
G13	Planning Permission 3PL/2009/0456/F (temporary monitoring mast)
G14	LPA Appeal Questionnaire (includes Third Party Consultation responses)
G15	Statement of Case for the Appellant (including Figures) and Statement of Case on Noise
G16	Statement of Case for Breckland District Council
G17	Statement of Case for the Residents of Daffy Green (RoDG)
G18	Statement of Case for Campaign against Turbines in Shipdham
G19	Statement of Common Ground on Noise between the Appellant and RoDG
G20	Statement of Common Ground between the Appellant and Breckland DC
G21	Consultation response on the planning application from English Heritage, dated 9 November 2011
G22	Consultation responses on the planning application from Norfolk County Council
G23	Consultation response on the planning application from Bradenham Parish Council
G24	Consultation response on the planning application from Shipdham Parish Council dated 17 October 2011
G25	Consultation response on the planning application from Great Ellingham Parish Council dated 26 September 2011
G26	Consultation response on the planning application from CPRE dated 27 October 2011
G27	Consultation response on the planning application from Natural England dated 5 September 2011
H. MISCELLANEOUS	
H1	Breckland Council Wind Energy Development Policy 2005
H2	Highways Agency. Spatial Planning Advice Note: SP 12/09. Planning applications for wind turbines sited near to Trunk Roads
FROM RESIDENTS OF DAFFY GREEN	
RDG01	Larsson & Ohlund: Variation of sound from wind turbines during different weather conditions
RDG02	HMP report for DTI 2006, The measurement of low frequency noise at three UK wind farms

RDG03	Freedom of Information material relating to HMP report drafts for DTI
RDG04	Siponen: Noise annoyance of wind turbines
RDG05	Van den Berg: An overview of residential health effects in relation to wind turbine noise
RDG06	Palmer: Learning from evidence of sound experienced from wind turbines
RDG07	Di Napoli: Long distance amplitude modulation of wind turbine noise
RDG08	Pedersen and Waye: Perception and annoyance due to wind turbine noise – a dose-response relationship
RDG09	Stigwood, Large and Stigwood: Audible amplitude modulation – results of field measurements and investigations compared to psycho-acoustical assessment and theoretical research
RDG10	Tachibana et al: Study of the amplitude modulation of wind turbine noise: Part 1 – Physical investigation: Part 2 – Auditory experiments
RDG11	NSW Planning guidelines wind farms draft
RDG12	Van den Berg: The beat is getting stronger: effect of atmospheric stability on low frequency modulated sound of wind turbines
RDG13	CPRE Tranquillity mapping: developing a robust methodology for planning support
RDG14	Bakker & Rapley: Problems measuring low-frequency sound levels near wind farms
RDG15	Moller & Pedersen: Low-frequency noise from large wind turbines
RDG16	Van den Berg: Why is wind turbine noise noisier than other noise
RDG17	Lee et al: Numerical modelling of wind turbine aerodynamic noise in the time domain
RDG18	Salford report: Research into aerodynamic modulation of wind turbine noise
RDG19	Lee Hoare: Salford critique
RDG20	National Assembly of Wales Petitions Committee: Control of noise from wind turbines
RDG21	Renewable Energy Foundation: The Den Brook amplitude modulation noise condition
RDG22	Broneske: Comparison of wind turbine manufacturers' noise data for use in wind farm assessments
RDG23	Hayes on why he uses G=0
RDG24	Test data on Enercon E70
RDG25	Bullmore et al: Wind farm noise predictions and comparison with measurements

