

Appendix 1



Department
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(by e-mail only to: Jamie.baldwin@ecotricity.co.uk)

Your ref:
Our ref:

19 January 2016

Dear Mr Baldwin

HECKINGTON FEN ONSHORE WIND FARM

I am writing in connection with Ecotricity's application of 6 February 2015 to vary the consent granted by the Secretary of State for Energy and Climate Change ("the Secretary of State") on 8 February 2013 under section 36 of the Electricity Act for the Heckington Fen wind farm ("the Variation Application").

The Secretary of State has considered the responses that were submitted following public consultation on the Variation Application and has taken the view that further consideration of the issues raised is necessary in order for her to conclude her deliberations on the Variation Application.

In order to solicit the further information she seeks, I have written out to those people and organisations that submitted responses to the initial consultation on the Variation Application. The attached letter is representative of those sent out to consultees to seek comments: you will see (at page 3) that we invite the Developer "to respond to the specific concerns raised by Lincolnshire County Council and local people". I should be grateful, therefore, for any comments on the matters raised in that letter by no later than 10 February 2016.

Yours sincerely

KEITH WELFORD

Appendix 2

Jamie Baldwin

Subject: FW: Heckington Fen Variation Application

From: Leigh Gareth (Energy Development)

Sent: 21 July 2016 17:20

To: Jamie Baldwin

Cc:

Subject: RE: Heckington Fen Variation Application

Jamie

These are next steps on the Heckington Fen S36 variation application:

- We will send you the remaining new representations received since the “consultation” of 19 January 2016 next week.
- You will then send us your comments on the Dr Yelland Noise Report submitted by Heck Off and any comments you wish to make on the other representations.
- Then we will ask you to consult under the EIA Regulations on the Noise Report, the further representations and your comments on them. We will explain exactly what is required by way of consultation in due course.
- Following the consultation, you will be given an opportunity to comment on any representations received.

Regards

Gareth



Department for
Business, Energy
& Industrial Strategy

Gareth Leigh
Energy Infrastructure Planning

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Appendix 3

**Heckington Fen Wind Park
Heckington Fen, near East Heckington**

Application to vary S. 36 consent and deemed permission

**RESPONSE STATEMENT OF
DR MATTHEW CAND
TO THE APPRAISAL REPORT OF
DR JOHN YELLAND
ON
NOISE**

Personal Experience

I am Matthew Cand. I am an Associate within Hoare Lea Acoustics, the specialist noise and vibration consultancy division of Hoare Lea & Partners, Europe's longest established firm of Consulting Engineers. Hoare Lea Acoustics has more than 40 years' experience in dealing with all types of sound and vibration issues. I specialise in the measurement, prediction and assessment of different types of community and environmental noise.

I hold a degree in Engineering awarded in 2001 by the Ecole Polytechnique, France. I was then awarded in 2005 a Doctor of Philosophy degree in Mechanical Engineering, by Imperial College London, following research work in which I investigated computational techniques of noise predictions for aircraft engines.

I have been employed in the field of acoustics and noise control for more than 10 years. I joined Hoare Lea Consulting Engineer's acoustics team in 2005 following completion of my post-graduate studies. My role was to provide acoustic advice for the design and planning of a wide range of construction projects, including architectural acoustic design, building services noise control, and large-scale industrial and infrastructure projects. I have increasingly focused my work in the field of environmental noise assessment, and developed particular expertise in wind farm acoustics. This followed my involvement in the practical assessment of over 50 wind farm projects. I have provided expert witness evidence on wind farm noise at public inquiries as well as hearings for the application to the Planning Inspectorate.

I am a member of the UK Institute of Acoustics, and I have been a member of the working group set up by the Institute in response to a request from the Department of Energy and Climate Change (DECC) to provide additional guidance on the assessment of wind turbine noise impact. The resulting Good Practice Guide (GPG) has been published in 2013 and is recognised in current planning policy.

I have reviewed the report¹ produced by Dr Yelland on the assessment of noise from the Heckington Fen Wind Park and provide comments below in response. This report raises concerns related to several aspects of the noise assessment presented both in the Heckington Fen Environmental Statement (ES) and the Variation of Consent Environmental Statement (VCES), as well as other points not related to noise which I do not propose to discuss. Given the number of technical points raised, including a specific detailed answer to each point may not be the most helpful way to inform the decision maker and so I will focus on key aspects of the assessment.

Assessment of revised turbine dimensions

Dr Yelland expresses concern that the implications for noise of the proposed change in turbine dimensions are significant and were not properly assessed. But Chapter 9 of the VCES (which I understand he denotes ANIA2) presented such an assessment. This demonstrated that the consented ETSU-R-97 limits could also be achieved by a number of turbine models with a larger rotor diameter: the GE103, Enercon E101 or Siemens SWT101 turbine models. This would be achieved either with a reduction in the number of turbines, or, in the case of the SWT101, by some of the turbines operating in a reduced noise mode². Chapter 9 of the VCES therefore clearly demonstrates that the applicable noise limits could be achieved in practice in a number of ways by different turbines, despite their increased dimensions, using these measures.

