



Independent Noise Working Group

Wind Turbine Amplitude Modulation & Planning Control Study

Work Package 9 – The Cotton Farm Monitor Experience

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Objective

To document the experience of fighting a wind farm application and the decision to carry out long term noise monitoring by the local community to prove the existence and frequency of noise emanating from a newly built wind farm.

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Abbreviations

AM	Amplitude Modulation
BIS	Department of Business, Innovation and Skills.
CF	Cotton Farm (wind farm)
CFA	Cotton Farm Alliance
CFAG	Cotton Farm Action Group
CFRA	Cotton Farm Residents Association. Successor to CFAG.
dB	Decibel (Unit of sound) measured on a logarithmic scale
DECC	Department of Energy and Climate Change.
DEFRA	Department of Environment, Food and Rural Affairs.
EAM	Excessive Amplitude Modulation
EIS	Environmental Investigation Study
ES	Environmental Statement
EH	Environmental Health (department)
EHO	Environmental Health Officer
ETSU	Energy Technology Support Unit. (ETSU-R-97 Noise standard for wind farms)
HDC	Huntingdon District Council
HMC&R	Her Majesty's Customs & Revenue (Tax collectors)
HMP	Hayes MacKenzie Partnership (Acoustics Consultant to the wind industry)
HL	Hoare Lea Acoustics (Consultant to the wind industry)
LPA	Local Planning Authority
MP	Member of Parliament
PINS	The Planning Inspectorate
ReUK/RUK	RenewableUK, Trade Association and lobby group for the Wind Industry
SCADA	Supervisory Control and Data Acquisition
SCDC	South Cambridgeshire District Council
SN	Statutory Nuisance
SoS	Secretary of State
VO	Valuation Officer
WHO	World Health Organisation
WF	Wind Farm
WP	Work Package
WP-SPD	Wind Power Supplementary Planning Document
VT	Valuation Tribunal (Independent panel for house valuation disputes)

1. Executive Summary

1. Existing wind turbines, as has been proven by the Cotton Farm monitor experience, should be constantly monitored and the data recorded. There has to be a clear understanding of the problems caused by noise and a clear directive for immediate action by the authorities and operators when unacceptable noise conditions do occur. The experience pioneered by the local community around the Cotton Farm wind farm proves this is not only practical but essential for legal and health reasons.

2. The latest and continuing exercise in the re-evaluation of Cotton Farm noise profiles by the local councils, with the co-operation of the owner of the wind farm during 2015 is very encouraging. Monitoring wind farm noise by the community and re-evaluation by the local authorities has never been done before, and with all the data and audio recordings from the noise monitors, wind farm met mast and the turbines SCADA data, the noise profile of a wind farm will, possibly for the first time, reveal the real the truth regarding noise generation from an operational wind farm. Comparisons with the original EIS assessment data will also be worth examining.

3. None of this would have been possible without the installation of the community noise monitor in Graveley. This document records the background and reasons for the local community decision to monitor the wind farm noise emissions at Cotton Farm wind farm and an analysis of the evidence obtained.

2. The Cotton Farm Wind Farm Experience

4. This section looks at the reasons why the local community made the decision to pay for the installation of noise monitoring equipment to record noise emissions from the Cotton Farm wind farm.

5. Across the United Kingdom, and echoed in many other parts of the world, local communities have been, and still are, being confronted with the prospect of a wind farm being built within their community. Local people quickly realise wind turbines will change the character of the places they live. Turbines are totally out of proportion to other landscape features and the distortion and the side effects of turbines, singly or in clusters, are far reaching and detrimental to their way of life. Most of the communities are appalled at the prospect. Discussions with local councillors, planning officers, and others in authority, make them realise they have to lead the fight to protect their way of life and homes. They will probably, like many others raise tens of thousands of pounds to fight what is, in their collective view, would be a considerable loss of their human rights, the possible effects on their health and a devaluation of their property.

6. This paper examines one community's experience affected by just one wind farm in Cambridgeshire. This particular case is important for three reasons:

- A. The experience of fighting a wind farm proposal followed a similar pattern experienced by hundreds of other communities throughout the UK.
- B. Unlike most wind farm protest groups, this one community did not give up when the wind farm was given approval against the opinion and wishes of the community, its council officers, councillors, the council determination panel and its MP's¹. The local community were not reassured by the developers stating the wind farm would not generate any significant noise. They decided to install a noise monitoring system.
- C. The installation and the development of the methodology of noise monitoring at Cotton Farm, along with the meteorological data, could be a 'blue print' for monitoring wind farms by local authorities, local communities and wind farm operators elsewhere². It allows for the continuous recording of noise data, including audio, from the wind farm to ensure compliance by the operators and allow records of the noise output of the wind farm in cases of complaints and breach of conditions of ETSU dB levels and Excessive AM (EAM) noise to be revisited and be used in evidence.

7. The problem of wind turbine generated noise was recognised very early in the planning procedures of the Cotton Farm application. This recognition, leading to the decision by the community to install a noise monitor at the same time the wind farm was being built, proved to be very important locally and nationally.

¹ More recently many decisions were called in by the SoS for Communities and Local Government. Many PINS approvals have been over turned because of, essentially, the bias in favour of developers and against local communities.

² See suggested analysis of methodology in WP5

8. The monitor's data has exposed the erroneous statements and tactics used by the wind industry to promote the installation and operation of onshore wind turbines. The monitor has, for example, helped to force the industry to publically acknowledge noise, including EAM, the thumping sounds as the blades cause pressure waves as they pass the tower, is not as 'rare' an event as developers had claimed. This has, to residences near the Cotton Farm wind farm, proved to be extremely common, especially at night. Cotton Farm is a very noisy wind farm.

9. The monitoring evidence proves the wind farm is far too close to homes and businesses. The local community is paying a very heavy price for its loss of amenity and the devaluation of quality of life and property. It is known that problems regarding health are also being attributed to the wind farm.

10. This paper is based on the experiences and observations of the local community at all levels and organisations including national policy, local authority planning and Environmental Health departments, the developers and the current owners of the wind farm. The evidence collected from the monitor at Cotton Farm is proving the community was right to be very concerned.³ The evidence gathered has proved the assurances and claims regarding noise, as stated by the developer, were incorrect.

11. This evidence is also considered by many as being very important in understanding noise emissions from wind farms generally. The actual data collected also highlights how much information appears to have been undisclosed by the wind industry developers and/or not examined by local planning authorities, during the planning process.

12. By concentrating specifically on noise does not mean the 'errors' or 'omissions' of the other elements in the planning process including visual impacts, cultural heritage, effects on wildlife, etc. were not as valid or as important.

13. Noise generated by wind turbines is being presented by the wind industry as overly scientific and technically complex. This is perhaps why the Planning and Environmental Health officers, most of whom are not sufficiently trained or experienced to the very high level necessary to make valid judgements on the evidence provided by the developers, have problems in dealing with the subject. Acceptance of the noise assessments supplied by the developers went, very often, unchallenged. This occurred at Cotton Farm.

14. Council officers, at an increasing number of authorities, are now realising they do need professional advice, technical assistance and, above all, a planning condition for AM noise. Evidence of this is seen in the council officers responses to Chris Heaton Harris MP's letter sent out in August 2014. See WP3.1 and by the Northern Ireland Assembly report in 2015.⁴

15. The Cotton Farm monitoring experience is a possible blue print for the mandatory monitoring of ALL wind farms to assist local authorities with noise complaints and to ensure noise planning conditions are legally complied with by the operators.

³ Stigwood, Large & Stigwood paper. Inter Noise. Melbourne November 2014.

⁴ <http://www.niassembly.gov.uk/assembly-business/committees/environment/reports/report-on-the-committees-inquiry-into-wind-energy/>

16. It seems most local authorities do not appear to have the means to understand, control or monitor the wind Industry's unique activities of both the building and operation of wind farms. These processes are very different to the routine work normally undertaken by District Councils with other building and development projects like housing estates, business parks or road schemes. Understanding this, the wind farm construction and operations could be considered to be one of the least understood, under regulated or monitored industries in the UK.

17. Based on the experiences of the Cotton Farm scheme, the author suggests that it is essential for local authorities to put into place regulations to ensure protection of the communities in their care and the resources required for their officers dealing with wind farm applications and their operation. Wind farm applications, their impact on the local community and the problems caused to residents before and after construction, are major problems for council officers. The escalating cost in time and money to the local authority caused by the projects progress spread over several years in many cases, are frequently and massively underestimated.