RDG26	Re-analysis of graphs in Bullmore et al paper at RDG25
RDG27	Cooper & Evans: Accuracy of noise predictions for wind farms & Comparison of predicted and measured wind farm noise levels and implications for assessment of new wind farms
RDG28	Generic warranty and test sound power levels for E66
RDG29	Measurement site at Swaffham
RDG30	Swaffham measurement data
RDG31	Van den Berg: Effects of the wind profile at night on wind turbine sound
RDG32	Forssen et al: Wind turbine noise propagation over flat ground: measurements and predictions
RDG33	Di Napoli: Assessing aerodynamic amplitude modulation from wind turbine noise & AM measurements from Enercon E66
RDG34	Generic warranties for Enercon E70 and other candidate turbines
RDG35	Renewable Energy Foundation: A critique of the IoA treatment of background noise for wind farm noise assessments
RDG36	Court of Appeal Judgement, Gorsedd Bran
RDG37	Counsel's opinion on Breckland's wind farm policy compliance with NPPF
RDG38	Bob Davis report on Shipdham Noise Assessment: response frm Hoare Lea: final comments by Bob Davis
RDG39	Van den Berg: Proof of Evidence: second Shipdham wind farm public inquiry
PROOFS OF EVIDENCE AND REBUTTAL EVIDENCE: APPELLANT	
	Proof of Evidence of Gavin David
	Summary Proof of Evidence of Gavin David
	Figures and Appendices to the Proof of Evidence of Gavin David
ECO/2/1	Summary Proof of Evidence of Matthew Cand
ECO/2/2	Proof of Evidence of Matthew Cand
Eco/2/3 part 1	Appendices to the Proof of Evidence of Matthew Cand
ECO/2/3 part 2	Appendices to the Proof of Evidence of Matthew Cand
ECO/2/4	Rebuttal to the Proof of Evidence of Dr Lee Hoare on Noise
ECO/2/5	Rebuttal to the Proof of Evidence of Mr MA Stigwood
ECO/3/1	Summary to Planning Proof of Evidence
ECO/3/2	Planning Proof of Evidence

ECO/3/3	Errata to Planning Proof of Evidence & Summary
ECO/3/4	Rebuttal of Third Party Representations/Submissions
PROOF OF EVIDENCE: BRECKLAND DISTRICT COUNCIL	
	Proof of Evidence of Jayne Owen
	Appendices to the Proof of Evidence of Jayne Owen
PROOFS OF EVIDENCE AND REBUTTAL EVIDENCE: RESIDENTS OF DAFFY GREEN	
	Summary Proof of Evidence of Dr Lee Hoare
	Proof of Evidence of Dr Lee Hoare
	Appendix to Proof of Evidence of Dr Lee Hoare: Understatement of Predicted Turbine Noise Levels
	Rebuttal to the Noise Proof of Evidence of Dr Matthew Cand
	Rebuttal to the Planning Proof of Evidence of Mervyn Dobson
	Summary Proof of Evidence of Mike Stigwood
	Proof of Evidence of Mike Stigwood
	Appendices to Proof of Evidence of Mike Stigwood
PROOFS OF EVIDENCE: CAMPAIGN AGAINST TURBINES IN SHIPDHAM AND BRADENHAM	
	Wind Turbine Noise: the Effect on Sleep and Health: Dr Gillian Collighan
	Proof of Evidence of Stephen Kite
	Proof of Evidence of Julian Reading
	Rebuttal of the evidence of Mr Dobson and Mr David with regard to letters of objection and support
	Proof of Evidence of Paul Hewitt
	Proof of Evidence of David Hill: Effects on Working Conditions
	Proof of Evidence of Katy Hillier: Impact on Residents
	Proof of Evidence of Adrian Caro: Visual Impact
DOCUMENTS SUBMITTED TO THE INQUIRY BY THE APPELLANT	
APP/1	Appellant's opening statement
APP/2	Appellant's witness list

