

**ELECTRICITY ACT 1989 (SECTION 36 AND SCHEDULE 8)
TOWN AND COUNTRY PLANNING ACT 1990 (SECTION 90)
THE ELECTRICITY GENERATION STATIONS AND OVERHEAD LINES
(INQUIRIES PROCEDURE)(ENGLAND AND WALES) RULES 2007**

**PUBLIC INQUIRY TO CONSIDER SECTION 36 ELECTRICITY ACT 1989
APPLICATIONS BY:**

- (1) STEADINGS WIND FARM LIMITED FOR CONSENT AND DEEMED PLANNING PERMISSION TO CONSTRUCT AND OPERATE A WIND FARM AT KIRKWHELPINGTON, NORTHUMBERLAND (KNOWN AS STEADINGS)**
- (2) AMEC PROJECT INVESTMENTS LIMITED FOR CONSENT AND DEEMED PLANNING PERMISSION TO CONSTRUCT AND OPERATE A WIND FARM AT RAY ESTATE, NORTHUMBERLAND (KNOWN AS RAY WIND FARM)**
- (3) WIND PROSPECTS DEVELOPMENT LIMITED FOR CONSENT AND DEEMED PLANNING PERMISSION TO CONSTRUCT AND OPERATE A WIND FARM AT GREEN RIGG FELL, BIRTLEY, NORTHUMBERLAND (KNOWN AS GREEN RIGG WIND FARM)**

**SQD LDR COLIN DEANE
SUMMARY OF REBUTTAL PROOF OF EVIDENCE
IN SUPPORT OF OBJECTION BY
MINISTRY OF DEFENCE**

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Glossary of defined terms

AIAA	Area of Intense Aerial Activity
ATC	Air Traffic Control
ATCO	Air Traffic Control Officer
ATS	Air Traffic Service
CAA	Civil Aviation Authority
DAP	Directorate of Airspace Policy
DF	Direction Finding
FIS	Flight Information Service
FL	Flight Level
RAS	Radar Advisory Service
RIS	Radar Information Service
TRA	Temporary Restricted Airspace
UKLFS	United Kingdom Low Flying System

Summary of Rebuttal Proof

1. My rebuttal proof addresses the operational air traffic control aspects of the proofs of evidence submitted by the three developers. To the extent that it can, it also addressed the supplementary information provided by AMEC Project Investments Limited. As the Inquiry is aware, the entirety of AMEC's position was unknown to me until Tuesday, 19 February 2008. I was out of the country for the following two days, and so had very little time indeed to assimilate and evaluate AMEC's position before submitting my rebuttal proof on 22 February. Accordingly, I will have to provide supplementary evidence at a later date, once a technical assessment has been carried out, in order to give my full response.

Wind Farms Already within LOS of Spadeadam

2. In my rebuttal proof, I respond in detail to several of the witnesses who refer to the fact that there are other wind farms within LOS of Spadeadam. There are ten operational wind farms within LOS of the Spadeadam radars. Currently, technical mitigations do not exist to address the clutter generated by these wind farms, so operational measures have to be taken. These wind farms have increased pilot and ATCO workload. At present, the workload remains manageable, but further proliferation of such developments could well 'tip the balance' between manageable and unmanageable.

3. If the wind farms are displaying as unidentified primary-only radar returns, Spadeadam's ATCOs seek to maintain a 5nm separation from them. This is prescribed by JSP 552 para 235.150.1, and is justified because of the speed of military aircraft, and because the uncontrolled airspace around Spadeadam can often contain civilian and military aircraft which are not bound to fly in the straight lines adopted in civilian controlled airspace.

4. Any accident involving aircraft controlled by or relying upon hazard/traffic information provided by the ATCOs at Spadeadam will have potentially catastrophic consequences (including loss of more than one human life, which may not be restricted to the aircrew involved, but could also include civilians from conurbations into which wreckage may fall). Accordingly, although the probability of an accident occurring because of an unidentified primary-only radar return may only be small, the potentially catastrophic nature of such an accident means that the small possibility cannot be treated as anything less than real. ATCOs at Spadeadam are thus obliged to deal carefully with any unidentified primary-only radar returns.

