

From: [REDACTED]
To: [Norfolk Boreas](#)
Subject: Norfolk Boreas Project EN010087.
Date: 01 February 2020 00:21:46

Dear Planning Inspectorate,

I would like to add if possible to my points regarding the applicant's intended noise management. The applicant's Baseline Noise Survey Appendix 25.1 demonstrates that the 32dB noise limit at residential property is questionable.

Table 2.15 shows the long term monitoring results of SSR2 in Ivy Todd as: Average Day 32.2dB. -1 standard deviation 27.1dB

Average Night 28.4dB. -1 standard deviation 22.3dB

This shows at night the baseline noise is under 32dB the majority of the time, and the -1 standard deviation shows at times it must drop to under 20dB. This means a 32dB substation noise will be heard.

The day time results show, half the time background noise will be greater than the substation noise limit of 32dB (+0.2dB) as the average is 32.2dB, and therefore half the time it will be lower than the 32dB substation noise, allowing the substation to be heard.

In the short term monitoring results, unfortunately SSR2 is missing. The remaining position's results are shown in Table 2.17 Daytime and 2.18 Night time. During the day 2 out of the 19 monitored had an average below 32dB, meaning more than half the time they will hear the substation, and the remaining positions less than half the time to varying degrees.

Night time results show that 16 of the 20 positions recorded an average below 32dB, 12 were below 30dB, 10 were below 28dB, 6 were below 26dB, 3 were below 24dB, 3 were below 22dB, and 1 below 21dB. These short term results are to La90 Bs4142:2014.

Unfortunately again there are no results for SSR2 Ivy Todd. This must demonstrate the substation will be heard widely, and probably most of the time in Ivy Todd.

I would like to refer to the Daedalus project Audible Noise Assessment document, <https://www.fareham.gov.uk/PDF/planning/Condition11and12.pdf> where I notice they have used earth bunding, and take the absorption properties into account conservatively before vegetation and soft landscaping establishes. This was thought necessary for a HVDC converter substation of 1000MW, where at Necton the combined scenario 1 capacity would be 3600MW.

Thank You for your attention. Colin King. 20022983.

From: [REDACTED]
To: [Norfolk Boreas](#)
Subject: Norfolk Boreas Project EN010087
Date: 25 February 2020 22:48:28

Dear Planning Inspectorate,

I have already described anomalies that concern me, with the viewpoints that I am familiar with, and in my opinion possible causes. Now I feel there is another part in the process of generating photo montages that could be open to inaccuracy. The applicant informs us in their, Appendix 29.1 Landscape and Visual Impact Assessment Methodology Environmental Statement 112. that they use

"Visual Nature Studio software which is based on the OS Terrain 5 digital terrain model with a 5m data grid (OS Terrain 5)." Plus 113." Adobe Photoshop software, to provide a realistic image of the appearance of the project", and that they 113." verify the location and scale of the computer generated model by using markers such as the existing transmission towers, the existing substations, church towers and other fixed built features in the landscape." They state in 113. that" Photomontages have been produced for all the representative viewpoints, using Adobe Photoshop software, to provide a realistic image of the appearance of the project." This information leaves uncertainty with regard to how the infrastructure image was created to accurate scale dimensions, and how it was positioned correctly within the montage, especially with regard to height.

114." The photographs and photomontages used in this assessment are for illustrative purposes only and, whilst useful tools in the assessment, are not considered to be completely representative of what will be apparent to the human eye. The assessments are carried out from observations in the field and therefore may include elements that are not visible in the photographs." This piece of information adds to the uncertainty over how accurately the photo montages were prepared, and can they be reliably used as the only means to assess visual impact and plan successful mitigation.

Could the applicant give a +/- M. of accuracy with regard to their method of producing the visualisations, with the three software packages mentioned, and after verification by their described method. It could then be combined with the known +/-2.5M that the montages are based on, to gain the actual accuracy of the photo montages.

Another method to prove the validity of the photo montages, would be to simply provide a simple scale, side elevation diagram for each viewpoint, clearly showing how much of the hills would be in view without mitigation, and then after 15 years of mitigation, and if needed the montage could be adjusted. If the diagram and montages were supplied together, and they matched, the montage could then be used with confidence. Until they are proven I think they should only be viewed as an indicative illustration, and a questionable poor tool, rather than a useful tool.