APP/3	Draft Conditions
APP/4	Correspondence between Dr Hoare and Hoare Lea Associates
APP/5	Correspondence between Dr Hoare and Hoare Lea Associates
APP/6	List of parties “for” and “against”
APP/7	List of parties “for” and “against”
APP/8	Note on capacity factor and total generation
APP/9	Planning condition regarding noise
APP/10	Email from RWE Npower plc about Tilbury B Power Station
APP/11	Shipdham – Draft Noise Conditions
APP/12	Notes about amplitude modulation
APP/13	Heads of terms for draft s106 agreement
APP/14	Notes on RoDG10 proposed alternative noise planning condition
APP/15	Draft condition about Construction Traffic Management Plan
APP/16	Appellant’s Closing Submissions
	Appellant’s outline costs application against the local planning authority
	Judgement: Telford and Wrekin Council v SSCLG
DOCUMENTS SUBMITTED BY INVITATION AFTER THE INQUIRY BY THE APPELLANT	
APPb1	Submissions on (a) Amplitude Modulation material published by Renewable UK (December 2013), and (b) the recent decision by the SoS on Turncole
APPb2	Submissions on Court of Appeal Judgement on Barnwell Manor Wind Energy Ltd v SoSCLG and others [2014]; 10 March 2014 and 17 March 2014
APPb3	Submissions on National Planning Practice Guidance
APPb4	Appellant’s Response to RoDG’s submission on the new NPPG
APPb5	Response to Inspector’s Questions on Draft Noise Conditions (by email of 25 March 2014); and covering email.
APPb6	Email chain 25/3/14 to 8/4/14; paper headed “Shipdham – Draft Noise Conditions (from 28 February 2014)”; paper headed “Condition 6 (original version in APP/3 with AM amendments)”.
DOCUMENTS SUBMITTED TO THE INQUIRY BY BRECKLAND DISTRICT COUNCIL	
LPA/1	Commentary on Condition 22 as proposed by Breckland Council

LPA/2	Inspector's Report: Appeal reference APP/F2415/A/09/2096369: Land to the north-east of Swinford
LPA/3	Email about Breckland Council Policy on Wind Energy
	LPA's representations in respect of the Campaign Against Turbines at Shipdham's (CATS') costs application.
	LPA's outline arguments against the Appellant's costs application
DOCUMENTS SUBMITTED BY INVITATION AFTER THE INQUIRY BY BRECKLAND DISTRICT COUNCIL	
LPAb1	LPA's representations regarding amplitude modulation, the Turncole Farm decision and the Barnwell Manor judgement
LPAb2	LPA's representations regarding National Planning Practice Guidance.
DOCUMENTS SUBMITTED TO THE INQUIRY BY RESIDENTS OF DAFFY GREEN	
RDGa1	Opening comments on behalf of RDG
RDGa2	Proof of evidence of Dr Lee Hoare
RDGa3	Appendix 1. Understatement of Predicted Turbine Noise Levels (with references)
RDGa4	Translation of key parts of di Napoli (RDG33)
RDGa5	ETSU-R-97 style condition
RDGa6	Letter from DECC about the Good Practice Guide
RDGa7	Schematics of layouts of Farr wind farm and Black Law wind farm
RDGa7B	Judgement: The Queen on the application of Hulme v SSCLG
RDGa8	Conference paper: "The new good-practice-guide to help assessment of wind turbine noise in Finland"
RDGa9	Conference Paper: "Wind turbine amplitude modulation: research to improve understanding as to its cause and effect"
RDGa10	Detailed explanation on how capacity factor and total generation were derived
RDGa11	10-metre measured wind speed planning conditions
RDGa12	Closing submissions on behalf of RDG
DOCUMENTS SUBMITTED BY INVITATION AFTER THE INQUIRY BY RESIDENTS OF DAFFY GREEN	
RDGb1	Evidence of Dr Hoare: The Renewable AM Research and Noise Condition
RDGb2	Letter of representation, 10 March 2014: Amplitude modulation and the Turncole Farm decision.
RDGb3	Evidence of Dr Hoare: National Planning Practice Guidance

