

AYRSHIRE JOINT PLANNING STEERING GROUP

16 December 2009

Glasgow Prestwick Airport: South of Scotland Regional Aviation Solution

PURPOSE OF THE REPORT

1. The purpose of this report is to bring to the attention of the Steering Group a new pilot exercise aimed at developing a solution to the problems which wind farms can potentially cause for aviation.

BACKGROUND

2. Wind farms are known to cause problems for aviation radar, specifically where turbines are located under aircraft flight-paths, in close proximity to airport approaches and in relation to military operations. This gives rise to problems for airport operations, reducing capacity, viability and future growth potential. Given Ayrshire's suitability for wind farm development this conflict between energy generation and airspace is a significant threat to Glasgow Prestwick Airport (GPA) and therefore to Ayrshire's economic potential. For this reason the Ayrshire Joint Structure Plan policies have sought to steer wind farm developers to areas which will minimise the impact on aviation and airport operations, to assess proposals against aviation and defence interests and demonstrate how any adverse effects can be overcome or minimised. Adverse radar impacts have proved to be show-stoppers for a number of wind farm developments and are perceived by Scottish Government as an issue which is holding back progress towards increasing electricity generation from renewable energy.

RESPONSIBLE AGENCIES

3. There are three bodies with specific, distinct, but related interests regarding impacts of wind farm developments on aviation and radar: National Air Traffic Services En Route (NERL); airport operators (e.g. Glasgow Prestwick Airport) and Ministry of Defence (MOD). NERL is responsible for the safe movement in the en-route phase of aircraft operating in UK controlled airspace (mainly at high altitude and between airports) and has a comprehensive infrastructure of radars, communication systems and navigational aids any of which could be compromised by wind farm development. NERL is responsible for safeguarding this infrastructure to ensure its integrity to provide the required services to Air Traffic Control (ATC). NERL has no responsibility for safeguarding airports and aircraft take-offs and landings as this responsibility falls to each airport operator (see below).
4. Airport operators are individually responsible for ATC services for take off and landing as aircraft leave and approach airports. Aircraft in close proximity to airports

and at relatively low altitude are controlled by airport ATC. As they leave or enter this airspace they transfer to or from NERL. Protecting these operations has given rise to a significant number of aviation objections to wind farm developments, particularly in relation to GPA airspace, and involves substantial resources from all involved to deal with impact assessments of development proposals. The MOD also has interests in safeguarding low fly zones and other areas used for military training and operational reasons.

5. In response to these objections the UK Government has been encouraging the wind farming industry, MOD; NERL, Civil Aviation Authority (CAA) and airport operators to engage in a dialogue to work towards a solution to the aviation/wind farm issue. This has two main strands – progressing the technology which could deliver a solution and by working on potential mitigation solutions. To this end the Department of Business, Enterprise and Regulatory Reform (BERR) and the Department of Energy and Climate Change (DECC) has established an Aviation Advisory Panel at the UK level. DECC are looking to produce a paper on how regional solutions could be applied and have established a pilot in South West Scotland to inform this process. The MOD is conducting a separate parallel exercise to identify a regional solution but have yet to identify a pilot area.

SOUTH OF SCOTLAND REGIONAL AVIATION SOLUTION (SSRAS)

6. A South of Scotland Regional Aviation Solution Sub-Group pilot has been established to investigate the development and application of a regional solution to radar issues in the SW Scotland. The focus has concentrated on those areas where it is likely to free up the greatest generation capacity by alleviating aviation objections. This is seen as a priority for the Scottish Government which estimates that 1GW (equivalent to 400 to 500 turbines) of capacity is currently in the planning process with an aviation objection. The SSRAS Sub Group has met three times so far.
7. In the case of Whitelee wind farm, Scottish Power’s mitigation, which uses an additional terrain shielded radar at Kincardine to substitute for the affected area in Glasgow Airport’s primary radar, has already been demonstrated. The additional radar at Kincardine creates an image of airspace above the turbines down to 2,500ft without seeing the Whitelee turbines which is then “patched into” the blanked area in Glasgow’s primary radar.
8. NERL have identified that this concept of “blinking out” areas of radar which are affected by false returns from wind turbines and “in-filling” with radar feeds from other locations may be capable of being deployed more generally in South West Scotland. NERL have undertaken a mapping exercise to identify where current primary radar coverage and topography could provide a solution if used in combinations, known as multi-radar tracking (MRT). There are however issues:
 - Not all radars are compatible (eg Prestwick and NERL);

