

Applications by London Ashford Airport Ltd.

Site at London Ashford Airport Limited, Lydd, Romney Marsh, TN29 9QL

Reference APP/L2250/V/10/2131934

Rebuttal Evidence of Dr John Richard Allan

Birdstrike Risk Mitigation

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Introduction

1. In this rebuttal proof of evidence I comment on the proof of evidence of Mr Nigel Deacon (LAA/6/A) and its associated appendices insofar as they relate to bird hazard management at Lydd Airport. Others will comment on evidence submitted by the applicant concerning the likely impact of this bird management on the ornithological interests in the area.
2. I consider the appropriateness of the data used by Mr Deacon to carry out the Bird Hazard Risk Assessment and question how he has weighted the different factors used to estimate the likely frequency and severity of birdstrikes with different species. I then go on to evaluate the Bird Control Management Plan, which is based on the Bird Hazard Risk Assessment, and question, in the light of the inadequacies of the risk assessment, and the data gathered by Fera, whether it is likely to be sufficient to control the true hazard at the airport. I conclude that, in my opinion, the level of bird control effort likely to be needed to effectively manage the birdstrike risk will be higher than that stated in the bird control management plan, especially in terms of off airfield bird control, the management of overflying waterfowl, and aerodrome safeguarding actions. Others will comment on the likely impacts of these measures on the surrounding ornithological interests.

Rebuttal of Mr. Nigel Deacon's proof of evidence Ornithology and Bird Control (LAA/6/A)

Part 2 Background

Paras. 2.3.1 and 2.3.2

3. These sections deal with the impacts of bird control on the surrounding ornithological interests and will be dealt with by Dr Underhill-Day and others in their rebuttal evidence.

Paras. 2.3.3 and 2.3.4

4. I do not agree with Mr Deacon's statements in paras. 2.3.3 and 2.3.4 that the data supporting the Bird Hazard Risk Assessment are adequate, nor that the

scope of the Bird Control Management Plan is sufficient. In my proof of evidence, I reviewed the original submissions on birdstrike risk assessment and bird control management in detail. Both have been re-written, the Bird Hazard Risk Assessment extensively so, with the addition of a considerable volume of new data. These data are poorly presented, improperly analysed and incomplete. They do, however, serve to point out inconsistencies in the estimation of strike probability in the risk assessment which I discuss in para. 33 below. In summary, Mr. Deacon still relies on incomplete or suspect data from the airport bird controllers, and fixed point count data from WEBS surveys and surveys commissioned by the airport, without any proper information on bird movements over or around the site. He appears to have disregarded the airport's own data on overflying geese and swans, which directly impacts on the viability of the proposal to detect and warn pilots about overflying waterfowl as a means of mitigating this risk.

Part 3 Scope of Evidence

Para. 3.1.4

5. Mr. Deacon states that

'A large amount of experience at UK airports adjacent to SPAs (e.g. Liverpool, Glasgow, Belfast City and City of Derry Airports) has shown that busy commercial airports and substantial adjacent bird populations can coexist without conflict. This experience has been replicated at major airports and important wildlife conservation sites worldwide.'

6. Mr. Deacon produces no evidence to support this contention. Clearly airports and bird conservation areas do exist in close proximity, but they do not do so without conflict in many cases. Historically, many airports were located on flat land of low economic value close to major conurbations at a time when birdstrike was not a significant hazard to propeller-driven aircraft. This has resulted in many examples of airports built on swamps, adjacent to estuaries, on reclaimed land or close to lakes and rivers, some of which are described by Mr Deacon in his proof of evidence. With the advent of large turbofan engines birdstrike has become recognised as an important factor in deciding whether to