Paragraph 114. states the impact assessments are carried out from observations in the field and may include elements that are not visible in the photographs. This firstly gives the impression the applicant could know relevant information from the in field observations, and is not showing it all in the statement, and secondly the photo montages of viewpoints 3 and 7, I feel should have turned out more accurate and true to life.

In addition to my last submission regarding the baseline noise monitoring, I have now noticed out of the 12 monitoring locations around the substation area, only 2 monitoring point's results are actually published for long term monitoring (1 week), and another point's results were for 1 day instead of a week. In the short term tests 1 location was missed, access problems were put forward as a reason, but no explanation is provided for the situation with the long term tests.

The baseline background noise limit is a very important element, with regard to the impact on residents around the substation. This I feel has been set too lenient at 32dB at 750m from the substation. The Dudgeon's limit is 32dB at 450m, Orsted's Hornsea 3

Annex 8.4, fig 1.2 shows 32dB at 300m, and the Daedalu's limit is 30dB at 245m for comparison. A diagram in the Daedalus Audible Noise Assessment shows 27.5 dB at the first property (245m). These comparable figures, and the shortfall in the background noise monitoring results leads me to question whether this figure was derived with the due care, and the realised importance required.

The results published in Appendix 25.1 Baseline Noise Survey, Onshore Project Substation I find concerning, when compared to the 32dB at 750m limit set. Table 2.15 shows the results for the long term monitoring. SSR2 is in Ivy Todd, and at a similar distance to the closest residents. The daytime results for SSR2 show an average background noise level of 32.2dB. This must mean, half the day, the background noise level was above the substation noise level, but half the day, the background noise level was below the substation noise level, meaning the substation would be heard in Ivy Todd for half of every day when it should actually be quiet, (a quality of Ivy Todd that residents and walkers expect and value). The 1 standard deviation + of 37.3dB and - of 27.1dB gives an indication of the range of values recorded. I consider the +1 standard deviation, and greater arbitrary, as once the background noise outweighs the problem noise, covering the problem noise, it is of no relevance how great the existing background noise gets. The -1 standard deviation in contrast shows how naturally quiet the area gets, and consequently how progressively more the substation noise will be noticed. -2 and -3 standard deviations would show the lower results recorded, under 27.1dB, and possibly below 25dB.

Night time results show the average value recorded was 28.4dB, substantially below the 32dB set limit. Consequently the substation would be heard most of the night. And with a -1 standard deviation of 22.3, this would suggest the natural background noise must be below 20dB at times.

SSR1 results show that Necton's Baseline Background Noise level is above 32dB most of the time, plus it is further away from the noise source than SSR2, so SSR1 results would seem satisfactory. SSR4 and SSR10 West End Bradenham should have been monitored, to represent close residents and a X3 holiday let business, in a very quiet area. Wood Farm should have been monitored. SSR7 Top Farm has results showing its background noise also above 32dB most of the time, so this could be considered satisfactory. This just leaves SSR2 Ivy Todd to work with, where the above results clearly show it would be heard in Ivy Todd half of every day, and all every night, at the agreed 32dB@750m. I suggest it not unreasonable to consider this unsatisfactory. This would affect at least 11 properties, including a high end b&b, in Ivy Todd. Who knows the effect on West End Bradenham and Wood Farm, as no attempt was made represent them.

Top Farm's background noise readings SSR7. are substantially higher than Ivy Todds, in fact always above 32dB, even at -1 standard deviation, possibly adding an advantage to it as an alternative site.

The short term monitoring test results are more complete, apart from SSR2 Ivy Todd which I feel is one of the more important locations. I also question the purpose of the short term tests, other than to easily produce extra data to add weight to the Baseline Noise Survey. A 12 month sample would be far more representative and valuable, than the 2 samples gained over a week, and the third long term sample gained over a day, so what is the value of an hour? Anyway the hour results during the day show 2 locations with a result lower than 32dB, and I think it is reasonable to suggest SSR2 Ivy Todd would have also show a low recording if it had been included. During the night all 10 locations except 1, showed a reading below 32dB, the majority substantially lower, and again SSR2 I feel would have also been under 32dB.