DOCUMENTS SUBMITTED TO THE INQUIRY BY CAMPAIGN AGAINST TURBINES IN SHIPDHAM AND BRADENHAM	
CATS1	Opening Statement
CATS2	Powerpoint presentation used at the Inquiry by Dr Collighan
CATS3	DCLG Press Release: Wind Turbine Proposals To Be Seen By Communities First
CATS4	Annotated mapping extract showing Shipdham, Bradenham and environs
	Closing Submission
	Suggested Route for Site Visit
	Application for an Order for Costs
DOCUMENTS SUBMITTED BY INVITATION AFTER THE INQUIRY BY CAMPAIGN AGAINST TURBINES IN SHIPDHAM AND BRADENHAM	
CATSb1	Letter of representation, 16 February 2014: comments on the report by Renewables UK.
CATSb2	Response to National Planning Practice Guidance.
CATSb3	Response dated 11 April 2014.
OTHER DOCUMENTS SUBMITTED TO THE INFORMAL HEARING	
	Bundle of Documents
GENERAL DOCUMENTS PLACED BEFORE THE INQUIRY	
X1	Inspector's pre-inquiry note.
X2	Noise conditions – Inspector's initial observations.
GENERAL DOCUMENTS PLACED BEFORE THE MAIN PARTIES AFTER THE CLOSE OF THE INQUIRY	
Xb1	Summary of research into amplitude modulation of aerodynamic noise from wind turbines: report for Renewable UK
Xb2	Review of Renewable UK's research into amplitude modulation
Xb3	Wind Turbine Amplitude Modulation: Research to improve understanding as to its cause and effect
Xb4	Wind Turbine Amplitude Modulation: Research to improve understanding as to its cause and effect: Brief summary
Xb5	The development of a penalty scheme for amplitude modulated wind farm noise: Description and justification

Xb6	Template planning condition on amplitude modulation: noise guidance notes.
Xb7	Secretary of State's decision letter and Inspector's report: 13 February 2014: appeals APP/X1545/A/12/2174982, APP/X1545/A/12/2179484 and APP/X1545/A/12/2179225: Turncole Farm, Southminster
Xb8	Judgement of the Court of Appeal, 18 February 2014, Barnwell Manor Wind Energy Ltd v. East Northamptonshire District Council and others

Department for Communities and Local Government

RIGHT TO CHALLENGE THE DECISION IN THE HIGH COURT

These notes are provided for guidance only and apply only to challenges under the legislation specified. If you require further advice on making any High Court challenge, or making an application for Judicial review, you should consult a solicitor or other advisor or contact the Crown Office at the Royal Courts of Justice, Queens Bench Division, Strand, London, WC2 2LL (0207 947 6000).

The attached decision is final unless it is successfully challenged in the Courts. The Secretary of State cannot amend or interpret the decision. It may be redetermined by the Secretary of State only if the decision is quashed by the Courts. However, if it is redetermined, it does not necessarily follow that the original decision will be reversed.

SECTION 1: PLANNING APPEALS AND CALLED-IN PLANNING APPLICATIONS;
The decision may be challenged by making an application to the High Court under Section 288 of the Town and Country Planning Act 1990 (the TCP Act).

Challenges under Section 288 of the TCP Act

Decisions on called-in applications under section 77 of the TCP Act (planning), appeals under section 78 (planning) may be challenged under this section. Any person aggrieved by the decision may question the validity of the decision on the grounds that it is not within the powers of the Act or that any of the relevant requirements have not been complied with in relation to the decision. An application under this section must be made within six weeks from the date of the decision.

SECTION 2: AWARDS OF COSTS

There is no statutory provision for challenging the decision on an application for an award of costs. The procedure is to make an application for Judicial Review.

SECTION 3: INSPECTION OF DOCUMENTS

Where an inquiry or hearing has been held any person who is entitled to be notified of the decision has a statutory right to view the documents, photographs and plans listed in the appendix to the report of the Inspector's report of the inquiry or hearing within 6 weeks of the date of the decision. If you are such a person and you wish to view the documents you should get in touch with the office at the address from which the decision was issued, as shown on the letterhead on the decision letter, quoting the reference number and stating the day and time you wish to visit. At least 3 days notice should be given, if possible.