18. South Cambridgeshire District Council (SCDC), a neighbouring council to Huntingdon DC (HDC) in whose district Cotton Farm is located, carried out an action to have some control over further wind farm development in their District. Residents in Graveley, the most blighted village affected by noise from the wind farm, are in the SCDC district. The SCDC Councillors produced a 'Power of Motion' debate at a full council meeting which passed the following motion in 2012.

It was **RESOLVED** that this Council supports seeking energy from renewable resources. However, applications for wind farms (2 turbines or more) are causing deep concerns to our residents by nature of their size, scale and noise. This Council believes that a minimum distance of 2 kilometres between a dwelling and a turbine should be set to protect residents from disturbance and visual impact. If the applicant can prove that this is not the case a shorter distance would be considered. This will be addressed during the review of the Local Development Framework

19. This resolution means there have not been any successful applications for WF developments in the authority's district since this motion was passed.

3. Cotton Farm Wind Farm History

20. The wind farm development proposal for Cotton Farm was announced in November 2007. Members of the community around the Cotton Farm site in Cambridgeshire formed the Cotton Farm Action Group (CFAG) to fight the wind farm planning application and the developer's subsequent appeal. The local authority (HDC) Determination Panel, with the recommendation of the LPA, unanimously turned down the application. The developer, RWE npower, appealed the decision. The appeal took place, in Huntingdon, from mid May 2010. When the December 2010 the PINS Inspector, Mr. Martin Pyke gave the approval to build the wind farm, the community decided to set up a noise monitor to record wind

turbine noise. This, it is believed has never been done before by any other community group.

21. The 8 x 126m high turbine wind farm was built and started operations in January 2013. Noise monitoring commenced at the same time. The CFAG committee was disbanded in February 2013. A new group was formed at the same time called the Cotton Farm Residents Association (CFRA) under a different chairman. This second group's brief is to liaise with the wind farm's (now third) owner,⁵ the council officers and the community on domestic and technical issues, especially noise. CFRA also has title over the noise monitoring equipment installed in Graveley and joint ownership, with MAS, of the noise data being collected over the last two and half years by the noise monitor.

4. The Cotton Farm Planning Appeal, 18th May/2nd June 2010

This section examines the appeal from the perspective on the individual groups involved in fighting the appeal.

HDC - The District Council

22. The HDC Determination Panel decision not to give approval to the wind farm was based on the proximity of the turbines near a Grade 2* late Tudor listed building, known as Toseland Hall. It is located just over 900m south from the nearest turbine. The montage, right, produced by CFAG, shows the visual effect. The reality is worse.



23. This was the only objection lodged by the council. This objection was very easily over-ruled by the developers at the appeal. The Inspector was, in essence, advised that the council's LPA should have consulted their own documentation, the Wind Power Supplementary planning document⁶ (WP-SPD), where it very clearly stated the area where the wind farm was proposed, the South East Clay lands, was already identified, by HDC itself, as a site for a wind farm of this size.

Small-scale group (2-12 turbines)

7.3 The landscape has a high capacity to accommodate a small-scale group. Although more obvious and dominant in the landscape, the generally open character of the South East Claylands means that a small-scale group of turbines would not dominate views and could respond well to the landscape structure and pattern. Providing it was appropriately sited, such a development would not have an adverse impact on key landscape

Page 29. HDC WP-SPD

The council had, it could be said, shot itself in the foot by objecting to its own policy document.

⁵ Greencoat UK Wind PLC.

⁶ The WP-SPD was the document contracted by HDC in response the Labour Government's Regional Spatial Strategy (RSS) asking councils to identify areas where wind farms could be located on geographical terms only. Many councils ignored this suggestion. HDC did not. The company contracted to do this study (Land Use Consultants or LUC) for HDC was also contracted at the same approximate time to assemble the Environmental Investigation Study (EIS) on behalf of RWE Npower for the Cotton Farm proposal in the exact same areas. The Local authorities did not consider this was a 'conflict of interest'. The RSS was later scrapped by Eric Pickles as SoS of DCLA.

The action group and parish councils

24. CFAG in combination with six parish councils formed the 'Cotton Farm Alliance' (CFA) to collectively fight the appeal as a Rule 6 Party. Its objective was contest the appeal on several fronts, including, and especially, noise. The noise arguments did not involve the council's legal team at all because they accepted the developer's information on noise uncontested. HDC were not participants during this phase of the appeal.

25. CFA raised about £70,000, and employed specialist experts including the acoustician, Mike Stigwood of MAS Environmental Ltd. It was during these periods of cross examination of the developer's acoustic consultant, (Hoare Lea) that a large number of technical errors became apparent. The constant problem of 'lack of evidence' and 'lack of due diligence' cropped up time and again. The Inspector, apparently in a dilemma of indecision, in his decision document stated, or inferred, that the district council by commissioning and adopting the WP-SPD, a wind farm was acceptable in the approximate area of Cotton Farm. Furthermore, the Inspector used this planning document, based on geographical location only, to weigh in favour of the developer on other subjects, including noise. However, at the later Molesworth wind farm appeal the same HDC WP-SPD was recognised as an 'unfit' document by the Secretary of State, Eric Pickles, in early 2015. See Appendix 2.

26. The only success the CFA achieved was the day time reduction of noise levels from the 40dB level to 35dB. During the appeal CFA had proved the original test monitors were, and admitted to by Hoare Lea, to being incorrectly positioned. The data collected by them, it was argued, would be also inaccurate. However, the fact the Inspector still accepted the data evidence from these incorrectly sited monitors. It was suggested, and confirmed by his own stated comment during the appeal that he did not fully understand the noise arguments presented to him.

Summary of Section 4

27. In common with most wind farm developments the original noise data, along with the meteorological data, was not divulged to the council or public. Only the developer's assessment of this data is published. There is not, in virtually all WF planning applications in the UK, the facility or the ability, of local council authorities to check the accuracy of this data. This is mostly due to the lack of technical resources, expertise and funding within the local authorities.

28. When the PINS Inspector's Cotton Farm wind farm decision was published in December 2010, it was obvious to many that the Inspector had really side stepped the noise issues. He seemed to use the weight of the HDC WP-SPD several times to 'assist' him over this and other 'difficult' decisions.

5. Decision to Install the Noise Monitor

The decision to record and save noise emissions from the Cotton Farm Wind Farm

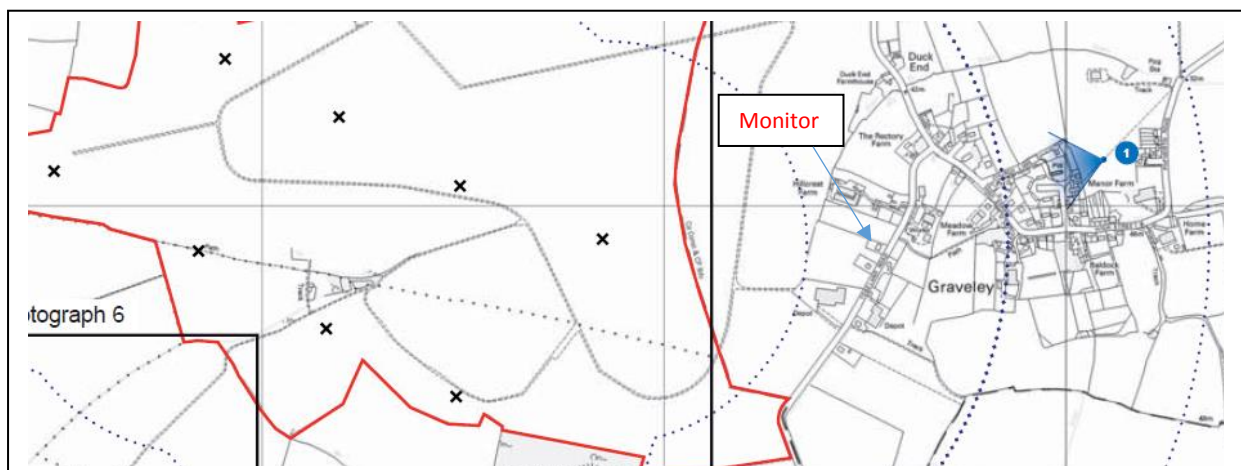
29. After the wind farm planning approval was given, the community considering a Judicial Review took legal advice. The legal opinion came back advising, ‘....you probably do have a case but, with the District Councils WP-SPD in the way the likelihood of success would be small’.