As noted in paragraph 4.1.6 of the Institute of Acoustics Good Practice guide (IOA GPG), it is standard practice at this stage to consider a representative candidate turbine, with the suitability of a final turbine model secured through the imposition of adequate planning conditions. The excerpts of planning decisions he cites at 4.3.3 of his report do not appear relevant in this context. In the overwhelming majority of planning and appeal decisions in the UK for which there was clear and robust evidence that ETSU-R-97 noise limits could be achieved, including the consented Heckington Fen Wind Park, noise did not represent grounds for refusal and suitable conditions were imposed. This is not

¹ Wind Turbine Noise Impact Assessment Appraisal by Dr Yelland, dated 6 June 2013.

² The assessment did not suggest that these reduced noise modes would only be applied for day-time hours and not at night-time, as claimed by Dr Yelland.

surprising, as the advice given in planning guidance is clear: as noted in the VCES, the National Policy Statement on Renewable Energy Infrastructure (EN-3) explains 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 may give little or no weight to adverse noise impacts from the operation of the wind turbines".

Turbine separations

Dr Yelland makes reference to guidance on turbine spacing from "EN3", although his Figure 5 comes from the now obsolete Companion Guide to Planning Policy Statement 22. NPS EN-3 does provide similar indicative guidance on typical separation distances between turbines but explains that *"this is a matter for the applicant"*. I will not therefore comment on non-acoustic considerations but I can clarify that for modern turbines, the noise emissions are mainly related to the power produced and therefore the incoming wind speed, rather than the level of incident turbulence, and that if reduced wind speeds are experienced due to turbine wake effects, this would tend to result in lower noise emission levels.

Baseline background noise measurements

The baseline background noise measurements undertaken to support the ES were used to derive suitable ETSU-R-97 noise criteria to assess the scheme. This survey was undertaken with due care and following consultation with local authority representatives. Representatives of both North Kesteven District Council and Boston Borough Council were contacted prior to the survey taking place and agreed the properties at which measurements would be undertaken; although they were invited to attend the installation of the monitoring equipment, both declined. The validity of the background noise survey, the measurement locations used as part of the survey and the "proxy" locations (used to represent background noise levels at property locations at which noise monitoring was not carried out) were discussed and agreed with North Kesteven District Council during the Public Inquiry for the consented Heckington Fen Wind Park. As a result, the following was included in the Statement of Common Ground between Ecotricity and North Kesteven District Council (dated 20 July 2012) which was submitted to the Inquiry:

The locations selected for background noise monitoring as set out in the Environmental Statement are agreed to be appropriate and representative. The Environmental Statement demonstrates that the proposed wind farm can be operated such that noise levels will fall within the relevant limits of acceptability advised by ETSU-R-97.

In contrast, Dr Yelland expresses a range of concerns regarding these measurements, but he has to my knowledge limited or no experience of undertaking such surveys. He expresses surprise at the elevated levels reported at some of the properties, given the “tranquil rural environment” he expects (his report 5.1.1); however, as he subsequently acknowledges (at 5.2.2 and 5.9.3), roads such as the A17 represent a clear source of background noise in the area. He notes at 6.2.1 that some residents prefer to use some areas “to escape the traffic noise from the A17”. This road traffic noise affects a large number of the properties neighbouring the site, depending on their proximity to these roads. In my experience, it is typical in such situations that relatively elevated noise levels, with a reduced dependence on wind speeds, are measured during quiet day-time periods: this was indeed observed at some properties to the south of the site. At other properties, as distance increases from the “A” roads, noise levels reduce and this was correctly reflected in the survey. In any case, I provide in an Annex to this statement further detailed clarification for each of the survey properties specifically considered by Dr Yelland in turn.

I consider that these clarifications address the concerns raised by Dr Yelland and demonstrates that robust baseline measurements were undertaken, in line with ETSU-R-97 and current good practice, as agreed in consultation with the local authority at the inquiry. These results therefore correctly formed the basis of the noise limits for the consented Heckington Fen Wind Park.

Noise predictions

Dr Yelland criticises the location used for the predictions at Home Farm, as he considers that a location approximately 120 m further north of the property (see Figure 1) would be more appropriate (section 6.2 of his report). Although I understand that this area, next to what appears to be farm buildings, is under the ownership of the residents of Home Farm, it would arguably not represent

the main amenity area immediately surrounding the dwelling: ETSU-R-97 explains that limits should apply to “areas of the property which are frequently used for relaxation”.

Dr Yelland considers that these potential discrepancies are “significant” (7.3.4 of his report). But as noted in the Annex to this statement, the assessment presented in the ES and VCES showed that predictions at this location were around 10 dB below the derived day-time noise limit. I can confirm that if predictions were considered at the location proposed by Dr Yelland, leading to increase of less than 1 dB in predicted turbine noise (as he suggests at 7.3.4), and using the baseline levels measured at Side Bar Lane (Derwent Cottage) are used to derive the noise limit, representing a further precautionary approach, the same conclusion would be reached: that predictions comply with ETSU-R-97 noise limits.