proceed with developments of airports in these habitats. The studies on the feasibility of developing a new London Airport on Maplin Sands and later a similar proposal on the Hoo Peninsular in N. Kent both included extensive surveys relating to birdstrike issues (Bell *et al.* 2003, appendix 4 pages 2-3) which combined fixed point counts with assessments of bird movements. Birdstrike risk was a factor, amongst many others, in the decision not to proceed in both cases. Other examples from around the world are quoted by Bell *et al.*, such as airport developments in Mexico City, Incheon Korea, and Lisbon Portugal, where new airports were proposed close to wetlands, involved substantial investigations of bird numbers and movements and either the removal of wetland features or restrictions on their future developments being put in place to protect flight safety (pages 221-229 of appendix 4 refer). Although the development of a new international airport is very different from a runway extension at Lydd, the assertion that because other airports occur close to protected areas for bird conservation means that other developments can be safely permitted or can occur without significant ecological impact is not necessarily the case. In my proof of evidence I provide information on issues encountered at all of the airports listed by Mr. Deacon (other than Belfast City of which I have no recent experience) where the airport has been in conflict with local conservation interests in recent years. I note that Mr Deacon has omitted reference to BAe Warton which was mentioned previously, where a legal case between the operator and Natural England concerning impacts on the nearby SPA is currently in progress. Similarly, Mr Deacon presents no evidence of coexistence of airports and conservation interests without impact at overseas airports. At John F Kennedy Airport in New York, a conflict between the airport and government conservation interests that control a nearby nature reserve resulted in 72,063 gulls being shot between 1990 and 2002 to protect flight safety (Dolbeer *et al.* 2003 appendix 1).

Para. 3.1.9

7. The study of WEBS count data in relation to aircraft movement rates at a number of coastal airports presented in Appendix 3 (LAA/6/C) has been reviewed in detail by Dr Underhill-Day in his rebuttal proof. I agree with Dr

Underhill-Day's assessment that the analysis is methodologically and statistically flawed. In particular, the absence of any control data from other WEBS sites where there is not an airport nearby, to check whether other population trends may be occurring at the national or regional level that would mask any trends due to aircraft movements, is a major shortcoming rendering any conclusions drawn unreliable.

Paras. 3.2.1 to 3.2.9

8. In this section Mr Deacon reviews the likely impact of implementing the new Bird Control Management Plan on the nearby areas of ornithological interest. This subject is dealt with in detail by Dr Underhill-Day in his proof of evidence and rebuttal proof, but a number of the assumptions that Mr Deacon makes about how the airport's bird control will operate appear not to be valid.

9. In para. 3.2.3 Mr Deacon states that

'All the techniques that will be used in the future are in place now at the Airport (and have been used for at least two decades), and used daily.'

10. This is true insofar as it refers to distress calls and pyrotechnics, but, based on my conversations with Mr Deacon and the bird control staff, there is no netting of water bodies currently in place, nor is any bird control (by whatever means) carried out in the area immediately around the airport, and there is no dispersal of waterfowl from more distant feeding sites, all of which are provided for under the Bird Control Management Plan.

11. In para. 3.2.4 Mr Deacon suggests that the overall bird control intensity will decline with the switch from occasional 'high intensity bird runs' to continuous patrolling. A brief review of the bird control logs kept by the airport (I have not carried out a detailed analysis) suggests that there are normally between 2 and 5 bird runs carried out per day under the current regime. There is no indication of how long a bird run normally takes, but if we assume that 30 minutes might be a normal figure for an airport of this size, then there is currently between 1 and 3 hours of bird control per day with, as I understand it, no off-airfield bird

control and no attempt to push birds back beyond the airport boundary. The short study conducted by Fera and described in my proof of evidence (section 5) showed that there are large numbers of hazardous birds in the fields surrounding the airport and these will require a substantially increased effort to disperse compared to the current situation. This need to manage birds in the fields near the airport is recognised in the revised Bird Control Management Plan (sections 6.4, 7.8 and 12.5), and the possibility of changing local agricultural practices by agreement or by purchase of the land is raised as a means of dealing with these issues in the Bird Hazard Risk Assessment (section 9.2). If neither of these options proves possible or entirely effective then the only alternative will be more bird control effort over a more extensive area than is currently in place. I consider this likely to be the case.

