

Summary of Case By:

Save Straiton For Scotland

Main Issues:

Noise and Residential Amenity

Key References:

1. CD017.002 Save Straiton Noise Report
2. CD.017.015 T0145Bald Hills
3. CD015.042 - N1 and N2 Noise - Energiekontor UK Ltd, ScottishPower Renewables (UK) Ltd & Knockcronal Wind Farm Ltd.
4. CD.017.003 complaints
5. CD017.004. complaints
6. CD 17 27 NANR277-windfarm-noise-statutory-nuisance
7. Mr Huson's report CD 017.05
8. Noise Hearing Session 30th May 2023 Day 1
9. Noise hearing session 31st May 2023 Day 2
10. CD017.007B PPA-310-2034 Appeal Rigghill WPS Appendix K
11. CD.017.009 IARO Report
12. CD.017.011 IARO chapter
13. CD17.34 Save Straiton Amendments to Operational Wind Turbine Noise Condition 37. 19-06-2023.
14. CD.017.23 3 Matters for Reporters Noise

The Topic Of Noise

1. Save Straiton for Scotland have provided irrefutable, first hand, ongoing evidence about the failure of ETSU-R-97, the Good Practice Guide and the subsequent planning conditions to protect the health and wellbeing of windfarm neighbours.

This submission summarises the significant issues that are associated with the proposed three wind farm developments in respect of 'noise' and residential amenity. The issues identified demonstrate the applications to be both individually and cumulatively unacceptable regarding the current planning guidelines for such activities.

2. ISSUES

A Supreme Court judgment in Australia (CD.017.015 Bald Hills) simply stated that there should be no preference towards the development of renewable energy to the detriment of people nearby. A development should be able to

both address the need for renewable energy AND provide an acceptable environment for those nearby to have an acceptable acoustic amenity.

The proposed three wind farm developments do not assure that the nearby Community will have an acceptable acoustic amenity.

3. It is accepted that current planning objectives, with regard to noise refer to ETSU-R-97 and the guidance provided by the Institute of Acoustics in their Good Practice Guides. These procedures and guides are recognised in the evidence presented to have flaws and remain ambiguous in part.

Given that the procedures for assessing wind farm noise impact in development applications have some leeway in interpretation, it would be advisable to err on the side of caution when applying these guidelines to ensure the protection of the Community. This is an example where the Bald Hill recommendations can apply and result in an acceptable outcome for BOTH the developers and the Community.

Any proposed development should ensure that the Community is protected whilst still producing renewable energy. If this means the reduction in scale of a proposed development then that would be an acceptable outcome from both a planning and social responsibility perspective with regard to noise.

3.1. The current development applications test the limits of the planning provisions assuming optimistic parameters with zero compliance margins for noise. The reality is rarely achieved.

An assessment of the noise impact from the Hadyard Hill Wind Farm that used a similarly lax application of the methodology outlined in ETSU-R-97 and the IoA Good Practice Guides, as used in these three development applications, show that the predicted noise levels and actual noise levels measured-show exceedances of approximately 13 dB.

3.2. With reference to CD015.042 - N1 and N2 Noise - Energiekontor UK Ltd, ScottishPower Renewables (UK) Ltd & Knockcronal Wind Farm Ltd.,

The statement at Para 3.5 "which discusses the alleged submission of a subsequent (third) report from TNEI, implies, whether intentional or not, that SSfS withheld an alleged 3rd TNEI report referenced by SAC in the FOI documentation 585570 in CD017.004.

We categorically state that all the information and reports provided by SAC through the EIR, where submitted as evidence to the inquiry, no documentation has been withheld and our case is based on factual evidence forwarded by SAC

as soon as this was finally received and subsequently made available to the inquiry at the earliest opportunity.

