



Neil Jackson Esq.,
The Chairman
UKOPA
Pipelines Maintenance Centre
Ripley Road, Ambergate
DERBYS, DE56 2FZ

20th June 2011

Neil,

RE: PROPOSED WINDFARM AT RAF HARRINGTON.

Please find enclosed a copy of a document relating to the proposed windfarm at RAF Harrington, which one of my constituents has asked me to pass on to you for your consideration.

I would therefore be most grateful if you could consider the contents of the enclosed document and let me have your thoughts accordingly.

I look forward to your response.

Yours sincerely,

CHRIS HEATON-HARRIS MP
MEMBER OF PARLIAMENT FOR DAVENTRY

House of Commons
LONDON, SW1A 0AA

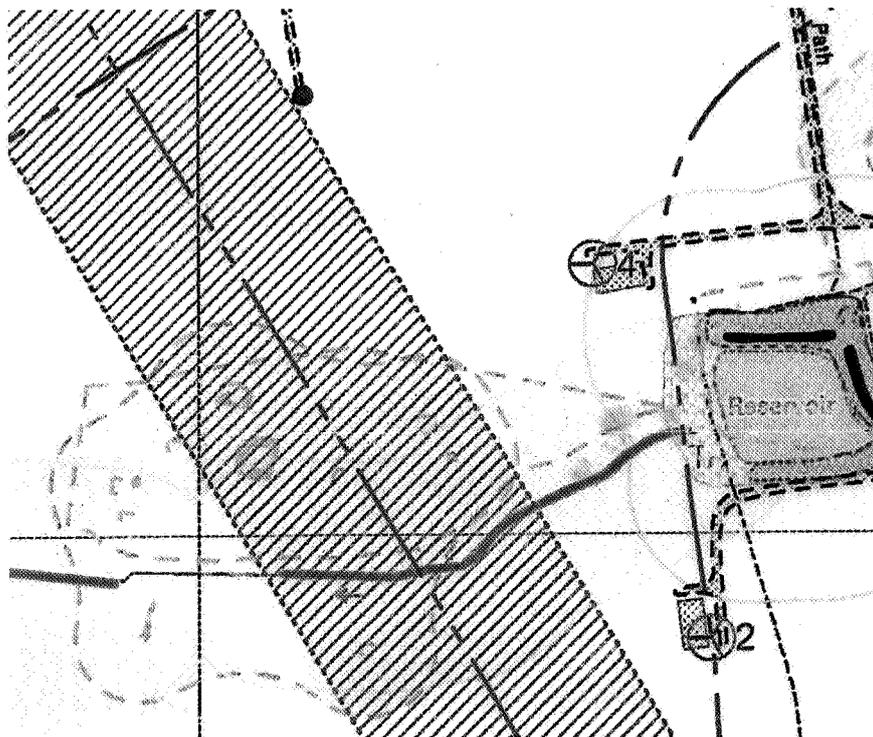
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Oil and Pipeline Agency: turbine 2 and community concern

The Issue

A high pressure military oil pipeline crosses land to the north of Maidwell village and the proposed wind farm. Investigations have revealed that it carries aviation fuel at high pressure (725psi, 15 times atmospheric). The pipeline is part of the Government Pipelines and Storage System (GPSS) and is covered by the Land Powers (Defence) Act of 1958. The only statutory requirement comes from Section 16 of that Act in which it maintains a way-leave of 10 feet around the pipeline itself. We believe that the pipe is of steel and is buried at a depth of circa 1m. Concern to maintain the integrity of the pipeline is such that its entire route is over-flown by helicopter at weekly intervals.

Figure 4.4 of the ES submitted by Nuon, a section of which is shown below, shows the path of the pipeline as a blue line that is buffered (blue cross hatch) at a separation distance of 110m. Turbine 2 is some 10-15m higher up the hill at a distance of around 180m from the buried pipeline and Turbine 4 is 5-10m above the pipeline and at a distance of 250m.



Responsibility for the management of the facility seems to rest with Fisher German LLP, The Grange, 80 Tamworth Road, Ashby de la Zouch, LE65 2BW and the Oil and Pipeline Agency (OPA).

The original application may well be the first in which turbine proximity to such a potentially dangerous military facility of this type is an issue.