- Possible 1-2 second delays between radars may be unacceptable for airport approach radars; and
 - Complex multi layered systems increase the potential for loss of radar.
9. A more advanced technical solution called Advanced Digital Tracking (ADT) is being pursued by Raytheon (a commercial company). This is the preferred long term solution favoured by NERL but there are a number of issues – funding; timescales for development (3 years prior to roll out and 3 to 5 years to be operational); and both MOD and some airport operators are cautious about its application in all circumstances.

SUMMARY & IMPLICATIONS

10. In summary the situation is currently as follows:
- Large areas in Ayrshire and parts of South Lanarkshire and Dumfries & Galloway are affected by potential conflicts between aviation and wind farms, particularly in relation to Glasgow Prestwick, but also Glasgow Airport and NERL, and a number of existing and proposed wind farm developments are affected by aviation/radar objections.
 - The existing radar at Glasgow Airport can accept one further “patch” in addition to an extended area of the Whitelee “patch”. The area covered by this additional patch is not yet decided but is likely to be chosen on the ability to free up the maximum number of turbines from an aviation objection and the criticality of airspace.
 - Two potential strategic solutions are being progressed – firstly a long term technical solution through Raytheon’s ADT system and secondly by using existing radars or new primary radar locations to create a multi radar tracking mosaic free of turbine clutter.
 - A regional radar mitigation (using existing radars or a new primary radar location to create an MRT mosaic free of turbine clutter) could remove aviation objections from a number of existing wind farm proposals if a site for a primary radar could be found that is terrain shielded from the proposed wind farms. These proposals are mainly in East Ayrshire but also in South and North Ayrshire, North and South Lanarkshire and Dumfries and Galloway. It could also free up other areas which are currently not subject to developer interest as a result of existing radar constraints.
 - GPA have been concerned for some time about the operational impacts and the critical nature of the airspace affected by the aviation/wind farm conflict to the south and east of the airport particularly in the Kyle/Dersalloch/Afton

cluster and would like to see an extension to controlled airspace in addition to any acceptable radar solution being put forward.

- A key question relates to costs and funding of a new primary radar, should a suitable location and site emerge. It is understood that a budget in the region of £10m would be required but the issue of who pays and in what timescale remain. If developers were to be co-funders on a consortium basis this could prove difficult without consents in place. There could be no certainty that consent can simply be assumed on the basis of air traffic control grounds alone as there remain other significant factors to consider.

CONCLUSIONS

11. The process currently being undertaken is likely to identify a potential solution to mitigate the adverse impacts of a number of proposed wind farm developments on radar at Glasgow Prestwick Airport. As the exercise has been targeted on current proposals it is likely that the solution will remove a significant degree of constraint from a cluster of proposed developments in the Dersalloch/Kyle/Afton area of East and South Ayrshire. How far this extends to other areas in the vicinity and what options this may present in terms of new development options remain to be seen.
12. However, even with a solution in place there would still be significant issues around the need and timing of any extension to GPA's controlled airspace. A key question also remains over funding, particularly in securing financial commitments in relation to as yet un-consented wind farm developments. The potential removal of an aviation constraint also does not by itself mean that a development is acceptable as many other factors will need to be given due consideration. The report from Government on this issue is expected shortly and a meeting arranged with the Energy Consents Unit on 15 December. The conclusion of the study may well have implications for the future of wind farm development over large parts of southern Scotland and implications for future local development plan policy and any further relevant information will be reported at the Steering Group meeting.

RECOMMENDATIONS

13. The Ayrshire Joint Planning Steering Group is asked to note the contents of this report and will continue to monitor the situation and report back.

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