3.3. Furthermore, the statement:

Whilst this additional report is not before this Inquiry, SSfS evidence confirms its existence, as referenced in the e-mail from SAC, and that an amended wind farm control regime was implemented,

SSfS does not confirm the existence of a third TNEI report and we argue that in the physical absence of the alleged third TNEI report, the Inquiry has no evidence as to the veracity of SAC's statement:

“Due to the amended operational control regime which has been put in place, levels were found to be in compliance with the agreed noise levels”

3.4. We find that if SAC's position is that; levels were found to be in compliance with the agreed noise levels, why have SAC not provided this 3rd TNEI report's evidence of compliance; or if it does exist, why have the applicants not produced it through their own protocol?

3.5. With further reference to this matter in CD015.042:

*3.2 The two TNEI reports submitted by SSfS [CD017.032 and CD017.033] were two versions of the same report dated April 2016 and July 2016 respectively. These reports are an assessment of compliance with the planning noise limits controlling operational noise from Hadyard Hill Wind Farm (HHWF). The assessment was completed by TNEI on behalf of Scottish and Southern Energy (SSE), the operators of HHWF. *The noise measurements were completed at a property beyond the western boundary of HHWF called Tralodden Cottage, which is well removed (approximately 8 km the closest turbine of CMWF) from the three proposed developments.*

The inclusion of this comment is irrelevant since the non-compliance relates to the whole wind farm and all properties surrounding it.

4. It is well understood that wind farms require ongoing maintenance and that the idealised situation regarding noise emissions from a newly installed wind farm can degrade with time. Any noise condition must be checked periodically throughout the expected lifetime of any wind farm.

- 4.1. The Joint Response in CD015.042 explains in detail why the Hadyard Hill Wind Farm noise predictions were wrong. Surely, if the excessive noise generating capabilities of the chosen wind turbines were known to exhibit such high sound power levels then the prediction model should have explained this when planning applications were made. The lesson learned here is to review manufacturer specifications with suspicion.
- 4.2. There are two further lessons to be learned: optimistic noise predictions will not address ongoing degradation in a wind farm and; optimistic predictions of wind farm noise should be considered to be 'the best that could be achieved' and will not reflect reality for a Community that will be exposed to noise emissions over at least 40 years.

A condition requiring periodic noise assessment may not be required if adequate investigation of any noise complaint is properly completed. An adequate investigation will require an assessment following the procedures described in DEFRA-NAN-R 277.

5. During the hearing Mr Huson's report (CD 017.05) was discussed at length in the afternoon of day 1. Mr Huson gave a summary of his report in the first session of Wednesday 31st May. Mr Jiggin's response to this at 60 minutes into the hearing is crucial to the Minister's understanding that ETSU and the GPG do not air on the side of caution.

Mr Jiggins refers to Mr Huson's cautionary recommendations as 'pessimisms', and 'misinterpretations' as to what can be achieved by adhering to ETSU. He states that Mr Huson's recommendations are '*unreasonable demands*' and that by adding all Mr Huson's pessimisms together, the demands are so large it would result in no consented wind farms.

- 5.1. The evidence given by Save Straiton For Scotland (CD.017.002 report, CD17.003, CD.017.004 and CD.17.023) on unresolved noise complaints, demonstrates how complaints from windfarm noise are not being adequately or timely addressed, leading to homes being abandoned, bought out or cases dismissed or left in limbo. The planning procedure is broken and councils are not able, for whatever reason, to respond adequately to wind turbine noise complaints.
- 5.2. A solution could be provided if noise conditions were to address the procedure in DEFRA-NAN- R 277, in order to ensure that local authorities

carry out their proscribed duty delegated by Government, to take action when wind turbines are still causing 'nuisance'. Mr Lotinga stated at 0.50 minutes that noise nuisance was not a planning matter. However, Save Straiton for Scotland reason that it becomes an extension of the planning procedure when it is the only course of action left to control noise pollution caused by wind turbines in a person's home.

6. Both Rita Holmes and Professor Alves Pereira on Day 1 (2.25 hours) responded to Mr Bray's question on how to treat matters with broader implications than those covered in ETSU and the GPG.