30. The local community had to consider other ways to protect itself. CFAG looked at the Inspectors decision document with particular reference to paras 89 and 90 where the Inspector states-

89. Given the small number of sites where excess AM has been proven, statistically, the odds are very much against it being a problem at Cotton Farm. I appreciate that some similarity with problem sites (such as Deeping St Nicholas) might be argued to reduce the odds somewhat, but not to the extent that it can reasonably be regarded as a distinct possibility, let alone a probability, in my view. Thus I find no compelling evidence that warrants an approach to AM in this case which differs from that taken in ETSU-R-97. In these circumstances I do not believe that the suggested [AM] condition satisfies the test of necessity, even on a precautionary basis.

90. In the unlikely event of a problem of excess AM arising, the appellant suggests that it could be addressed by the local authority using statutory nuisance powers. Whilst I have some misgivings about this procedure because of the much higher threshold of harm that would inevitably apply, I see little option but to conclude that this is the best means currently available of resolving this issue.

The local community did not agree with the Inspector’s assessment.



31. The decision was then made by the community to commission and install the necessary monitoring equipment to obtain the evidence to demonstrate the original noise hypothesis was wrong and to ensure the WF operators keep within planning conditions. The primary reason was, however, to monitor and record EAM noise. The original concept was to gather AM information for use under Statutory Nuisance (SN) as suggested by the Inspector. The

monitor location was chosen in Graveley, at a private residence at just over 600m from the nearest turbine. At the same location a 10m mast for the weather station was also installed. The location and equipment conforms to the requirements for wind farm noise recording⁷.

6. Meteorological Mast and Noise Monitoring Equipment

Summary of the Methodology

32. It was essential to install a system that would accurately record noise data and be admissible in any Inquiry or court case. The objective was to continuously record noise emissions from the wind farm site in real time and permanently save these recordings. This data could then be 'processed' in accordance with any wind industry standard including ETSU, or other noise orientated regulations, i.e. BS4142, WHO, etc. The community is aware the data has been used to prove the validity of a Japanese study⁸ on AM noise and to prove the original ReUK AM Condition⁹, based on the RES/Dr. Jeremy Bass Den Brook proposed revision was unworkable. On the noise monitoring web site¹⁰ the ETSU averaging noise standard, LA90, is calculated and averaged in accordance with the wind industry's methodology and published for every 10 minute 'segment' of collected noise.

Methodology Comparison

33. The primary difference between the wind industry's recording methodology and the Graveley community monitor is the ability of the community system to record and play back noise in real time and also watch the noise 'trace' on the computer screen at any time and on line. The wind industry cannot do this with their data.

34. Noise data recordings for planning applications, especially audio recordings, are very limited. The possible reason there is no audio recordings saved is due, probably, to the restricted battery power available and the limited capacity for data storage within their monitoring equipment.

Identification and interpretation of noise signatures.

35. Community members, on visiting the monitor web site, can very quickly and easily identify the many noise features recorded. (The Cotton Farm monitor web site can be accessed at: http://www.masenv.co.uk/~remote_data/.) They can hear the individual noises and see its 'signature' on the trace. Bird calls are recognisable from one species to another; vehicles passing on a nearby road can be identified and, with little experience, be recognised as a lorry, car or tractor. Other noise sources like aircraft flying over, the toot of a train at a level crossing 3 miles away and, of course the wind turbines are all very easily identified both by sound and visually on screen. By being able to both see and hear the sounds at the same time one can see not only when turbine noises are being masked by a passing car or military jet, but they can be easily seen (and heard) when the temporary noise source passes by. The turbine noise signatures are easily identified even when mixed

⁷ See appendix 1 for full details and photographs.

⁸ Assessment of wind turbine noise in immission areas. Akinori Fukushima et al. Denver Aug 2013

⁹ Renewables UK. Planning Condition on AM. Dec 2013

¹⁰ www.masenv.co.uk/~remote_data/

in with other noise signatures or, as the wind industry acousticians like to call these sounds, ‘false positives’.

36. Listening and looking at the noise signatures in real time is, by far the best way of identifying and separating the different sounds by using the most valuable identification tools available, the combination of ears and eyes. One accepts raw data has to be recorded and processed scientifically to overcome the variations of human hearing and visual interpretation when used in evidence. To rely totally on evaluation of processed data to produce an averaged formula or equation without any reference to the sounds experienced by residents in real time should be treated with extreme caution. In removing ‘false positives’, it could have the effect of removing the recorded EAM from the turbines as well, leading very likely to an inaccurate and biased assessment.

Practical use of recorded data.

37. The Graveley system is proof that a monitoring system could be used to identify what is actually happening at the time of noise complaints, allowing for example, a duty EHO, to order turbine shut down under an abatement order. The justification of this can be replicated at any subsequent examination of the evidence.

This principle has been also recommended by the Committee of the Environment for the Northern Ireland Assembly published March 2015. (See footnote 12 reference detail)

38. The wind industry ETSU noise assessment methodology by comparison (or design) is based on the LA90_{10min} averaging process formally defined as; *the noise level which is exceeded for 90% of a 10 minute interval*. Consequently the extremes of the noise fluctuations, the amplitude modulation we hear, are completely hidden. For any 10 minute recording period the measured value results in a single dot on a graph based on this LA90_{10min} averaging down process. The data collected by the Graveley community monitor, on the other hand, allows examination of the noise emissions in real time AND allows for the calculations of LA90 in accordance with ETSU or potentially any other standard.

Glasgow WT noise conference April 2015, MAS paper ‘Cotton Farm Wind Farm – Long term community noise monitoring project – 2 years on’, pages 11/12, states: *“Both the ReUK and RES [AM planning condition] procedures have significant potential failure rates. The RES method is subject to false positives. It identified EAM where there is none, includes extraneous noise AM and also misses periods of AM that are consistently near its trigger boundary”*.

“It is difficult to envisage a fully automated process which accurately assesses AM. The RES and RUK methods aim to characterise AM by approximating the AM variation as a regular sine wave, but AM rarely approximates a sine wave and typically occurs within what is essentially a random signal. As such there will always be the need to listen to the data to verify AM and automation can only really work where there is no other corrupting noise”.

7. Local Authorities and the Graveley Monitor

39. All local council (EHO) officers have access to the Graveley monitor on line. They are also aware the community monitor is operated to a much higher noise range and standard than the wind industry normally employs. They are aware the information seen on line is available to anyone and, unlike data collected by the wind industry acousticians, the information seen on line is not considered confidential.

40. The acousticians, MAS Environmental, employed by the community, probably have more experience and knowledge regarding wind farm (EAM) noise than any other acoustic consultant in the UK. The equipment in Graveley is calibrated monthly and constantly monitored.

41. After a period of reluctance to accept the noise evidence from the community monitor, the EHO's are now accepting the information it is providing. This has been reinforced in the light of ongoing noise complaints by residents over two and a half years being confirmed by the EAM evidence recorded by the monitor. It has also confirmed their (EHO) own independent recordings of EAM and proven breaches of planning conditions under ETSU.¹¹

42. Council officers who, currently, have no other means of checking noise complaints¹², especially if a Statutory Nuisance or a provable AM Condition were to be in place need a continuous long term monitoring system.

43. It is important to understand the Graveley monitor is paving the way for a simple methodology ensuring (planning and operational) compliance within the law. Council officials, especially EHO's, should examine the methodology pioneered by the Graveley monitor. It is only by collecting the evidence and having instant access to the visual and audio data, that a confident and provable judgement can be made to enforce an abatement order in any case of non-compliance. The noise recording can be replayed at any Inquiry or legal challenge as evidence of the facts at the time of the breach.

It is to be noted the Northern Ireland Assembly's Committee for the Environment, carrying out a review examining wind farms, in their report independently recommended the adoption of these precise methods of recording data for use by EHO's in their report published in March 2015.¹³

44. The NI Committee for the Environment was also concerned that there does not appear to be continuous long-term monitoring of noise from wind farms, either by developers or by the relevant public sector organisations. If such information were available it would introduce an objective measure of the noise output of turbines, as opposed to the projected noise impact produced by a desk-top exercise as part of the application process. This would provide both developers and planners with factual evidence and a useful assessment

¹¹ During July 2015 a report was published on the wind farm operation undertaken by acoustician Dick Bowdler, on behalf of the Huntingdon DC. This proved the CFWF did NOT conform to ETSU Planning Conditions in normal operation mode. His recommendation of compliance in 'curtailed' mode is currently under investigation.