Figure 1 – red point representing the prediction location at Home Farm indicated by Dr Yelland, and main apparent dwelling and amenity area (red square)

Dr Yelland then queries in his section 6.3 the emission data used for the Enercon E82 turbine in the ES: I can confirm that the data assumed included a suitable margin for measurement uncertainties, in accordance with the IOA GPG, and that his interpretation of the GPG guidance in this regard is incorrect. In any case, different emission data was considered for the candidate machines considered in the VCES which is now relevant, and that in all cases a suitable

uncertainty margin was added to the emission data in accordance with GPG guidance.

Dr Yelland then cites (at 6.1.3 and section 6.4) the general uncertainty margins of ± 3 dB mentioned in the ISO 9613-2 standard. But he mixes together and misrepresents the advice set out in this general standard and the supplementary advice given in the IOA GPG. He does not explain that the use of the ISO 9613 standard "in its entirety", as written, would recommend parameters such as soft³ ground ($G=1$), and allow predictions at heights lower than 4 m, such that this would result in levels typically 4 dB lower than using the IOA GPG recommendations. In addition, the GPG recommends incorporating additional uncertainty margins to the source levels (which the ISO standard does not). It is not appropriate to isolate one aspect of the general standard and not make clear that the conservative parameters recommended in the IOA GPG more than compensate for the 3 dB uncertainty of the standard when applied "as written". As an author of the IOA GPG I can confirm that his interpretation of the guidance in this regard is misguided. In addition, based on our considerable experience from validation studies and practical measurements, I can confirm that these predictions are achieved in practice, which explains why practitioners do not add a further correction of $+3$ dB.

He cites two planning decisions in support of his argument (para. 4.3.3): the first one does not appear relevant regarding the technical point made; in the second⁴, following the extract cited by Dr Yelland, the inspector goes on to conclude being satisfied "*that the appellant's consultant [Hoare Lea] has been conservative in the calculation approach*" and that the "*noise conditions could be complied with*".

³ The ground between the turbines and receptors is farm land and therefore 'porous' or soft according to the definitions given in ISO 9613-2. This means a parameter of $G=1$ would be used instead of $G=0.5$ (50% soft, 50% hard) as recommended in the IOA GPG.

⁴ Land adjacent to Louth Canal, Appeal reference PP/D2510/A/13/2200887.

ETSU-R-97 day-time noise limits

As explained in the ES, ETSU-R-97 prescribes a minimum or fixed lower limits for day-time periods is chosen in the range of 35 to 40 dB(A), based on a number of factors including the number of properties, the likely duration and level of exposure and the power output of the wind farm.

As explained in the IOA GPG, when considering generation capacity and effect of the limit, the scale of the project is a key consideration: *"larger schemes have relatively more planning merit (for noise) according to the description in ETSU-R-97"*. In this case, the very large scale of the scheme means it is considered under Section 36 of Electricity Act, and this will therefore tend to justify a limit at the upper end of the range.

As noted in the ES, the general rural character of the area means that there is generally a limited number of properties relative to the area in question (nearly 80 km²). If we consider this in further detail, it can be observed that the greater number of properties is located to the south of the site: but these properties are located either alongside or in relative proximity to the A17 or A1121 and therefore exposed to increased levels of background noise. The resultant effect is that, for these locations, predicted turbine noise levels are either similar to typical baseline levels experienced during quiet periods of the day or night-time, or in many cases clearly below these levels. This is apparent from consulting the charts of Appendix 10.E of the ES or Appendix 9.B of the VCES. Furthermore, the predictions shown are based on worst-case downwind conditions (wind blowing from source to receiver), and the actual levels which occur in practice will be significantly lower (10 dB(A) to 15 dB(A)) under upwind conditions. As these properties are located upwind of the site under the prevailing south-westerly wind direction, they will have in reality a further reduced exposure to noise from the site, compared to the predictions shown, for the majority of the time. This means that the "level and duration of exposure" would be relatively limited for the majority of the neighbouring dwellings, further justifying an increased limit.

When considering the properties to the north or west, situated broadly downwind of the turbines under prevailing south-westerly winds, it is apparent that their

level/duration of exposure would be higher, as they experience reduced background and would be downwind of the turbines for an increased proportion of the time. However, this concerns a much more limited number of isolated properties. Reducing the fixed part of the limit would therefore have a disproportionate impact on the potential scale of the scheme due to constraint this would represent at this limited number of properties.

Based on an evaluation of these relevant ETSU-R-97 factors, in the round, I agreed that a limit at the upper end of this range is wholly appropriate for this site, as explained in the ES. This was the basis on which the Heckington Wind Park was consented and these considerations remain applicable for the proposed variation, as it has a similar noise impact and generation capacity of at least 50 MW.

(Excessive) Amplitude Modulation or AM

Dr Yelland seems to misunderstand this aspect of Wind Turbine Noise and conflate the issues of Amplitude Modulation (or AM) and (very) low-frequency noise or “infrasound” (in particular in section 3.3). However, a large number of studies have demonstrated that for modern turbine designs, the infrasound levels produced at typical separation distances are negligible. None of the data or studies cited by Dr Yelland support the speculative analysis on the subject which he outlines in this report.