The Position of the Wind Farms

5. Three of the witnesses claim that, because the wind farms fall outside various Danger Areas, Tactical Training Areas and the Spadeadam Area of Intense Air Activity, they will have little or no impact on Spadeadam ATC, either at low level or at medium and high level. These assessments are fundamentally flawed.

6. The proposed wind farms are situated in what I will call the "Newcastle-Otterburn Corridor". It is a 10.4nm wide channel of uncontrolled airspace between the restricted airspace over Otterburn Range and the restricted airspace over Newcastle Airport. During significant military exercises, the width of the Newcastle-Otterburn Corridor is reduced to 7.4nm, as a 3nm buffer is imposed from the northern edge of the Newcastle Airport zone, from surface to FL105.

7. The Newcastle-Otterburn Corridor and the Hexham Gap converge on the same piece of airspace at the south-eastern segment of Spadeadam. The Newcastle-Otterburn Corridor is used by military aircraft to approach SEWTR from the east. They require minimum separation of 5nm both from the restricted airspaces and from any returns being generated by the wind farms. This prescribed separation must be adhered to, especially for foreign aircrews. The clutter anticipated from any one of the three proposed developments will make it impossible to guarantee separation of 5nm, particularly if there is more than one

aircraft in the vicinity. Re-routing of aircraft from the Newcastle-Otterburn Corridor will have a significant knock-on effect on the Hexham Gap.

Low-flying aircraft

8. The Newcastle-Otterburn Corridor is a known area for low level approaches to Spadeadam, where pilots are using the terrain to evade the Range's threat radars. This is an important part of the SEWTR training. The developments will clearly impinge upon this low flying approach. The MoD has concluded that the effect of the physical obstructions presented by the proposed developments, although not desirable, can be managed operationally. This does not mean, however, that the ATC aspects of the low-flying approach are not affected. In fact, quite the contrary – it is clear that certain low-flying approaches in the Newcastle-Otterburn Corridor under the LOS of the Spadeadam threat radars will have to be abandoned. This will put additional pressure on other low-flying approaches to the Range.

Class G (Uncontrolled) Airspace

9. Because the proposed wind farms lie in Class G airspace that is used by civilian aircraft, the ATCOs at Spadeadam cannot simply assume that the unidentified primary-only radar returns in the area of the wind farms are clutter that can be ignored. There are three civilian airfields close to the area of the proposed development, and light aircraft from these fields, including helicopters, gliders and microlights can and do use the Newcastle-Otterburn Corridor, both during the week and at weekends.

The type of ATC provided by Spadeadam

10. Radar services are routinely provided to aircraft flying at all levels in the vicinity of Spadeadam, including the airspace above the proposed site of the wind farms. While it is the case that more RIS services are provided than RAS services, this does not mean that the service is any less important for the pilots. The nature of operations at Spadeadam means that the ATCO is often working as a second pair of eyes for pilots with extremely high cockpit workloads. It is therefore crucial that aircraft identity be established and maintained at all times.

11. The potentially serious consequences of even a small mistake heighten the importance of this function. Accordingly, any information relevant to the safe conduct of flights is essential and there is an intense need to call potential hazards. Under FIS where radar derived information is available, and under RIS, ATCOs

can and do request that, if pilots are able to safely comply with restrictions in order to ensure that separation is maintained, that they agree so to do.

Provision of a Limited Service

12. In military ATC, the circumstances in which a limited service may be provided are set out in JSP 552, which I reproduce in my rebuttal proof. None of the five circumstances identified in JSP 552 apply so as to enable an ACTO at Spadeadam to decide that, because of clutter resulting from one or more of the three proposed wind farms, only a limited service was to be provided.

13. In any event, it would be particularly inapposite for a facility like Spadeadam to provide a partial service, especially on an approach route to the Range. It is incumbent on the ATCOs at Spadeadam to offer as much information as is deemed appropriate to aid the safe conduct of flight and offer warning of definite hazards.