¹² See WP6.2 'A local Councils guidance on Nuisance'.

¹³ <http://www.niassembly.gov.uk/assembly-business/committees/environment/reports/report-on-the-committees-inquiry-into-wind-energy/>

measure for future applications. The report included the recommendation “**The Committee recommends that the Department of the Environment should bear responsibility for ensuring that arrangements be put in place for on-going long-term monitoring of wind turbine noise**”.

8. Wind Farm Developer and the Graveley Monitor

45. RWE npower (now RWE Innergy) sold the CFWF planning approval to RENERCO, a German wind farm developer, early in 2011. The community contacted and had a meeting with the new developer of the wind farm, RENERCO (later becoming BayWa) with a view of sharing the cost and data from a permanently installed noise monitor. RENERCO flatly refused so the community went forward on its own. However RENERCO did employ the Hayes McKenzie Partnership (HMP) to monitor the wind farm noise output during the commissioning phase and the early part of operational use in 2013. They installed four monitors, two in Graveley east of the turbines, one in Great Paxton to the west and one in the south, at Toseland.¹⁴

46. It is to be noted WF operators do not normally install noise monitors to collect data from operational wind farms. Why this highly unusual action was carried out at Cotton Farm can only be speculated. It is assumed, by the author and others, the developer could not be confident that the original noise assessment published in the EIS, and scrutinised at the appeal was correct. If it were to be undermined by the community monitor findings they probably needed to have their own up to date data to try and counter this evidence.

47. The EHO's, led by the HDC EHO, asked the developers for the HMP data at the commencement of the recordings and for the wind farm to operate in full operational mode during data collection. This was agreed. After six months HMP reported the wind farm conforms to the original planning conditions.¹⁵ EAM recordings were deliberately excluded, the HMP report in para 3.7, final sentence, states:- *‘For the purposes of the assessment carried out here no tonal evaluation has been included’*.

48. The report also stated the turbines were operating in ‘curtailed mode’ (i.e. at reduced power) which seemed contrary to the demands of the EHO's. On discovering this anomaly the noise exercise continued for a further six months. The HMP monitor data, along with the 80m¹⁶ meteorological mast data requested earlier, was also handed over to the EHO. The latter event is almost unheard of by the secretive wind industry. The data was examined.

49. On assessing this data *The EHO identified a startling fact*. The met mast wind direction was registering about 40° out of alignment. Whether this was bad installation, a lack of care in testing or something else is unclear. The EHO, on using assessing the HMP monitoring data corrected for the wind direction error, very quickly demonstrated that College Farm, a monitor site at Great Paxton, had suffered breaches of noise planning conditions.

¹⁴ See appendix 1 for locations of all monitors used on around the Cotton Farm site. (Up to Jan 2015)

¹⁵ Hayes McKenzie report HM2605/R2 to BayWa. 20th August 2013. Published on the Baywa web site.

¹⁶ The same height as the turbine nacelle or hub.

50. The EHO has since requested the SCADA¹⁷ data from the individual turbines to obtain wind direction, wind speed and turbine power output data. After an eight month delay this information has been made available to the EHO's. However, since the initial breach of ETSU noise limits; further breaches have been identified in Graveley using the HMP data. See graph on page 16.

The author emphasises these breaches are based on the WF operators (HMP) data, not the communities monitor data. However, if referenced to the 80m (corrected) met mast data the community monitor data could be very easily used to confirm and cross reference this information.

51. BayWa subsequently sold the Cotton Farm wind farm to a third owner, a financial group in the City known as *Greencoat UK wind PLC*, in September 2013. This financial group manages pension fund investments and a direct investment of £50 million from the Department for Business, Innovation & Skills (BIS), (SoS was at the time was Vince Cable MP Lib Dem)¹⁸

52. The community is in contact with Greencoat PLC and are aware BayWa are retained to operate the wind farm. The noise complaints and the monitoring of the wind farm by HMP were, apparently, only revealed to Greencoat PLC 2 days before completion of the contract. Greencoat ordered the WF to run in curtailed mode to see if the issue over noise is reduced. BayWa, on the other hand, have also admitted to the council officers not all the turbines are operating in curtailed mode.

Summary of Section 8

53. The fact the operator's met mast provided corrupt data is inexcusable. The need to monitor all wind farms independently is borne out by the 'problems' identified at Cotton Farm when the data was eventually made available and professionally examined. The data from turbines and met mast should be recorded and saved and be available to all parties along with noise recordings from the monitor. Wind farms have a massive and often controversial visual impact on any area. With respect of noise, the owners should embrace the chance to ensure the wind farm noise emissions are not only controlled but should be seen and proved to be controlled. Belatedly, and only after two years of noise complaints are the owners of Cotton Farm and local councils trying to find ways to control the acknowledged Planning Condition breaches and EAM noise issues.

54. *Huntingdon District Council commissioned a report by an acoustician (Dick Bowdler) which reported to the council in July 2015. The report is based on the wind farm operator's own noise monitoring recordings taken by HMP during 2013 and again later in 2014. Bowdler was, the author understands, allowed access to the normally confidential met mast and turbine SCADA data. The report is currently under scrutiny. Early information indicate there are 'concerns' over the validity of the report despite its report agreeing with earlier ETSU non-compliance to planning conditions as described in the next chapter.*

¹⁷ SCADA is an acronym for **Supervisory Control and Data Acquisition**. SCADA generally refers to an industrial computer system that monitors and controls a process.

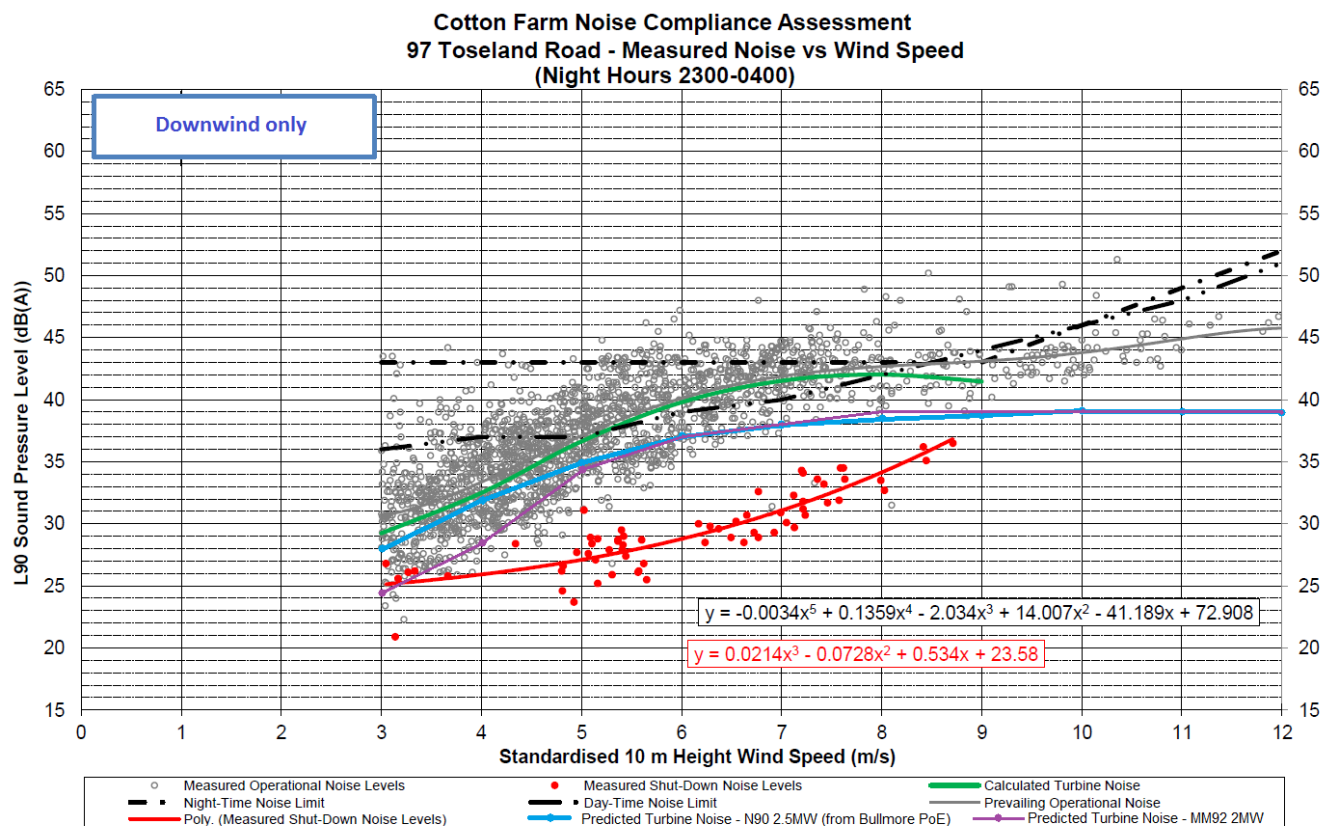
¹⁸ Feb 2015 Sunday Times business section reports 'Gov't to sell 40 million Greencoat shares.'