For example, Appendix 10.A of the ES described a study undertaken in 2006 for the UK Government which demonstrated that despite claims of “low-frequency” noise made for three UK wind farms, the levels of infrasound (at frequencies below 20 Hz) measured there were extremely low, such that there would be no audibility or other effects even accounting for very sensitive persons. The same report did however go on to suggest that, where complaints of noise at night had occurred, these had most likely resulted from an audible and marked amplitude modulation of the blade passing noise, making the ‘swish, swish, swish’ sound (often referred to as ‘blade swish’) more prominent than normal: this is sometimes described as Excessive AM or EAM. This was describing noise at higher frequencies (more than 100 Hz) which would have been audible to a typical listener, as opposed to the infrasound which was inaudible. As explained

in the same ES appendix, subsequent research suggested that this was a limited and site-specific phenomenon.

Since then, additional research on AM was conducted, including an extensive research programme entitled 'Wind Turbine Amplitude Modulation: Research to Improve Understanding as to its Cause and Effect' (2013). This research, commissioned by RenewableUK (ReUK), and in which I was involved, was specifically aimed at identifying and explaining some of the key features of wind turbine AM noise. It has emerged that wind turbines were capable of generating noise with characteristics outwith that expected of them in some cases. This characteristic was an enhanced level of modulated aerodynamic noise that resulted in the blade swish becoming more impulsive in character, such that those exposed to it would describe it more as a 'whoomp' or 'thump' than a 'swish'. It could also become audible at distances from the wind turbines that were considerably greater than the distances at which blade swish could ordinarily be perceived. It has since emerged that this may be similar to the character of the noise identified in above 2006 study. Hence for the purposes of the ReUK project, any such AM phenomena with characteristics falling outside those expected of this "normal" AM (NAM) were therefore termed 'Other AM' (OAM).

The research identified the most likely cause of OAM noise is transient stall on the wind turbine blade (i.e. stall which occurs over a small area of each turbine blade in one part of the blade's rotation only). The occurrence of transient stall will be dependent on a complex combination of factors, including the air inflow conditions onto the individual blades, how these inflow conditions may vary across the rotor disc, the design of the wind turbine blades and the manner in which the wind turbine is operated. However the occurrence of OAM is related to a complex combination of site-specific factors and cannot be predicted at this stage; it cannot be related to a single parameter such as wind shear as Dr Yelland suggests.

The above research has developed objective techniques for identifying and quantifying AM noise, which could be related to the subjective response to AM noise. There is however currently no generally agreed procedure for identifying AM beyond that assumed within ETSU-R-97. Further publications on this subject

are expected in the near future from the Institute of Acoustics and the Department of Energy and Climate Change, and on this basis several inspectors have imposed conditions which refer to this expected guidance. Current Government advice at present however continues to advocate the use of ETSU-R-97 as supplemented by the GPG.

Annex – comments on background noise survey locations

The Old Church

The monitoring location at The Old Church, on a patio area to the rear of the garden, was selected in consultation with the property owner as the typical part of the outdoor amenity space at the property which would be used for, for instance, sitting outside on summer evenings. As can be seen from photographs in Appendix 10.C of the ES (Figures C1 to C4), the monitoring position was situated on this patio area as far as practical from the trees on the south boundary of the property and the shrubbery on the west boundary of the property. Whilst the presence of mature trees around the property represent a source of increased noise levels at higher wind speeds, mature trees and hedgerows around property boundaries are a common feature of other residential properties in this area and therefore the sound of the wind in the trees is representative of typical ambient noise in this area. Dr Yelland's suggestion that quieter levels would have been experienced at another location appears speculative rather than based on specific evidence.

Dr Yelland expresses concern regarding the increased levels measured there at the highest wind speeds⁵, but, as is apparent for example from the charts of Appendix 10.E of the ES or Appendix 9.B of the VCES, the predicted turbine noise levels reach their maximum around wind speeds of 7m/s: in this range the noise levels measured at The Old Church are comparable or generally lower to those measured at the Mill Green Farm proxy location (which had no mature trees).

College Farm

As noted in the ES, this property was selected as the nearest residential property to the South East of the proposed site for which access permissions could be obtained. In addition, this location is situated the furthest from the A17 to the south: this source of noise represents the main reason that more elevated levels were measured there compared to other locations to the north such as The Old Church, and it was therefore appropriate to try and minimise it.

With these factors in mind, the monitoring position was selected within the outdoor amenity space as far as reasonably practicable from the farm buildings and the activities included therein, whilst not being excessively close to the vegetation on the site boundary. Dr Yelland also suggests that the measurements at College Farm could have been adversely affected by the sound of the wind disturbing hedgerows and trees around that property. But trees and/or hedgerows are a common feature at the boundary of other residential properties in this area (such as Caton House) and therefore it is entirely appropriate for these measurements to be considered representative. Farm traffic and activities in the surrounding fields would also affect neighbouring properties such as Caton House. Whilst a septic tank vent was located next to the monitoring location, no noise from the septic tank was audible on any of the four visits that were made to the property.

⁵ It should be noted that in Figure 6 of the Dr Yelland report the curves were incorrectly extrapolated beyond the maximum wind speed of 10m/s which was measured during the survey.