14. The draft Spaven report states [para 6.30 pg 44] that “limitation of radar services in specified circumstances” is one of the operational measures used at RAF and other UK military units. I am surprised to hear that this occurs, and have never myself come across such a practice. As the report does not give actual examples of where this happens, I was not able to investigate it further at the time of writing my rebuttal proof, although more information has been requested. At the time of writing this summary, it is yet to be provided.

Suggested Mitigations

SSR

15. As some of the witnesses for the developers recognize, SSR suffers from technical limitations. Also, transponders sometimes cease functioning altogether. This means that it is not an acceptable risk strategy to rely solely on SSR to ensure the safety of aircraft in the vicinity of Spadeadam. Also, the clutter on the display generated by wind turbines can obscure SSR labels, and make the information, particularly that relating to height, difficult to read.

Fill-in radar - Lowther Hill

16. Lowther Hill cannot be used as an in-fill radar as it does not provide sufficient radar coverage of the area of the proposed developments. Also, information from Lowther Hill cannot be used to provide ATS as it has never been flight checked.

Fill-in radar – Berry Hill radar and AMEC's mitigation

17. AMEC suggests it will be operationally acceptable and technically feasible, to blank out the clutter on the Deadwater Fell radar and replace it with a 'patch' from Berry Hill. This does not seem a promising solution. It is inescapable that nine of the Ray turbines are in LOS of the Berry Hill radar. Even if only a single blade of each turbine is in LOS, that means that nine 45m turbines, situated between 31.9kms and 35.2kms from the radar, are seen by the radar. Nowhere does the Qinetiq report conclude that the clutter from Ray will be reduced, let alone eliminated, by the proposed mitigation.

Installing a third radar at Spadeadam

18. The MoD will very seriously consider AMEC's offer to install a third radar at Spadeadam. Unfortunately, that will likely entail AMEC providing much more detailed information about the proposed positioning of such a radar than is contained in the Qinetiq report [para 7.3 pgs 43-45]. This, combined with the very brief time I have had to consider AMEC's offer, means that further supplementary evidence will have to be provided setting out the MoD's full position.

19. In the interim, I set out in my proof of evidence the steps required for such a proposal to become reality. Specifications would have to be developed, and then several trials held, both off-site and at the various positions suggested by AMEC. The radar would then have to be built, then installed and then flight checked. That would take a significant period of time and considerable monetary investment.

RAG Mapping

20. RAG mapping entails blanking out an area of the radar. It is only appropriate for airspace through which aircraft are transiting in generally straight lines. Where aircraft are hovering or performing general handling, it is possible that they could enter the blanked out area and be rendered completely invisible to the ATCO. It is clear how dangerous such a situation would be, particularly as the ATCO would not have any warning of the craft exiting the blanked out area.

21. Also, any RAG mapping that obscured an aircraft for three sweeps of the radar would require it to be re-identified, increasing ATCO workload.

Plot extraction – ADT and SENSIS

22. Two plot extraction systems are currently being developed: SENSIS system, produced by Selex Sistemi Integrati (Selex) and the Advanced Digital Tracker

(ADT) produced by British Aerospace Systems (BAeS). They were trailed at Clatter in mid-Wales between 24 April and 8 June 2006 to assess their viability as mitigates of wind turbine interference.

23. The trial showed that both SENSIS and ADT were successful in reducing those effects but neither was able to provide sufficient mitigation to allow the MOD to accept that they allowed for the safe control of aircraft in the vicinity of wind turbines.

24. I describe in my proof of evidence the further development planned for both ADT and SENSIS. It is clear from those plans that neither system will provide a feasible mitigation within the next five years.

The "Tilting Mitigation" proposed by WPDL

25. From an operational perspective, the only radar that could be tilted is Berry Hill, as the current -10° tilt of Deadwater Fell has to be maintained to provide ATS to the low flying activities in and around Spadeadam.

26. As illustrated in Mark Spencer's technical report, tilting Berry Hill would render it completely unusable on its own. In that scenario, if Deadwater Fell were to go offline for any reason, Berry Hill would not be able to provide sufficient coverage for the safe provision of ATS, and all operations at Spadeadam would have to cease. It should be obvious that the MoD is simply unable to countenance even a slim chance that such a shutdown could occur.

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