9. Analysis of the Wind Farm Noise Data¹⁹

55. After assessing both the community monitor data and the HMP data results, What has been discovered? **It is proving the failure, or the 'breach' of 'Planning Conditions' and proving the incidence and magnitude of EAM are much greater than expected.** This section analyses some of the evidence.

ETSU and the failure of the Planning Conditions

55. The graph below is based on the original Hoare Lea graph from the original Cotton Farm planning application produced for the EIS. The HDC EHO curves of actual noise, using data recorded by Hayes McKenzie, are superimposed on the original EIS 'estimates' made by Hoare Lea. Also included are the Hoare Lea Proof of Evidence lines for the planning appeal.



56. The points to note are the **blue** calculated turbine noise (polynomial) line by HL and the **green** actual turbine noise line by the EHO using the HMP recording. Note it goes above the dotted black line, which is the maximum allowable noise level line from 5m to 8m/sec wind speed. Also note the actual and much lower background noise measurements (**red**) recorded when the turbines are switched off. This indicates how quiet the actual background noise normally is at the comparable wind speeds.

57. When the turbines are operating the noise levels are about double (10dB) higher than 'nominal' background noise²⁰. This shows wind turbines are 'noisy' no matter how it is

¹⁹ The paper presented by Stigwood, Large & Stigwood at the Melbourne 'Inter.noise 2014' conference in November 2014 goes into considerable technical information on the Cotton Farm noise experience.

dressed up. The installation of 80+ tonnes of rotating variable speed machinery driven by massive rotor blades on top of an 80m pole will always have the potential to make a lot of noise.

58. This graph also raises the question mark on the authenticity of the original background noise level calculations by the developers acoustician's for the original planning application. Their original calculations are 'adjusted' to account for the nominated turbine used. The grey circles on the graph are NOT the actual noise level but have the sample turbine noise calculation added to the figure.

59. The original (HL) noise monitors used to gather the original background noise data for the planning application were put near reflective surfaces such as fences or walls that reflect and amplify noise. This also included the monitor located near a running stream at 'Duck End' in Graveley. In all cases the noise levels would, when averaged under LA90, could be actually higher than it should be. It was, probably, because of this anomaly the Inspector agreed to the lowering of the LA90 dB level from 40dB requested by the developer to 35dB.

60. This one graph highlights the reasons why all information should be made available to the authorities and these same authorities should employ independent experts who can not only understand and interpret the information, but can advise on how to ensure the community is protected in the form of planning conditions and other legal requirements.

10. EAM Recorded is Proving the Original Assessments Were Wrong

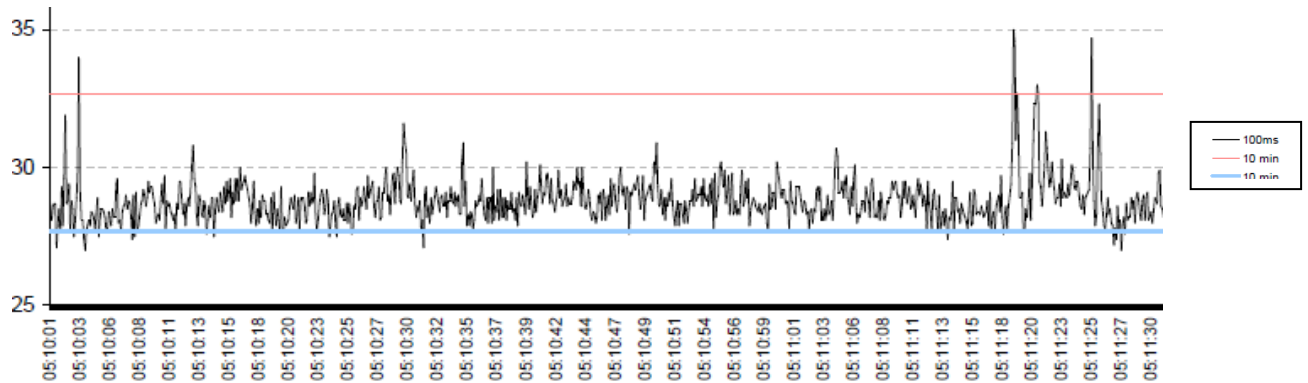
61. AM is complex in structure and may include components of low frequency noise (LFN) which could affect peoples' health. The explanation of AM is examined in detail in WP1 and health is discussed in WP3.2. The community near Cotton Farm are aware of possible health problems occurring but it does need further studies to examine the alleged cases. There are no planning conditions covering AM noise or its excesses known as EAM. There should be because it is the EAM noise that people actually hear and are most adversely affected by.

62. The wind industry accepts a noise peak to trough level of 3dB in ETSU for near turbine assessment only (not greater than 400m). The more distant AM, often experienced and recorded as EAM, is not, however controlled under ETSU and is applicable at ALL levels of average background noise levels day and night.

63. The graph below shows about 90 seconds of turbine AM noise at 600m. The characteristic rise and fall shows the sweep and beat of the turbine blades passing the tower. It is possible to see a second or third beat indicating other nearby turbines also adding their AM noise to the mix. It can be seen from this sample the AM noise is within the acceptable 3dB peak to trough noise levels.

²⁰ dB noise levels are logarithmic. Each 10db rise the noise level doubles in volume.

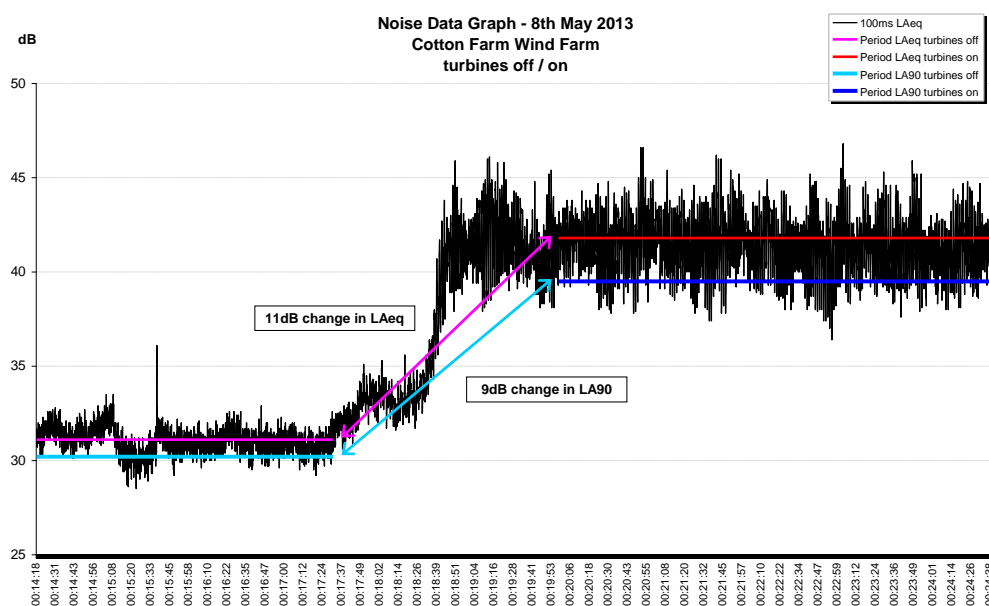
Cotton Farm October 11th 2014.



64. There are two sections of 'spikes' at 05:10.02 and 05:11.18. These are characteristic of bird calls in the very early dawn. Visually from the trace they are obvious. Listening on audio it is easy to identify the species.