Case History

This history does not reflect well on DDC Planning Department and, in particular, on actions by the case officer to negate an original rejection by a statutory consultee. It is hard not to get the impression that the case officer tried extremely hard to negate the objection, including a postponement of the original date of the DDC Determination meeting, 'at the appellant's request' that, whatever else it did gave time for the withdrawal of objection to be achieved.

The early investigations by Daventry DC sought opinion from just the GPSS and the Health and Safety Executive (H&SE).

a) HSE Response

H&SE reported that as of that time they had no general mandate to look into wind farm safety. This position is changing rapidly under the H&SE's Emerging Energy Technologies (EET) programme, which seems set to rectify the anomaly that some of the largest pieces of rotating machinery currently in use are not subject to their oversight (see, for example *H&S Executive Board Minutes* dated 28th April 2010 (HSE/10/41)).

b) GPSS Response

The GPSS response was as below:

GOVERNMENT PIPELINES & STORAGE SYSTEM – The Government Pipelines and Storage System (GPSS) may be affected by your proposals as indicated on the attached plans. The plans are intended for general guidance only and should not be relied upon for excavation or construction purposes. No guarantee is given regarding the accuracy of the information provided and in order to verify the accurate location of the pipeline in conjunction with your proposals you should contact Amco Construction, the GPSS Operator, to arrange a site visit.

You should note that the interests of the GPSS are conserved by means of Land Powers (Defence) Act 1958, in particular Section 16 of the Act, and other legislation such as Pipeline Safety Regulations 1996. It is, however, the Land Powers (Defence) Act 1958 that specifically prohibits any development and most intrusive activities within a GPSS Wayleave without specific consent from the Secretary for Defence. GPSS Wayleaves are generally 6m wide and beside the pipeline 3m on either side and can incorporate other associated GPSS facilities.

The GPSS Operator will be able to provide guidance on the required procedure for entering into Section 16 Consent and provide confirmation on permitted development and intrusive activities. The whole process of obtaining Section 16 Consent can take between four and six weeks depending on circumstances at the time of the application. To reiterate, you should not undertake any work or activity without first contacting the GPSS Operator for advice and if required Section 16 Consent.

You should be aware that landowners and third parties have a duty of care not to carry any works that have the potential to damage GPSS apparatus. This duty of care applies even if the works themselves are situated more than 3m from the pipeline. Examples of such works are mineral extraction, mining, explosives, piling and windfarms.

Please note that the implementation of any unapproved works that affects a GPSS Wayleave may result in serious consequences in terms of health and safety, expense and other attendant liabilities. In such cases it is the perpetrator of the act, together with any promoting organisation that shall be held fully accountable for any resulting damage.

There is no evidence that any of these recommendations were followed. Despite the concern expressed by the Maidwell with Draughton Parish Council when it asked: *'Is Daventry District Council aware that there is a military high-pressure fuel line running across the site from NW to SE direction, exiting the site adjacent to the eastern boundary of Draughton Heath?'*, no concern was carried forward by the case officer in the Regulation 19 request to the appellant. Whether this was a result of incompetence or design is moot, but the failure to warn the appellant that this might be an issue could well explain some of the later activity by DDC Planning.

c) Oil and Pipeline Agency (OPA)

In the event, and as far as we are aware the contact with the OPA was made by the SNHWF Action Group itself. The result was the following expression of concern:



York House, 23 Kingsway, London WC2B 6UJ
Telephone: 020 7420 1670 Fax: 020 7379 0500

18th September 2009

Daventry District Council

For the attention of Mrs C.Phillips

Dear Madam,

SUBJECT : Wind Farm Planning Application DA/2009/0168

It is come to our attention that there is a planning proposal being considered by your department for a wind farm in close proximity to a high pressure refined oil products Government pipeline.

OPA, as Managing Agent for the Ministry of Defence, have not been consulted on the design of the proposal. It appears that gas pipelines and power lines are covered by regulations ensuring there is adequate separation distance between such proposals and the above mentioned utilities. The situation regarding high pressure refined oil pipelines is not so defined.