The results or data from a Baseline Noise Survey should not be lumped together and averaged to form a value to base the projects noise limit. Each locations results should be considered individually, and simply the limit should be set as close as possible to the lowest recorded reading, at the closest properties. Monitoring points should be at all the closest properties, but I notice Wood Farm is not included, with their closest monitoring point some 800m further away from the substation, behind them.

Another observation with the noise limit set at 750m means potentially an area of 768 acres of land is covered in noise above 32dB. This would appear a very vulnerable situation, with the slightest wind causing a massive amount of sound energy to potentially travel miles. The applicant must take this into account and reduce the noise level accordingly, so that the 32dB sound limit at 750m is not exceeded, even down wind of the project. With a large area of sound like this, the potential for accidentally exceeding the limit, either through miscalculation, or unusual weather conditions is greater than if a tighter limit was set, like the 450m, 300m and 245m limits set on the aforementioned substations.

I must mention the possible interaction between the photo montages and the sound mitigation considerations. If landforms that conceal the converter halls are being shown by, and recognised from the photo montages, and they are being used in the sound mitigation calculations, this would put added importance on the accuracy of the photo montages, as inaccuracies would not only affect the final real life visual impact, but the noise impact as well.

Obviously I consider the visual and sound impact that would result from the construction of the substations unacceptable as the applicant currently proposes. The applicant's calculations and methodology maybe to industry standards, but when these standards are used to fit a construction of this size, into a rural landscape and community, they seem inadequate for purpose. The applicant suggests that the visualisations supplied may look different to the actual human eye view, and sensitive sound receptors not monitored (Wood Farm, and West End Bradenham) etc. is all to industry standards. As these anomalies would make a large permanent difference to residents lives, and they meet the industry standards, it would suggest the body who set the standards were not envisaging a construction of this type to be set in such a sensitive area.

I have not found a definitive answer to my question with regard to shortening the cable corridors by exchanging the destinations of Vattenfall's cable, and Orsted's cable. If I have this totally wrong, then it should be easy to prove.

I am concerned that it seems like Breckland Council have taken most of the applicants predictions at face value, and have not shown enough consideration to the possibility that the project may differ from the predictions, and the resulting consequences to residents and their Adopted Local Plan.

To my knowledge, there has been no progress with regard to the land easement rights over the land of the Necton substation area, held by Colin King, Paul King, and Jacqueline Claxton.

Finally I would like to comment on the practice of gathering Factors Characterising Population Sensitivity.

27.3.4.1 Sensitivity

37. Table 27.2 sets out factors characterising sensitivity for human health. The table informs the professional judgement on scoring high, medium, low or negligible sensitivity. In line with best practice a formulaic matrix approach to determining sensitivity has been avoided. The 'higher' and 'lower' sensitivity characterisations represent instructive positions on a spectrum that would also include more extreme, as well as intermediate, positions. Most situations have a mix of higher and lower characterising factors so a balanced expert view of sensitivity is taken.

Table 27.2 Factors Characterising Population Sensitivity (Cave et al., 2017a)

	Inequalities	Deprivation	Health status	Life stage	Outlook
Higher sensitivity	High levels of inequalities or inequities.	High levels of overall deprivation or a high level of deprivation for a relevant sub-domain of the indices of multiple deprivation. High levels of poor access to financial, social or political resources.	High levels of poor health and/or disability (particularly multiple or complex long-term health conditions). High reliance on (or low capacity in) healthcare facilities, staff or resources.	Presence of dependants (particularly the elderly or children), pregnant women, shift workers or the economically inactive.	Presence of groups with strong views or high degrees of uncertainty about the project who may anticipate risks to their health and thus be affected by not only actual changes, but also by the possibility of change.
Lower sensitivity	Low levels of inequalities or inequities.	Low levels of overall deprivation or a low level of deprivation for a relevant sub-domain of the indices of multiple deprivation. Good access to financial, social or political resources.	Low levels of poor health and/or low levels of disability. Low reliance on (or high capacity in) healthcare facilities, staff or resources.	Predominantly a working age population in steady good quality employment.	No indication that strong views are held about the project. People are well informed of the issues and potential effects.