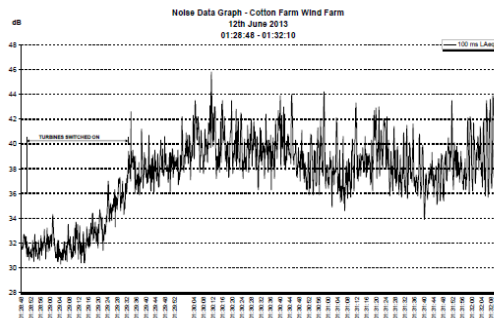
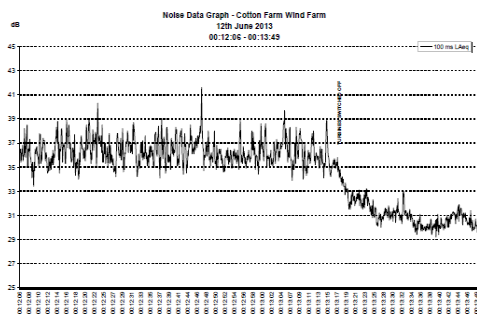
65. The graph below shows about 10 minutes of recording just after midnight. The original background noise levels at about 31dB with an AM peak to trough of about 3dB. The turbines are then turned on and immediately the background average noise levels rise by about 9dB. *This is doubling the real time noise level.* Added to this is the increase of the peak to trough EAM dB levels as the turbine blades swish and thump as they rotate. The EAM shown here at about 6dB to 7dB peak to trough and is well in excess of the 3dB peak to trough maximum allowed for in ETSU. It also shows the EAM produced is undeniably coming from the turbines.

Cotton Farm 8th May 2013



66. The above graph also shows why the wind industry is insistent on using a 43dB noise level at night time. No matter how quiet the background noise levels are in the countryside the industrial energy from wind turbines generates a lot of noise. This fact is inescapable. The justification given at the CF appeal, and many other appeals nationwide, for this extraordinary high level of 43dB level at night included the comments, *'People are asleep and won't hear the turbines'*, and also that *'People have their windows closed at night and this keeps the noise out'*. The assumptions and arrogance of these comments are simply, palpably and obviously not true. The truth is the turbines will make noise close to the 43dB levels, especially at lower wind speeds all the time. At night, in the countryside, this is a relatively very high compared to the background noise and so is unacceptable.

67. The Cotton Farm recordings below show the turbines switched off in the left chart and the corresponding drop in noise levels and, about 90 mins later they are switched on again as shown in the right chart. Some EAM traces show well over 8dB peak to trough.



12th June 2013.
Scale of the dB
tables are not
the same.

68. The community monitor at Graveley has exposed the level of noise as not only excessive, but frequently so. The big surprise is reverse EAM. This is EAM noise which is experienced *upwind* of the turbines. On one occasion the peak to trough level of reverse EAM was 13dB! **At Cotton Farm the noise monitor records EAM in excess of 5dB peak to trough during over 50% of nights.**

69. Turbines generate noise and the evidence of this is undeniable. The wind industry has used ETSU to ensure generation of electricity at night by having a very high 43dB noise limit. What the industry did not fully anticipate, and for a very long time was in (public) denial of, are the number of incidences and the actual level of EAM noise generated by turbines, especially at night. This is the noise people actually complain of.

70. The premise that people are not complaining about noise is simply not true. In Graveley the majority of residents (250 approx.) have heard the turbines during the day and night and grumbled about it. Many find the noise irritating; some can blank it out. Most do not complain officially because they don't want to be 'involved'. The percentage of people hearing the noise from the wind farm is much greater than those who have actually reported it. This highlights the need of local authority officers and council members to actively protect the local communities and not to wait for noise complaints.

71. Many residents have supplied logs of their noise complaints and described their experiences. Samples of some of these logs, submitted to the EHO's can be seen in appendix 3. The number of independent noise complaints sent to the EHOs' run into many hundreds of individual reports. These reports can be easily cross referenced with the monitor's noise data.

72. Huntingdon DC and South Cambs DC have advised the community they are requesting a full evaluation of the noise profile of Cotton Farm wind farm. Due to the continuous complaints of noise from residents and concerns over possible breaches of planning conditions, the councils are to agree a methodology and monitor location plan with the wind farm owners to monitor turbine noise, and background noise with turbines switched off in differing wind speed and wind directions.

It is the author's understanding this is to evaluate both background noise levels, as stated in the EIS and actual turbine noise. At the same time EAM noise records will be recorded by the councils using microphones able to collect all and especially low frequency levels in selected and known affected dwellings. The actual terms of the methodology has not yet been published. HDC is advising the community in July 2015 as to what they have done.²¹

11. Property Devaluation Due to Wind Farm Noise

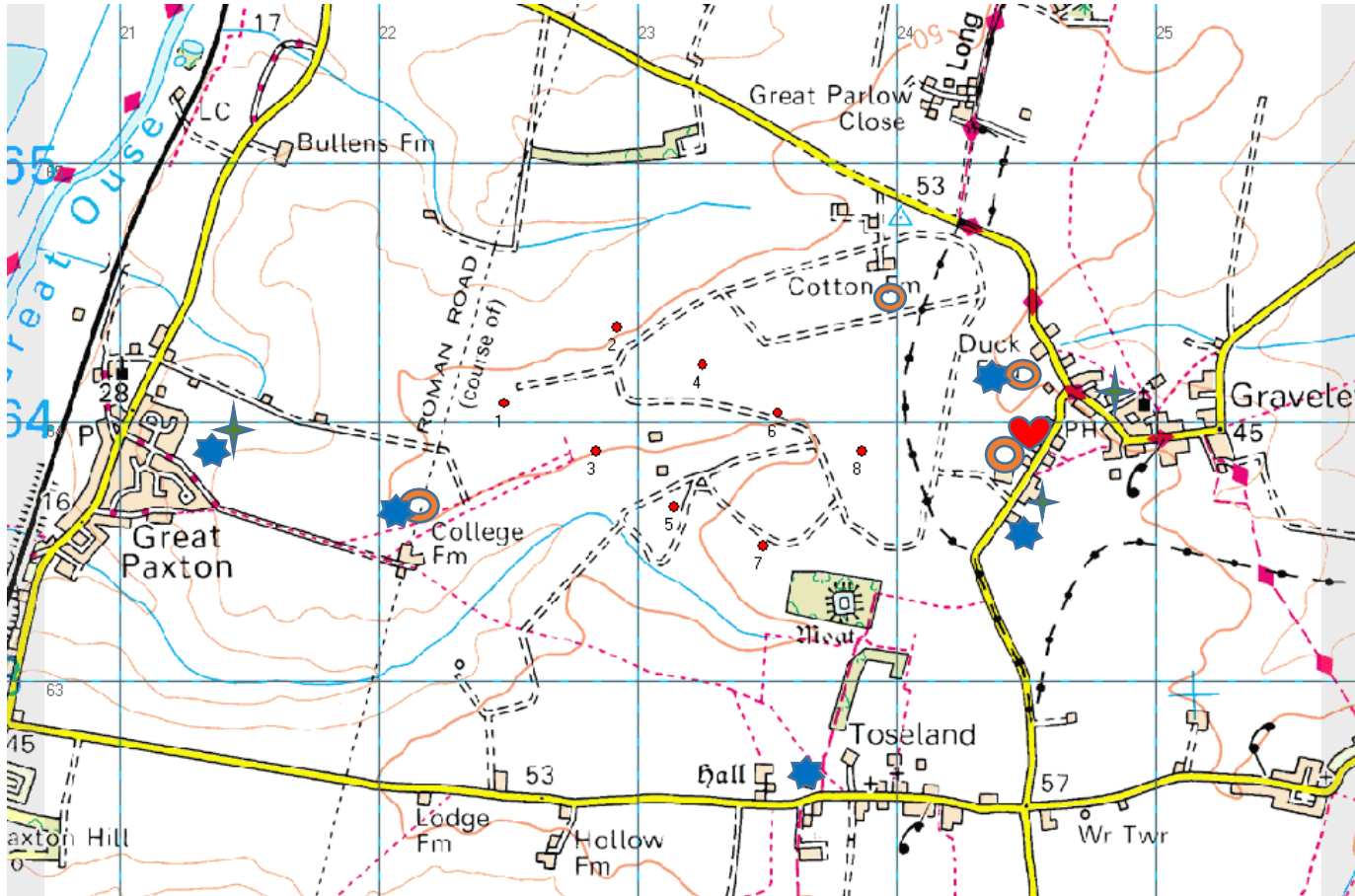
73. A resident in Graveley, in early summer 2013 requested a reduction in his community charge banding evaluation (from Band C to Band B) based on the fact that noise from the wind farm reduced his and his wife's enjoyment of their 'property amenity'. With this reduced amenity the value of his property, he claimed, would be reduced and, therefore, the banding level should be reduced. The case went before the Valuation Tribunal in August 2014. Although the re-banding request was rejected, primarily because of the uncertainty of the level of the actual devaluation value the Tribunal did acknowledge wind farm noise did have a devaluing effect on the value of properties near wind farms.