12. Mr Deacon makes reference in section 3.2.8 to a revision to the Bird Control Management Plan (LAA/6/C) that incorporates maps of areas where pyrotechnics and distress calls will be used with restraint. Unfortunately, if the airport operator is to put public safety foremost, as it clearly should, then if hazardous birds are present in these areas and need to be dispersed then the bird controllers will need to do whatever is necessary to disperse them (louder distress calls, pyrotechnics or live rounds). There is a fundamental problem in the airport offering restraint, compromise or consultation as a means of mitigating bird management impacts, because in the final analysis public safety must come first. The liability issues surrounding a serious air accident are such that no airport operator can afford to go on record as possibly compromising operational safety in order to accommodate conservation interests. Liability issues are addressed in more detail in the report of Airport Solutions appended to this proof of evidence (Appendix 6).

13. A similar point applies to aerodrome safeguarding. In section 3.2.2 Mr Deacon states that because the airport is not 'officially safeguarded' it has no powers to require the Local Planning Authority to consult it, nor to have an application called-in for determination by the Secretary of State. Mr Deacon implies that this, combined with consultation with conservation interests, will reduce the impact of the safeguarding process on the surrounding areas of conservation

importance. Elsewhere (section 9 of the Bird Hazard Risk Assessment) Mr Deacon describes an effective safeguarding process as ‘a critical element’ in the management of birdstrike risk. As with airport bird control, personal and corporate liability issues mean that the LPA will have little alternative but to treat the airport as if it was officially safeguarded, and the airport will need to be seen to put public safety first in its response to safeguarding consultations. Even with goodwill on all sides, the scope for compromise may be limited and consequent impacts on nearby conservation interests, such as those described in sections 81-87 of my main proof of evidence, unavoidable.

Section 3.3 Bird Hazard Risk Assessment

14. The Bird Hazard Risk Assessment has been substantially re-written since the production of my proof of evidence. I have therefore reviewed the latest version in section 19 and following below.

Part 4. Conclusion

15. Mr Deacon’s conclusions in his proof of evidence concerning the impact of bird control on the surrounding ornithological interests (sections 4.1 and 4.2 of part 4) will be dealt with by Dr Underhill-Day in his rebuttal evidence.

16. In section 4.3 Mr Deacon states that

‘The assessment of the birdstrike risk and the subsequent statement of birdstrike management policy – the Bird Control Management Plan – are compliant with, and exceed, the UK regulatory standards set down by the Civil Aviation Authority and are appropriate to the Airport’s proposed operation’

17. In the CAA’s licensing regulations, set out in CAP 168 Licensing of Aerodromes (CD 16.1 (LAA)), Chapter 5 Birdstrike Risk Management For Aerodromes) sets a requirement for aerodromes that *inter alia*:

‘All reasonable measures should be taken to address those features on the aerodrome that may attract birds or wildlife, control the existence of birds/wildlife on the aerodrome, and, where practicable, in the vicinity of the aerodrome to prevent bird flightlines across the aerodrome and its approach and departure routes.’

18. In my opinion the applicant's proposals do not adequately assess and would therefore not adequately manage, the risk from birds in the immediate vicinity of the aerodrome, nor the risk from overflying birds moving longer distances to and from feeding and roosting sites. The CAA does not specify the level of bird control intervention needed by an aerodrome for it to be compliant with CAP 168, as this will vary from site to site depending on the local bird populations and their behaviour. Because the data underpinning the Bird Hazard Risk Assessment are flawed and incomplete (see para.26 and following of this rebuttal proof below) there is a very real danger that the level of risk from birds off the airfield has been underestimated. This is supported by the limited fieldwork undertaken by Fera. If this is so, then the level of off airfield intervention needed to comply with CAA requirements would be considerably higher than that suggested by the applicant. Dr Underhill-Day and others will comment on the likely impact of this situation on the surrounding ornithological interests.

Rebuttal evidence in relation to Appendix 1 Bird Hazard Risk Assessment (LAA/6/C)

Introduction

19. The Bird Hazard Risk Assessment has been substantially revised since the original submission which I reviewed in my main proof of evidence. Some additional information has been provided in terms of the detail of how estimates of birdstrike probability and severity have been arrived at, and a number of graphs of bird numbers against year or month have been added. It has subsequently been confirmed in a letter from the applicant's solicitor dated 26th January 2011 (ref 20\23779805.21VJ02\632297.07000) that all of these graphs refer to the bird counts conducted by the airport's bird control staff. Unfortunately these changes raise more questions than they answer. There are inconsistencies between the data presented and the risk levels that are derived from them. They do not resolve the basic problem that the applicant has not collected any data about the movements of birds other than geese and swans around the airport, nor on the numbers of most common hazardous bird species in the immediate surroundings of the airport. It appears, based on my examination of the data, that the data collected by airport bird controllers on

overflying geese and swans has been omitted from the graphs altogether. All of this information is necessary to inform a proper risk assessment and hence to develop a Bird Control Management Plan of sufficient scope and intensity to manage those risks.