6.1. Ms Holmes relates to the lack of suitable monitoring equipment down to low levels, the power of the wind lobby to stifle research into ILFN AM in order to curtail any real upgrade to ETSU – written in 1996 – published in 1997 and GPG last updated 2013. Ms Holmes also relates to her own experience as to how 'conditions are ineffective.

6.2. It is Professor Alves Pereira (Day 1 2.40 hours) recommendation that no wind power plant should be consented until ETSU regards public health as an issue.

Professor Alves Pereira stated:

'If public health is a consideration in the planning process, no wind power plant can be safely consented until proper health procedures are put in place, therefore there should be a moratorium until we gather evidence and protect public health.'

ETSU does not have one single medical professional involved. Mr Huson points out: **Where ETSU is silent:** that when ETSU was formulated, its core objective was health related. The problem is that at its outset it never addressed ILFN, AM, tonal or vibration issues related to turbines the size and power levels these turbines in these 3 applications may present.

6.3. At 2.51 hours: when the applicants were asked by Mr Bray 'What should be done with the evidence provided by the Save Straiton team'?

The applicants doggedly adhered to their opinion that only ETSU and the GPG, as current government policy were to be considered under the operational noise impact assessments. Mr McLeod referred to statutory nuisance and that if the council failed to act then there was the option of legal

aid or taking a summary action to the sheriff's court. (We followed up on this procedure and found no easy way to pursue this action).

That our evidence should be ignored or dealt with elsewhere, that there should be no additional conditions to protect public health demonstrates how little the applicants really care about the residential amenity of those left to live with the consequences of a decision to consent these 200 metre 6-7MW turbines.

The authors of ETSU signed a disclaimer as to the veracity or accuracy to anything contained in the document. This is documented in CD017.007B.

These are the reasons why the reporters should be cautious in relying on ETSU and the GPG.

7. Mr Huson confirms in his evidence, both during the hearing sessions and in CD.017.005, that the current development applications have used very conservative parameters to predict noise impacts in the Community which comply with ETSU-R-97 and recommendations in the IoA Good Practice Guides. For example; sound power levels have been based upon manufacturer expectations rather than independent test results and have also assumed that there are no special annoying audible characteristics such as tonality, impulsiveness and amplitude modulation (AM).
- 7.1. It has also been assumed that sound propagation noise models use a ground absorption value of $G=0.5$, despite the IoA Good Practice Guides explaining that $G=0$ could be used to provide a more robust prediction.
- 7.2. The noise compliance target limits are based upon Background sound level data that has been demonstrated to be suspect. The uncertainty of Background measurement data has not been provided in the three applications, especially regarding the uncertainties associated with wind speed measurements that constitute half of the data required to produce a target noise limit at any integer wind speed.
- 7.3. During the Hearings we had a response from Mr Jiggins who assured that the accuracy of wind speed measurements using the chosen two alternative methods providing wind speed, as opposed to using a recommended meteorological anemometer on a mast, provide the required accuracy needed when applying ETSU-R-97. Despite Mr

Jiggins' assurances, no evidence was provided and the application should be deemed incomplete, an issue that Mr Jiggins acknowledged.

- 7.4. With reference CD. 015.042. Agreement between: James Mackay, TNEI (WIN-370-4 Craiginmoddie Wind Farm) James Powlson, WSP (WIN-370-5 Carrick Wind Farm) Mark Jiggins, Hoare Lea (WIN-370-6 Knockcronal Wind Farm) ISO 9613-2 Ground Factors: Mr Huson's response is that:

In the Hearing Mr Jiggins agreed that the alternative ground factor, that is allowed in ETSU-R-97 and the IoA Good Practice Guidelines, did increase predicted sound levels by more than 2 dB. Mr Jiggins did not state if he modelled the alternative with a receiver height of 4m or 1.5m but only that the predicted sound levels would be higher. My own calculations using the ISO 9613-2 method directly (not implemented by commercial software packages) on many wind farms show that with a receiver height of 1.5m and $G=0$ that the predicted sound levels are typically 4 dB higher than if $G=0.5$ and a receiver height of 4m is used. I note that Mr Jiggins does not describe how he calculated his predictions. It is common for noise consultants to use software that purport to implement ISO 9613-2.