38. The assessment characterises the relevant populations for each health issue. For each category, the text sets out detail on the one or more relevant factors from Table 27.2 that informed the score.

27.3.4.2 Magnitude

39. Table 27.3 sets out factors characterising magnitude for human health. The table informs the professional judgement on assigning scoring of large, medium, small or negligible magnitude. In line with best practice for the assessment of human health,

specific, local, regional and national population groups. The data covers a range of variables relevant to the scope of this chapter. Appendix 27.1 also includes a discussion of data under the eight themes that cut across the scope of construction and operational effects of the project.

27.5.3.1.1 Norfolk County

87. The health of people in Norfolk is varied compared with the England average (Table 27.7). Health priorities for Norfolk County Council are the social and emotional wellbeing of children aged 0-5, obesity, and dementia.

Table 27.7 Health of people in Norfolk County (Source: Public Health England, 2017)

Factor	Norfolk County compared with England averages
Health of children	
Children living in low income families	18% (25,000). Lower than for England (20%)
Child obesity in Year 6 of school	18% (1,427) of children. Higher than the average for England (34%)
Alcohol specific hospital stays among those under 18	26 per 100,000 population. This represents 43 stays per year. Higher than the average for England
GCSE attainment	Lower than the England average
Smokers as a proportion of the population	Lower than the England average
Levels of breastfeeding initiation	Higher than the England average
Health of adults	
Life expectancy for women	83.6 in Norfolk compared to 82.9 in England
Life expectancy for men	80.2 in Norfolk compared to 79.2 in England
Life expectancy in the most deprived areas	Life expectancy is 6.3 years lower for men and 4.2 years lower for women
Rate of alcohol-related harm hospital stays	676 per 100,000 population. This represents 6,134 stays per year. Lower than the England average
Rate of self-harm hospital stays	225 per 100,000 population. Lower than the England average
Rate of smoking related deaths	247 per 100,000 population. This represents 1,527 deaths per year in the County. Higher than the England average
Estimated levels of adult excess weight	Lower than the England average
Estimated levels of adult smoking	Higher than the England average
The rate of people killed and seriously injured on roads	Lower than the England average
Rates of sexually transmitted infections and TB	Higher than the England average
Rate of statutory homelessness	Lower than the England average
Rate of violent crime	Higher than the England average
Rates of long term unemployment	Higher than the England average
Rate of early deaths from cardiovascular diseases	Higher than the England average
Rate of early deaths from cancer	Higher than the England average

27.5.3.2 Noise

91. Noise effects are considered at the site-specific level (representative of landfill, cable route and onshore project substation, see section 27.4.1). Baseline data is discussed accordingly, including reference to local or regional indicators as appropriate.
92. The environmental baseline for noise has been provided in Chapter 25 Noise and Vibration.
93. The human health baseline relevant to this topic from Appendix 27.1 Table 3.1, Table 3.2 and Table 3.3 can be summarised as follows.
94. People who spend extended periods at home may experience greater noise exposure durations than those who are absent during normal working hours (Table 27.11).

Table 27.11 Summary of baseline relevant to Noise and Air Quality (Department of Communities and Local Government, 2015)

Project location	Landfall	Cable Route ²	Onshore project substation	National
Representative LSOA	North Norfolk LSOA 012A	Breckland LSOA 004C	Breckland LSOA 004A	England average
Households have no adults in employment	40%	32%	52%	33%
Households include dependent children	19%	25%	19%	29%
Households include a person with a long-term health problem or disability	28%	29%	31%	26%
People aged over 65 years old	25%	22%	35%	16%
People report working mainly at or from home	18%	18%	15%	10%
Deprivation can increase sensitivity to change:				
For overall deprivation ³ where 1 is the most deprived LSOA	8,484	8,926	18,957	32,844 LSOAs in England
Relative deprivation by neighbourhoods in England	Within 30% most deprived	Within 30% most deprived	Within 50% most deprived	n/a