2 Council Houses

This location was placed at a distance of approximately 2 m from the façade of the property, in a rear garden area. Although ETSU-R-97 recommends in general to avoid proximity to reflective vertical surfaces, this is because reflections can increase the noise levels. In this specific case, noise levels in the area were clearly dominated by the A17 (as Dr Yelland acknowledges) and the overriding consideration was to minimise this source of noise: this was achieved by selecting a location in proximity to the building which acts as a solid screen or barrier to reduce traffic noise levels. The expected noise reduction in such cases would be of more than 10 dB. This is particularly important as it is the north side of the properties which faces the Wind Park site. In contrast, there was much less baseline noise observed to be coming from the north to be reflected by the building façade. This approach is clarified as acceptable in such circumstances in Supplementary Guidance Note 1 of the IOA GPG (section 2.5.3).

It was not possible at the time of the survey to locate the measurement location further towards the rear of the garden area as the resident stated that the whole of the driveway area needed to be kept clear for vehicle access. In any case, if the location had been moved further away from the building, which was screening the road noise source, the amount of screening would have been reduced and higher noise levels expected.

Dr Yelland expresses some surprise that the directional filtering applied (excluding southerly winds when the property is downwind of the A17) does not result in the effect he expects from generic examples provided elsewhere. But he then correctly notes that this could be explained by the proximity of the A17, which means that the associated propagation effects are limited. Although he is concerned about the limited data available at higher wind speeds, the IOA GPG is clear (Summary Box 12 page 13) that it is not necessary to measure up to 12m/s but to cover the range of wind speeds over which the turbine reaches its maximum level of noise emissions, which in this case is 7m/s. With this in mind, sufficient data was acquired over this range of relevant wind speeds.

In relation to the comments from Dr Yelland made regarding access requests, I can clarify that letters were sent to 1, 2 and 3 Council Houses to request access permission for monitoring. The location at 2 Council Houses was selected as the resident was the only one to reply to these letters. All of the neighbouring Council Houses properties are of very similar design, have similar sized garden areas and are located at a similar distance from the A17, therefore they would all be expected to experience very similar levels of noise (trees to the south would not provide any "noise barrier" effect as suggested in the report).

The location of Ashleigh House suggested by Dr Yelland would likely experience significantly higher noise levels from the A17 due to the reduced screening from solid constructions such as buildings, and therefore measurements at this location would have likely to be higher than those measured at 2 Council Houses. Finally in relation to the suitability of the location to represent measurements at other properties located along the A17 to the West, such as Home Farm, the increased distance from the A17 would be offset by the substantial screening present at the chosen location. As noted by Dr Yelland,

access to Home Farm was refused despite Hoare Lea seeking access. The chosen location is therefore wholly appropriate and representative, as agreed with North Kesteven Council. The assessment of turbine noise levels at these properties was typically 10 dB below the derived day-time limits, which are largely dependent on measured background, and therefore none of the factors raised by Dr Yelland would affect the conclusions made in the ES or VCES. I have considered this specifically for Home Farm in the main body of this letter.

Side Bar Lane (Derwent Cottage)

In relation to access being sought for locations on Side Bar Lane, letters were sent by Hoare Lea to Fen Farm and 3 The Bungalow on Side Bar Lane requesting access permission, however no response was received. Hoare Lea was also advised by Ecotricity that, prior to Hoare Lea's involvement in the project, several residents at the south end of Side Bar Lane had previously expressed to Ecotricity their unwillingness to engage with the assessment, hence why no requests for access were made to other residents.

Dr Yelland also suggests that the chosen location, in a field to east of properties on Side Bar Lane, was located in close proximity to a building, but this was not the case. It can be seen from the photographs contained within Appendix 10.C of the ES, and in particular Figure C.15, that the monitoring equipment was located approximately 2.5 m to 3 m within the ploughed area of the field to the rear of the properties on Side Bar Lane. The field margin between the ploughed area of the field and the rear of the properties in Side Bar Lane was, at this point, between 1 m and 1.5m wide, therefore the distance between the monitoring location and the rear of the building that has been referred to was between 3.5 m and 4.5 m. Therefore, the location was suitable in respect of reflective surfaces.

Finally, the report suggests that the presence of chickens at Derwent Cottage adversely affected the noise measurements at this location. No noise from livestock, including chickens, was audible at the monitoring position during any of the four visits that were made to this location during the course of the survey. It can also be noted that the noise levels measured at Side Bar Lane, after the influence of the A17 has been minimised by data filtering, are similar to the noise levels measured at College Farm for example.

Glebe Farm

Dr Yelland relates the resident's contention that they were two sets of monitoring equipment installed at Glebe Farm during the monitoring period. I can confirm that only one set of monitoring equipment was installed by Hoare Lea at Glebe Farm, and this was installed at the location described in Appendix C of the ES. If a second set of noise monitoring equipment was installed at Glebe Farm, this wasn't installed by Hoare Lea, we were not aware of this monitoring and we do not have access to any data other than that reported in the ES. We are aware that the monitoring equipment was moved by the resident during the survey, and this may be the source of the confusion. We were advised by the resident that the equipment was moved a matter of a few meters, to the opposite side of the fence (shown in Figure C18 of Appendix 10.C of the ES), in preparation for livestock being brought into the paddock in which the monitoring

equipment was originally located. It was this location from which the meter was retrieved from at the completion of the survey. If the monitoring equipment was moved by the resident to any other location during the survey, we were not made aware of this nor was there any reasonable reason to expect this.