- 7.5. This demonstrates that predicted sound levels, assuming that the sound power levels of the candidate wind turbines are accurate without any audible annoying characteristics, are too low by over 2 dB, yet being in compliance with ETSU-R-97 and the IoA Guidelines.

Given that the predictions for Hadyard Hill Wind Farm were shown to be grossly underestimated it remains prudent to err on the side of caution when considering wind farm prediction model inputs and $G=0$ with a 1.5m receiver height should be used.

- 7.6. This shows that a valid interpretation of the planning guidelines demonstrates non-compliance with the target noise limits proposed in the applications.**

- 7.7. It is significant that the applicants refer to noise sensitive properties in all their NIAs but when it comes to the conditions they insist that they become 'dwellings' which should be of a brick built standard. SSfS referred to the

fact that Tairlaw House is made of sub standard breeze block building material and they also run a business from a caravan within their curtilage.

- 7.8. We submit that a noise sensitive receiver should be that described by the South Ayrshire Council and must not be limited to typical brick-built dwellings upon which ETSU-R-97 bases its target noise guidelines. To protect the amenity of a Community surrounding wind farm developments that do not reside in a brick-built dwelling it will be necessary to adjust the recommended outdoor noise limits according to the dwelling structure. For example, as there is no significant attenuation from outside to inside a tent in a campsite the target noise level outside becomes the indoor noise level suggested in ETSU-R-97 to protect sleep and which is based upon WHO Community Noise Guidelines at 30 dB(A), Leq. For a campsite, the LA90 recommended noise level outside becomes 28 dB(A) at night to protect sleep.
- 7.9. Furthermore, it is of note that there was no adequate assessment of the acoustic impacts on the recreational amenity of the Dome at Tallyminoch. The owner of this property relies of the revenue from paying guests to maintain this important tourist facility promoting the dark sky park in this exceptionally tranquil rural location.
- 7.10. The three wind farm development applications are all deficient in regard to the assessment of noise impact upon all noise sensitive locations in the surrounding Community.
8. We contest the agreed position statements that it was agreed that an assessment of excess amplitude modulation could be scoped out.

Mr Huson's Evidence in his report at CD.017.005 Para 95 & 96.

95 ETSU-R-97 incorrectly addressed amplitude modulation and made a sweeping assumption that such a characteristic was rare in modern wind farms. This is not the case and it is now recognised that amplitude modulation is the most significantly intrusive sound characteristic of wind turbines.

- 8.1. *96 The GPG refers in section 7.2 to ongoing research. Since the publication of the GPG there has been much ongoing research and amplitude modulation is known to be a significant concern for residents near modern wind farms.*

9. It is of note that evidence of baseline acoustic sound-scape monitoring is submitted as an integral part of our Inquiry Report -see CD.017.009 IARO.

This document describes in detail the scientific acoustic data gathered at various noise receptors, inside homes of people who have serious concerns about a future with more industrial wind turbines on their doorstep.

9.1. A summary of the report:

Craiginmoddie, Carrick and Knockcronal Wind Power Plants (WPPs) are currently being proposed for South Ayrshire.

- High-resolution recordings of low-frequency sound and infrasound were obtained at several locations near these proposed WPPs.
- The purpose of these recordings was to document the baseline soundscape prior to, and in anticipation of, a formal consent for these proposed WPPs.
- The presence or absence of existing Wind Turbine Acoustic Signatures (WTAS) was determined for each of the locations and their likely sources are indicated.
- The following locations are already subjected to WTAS from several other, WPPs: Knockskae Cottage, Glenalla Farm, Little Garroch, Glengennet, Tairlaw House, Glenhead, and Barnfield
- A further WTAS source, with a BPF at or above 1 Hz, affected Knockskae Cottage, Glenalla Farm, Little Garroch, Glengennet, Glenhead and Barnfield. Its source could not be identified.
- All locations affected by this unknown source were also affected by a 20-hertz tone, also of unknown origin.