95. The indicator for noise effects is not reported on smaller area statistics. Therefore, baseline exposure to transport related noise is considered representative of the regional (County) level. This indicates that 2.1% of people are exposed to road, rail and air transport noise of 65 dB(A) or more during the daytime (compared to an average of 5.2% for England). (PHE 2017a and 2017b)
96. During the night-time transport related noise at the regional (County) level (the indicator not reporting on smaller area statistics) indicates that 3.0% of people are

³ The index of multiple deprivation is comprised of domains for: income; employment; education, skills and training; health deprivation and disability; crime; barriers to housing and services; and living environment.

for exercise or other health reasons (compared to an average of 17.9% for England). These factors are likely to relate to the rural nature of Norfolk.

111. The representative populations around the project are around the median of relative health deprivation (Table 27.14 – approximately 16 to 19,000 out of 32,844). A higher proportion of households have access to a vehicle which would allow them to access wider physical activity opportunities. But this may be representative of the low population density (Table 27.13) rather than the level of physical activity.

Table 27.14 Summary of baseline for physical activity

Project location	Landfall	Cable Route ²	Onshore project substation	National
Representative LSOA	North Norfolk LSOA 012A	Breckland LSOA 004C	Breckland LSOA 004A	England average
People reporting their health is very good or good	77%	78%	73%	81%
Proportion reporting fair health	17%	14%	20%	13%
Proportion of people reporting bad or very bad health	6%	9%	7%	5%
People reporting that their day-to-day activities are not limited	77%	79%	72%	82%
Population aged over 65	25%	22%	35%	16%
Health deprivation can increase sensitivity to change:				
For overall deprivation ³ where 1 is the most deprived LSOA	19,670	16,240	16,457	32,844 LSOAs in England
Relative deprivation by neighbourhoods in England	amongst the 50% least deprived neighbourhoods in the country	amongst the 50% most deprived neighbourhoods in the country	amongst the 50% least deprived neighbourhoods in the country	
Access to a vehicle is indicative of being able to access alternative physical activity opportunities:				
Households have a vehicle	92%	92%	87%	74%

27.5.3.6 Journey times and / or reduced access

112. There is potential for journey times and/or access to be affected at the local level (see section 27.4.1). Baseline data is discussed accordingly, including reference to local or regional indicators as appropriate.
113. The environmental baseline for traffic has been provided in Chapter 24 Traffic and Transport.
114. The human health baseline relevant to this topic from Appendix 27.1 Table 3.1, Table 3.2 and Table 3.3 is summarised in Table 27.15. This shows that North Norfolk and Breckland have low access to health assets and tend to travel further to work than average. All local areas have similar or higher rate of death or serious injury on the road. This correlates with the high number of people that have access to a vehicle and the low population (Table 27.13).

Table 27.15 Summary of baseline for journey times and access to services

	North Norfolk	Broadland	Breckland	England
Average distance travelled to work	21km	15km	20km	15km
Baseline rate of people killed or seriously injured on the roads (per 100,000 ⁷)	40.0	44.0	48.0	39.7
Access to Health Assets & Hazards ⁸	29.3%	14.7%	26.0%	21.2%
Access deprivation can increase sensitivity to change:				
For the barriers to housing and services domain of deprivation ⁹ (where 1 is the most deprived area)	23	134	44	326

27.5.3.7 Employment

- 115. Employment effects are expected at the regional level (see section 27.4.1). Baseline data is discussed accordingly.
- 116. The environmental baseline has been provided in Chapter 31 Socio-economics.
- 117. The human health baseline relevant to this topic from Appendix 27.1 Table 3.1, Table 3.2 and Table 3.3 is summarised in Table 27.16. Chapter 31 Socio-economics indicates there would be an appropriate pool of construction workers who would benefit from employment opportunities associated with the onshore cable laying tasks of the project.
- 118. Income deprivation in Norfolk County in 2015 was below average compared to that for England. The percentage of older people and children affected by income deprivation are both below the average for England. In terms of gender pay equality; this is currently only slightly below the average for England.