20. I have no disagreement with the overall approach to risk assessment adopted by Mr Deacon as this is broadly standard across the aviation industry. The reference to Thorpe (1996) is out of date. It is also unclear how Mr Deacon has 'updated' this information to take account of more recent incidents. Thorpe has produced several subsequent papers updating this information, the most recent of which (Thorpe 2010 (in appendix 2 of my main proof of evidence)) gives the figures as 276 fatalities and 108 aircraft destroyed.

21. It is unclear from his proof of evidence how Mr Deacon has interpreted the six 'primary factors' listed in the first part of section 2 of the Bird Hazard Risk Assessment that he uses to estimate birdstrike severity and frequency. The first two factors; size/weight of the species under consideration, and flocking behaviour (risk of multiple strikes) combine to produce a measure of the likely severity of a strike with that species which is expressed as 'risk of damage' on the vertical axis of the risk matrix in section 7 of the Bird Hazard Risk Assessment. It is not clear how Mr Deacon has applied a weighting for flocking behaviour to the risk of damage category for each species, but I have no significant disagreement with the outcome.

22. The four remaining factors are

- *Behaviour on aerodromes,*
- *Local population levels and distribution, including their occurrence on the airport (WeBS, ornithological surveys, bird control records, observations),*
- *Flight line or other over flight activity, and*
- *Birdstrike records.*

23. These factors combine to produce an estimate of 'expected strike frequency' which is the horizontal axis in the risk assessment matrix in section 7. There is no information provided at all about how Mr Deacon has used these 4 factors to produce an estimate of strike frequency for each species, nor of what level

of weighting he has given to each factor in producing his assessment. He has evaluated the quality of some of the data presented but not other parts. For example, in the second bullet point of part 2 of the Bird Hazard Risk assessment he states:

'The number of birdstrikes recorded at LAA over recent years has been too low to provide a reliable basis for a risk assessment based solely on this data. In particular, key potentially hazardous species occurring in the local environment (e.g. waterfowl, starling) have not been involved in birdstrikes at the Airport in recent years, and small birds are under-represented in the birdstrike record. LAA's birdstrike data is considered in the following assessment, but care has been taken not to rely on these records too heavily to inform the risk assessment.'

24. But there is no indication of what 'not rely too heavily' actually means.

25. Although Mr Deacon recognises shortcomings in the airport's bird strike record, he does not perform a similar evaluation of the quality of the data in the airport's bird control logs, which are the source of the various graphs of bird numbers that have been added to section 6 of this version of the Bird Hazard Risk Assessment. These data are badly presented, improperly analysed, and incomplete.

26. The presentation of the new bird count data does not make it clear where the information has come from, who collected it, or how it was collected. The proof of evidence does state in section 6.1.1 that the graphs for gulls come from '*the airport's bird control records*' but none of the figures are adequately labelled and it is impossible to tell what the data actually represent. For example, the data for gulls in Fig 1 show what I assume are total bird numbers summed across all bird control runs for each month on the vertical axis (although this is unlabelled); they could equally well show peak monthly counts or a monthly average but it is impossible to tell. A subsequent communication from the applicant's solicitors (ref 20\23779805.2IVJ02\632297.07000) has confirmed that all of the graphs in the revised Bird Hazard Risk Assessment arise from the airport bird control records.