And our goal is:

Acoustical monitoring of the baseline soundscape in vicinity of the proposed Craiginmoddie, Carrick and Knockcronal WPPs in anticipation that consent may be granted.

9.2. We contest the applicant's agreed position statements:

"It was agreed that the assessment of wind turbine low frequency noise and infrasound should be scoped out of the assessment on the basis that guidance referenced by Scottish Planning Policy that there is no evidence of health effects arising from infrasound or low frequency noise generated by wind turbines".

9.3. Mr Huson therefore states in his Report CD.017.005:

154 Low frequency sound is not considered separately in ETSU-R-97 and I propose that a condition be included in a permit, if approved, to assess low frequency noise in accordance with DEFRA-NAN-R45.

155 Infrasound remains an area of contention and any permit for wind farm developments should include a provision that; if it is demonstrated that infrasound from wind farms have an adverse effect on health that the wind farms must comply with such infrasound level limits that prevent adverse health effects.

9.4. Furthermore, Mr Huson at Para's 68 -69 & 70 concludes;

68 Accordingly, I disagree with Section 3 of the Statement of Agreed Matters, 21 March 2023 regarding infrasound from wind turbines being comparable to the normal ambient environment and that A-weighted sound levels present sufficient control over the potential impact of low frequency noise.

9.5. *69 The issue associated with the larger wind turbines is that they emit resonant infrasound tones in the presence of wind even when they are not rotating. This makes it impossible to assess the ambient infrasound levels around the wind farms until after they are decommissioned and removed. I presume that the same will apply for the candidate wind turbines used as examples in the three wind farms of this conjoined inquiry.*

9.6. *70 If ambient infrasound levels are deemed to be important it would be wise to collect samples before construction of the proposed developments, so that ambient infrasound measurements can be compared to when the developments are operational.*

9.7. Mr Jiggins suggested that it was not practical to monitor inside the homes of complainants because it is too intrusive. Our experience is contrary to this statement, we have found few problems, but with the right attitude and continuous recording for shorter time periods.

10. 31st May2023 Day 2 of the Noise Hearing Session 2.25 hours.

The experience and evidence of Rita Holmes, as one of the 17 residents who reported being severely impacted by the Hunterston turbines, (CD.017.007) advised how adversely impacted their residential amenity became when the turbines were operational. How they were not protected by the current WTN guidance and how Public Health Scotland were incapable of action. She was unable to see the turbines from her home but she was able to 'perceive' when the turbines were operational, to the extent that a wave of sickness, or dizziness would overtake her. How many more cases are there that are hidden or unresolved, whereby residents are not being supported by their Local Planning Authority or Environmental Health Departments?

10.1. Professor Alves Pereira stated in her evidence that the truth is often very inconvenient, especially when it goes against government policy, so what should one do? She explains how ILFN may be up for debate in the UK, but other countries have had legislation for infrasound since the 1980s. She demonstrates how Mr Lotinga's own evidence in CD.012.027 Hearing statement on Noise actually contains references to papers which have been inadequately evaluated as they have been evaluated by acousticians and engineers and not been evaluated by those with a medical background. Mr Lotinga states that 'noise' below 80hertz is accepted by the wind industry to be imperceptible to humans. He confirms that, 'we' accept that, audible is synonymous with perceptible and only audible is perceived by the human brain.

10.2. Yet his reference 20 on page 18 by Weichenberger 2017 demonstrates that infrasound is perceived by the brain even if it is inaudible.

Mr Lotinga's reference in paragraph 93 on page 22

In relation to low frequency sound and noise limits, the WSP BEIS report also noted the following.....

reference 44 on page 23, as well as referring to the fact that wind turbine noise is often a greater source of low frequency noise than traffic noise; it also says that allowable windfarm noise limits and associated penalties are often lacking in evidence to support them. That wind turbine noise has the potential to impact on human annoyance, sleep disturbance and well being. Professor Alves Pereira stressed that annoyance is a symptom of the agent of disease from a wind turbine pulse. Please refer to CD.017.011 IARO chapter

11. It is also notable that the WHO state; Special attention should also be given to: *noise sources in an environment with low background sound levels; combinations of noise and vibrations; and noise sources with low frequency components.*

11.1. The question is then, why are the wind industry acousticians constantly seeking to down play residents' complaints and deny the health impacts from adversely impacted residents, especially those who suffer severe sleep disturbance?