Table 27.16 Summary of employment baseline (Source: NOMIS 2017 and English indices of deprivation 2015)

	Norfolk County	British average
Working age (16-64) people in employment	75.7%	75.1%
People in skilled manual occupations	20.6%	16.5%
People affected by income deprivation	13.2%	14.7%
Older people affected by income deprivation	14.1%	16.2%
Children affected by income deprivation	17.7%	19.9%
Gender pay equality ¹⁰	76.2%	83.3%

⁷ Data from 2014 to 2016

⁸ Access to Health Assets & Hazards (AHAH) index measures the percentage of the population who live in LSOAs which score in the poorest performing 20% of domains for access to retail services, access to health services, and physical environment.

⁹ The barriers to housing and services domain of deprivation is comprised of indicators for: road distance to a post office; road distance to a primary school; road distance to general store or supermarket; road distance to a GP surgery; household overcrowding; homelessness; and housing affordability. Uses rank of average rank.

¹⁰ Ratio between the gross median hourly earnings for women and the gross median hourly earnings for men

Table 3.2 PHE Health assets profile Norfolk

Health assets indicators	Period	Norfolk		England
		Count	Value	Value
Gender pay equality	2015	-	78.9%	79.4%
Housing affordability ratio	2016	-	8.0	7.2
Percentage of people aged 16-64 in employment	2016/17	401,100	76.9%	74.4%
Income deprivation	2015	-	13.2%	14.7%
Income deprivation in older people (IDAOP)	2015	-	14.1%	16.2%
Income deprivation in children (IDAC)	2015	25,807	17.7%	19.9%
GCSEs achieved (5A*-C including English & Maths)	2015/16	4,347	54.6%	57.8%
School Readiness: the percentage of Year 1 pupils achieving the expected level in the phonics screening check	2016/17	7,354	77.9%	81.1%
School Readiness: the percentage of children achieving a good level of development at the end of reception	2016/17	6,806	70.1%	70.7%
Healthy life expectancy at birth (Male)	2014 - 16	-	64.7	63.3
Healthy life expectancy at birth (Female)	2014 - 16	-	64.4	63.9
People's access to woodland	2015	94,781	10.7%	16.8%
Proportion of people who use services who feel safe	2015/16	-	67.8%	69.2%
Access to NHS dental services - successfully obtained a dental appointment	2015/16	3,918	95.1%	94.7%
Percentage of people who said they had good experience when making a GP appointment	2015/16	9,985	75.7%	73.4%
Social connection: percentage of adult social care users who have as much social contact as they would like	2016/17	-	49.3%	45.4%
Social connection: percentage of adult carers who have as much social contact as they would like	2016/17	176	32.0%	35.5%
Proportion of people who use services who have control over their daily life	2015/16	-	78.2%	76.6%
Self-reported well-being: % of respondents with a high happiness score	2015/16	-	74.9%	74.7%
Self-reported well-being: % of respondents with a high satisfaction score	2015/16	-	82.6%	81.2%
Percentage of people aged 16+ with sports club membership	2015/16	-	19.3%	22.0%
Percentage of physically active adults	2015	-	56.5%	57.0%
Utilisation of outdoor space for exercise/health reasons	Mar 2015 - Feb 2016	-	18.8%	17.9%
Additional Wider Determinants of Health indicators				
Exposure to road, rail and air transport noise of 65 dB(A) or more during the daytime	2011	18,410	2.1%	5.2%
Exposure to road, rail and air transport noise of 55 dB(A) or more during the night-time	2011	26,160	3.0%	8.0%

These tables are an example of the information gathered to professionally judge the sensitivity of the population. This seems to demonstrate the great lengths the applicant is prepared to go to, to formulate the degree of mitigation needed. If maximum mitigation was being used, these considerations could be considered as responsible and thorough, but in combination with very economical mitigations, it would seem the information gathered is used to formulate the minimum and least expensive mitigation needed.

This in combination with poor visualizations and sound monitoring could see mitigations under estimated. If the general attitude towards mitigation was a little more pliant, and less marginal, then breastfeeding, sexual infections, under age drinking, self harm etc. would not have to be considerations.

Thank You For Your Attention, Colin King. 20022983.