27. Mr Deacon also makes statements about the behaviour of gulls at Lydd in relation to time of day, time of year and weather factors (paras. 6.1.1 and 6.1.2) but produces no evidence to support his statements. Elsewhere in his proof of evidence (appendix 3) Mr Deacon has conducted statistical analyses to correlate bird numbers on protected areas with air traffic numbers on nearby airports. He has not carried out any similar analyses despite the large volume of data available to him from the airport's bird counts over several years. It is therefore impossible to judge whether any trends described by Mr Deacon in relation to these data are significant in the scientific sense.
28. The analysis of the airport's birdstrike information is also flawed in that the level of effort involved in carrying out these counts varies from week to week and month to month. It is not appropriate to present simple totals gathered in this way as an indication of relative bird numbers. For example, reference to sample bird control logs provided to me by the airport shows that in October 2007 a total of 42 bird runs were carried out (an average of around 1.3 per day), whereas in October 2008 there were 92 bird runs undertaken (an average of 2.9 per day). Assuming that the data represent the total number of birds counted summed across all bird runs (although nowhere is this made clear) it is highly likely that the different levels of observer effort will influence the number of birds recorded. Assuming that similar discrepancies in effort occur at other times, this makes month by month or year by year comparisons meaningless unless they are corrected for differences in bird run frequency which, as far as can be seen from the poor presentation, they are not.
29. I gathered from conversations with Mr Deacon and the airport's staff that bird controllers only record birds actually on the airfield itself and do not record birds outside the perimeter fence. They also do not record birds overflying the airport other than geese and swans. This is confirmed by reference to the airport's bird control log sheet which has provision only to record birds on the airfield grass and tarmac areas and only has over-flight recording boxes for swans and geese. An example of the bird control recording log for 10th November 2010 is provided in appendix 2. It shows that 4 bird control runs were carried out on that day, at 08:25, 09:35, 12:40 and 16:00, and that 45

corvids and 50 Lapwings were dispersed from the airfield and 1 swan and 3 geese recorded overflying. Fera observations carried out on the same day for only 1 hour between 06:45 and 07:45 are described in table 2 and fig. 7 of my proof of evidence. The birds counted by Fera were only overflying individuals and some were outside the airport perimeter, as can be seen by reference to fig. 7 of my proof of evidence, but a total of 107 flocks consisting of 6596 individual birds of hazardous species were observed aloft during this single hour. These included 9 Mute Swans and 240 Greylag Geese.

30. In relation to the Fera vantage point counts, whilst preparing this rebuttal proof of evidence I have noted a number of minor errors in the figures presented in my main proof of evidence. These do not alter my opinions or conclusions in any way, but I have included a list of errata and corrected set of figures in appendix 5 to this rebuttal proof of evidence for the sake of accuracy.
31. It appears that Mr Deacon has also not used the data on overflying swans and geese gathered by the airport bird controllers. It is impossible to say with certainty what the graphs for swans and geese (figs. 15-18 in the Bird Hazard Risk Assessment) actually represent, because they are unlabeled, but reference to overflying data supplied to me by the airport shows that this does not match the data presented in figs 15-18. For example, the graphs of bird counts by year (figs 16 and 18) show a value of zero for both geese and swans in 2010 but the overflying records for the airport summarised up to 10th November 2010 show 27 swans and 1035 geese recorded overflying the airfield. A copy of the summary sheet supplied to me by the airport is included as appendix 3. Given that the airport bird controllers actually record a low proportion of the birds actually present around or overflying the airport (see para. 29 above) the true number of over-flights by swans and geese will be significantly higher. In para. 7.7 of the Bird Control Management Plan, Mr Deacon describes crossing waterfowl as '*The only significant difference between LAA's bird hazard and many other airports*' yet his data grossly understate the true risk by omitting transiting bird information that was readily available to him.