Can it really be the case that all other sources of noise nuisance from whatever source rightly needs to be addressed, but only wind turbine noise is benign and causes no ill effects?

The evidence from the WHO totally contradicts the unfounded claim by the WPS authors:

Overall, the findings from the existing evidence base indicate that infrasound from wind turbines at typical exposure levels has no direct adverse effects on physical or mental health, and reported symptoms of ill-health are more likely to be psychogenic in origin.

and likewise, as questioned by INWG: CD.017.008

'On what basis should medically unqualified acousticians, (as are the WSP authors) opinions on the health and wellbeing of adversely affected residents, become accepted as a statement of fact, on which large scale planning decisions are made and on which government policy is determined? '

12. The NIA reports conclude that in no case would effects be of such nature and / or magnitude that they affect living conditions at any property to the point it becomes an unattractive place to live, when judged objectively in the public interest.

Therefore, the Reporter has to consider as to why Knockcronnal and Carrick deem it necessary to induce 3 further properties to become financially involved when the planning application has progressed as far as this public inquiry?

12.1. For Knockcronnal:

*the RVA Agreements create financial involvement solely to the extent that the properties can be considered non-sensitive receptors **with respect to residential visual amenity**. The RVA Agreements do not provide for the acquisition of any of the RVA Properties. The RVA Agreements also do not address noise or shadow flicker matters and have no bearing on the related assessments with respect to these matters (or any other matters) included in the Applicant's Environmental Impact Assessment Report or subsequent documentation submitted during the public local inquiry process.*

2.7 Specifically with respect to noise, the site specific noise limits proposed by the Applicant and included in the operational noise conditions [CD015.037] have been calculated on the basis that no dwellings are financially involved.

12.2. A home is very personal and people who choose to live in rural locations do so for the wild open peaceful environment as the witness statements in 017.014 testify.

The reality of living in the shadow of an complex of this size and power in a normally quiet rural environment is tantamount to living in a large scale industrial and devastated environment.

13. CD17.34 Save Straiton Amendments to Operational Wind Turbine Noise Condition 37.

We stand by our recommendations with regard to conditions in this document, to take the precautionary approach in order to protect public health and residential amenity. Conditions can only be a contingency in the event the applications are approved.

Should the applicants have full confidence in their bluster about the capabilities of their proposed turbines, they would gladly accept all our proposed conditions - even be prepared to address our 'wish list'.

13.1. The Reporters should request that the background noise tables are completely reassessed due to ongoing non compliance of Hadyard Hill operational noise levels and the conjoined applicants unsound reliance on flawed data. See CD.017.23 3 Matters for Reporters Noise.

13.2. Justification for the inclusion of an amplitude modulation condition and also impulsiveness has been explored in the Hearing and should remain as suggested.

Other suggested modifications have been justified and should not be removed.

The arguments offered in the Joint Response for the removal of the conditions proposed by SSfS are not founded and should be rejected.

Conclusion:

This summary is based on evidence generated from the dire circumstances created for many when forced to envisage a life, or live, close to industrial wind turbines, as current Scottish Government policy dictates.

Scottish Government Planning endorses ETSU-R-97

This is unjust, immoral guidance which we have a right and a duty to challenge.

Save Straiton For Scotland appeals to the Reporters to penetrate the ostensible and refuse this planning application on the evidence of breaches in ETSU-R-97, the Good Practice Guide and potential overbearing Residential Amenity Impacts both visual and Noise.

The three wind farm development applications are all deficient in regard to the assessment of noise impact upon all noise sensitive locations in the surrounding Community.

End