Dr Yelland then expresses concern about the proximity of hedgerows to the monitoring location at Glebe Farm. As can be seen from the installation photographs contained within Appendix C.10 of the ES for the development (specifically Figures C17 to C20), there were no hedgerows present in the relative vicinity of the monitoring position at Glebe Farm, either before or after the location move.

Finally, we are aware that the resident of Glebe Farm was carrying out earthworks with an excavator during the survey period, and this was observed during one of the site visits as taking place near to the caravan that is visible in Figure C17 of Appendix 10.C of the ES. Dr Yelland expresses concerns that this atypical data was not excluded from the survey. We would note that excavation works were only observed during daytime hours on weekdays, and are only apparent in the survey data during these times. Daytime periods (between 07:00 and 18:00) on weekdays are excluded from the “quiet day-time periods” under the ETSU-R-97 methodology, and therefore these periods were removed from the assessment without any need for further filtering of data. There is no suggestion from the measured data that excavation work was being carried out in the evening, during night-time or at weekends, so there was no need for further filtering of the data. An example of this is shown in Figure A below.

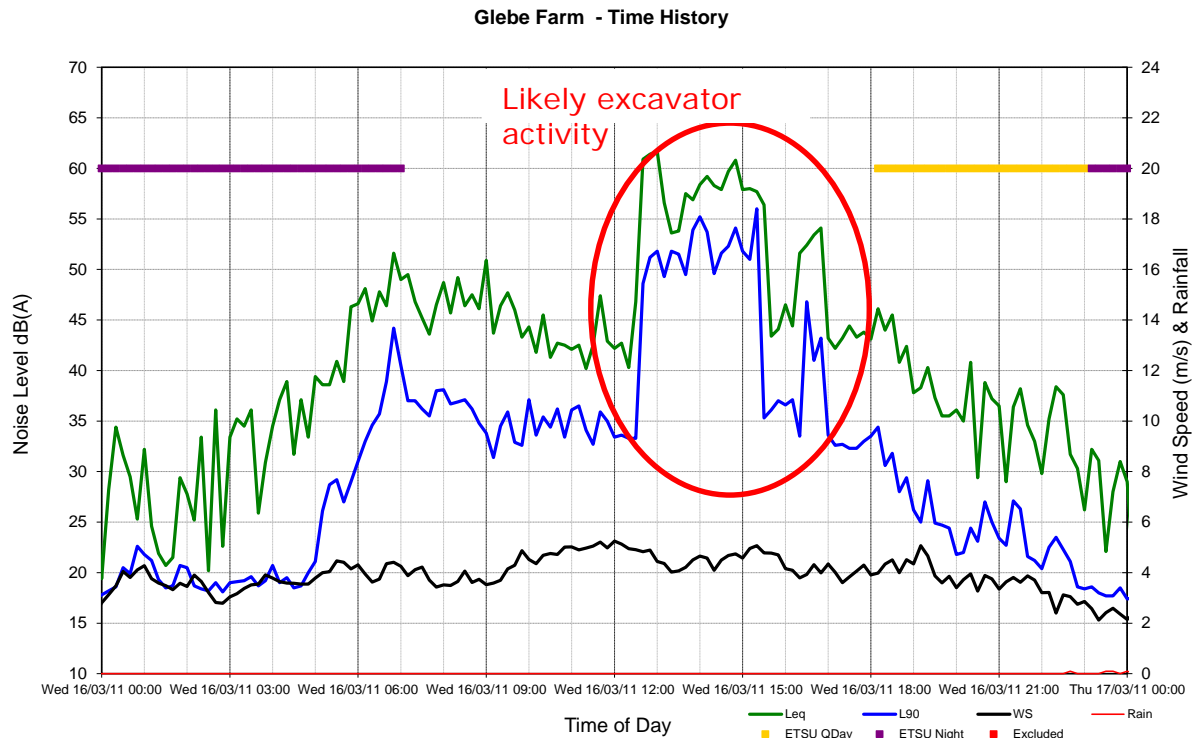


Figure A – Example of elevated noise levels likely due to excavator activity (highlighted in red, shown in relation to ETSU-R-97 quiet day-time (yellow bar) and night-time (purple bar) periods. This shows that the noisy activity occurred during periods discarded under ETSU-R-97.

Mill Green Farm (Proxy)

As Dr Yelland confirms, access to this property was refused. This was despite two letters sent to the property by Hoare Lea to request access permission. No response was received to either of these requests. We also understand that that Ecotricity contacted the resident of Mill Green Farm by telephone, and that it was made clear that there was no possibility of access being granted for noise monitoring. We also understand that Ecotricity made enquiries with Crown Estates as to whether they would grant access for noise monitoring on property that they own around Mill Green Farm, but access was not granted. The measurements were therefore made at an available and accessible location, which is perfectly reasonable in the circumstances in line with the Good Practice Guidance cited by Dr Yelland.

A monitoring location immediately adjacent to Head Dike was not appropriate due to the potential for water movement noise in the drain and the presence of a pumping station affecting the measurements. As such, a location was selected approximately 1.1 km from Mill Green Farm, as shown in Appendix 10.B of the ES. This monitoring location was approximately 300 m from Head Dike and the pumping station. No noise from the pumping station or water movement in Head Dike was audible at the monitoring location during any of the site visits, and it would not be expected to have occurred at any point during the survey period as there was very little rain during this time.