See appendix 4 for further details.

²¹ The author notes the councils are not, after all, to install monitors but only to evaluate existing (HMP) data under ETSU compliance rules. HDC have no plans to evaluate or deal with EAM noise issues. 16th July 2015.

12. Appendix 1 – CFRA Noise Monitor Installation

Monitor Sites



-  Hoare Lea monitors 2006 locations for RWE npower Environmental Impact Statement
-  Hayes MacKenzie Partnership monitors from Jan 2013 to approx November 2013. These were contracted by Renenco. (later BayWa) During this recording period the wind farm was sold to Greencoat UK wind PLC.
-  Graveley community monitor and met mast. Installation December 2013
-  Some sites used by EHO's for recording EAM noise to support complaints.

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HMP monitor (right) and HDC EHO monitor (left) at Gt. Paxton.

Monitor Details



The monitor is located at a private property in Graveley. The monitor is battery powered with permanent charging from the mains.

The nearest turbine is slightly more than 600m. The wind shield is regularly replaced. (Birds do peck at it)

The monitor is connected to a sound meter and computer. The data is both collected and stored locally and also sent, via the internet, to a server for processing.



The meteorological 10m mast and weather station are located at the same property.

The weather station continuously records wind direction, wind speed, air temperature and rainfall. This data is also collected and sent, via the internet to the server.

Technical Description of the Graveley Monitor System

74. A type 1 Larson Davis LxT sound level meter is used to record sound levels. The microphone has an oversized wind shield to comply with industry standards. This is calibrated once a month to ensure levels are reliable and the device is running correctly.

75. A Vantage Pro 2 weather station is used to record met data. The mast of the anemometer is mounted on a 10m flag pole. Both the sound level meter and the weather station recorder are controlled automatically by a laptop computer connected to the internet. The laptop extracts the data files from the LxT every hour and additionally continuously records the LxT sound levels into a text file (100ms data records and overall LA90) and the LxT audio output into a compressed audio file (This is supported by most internet browsers and offers good compromise of high audio quality and small file size).

76. The laptop also extracts the met data into a text file. These four files (the LxT data file, the text file of 100ms and LA90 levels, the audio file and the text file of weather data) are then uploaded to the internet hosted web space every hour. A specially built web page, upon opening in any modern internet browser, then reads the text files to create the table of contents and additionally draws the graphs of 100ms data while playing the matching audio file alongside it. This allows free access for anyone to view the data without the need for specialised software or training.

77. There are notes on the web page about how to understand the data and also its limitations.

The LxT data files are periodically downloaded by the MAS office server and these are kept for when more detailed data analysis is required as they contain detailed sound level data including the 1/3 octave spectrum.

13. Appendix 2 - Molesworth Appeal Decision, December 2014

78. The Huntingdon DC document known as the Wind Power Supplementary Planning document (WP-SPD) was considered in great detail at the Molesworth appeal. Application Ref: 1200967FUL, Decision document: APP/H0520/A/13/2197548. The Molesworth decision documentation reinforces the opinions and concerns held by the Cotton Farm Rule 6 Party participants at their appeal.

79. The Molesworth Inspector, in his report to the SoS of The Department of Communities and Local Authorities (DCLA), commented on the revision and update of the WP-SPD taking place at the time of the appeal could not be used and the existing WP-SPD still applied. (The new 2014 SPD document was adopted in June of that year.)

The WP SPD includes advice on the capacity of the District's landscape character areas in Huntingdonshire to accommodate wind turbine development [36-40]. It stops short of indentifying specific 'suitable areas' for renewable energy as recommended by paragraph 99 of the national Framework, but it does identify which character areas have more or less capacity for this type of development.

459. The WP SPD is clearly an important material consideration. Its key conclusions of relevance to this appeal are that the Northern Wolds has: a 'high' capacity for single turbines or for a 'small scale group' of 2-3 turbines; but a low capacity for any larger groups; and *'there is very little scope for the Northern Wolds to accommodate more than one small scale group'* [38-39]. This may be contrasted with other Huntingdonshire landscape character areas in that 5 of the 9 LCAs were assessed as having capacity for groups of up to 12 turbines [128]. However the WP SPD conclusions are undermined to some degree by inconsistencies in the WTD Report that underpins it, particularly as the WP SPD stated that its summary Table 2.1 (copied from the WTD Report) should be read in conjunction with the background material in WTD Report [40].

460. Whilst the WP SPD does not entirely preclude groups of more than 3 turbines from the Northern Wolds, its advice that the area only has high capacity for a group of that size suggests a conflict with the appeal proposal for 6 turbines.

80. It is this final comment in para 460, the author suggests, is probably why the Inspectors recommendation was for the 6 turbine proposal to be reduced to only 3 for approval. The Inspectors comments do prove the weight and power of the WP-SPD.

81. However, it is to be noticed HDC had been revising the document for some time before the Molesworth appeal and had asked for opinions from interested parties in the district as part of their consultation process.

82. The primary problem of the original WP-SPD document was that it was based only on specific geographical location and only for wind turbines. There was no consideration of impacts of one specific area to an adjoining area. The Cotton Farm action group, (CFAG) had, as part of this consultation process, pointed out the fact that the original document was researched by Land Use Consultants (LUC) who were, at the same time, assembling the Environmental Investigation Study (EIS) for the Cotton Farm proposal (See footnote 5, page 8) raising concerns of 'bias'. The WP-SPD was then considered by the community as a 'Trojan Horse' document allowing almost unrestricted wind farm development in the HDC district and the Rule 6 Party group at the Molesworth appeal were well aware of this.

83. The Secretary of State seems to give more weight to the demise of the 2006 WP-SPD than the Inspector, as can be seen in the following quotes from his report.

8. After the inquiry closed, Huntingdonshire District Council adopted the Supplementary Planning Document (SPD): Wind Energy Development in Huntingdonshire 2014 on 19 June 2014. This SPD deals with issues of landscape and visual impact for wind energy development proposals, identifying which landscape character areas are more or less suitable for wind turbine development of different types. That includes the Northern Wolds LCA which is considered to have a low capacity for a medium scale group of 6-12 turbines and a moderate capacity for a small scale group of 2-5 turbines.
9. The Secretary of State notes that the 2014 SPD replaces the Wind Power SPD adopted in 2006 (WP SPD), which has been revoked. In his report, the Inspector considered the WP SPD to be an important material consideration and because the 2014 SPD was only in draft form at the time of the inquiry, the Inspector afforded it only limited weight (IR41). The Secretary of State considers that due to the document's current status now that it has been adopted by the District Council, it merits significant weight in his consideration of this appeal. However, as the Inspector and parties were aware of the document, albeit in draft form at the time of the inquiry, he does not consider it constitutes new evidence requiring further reference back to the parties.

The SoS identifies the WP-SPD dealt with the landscape and visual impact issues and its power was changed and revoked by its replacement, even in the draft form.

84. In the Cotton Farm Inquiry the Inspector used the WP-SPD several times for non-landscape or visual impact issues by stating HDC, by authorising and accepting this document, intimated the council accepted a wind farm could be sited in the approximate area where Cotton Farm was located. This acceptance included decisions on noise issues which has nothing to do with landscape or visual issues. (See para 3.2.2, pages 8 and 9.)

14. Appendix 3 – Noise Logs

Actual logs supplied to (SCDC & HDC) EHOs' regarding noise experiences from CFWF.