32. Mr Deacon also makes reference to 9 visits to the airport that he has carried out. He provides no information on any data that he may have gathered, observations he made, notes he has taken or reports he may have produced. It is therefore impossible to assess how this contributes to the risk assessment that has been carried out.
33. The lack of clarity as to how the different factors have been used to determine likely birdstrike frequency makes it impossible to evaluate whether the risk levels in the Bird Hazard Risk Assessment are realistic or not. For example, it is unclear why the predicted strike levels for Herring Gull and Pheasant have been reduced from High to Moderate since the previous risk assessment was undertaken, nor why Canada Goose has been reduced from Low to Very Low. Equally it is difficult to see why Mallard, a species for which no airport count data are presented (presumably because the counts are too low to be reliable) and which has never been struck at the airport, has a predicted strike frequency higher than Lapwing which is recorded in hundreds from time to time on the airfield grassland (and in much higher numbers on the adjacent fields based on Fera's observations) and which is well known as a birdstrike problem at many airfields in the UK.
34. The Bird Hazard Risk Assessment goes on to outline the methods that would be used to manage the risks identified and these inform the Bird Control Management Plan provided in appendix 2 to Mr Deacon's proof. I have already dealt with the apparent contradiction between Mr Deacon's proof of evidence, which states that the airport cannot require the local authority to operate a safeguarding process, and his statement that such a process is critical to safe operation of the airport in para. 13 of this rebuttal proof.
35. The revised version of the Bird Hazard Risk Assessment also acknowledges that changes in land use around the airport, and possible deterrence of geese and swans from feeding grounds remote from the airport, could be needed to manage the birdstrike risk. I agree with both of these statements, indeed based on the very limited data gathered by Fera on bird movements over the site and the airport's own swan and goose overflying data that Mr Deacon has not presented, I think that off-airfield management of this sort is likely to be

needed to a far greater extent than either the Bird Hazard Risk Assessment or the Bird Control Management Plan suggest. The large numbers of crossing waterfowl recorded by the airport (and even larger numbers observed by Fera) cast further doubt on the airport's proposal for a 'detect and warn' approach to managing these species. It may prove impossible to find a 'window of opportunity' to safely allow aircraft to depart at times of high bird activity. For example, on Wednesday 15th September 2010 I undertook a preliminary visit to the airport and carried out an informal dawn observation from the western end of the runway. Data were not systematically gathered and have therefore not been presented, but from 06:00 to 06:45 there was no time when there were not at least some hazardous birds in the air over the airport or its approaches. The airport was not operational at the time, but later in the year, the dawn period will coincide with operational hours and the possibility of scheduling aircraft to avoid times of high bird numbers has been raised. The report produced by Airport Solutions reviews the operational impacts of a 'detect and warn' policy in more detail, but this approach conflicts with the evidence produced by Ms Condon (LAA/4/A) who in sections 4.1.6 and 5.4.6 cites the need for scheduling flexibility for airlines as an important factor in attracting airlines to operate from LAA.

Rebuttal evidence to Appendix 2 Bird Control Management Plan

36. The Bird Control Management Plan is broadly similar to that presented with the original planning application (CD1.33d(LAA)). As stated in my proof of evidence, I have no disagreement with the techniques proposed, nor with the organisation and management of the bird control proposed for the airport. As already stated in rebuttal to Mr Deacon's proof of evidence, I do not believe that the airport can guarantee zones of restraint in the use of pyrotechnics or in the application of the safeguarding process as a means of reducing the off-airfield impact of bird management processes (paras.12 and 13 above refer). If a hazardous situation on the ground or overhead of the zones where restraint in the use of pyrotechnics and distress calls has been proposed occurs, the airport will need to manage it effectively. Similarly, if a development that is considered likely to generate an additional birdstrike risk is proposed in the

area to the SW of the airport, where the airport has indicated it is unlikely to object to planning applications, then the airport will need to take the necessary action (either bird management or safeguarding objection) to preserve public safety whatever the conservation impacts that might ensue.

Conclusion

37. Having reviewed Mr Deacon's evidence concerning birdstrike risk mitigation my view remains that the applicant has based its risk assessment on incomplete and flawed data, especially in relation to bird movements around the airport and counts of common hazardous species outside the airport boundary. Even allowing for the inadequacy of the data used, it is unclear how Mr Deacon has used the information available to him to arrive at likely risk levels at the airport if bird control were not improved. It is, therefore impossible to determine if the additional bird control measures described in the Bird Control Management Plan will be sufficient to manage the likely risk. The short study conducted by Fera is not sufficient to remedy this situation, but it does suggest that risk levels at the airport would be higher than estimated by Mr Deacon and thus require greater effort to control. The potential for this control to impact on the ornithological interests in the area is assessed by other experts.

38. Finally, I would wish to reserve my position concerning the need to give further or additional evidence in response to any additional information that Mr Deacon may present in his rebuttal proof of evidence.

References

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