Figures E.21 and E.22 of Appendix 10.E of the ES show that across all wind speed and during both day and night, measured noise levels at the Mill Green Farm proxy location only very rarely exceeded 40 dB L_{A90} , and drop at times to around 17 dB L_{A90} , which is the lowest level that the monitoring equipment can record. It is not clear why Dr Yelland expresses surprise that marginally higher levels were observed during the day-time compared to the night-time, as increased levels of distant human activity increases the background in these situations. These measurements are clearly lower than other measured locations (other than The Old Church).

It is highly unlikely that noise levels measured in the external amenity space associated with Mill Green Farm would be lower than those measured at the Mill Green Farm proxy location at higher wind speeds (e.g. upwards of 5 m/s), since at the time of the survey, the area immediately adjacent to Mill Green Farm was surrounded by a high hedgerow and contained several (15 to 20) mature trees. Any monitoring position within the external amenity space of Mill Green Farm would therefore by necessity have been within a few metres of mature trees / hedgerows. Dr Yelland previously expressed some concern about noise from vegetation so this demonstrates an inconsistent approach. In contrast, there was a clear absence of vegetation at the chosen location (as is clear from Figures C.21 to C.24 of Appendix 10C of the ES). The location retained therefore provide a reasonable and likely conservative representation of background noise levels at the property for which access was refused, in line with good practice.

Appendix 4

Your Ref :
Our Ref :
Contact :
Email :

Mr K Welford
Case Manager
National Infrastructure Consents
DECC

Via email

11 June 2015

Dear Keith

Re: 15/0416/S36 Land at Six Hundred Farm, Six Hundred Drive East Heckington

Thank you for your email on 10 June asking for the Council's response. I am sorry that you have not received written confirmation to date. Our records indicate that the Council's consultation response was issued on 5 June.

In the absence of the earlier response, I write to confirm that after a lengthy debate, Members of the Planning Sub-Committee reluctantly endorsed the Officer recommendation to raise **no objections** to the amended proposals.

For information I would set out the following issues from my records of the debate:-

Committee Members whilst deciding to raise no objections nonetheless expressed their strong reservations about the impact of the scheme on the landscape character of the area. Members noted that the overall height of the turbines would remain 125 metres to blade tip, however, the swept path of the blades would increase and this would lead to a change in the visual impact of the turbines. This would result in some additional harm, the Inspector having himself commented that the development would result in moderate to minor adverse impact on the local landscape character, but it was recognised in the debate that any additional harm would not, in all likelihood, lead to a different conclusion when set against the Inspector's report in 2012. Ultimately Members determined an objection on this basis could not reasonably be sustained.

Similarly there was some concern expressed by Members in their debate about the proposed rewording of Condition 5 allowing, amongst other elements, construction of various ground works and access tracks to commence before the agreement of a Radar Mitigation Scheme (RMS). This concern related to the extent of works that could be undertaken in advance of the RMS such that in the event should a RMS prove incapable of agreement and thereby no turbines could be installed, there could, conceivably be extensive abortive works on the ground. Naturally in this event the land would be blighted unnecessarily. Again no objection was raised but the point of issue behind the debate is valid such that it could be reasonable that any updated consent with this condition as proposed should have a requirement or condition to enable restoration of the land should works proceed at risk of the RMS not being agreed.

I trust these matters will be placed in front of the decision-taker alongside the Council's decision to raise no formal objections.

If I can assist further please contact me direct.

Yours sincerely

A handwritten signature in black ink, appearing to read 'M Williets', written in a cursive style.

Mark Williets

Development Manager

Development Management

Appendix 5



Defence Infrastructure Organisation

Your Reference: Heckington Fen Wind Farm

Our Reference: DIO/SUT/43/10/1/5457

Telephone [MOD]:

Facsimile [MOD]:

E-mail:

Mr Keith Welford
Department of Energy & Climate Change

20th May 2015

Dear Mr Welford

Heckington Fen Wind Farm

Electricity Act 1989 Section 36 (as amended) ("the Act") **Town and Country Planning Act 1990 Section 90 (as amended) ("the Section 90 direction")**

Thank you for consulting the Ministry of Defence (MOD) on the application made on behalf of Ecotricity (Next Generation) Limited to vary the consent in respect of the Heckington Fen Wind Farm in your communication dated 26th March 2015.

In light of the proposed variations to the existing consent, the MOD has reassessed the application and has no objection to the following variations:

Condition 1.

Amend the turbine rotor diameter from 90m to a maximum rotor diameter of up to 103m and allow a 10 meter radius micro-siting allowance around each turbine location where onsite constraints allow, as set out in Figure 3.1;

Condition 5. Amend the wording of the condition to read:

"No construction of a wind turbine shall commence unless and until a Radar Mitigation Scheme has been submitted to and approved in writing by the Secretary of State, having consulted with the Ministry of Defence and NATS (En Route) plc, to address the impact of the wind farm upon air safety"; and

Condition 7.

Amend the wording of the condition to remove the words "shown on Figure 4.1" at the end of the second sentence.