The pipelines are protected by a wayleave, which provides protection against development in close proximity. However, as the proposal development is not encroaching upon the wayleave, the assumption appears to have been that the oil pipeline will be unaffected by the development.

It is OPA's opinion that a similar separation distance is required for high pressure oil pipelines as for gas pipelines. Oil is pumped at similar pressures as gas through transmission pipelines, hence could be similarly affected. The effect of a breach of an oil pipeline can be worse than a gas pipeline in that, although the liquid is not highly explosive, it is flammable and there is a significant risk of ground contamination and water pollution. In addition high voltage cables, as may be used for transmission of electricity generated by the wind farm, over a pipeline can induce accelerated corrosion of the pipeline with the result of an unexpected failure and lost of containment.

It is for the above reasons that OPA object to the proposal. Insufficient consideration has been given to the high pressure oil pipeline and without detailed investigation the wind farm design could be detrimental to the oil pipeline.

Yours faithfully

C.Perkins
Head of Operations

This first advice from OPA was followed in a letter of objection dated 27th November 2009 in which a request for a more formal safety assessment was made, with the suggestion that a separation distance of 5 rotor diameters (>400m) might be appropriate given that the possible damage from a breach of the pipeline could well be

much greater than from one carrying gas. It is clear that in making this suggestion Mr. Perkins was not familiar with the current UKOPA Guidance (1.5 x hub height separation distance) and that he has no experience or knowledge of practice elsewhere.

(Note: SNHWF obtained this copy from the publicly available objections provided by Daventry DC and are thus not in breach of its attached disclaimer).

From: Chris Perkins [mailto:Chris.Perkins@oilandpipelines.com]
Sent: 27 November 2009 16:58
To: c.phillips@daventrydc.gov.uk
Subject: Harrington Wind Farm



Claire,

My objections to the wind farm at Harrington are based upon the fact that a suitable safety assessment had not been carried for the wind turbines with regard to the oil pipeline that is approximately 140m away from the nearest turbine. The requirements for gas pipelines is a separation distance of 5 rotor diameters and for power lines a separation distance of 5 rotor diameters. There is a wayleave of 3m on both sides of a pipeline, which protects the oil pipeline from building works, but, I believe, this does not represent a safe distance for an oil pipeline from a structure such as a wind turbine.

I note that the proposed developer has allowed a safety strip of 110m either side of the pipeline and the nearest turbine is approximately 140m away. Although this distance is more than the height of the turbines (126m maximum height), there is very little safety margin allowed to ensure the pipeline is unlikely to be damaged from a collapsing turbine. I have no experience of the potential area of scatter for debris from a turbine failure, hence cannot determine if the oil pipeline is safe. However a breach of an oil pipeline could result in a major discharge of oil and, depending upon the topography and the environment, widespread dispersion. The consequences would be contaminated land and if in close proximity to water courses or aquifers then contamination of drinking water supplies and a risk of a major fire.

Finally, it is unlikely that OPA would grant consent for any high voltage cable associated with the turbine to cross the pipeline without measures taken to protect the pipeline from induced current corrosion.

I trust that I have provided you with the information that you need to progress your planning application. Should you have any further questions please do not hesitate to contact the undersigned.

Regards

Chris Perkins

Head of Operations

0207 420 1683(Office)

07891 02496(Mobile)

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What happened next is to say the least dubious and was the main reason for SNHWF's FOI request made shortly after the public inquiry. We have little doubt that the above letter created panic in DDC Planning and at Nuon.

The letter was followed by further correspondence of some undisclosed nature and content that has not been made public that led to a further letter from OPA dated 1st Dec. 2009 in which the agency reiterated its concerns. Finally, following some further undisclosed correspondence to which reference is made on 3rd December 2009 OPA wrote to the effect that 'information received' suggested that a separation distance of 1.5 x hub height (about 120m in this case) is the 'currently accepted minimum separation distance for gas transmission mains from wind turbines' concluding

'Although there are some recent incidents of turbine failure which caused damage beyond the above distance, (I) am unable to justify a demand for a greater separation distance than that applicable for gas transmission mains. As the Harrington proposal provides that distance, I have to assume that the position of the wind turbine in respect of the oil pipeline is acceptable'.