Log of noise incidents from Cotton Farm: 05 Jan - 16 March 2014 inclusive

Complainant's name [REDACTED]. Address [REDACTED] High Street, Graveley, St Neots PE19 6PL. Tel No 01480 [REDACTED]. (Redacted to protect complainant)

Date	Time on	Alleged Nuisance Time off	Description of Alleged Nuisance	How did it affect the enjoyment of your home?
Sunday 26 January 2014	21:45		Stepped into the garden to take my visiting mother's dog for a short walk - turbines extremely noisy and intrusive. Tried to activate the SCDC monitoring kit but did not seem to be working.	Very unpleasant experience - did not stay outside for very long
Sunday 2 February 2014	07:45 08:30		Opened the bedroom windows to listen to the birdsong but the whoosh/whoomph noise was too intrusive - had to close them again Took dog in garden - noise from the turbines very noticeable above and amongst the birdsong - really unpleasant	A peaceful Sunday morning ruined
Thursday 13 February 2014	06:00 07:50		Turbines making a really unpleasant noise - audible in the bedroom and very intrusive/unacceptable once the bedroom window was opened. Outside the back door was even worse. Only light breeze at ground level. Almost called the SCDC emergency line but not practicable given time of day and need to get up etc. Outside at the front of the house - turbine noise almost as loud as passing cars. Little wind at ground level but turbines visibly turning strongly	Most concerned that they were audible in the bedroom with the windows closed -noise with the windows open in our and my son's bedroom was awful. What happens when the weather improves and we have the windows open at night?
Sunday 16 February 2014	08:25		Opened bedroom windows to enjoy a quiet Sunday morning lay-in (sunshine, no rain or wind) but the sound of the turbines was too intrusive - shut window and got up instead. Downstairs in the kitchen, turbines were audible too	Another peaceful Sunday morning ruined
Sunday 2 March 2014	07:00		Walking our new puppy in the back garden - EAM noise of the turbines clearly audible/intrusive in amongst the bird song. Unlike the previous day when the turbines were off and everything was peaceful	The garden is not a pleasant place to be with the noise
Sunday 16 March 2014	12:00	Rest of afternoon	Returned home from a week's holiday and the first noise we heard as we got out of the car was that of the turbines. Today was a lovely Spring day but all that could be heard was the whoosh/whoomph of the turbines. The audio and data from the CFRA monitoring site confirms the noise levels	Very bad return from holiday - no desire to go into the garden

Log of noise incidents from Cotton Farm wind farm #2

Complainant's name. [REDACTED] Address [REDACTED] Toseland Road, Graveley, St.Neots Cambs.
 PE19 [REDACTED]
 Tel No 07 [REDACTED]

Date	Time on	Time off	Description of Alleged Nuisance	How did it affect the enjoyment of your home?
21/06//13	2100	NK	Loud 'whoomping' similar to the rotation of a loaded washing machine. Heard it for over 30 mins before returning to the TV. Front and back garden	Wind westerly. Low level wind speed. Noise constant. Neighbour also heard it.
22/06/13	0500	NK	Loud constant 'whoomping'. Heard it for 30 mins approx. before going indoors. Background noise very low. Bird song pronounced but turbine noise louder. Back garden (Did not check front)	Very little wind low level wind but higher level breeze in tree tops showed wind from West. Tranquillity of the garden totally lost.
10/08/13	17:00	19:30	Continuous helicopter blade whooshing type noise	Constant noise late into the evening, eventually abandoned using the garden for recreation purposes as noise become the focus of attention rather than anything else..... nice sunny evening ruined. Front windows had to be closed too resulting in temperature rise inside the house.
11/08/13	07:00	23:00	Continuous helicopter or aircraft rotor blade whooshing type noise or passing plane that never disappears.	Apart from necessary garden maintenance abandoned using the garden for recreation purposes as again the noise become the focus of attention rather than anything else Slight rest-bite around 19:45 as turbine 8 switched off due to shadow flicker issues. Again windows had to be closed leading to stuffy conditions inside the house as no airflow possible, thank goodness we have double glazing.
12/08/13	18:30	20:00	Main sounds akin to an aircraft passing overhead, but never disappearing, this is very distracting and becomes after a while is the only thing you can focus on in the early hours of the morning.	Windows had to be shut, dismissed any notion of using the garden this evening, shame as daughter's birthday today and family round couldn't enjoy the rear garden. Also affect by shadow flicker despite cloudy conditions for about 30 mins, until turbine 8 switched off as it's supposed to be to stop daughter's migraine attacks re-occurring.
30/08/13	16:00	22:00	Noise like the sound of an aircraft passing overhead continuously.	Same issues as other occurrences mainly unable to use the garden during daylight hours, not possible to have the windows open due to noise being heard inside the house, worse

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				upstairs in the front bedroom, as the noise is ever present during these periods you are constantly drawn to its annoyance.
31/08/13	04:00	22:30	Same repetitive sounds again. Main sounds akin to an aircraft passing overhead, but never disappearing, this is very distracting and becomes after a while is the only thing you can focus on in the early hours of the morning.	Daughter woken up at 04:00 and couldn't get back to sleep, the knock on effect being that the whole household is then disturbed as she gets up, makes coffee etc.... noise lasts all day, daughter knowing this decide to sleep at boyfriend's tonight in order to get a good night's sleep.
01/09/13	08:00	19:30	Noise exists continually for approx. 72 hours, level of annoyance depends on whether you are outside or have the windows open.	Daughter again chose to sleep round boyfriend's knowing that the wind directions and strength means we are again subjected to constant noise issues. During daylight hours we are unable to spend any length of time in the gardens other than to cut the grass (lawn mower drowns out constant helicopter sounds). Respite only possible by either staying in doors with the windows shut or getting away from the wind farm (shopping, visiting friends etc..)

These are sample logs lodged with the EHO of SCDC. There are many more records from villagers. The template was supplied by the EH Department of HDC.

15. Appendix 4 - Property Devaluation

85. A resident in Graveley, in early summer 2013 requested a reduction in his community charge banding evaluation (from Band C to Band B) based on the fact that noise from the wind farm reduced his and his wife's enjoyment of their 'property amenity'. With this reduced amenity the value of his property, he claimed, would be reduced and, therefore the banding level should be reduced. The case went before the Valuation Tribunal. Although the re-banding request was rejected the Tribunal acknowledged wind farm noise did have an effect on the value of properties.

86. A claim was made, and was initially turned down by the valuation officer on visual grounds (One can't see the turbines from the house)²² which ignored the original claim which was based on unacceptable noise from the WF. This was appealed by the owner and the basic principle of property devaluation caused by (EAM) noise from the wind farm was acknowledged by the Valuation Panel but the re-banding was not allowed on the basis the actual devaluation value was not proven, therefore a nominal 5% devaluation assumed would not take the property value outside the Band C it was currently registered in²³.

87. It was admitted by the Valuation officers' (VO) (employed by HMRC) to the Valuation Tribunal (VT), an independent panel, under the wing of the Department of Communities and Local Government (DCLA), it was very difficult to obtain evidence and assess the case. The methodology they normally use is based on the 1991 road side evaluation for property banding and recent sales of properties, preferably in the same banding level in the immediate locality and registered with the Land Registry and the visual impact of a 'new' construction which could affect the area. (i.e. Factory unit, new barn, etc.) None of these criteria fitted with the basis of the claim which, obviously, caused problems for the VT and their legal advisor.

88. Sales of Houses in Graveley have virtually stopped. Only one property has been sold (at a comparatively very low price, Sept 2014) since 2010. In nearby villages some movement has occurred but mostly in the lower value 'first time buyer' end of the market. Several middle range homes in Graveley have been on the market for up to two years and have not sold.

89. Other properties for sale in the area have also had major problems. One property in Great Paxton, with several bedrooms, out buildings rented out to small businesses and 28 acres of land has been on the market for over 18 months. Prices have dropped over time to about £850K from about £1million and the only offer for the property, as advised by the estate agent, was £1.²⁴ Many people, with arranged appointments to view the property, simply did not turn up at the house. Many of the potential buyers advised the estate agents their loss of interest was due to the location of the wind farm just over 600m away. The owner, in a recent formal letter to the HDC authorities, has described the problems of visual impact and noise in great detail. The owner has also suffered recent health problems due to the stress of trying to sell the property.

²² This proved not to be true. During summer leaves on trees obscure the turbines. In winter they can be seen and the valuation tribunal acknowledged that.

²³ VT 9530649151/037CAD/1 6th August 2014

²⁴ Fine & Country Estate agents, St Neots, Cambs.