In respect of the variation proposed to Condition 5, it should be noted the MOD has commenced discussions with Ecotricity (Next Generation) Limited regarding radar mitigation and it is understood that all parties are in agreement regarding the requirement for mitigation. It is on this basis that the MOD has no objection to the proposed variation to Condition 5.

The MOD has no comment to make on the remaining variations proposed.

The application is for up to 22 turbines at a maximum overall height of 125 metres to blade tip. This has been assessed using the grid references below as submitted in the application.

Turbine	100km Square letter	Easting	Northing
1	TF	19572	46370
2	TF	19586	46048
3	TF	19600	45643
4	TF	19920	45963
5	TF	19933	45564
6	TF	19983	45205
7	TF	20210	46312
8	TF	20237	45901
9	TF	20257	45556
10	TF	20260	45116
11	TF	20622	46522
12	TF	20609	46171
13	TF	20631	45770
14	TF	20597	45416
15	TF	20596	45008
16	TF	20981	46391
17	TF	20979	46055
18	TF	21052	45766
19	TF	20933	45357
20	TF	20902	44899
21	TF	21420	45863
22	TF	21297	45450

I hope this adequately explains our position on the matter. If you require further information or would like to discuss this matter further please do not hesitate to contact me.

Yours sincerely



Claire Duddy
Assistant Safeguarding Officer – Wind Energy
Defence Infrastructure Organisation

SAFEGUARDING SOLUTIONS TO DEFENCE NEEDS

Appendix 6



Department
of Energy &
Climate Change

Jamie Baldwin
Project Manager
Ecotricity
Unicorn House
Russell Street
Stroud
Gloucestershire
GL5 3AX

**Department of Energy & Climate
Change**

2nd Floor, Kings Building
c/o 3 Whitehall Place,
London SW1A 2AW
T: +44 (0)300 068 5686
E: keith.welford@decc.gsi.gov.uk
www.decc.gov.uk

13 March 2015

Your ref: 4038_P0199_01
Our ref:

Dear Mr Baldwin

**ELECTRICITY ACT 1989
TOWN AND COUNTRY PLANNING ACT 1990**

**ELECTRICITY GENERATING STATIONS (VARIATION OF CONSENTS)
(ENGLAND AND WALES) REGULATIONS 2013 – NOTICE OF SUITABILITY
FOR PUBLICATION GIVEN IN ACCORDANCE WITH REGULATION 4(6)**

**HECKINGTON FEN WIND FARM GENERATING STATION AT SIX
HUNDRED DROVE, EAST HECKINGTON, LINCOLNSHIRE**

I refer to your letter of 6 February 2015 (received here on 9 February 2015) making an application for variations to be made to the section 36 consent dated 8 February 2013 for the Heckington Fen Wind Park ("the Heckington Fen consent") and to the direction made under section 90 of the Town and Country Planning Act 1990 ("the deemed planning permission") for the same project pursuant to section 36C of the Electricity Act 1989 and to the Electricity Generating Stations (Variation of Consents)(England and Wales) Regulations 2013 ("the Variation Regulations")("the variation application").

I refer also to my letter of 2 March 2015 which set out that the Secretary of State was, pursuant to regulation 10 of the Variation Regulations, exercising his discretion to extend the time taken for him to consider whether the variation application is suitable for publication.

The Secretary of State has now considered whether the variation application is suitable for publication in accordance with regulation 4 of the Variation Regulations. He notes that the information provided in the variation application accords with the requirements of regulation 3 of those Regulations (where they are applicable). He has concluded that the application satisfies the requirements of regulation 4(8), in that: the changes that are proposed to be made to the construction and operation of the generating station are not authorised by the Heckington Fen consent and the deemed planning permission; the development now proposed does not differ from the generating station in the Heckington Fen consent to such an extent that it requires a new consent; and there is sufficient information in the variation application and the accompanying 'Variation of Consent' document (of 'February 2015') to enable DECC to determine the application and other persons to understand its likely environmental effects.

The Secretary of State considers, therefore, that the application is suitable for publication, and notifies you of this in accordance with regulation 4(6). The publication should be made in accordance with the requirements set out in regulation 5 of the Variation Regulations, to which he draws the attention of the applicant.

The applicant should note that the Secretary of State's decision to accept the application does not pre-judge his consideration of the merits or otherwise of the variation application.

Yours sincerely

A handwritten signature in dark ink, appearing to read 'Keith Welford', with a stylized, flowing script.

KEITH WELFORD

Appendix 7

List of Representations Received following 19th January 2016 Consultation Letter from DECC (now BEIS)

Organisations

- North Kesteven District Council
- Lincolnshire County Council
- NATS Safeguarding
- Civil Aviation Authority
- Natural England
- Great Hale Parish Council
- Swineshead Parish Council
- Heckington Parish Council
- Amber Hill Parish Council
- South Kyme Parish Council

All the above representations were sent to the applicant by the Department for Energy and Climate Change (now the Department of Business, Energy and Industrial Strategy) on 26th April 2016.

Individuals – 24 unsigned letters based on a template letter sent to the applicant by the Department for Energy and Climate Change (now the Department of Business, Energy and Industrial Strategy) on 22nd April 2016.