This reflects the current UKOPA position that the appropriate separation should be 1.5 times hub height. However, we do NOT think that this is the response of someone who is entirely happy with the position into which he had been maneuvered by DDC Planning and the appellants.

SNHWF and the Parishes completely failed to get our disquiet about this history into discussion at the public inquiry, with the result that the inspector ruled (PINS APP/Y2810/A/10/2125093, 20th September 2010:

32. The Ministry of Defence high pressure oil pipeline crosses the site and is a potential hazard to safety if breached. Nevertheless, all the turbines would be further from the pipeline than the minimum separation distance of 1.5 x hub height, the closest turbine being some 140m from the pipeline. The Oil and Pipelines Agency advise that the position of the wind turbines in respect of the oil pipeline is acceptable and I heard and have read nothing to justify me taking a different view.

Note

Whatever one makes of the following, these concerns seem to cut no ice at Public Inquiries. There is substantial literature on the probability of accidents that makes the UKOPA guidance suspect. SNHWF's own submission to the public inquiry showed that:

- a) Accidents involving turbine failure, even tower collapse and blade throw are almost certainly more common than the industry would like us to believe. The Caithness Wind Information Forum has an up-to-date register of such accidents that if anything is almost certainly an under-estimate. It is clear that as the early turbines age and their numbers increase, so catastrophic failure is becoming increasingly common and these data make nonsense of the frequent claims that this is in some sense a 'safe' technology. The three most common types of failure are blade throw, gearbox fire and structural failure. Of these blade throw is most likely to impact on the pipeline. What seems to happen is that gear box failure in very high winds prevents the blades being braked and 'parked' leading to them to 'over-speed' and then break up. This implies that the velocities at failure can be very high, with extreme examples being pieces of blades thrown over 1300m.
- b) Model studies in standard texts and from California show have attempted to assess the probability of failure conflated with the probability of significant debris being thrown with sufficient energy to damage a buried pipeline at some *specific* distance from the turbine. As yet we do not have this, but we do have a paper prepared by Scot Larwood of the California Wind Energy Collaborative, University of California at Davis titled 'Permitting setbacks for wind turbines in California and the blade throw hazard' (32 pages, 2005, available at: http://www.energy.ca.gov/pier/project_reports/CEC-500-2005-184.html). This reviews the evidence and suggests that the probability of failure is somewhere between 10^{-2} (1 in 100) and 10^{-3} (1 in 1000) per turbine year. Significantly, no improvement was noted as gear box technology has developed. The probability of damage at ground level at distance might be expected to decline steadily with distance but for a model turbine similar to those proposed for Harrington (39m radius rotors and 80m hub height) was found to be roughly constant at 10^{-3} , up to a distance of 200m at which point it dropped rapidly. Combining these probabilities and allowing for the fact that we have two turbines operating close to the pipeline for at least 25 years is the sort of problem that an advanced statistics class might be set, but the answer for the probability of an accident

that breaks the pipeline is definitely not zero and suggests that the prudent safe distance should be set much further than that suggested. This type of model result should be well-known to the industry. A standard work on wind turbine technology by Erich Hau published as *Wind Turbines: Fundamentals, Technologies, Application, Economics* deals with it in Section 15.1.1. Hau presents a case based on a turbine of 60m hub height, with 60m diameter rotor. The blade is shown as covering in excess of 280m before descending to ground level. This result is for a relatively small blade. The objection that these studies are theoretical, based merely on modeling from first principles, can be countered by the observation that the same is true for industry provided estimates of both noise and shadow flicker nuisance.

Suggested actions

- a) Letter to OPA outlining the new proposal and re-expressing the concerns in the community. Given the nature of the fluids in the pipeline and his original concerns is he happy with the appropriateness of the UKOPA Guidance? An offer to brief him on blade throw hazard is a further option.
- b) Possible involvement of the HSE. Perhaps a letter noting the risks to the general public of such large rotating machinery and enquiring if their interest has been taken further.
- c) There is also a HSE Committee on Major Hazards (COMAH) that perhaps might have an interest.
- d) There either is or was an HOC standing committee showing concern to which an enquiry might be made, see <http://www.publications.parliament.uk/pa/cm200203/cmstand/eurob/st021204/21204s01.htm>

D. Unwin 21-5-11