



**Town and Country Planning Act 1990 section 77,  
Town and Country Planning (Inquiries Procedure) (England) Rules  
2000**

**Public Inquiry into planning applications by London Ashford  
Airport Ltd for the construction of a runway extension and erection  
of a terminal building at London Ashford Airport Limited, Lydd,  
Romney Marsh, TN29 9QL**

**Rebuttal Proof of Jo Dear  
10 March 2011**

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**SECTION 1: INTRODUCTION**

1. I have read and considered the proofs of evidence of the Applicant in particular those referenced in the following sections. My response should be read in conjunction with my proof of evidence (NE/3/A, B and C) and the proofs of evidence and rebuttal proofs of the other expert witnesses who will appear at public inquiry on behalf of Natural England (and the RSPB). I have only addressed those points that I think will aid the inspector and no implications should be drawn on my opinion on points not addressed in this rebuttal or my proof.
2. My response to the proofs and rebuttals of Mr Deacon, Dr Armstrong, and proofs of Mr Maskens and Ms Congdon to the matters related to ornithology (birds) is included in section 2 (below). In this section I explain that the Applicant has failed to consider all the likely and potential impacts on the ornithological interest of the area in Mr Deacon's and Dr Armstrong's proofs. In addition I explain the requirements for assessment of impact interactions and demonstrate how the Applicant has failed to consider these in its proofs. With reference to the rebuttal proofs of Dr Underhill-Day and Dr Allan I address the current and future importance of the designated sites in the light of comments made by Dr Armstrong in his proof regarding climate change. In particular I note that the sites are currently internationally important for their bird interest. I conclude that nothing presented within the Applicant's evidence leads me to alter any of my conclusions in my proof of evidence.
3. My response to the proof of evidence of Dr McLellan with respect to matters related to invertebrates is included in section 3 (below). I draw on my colleague Mr Heaver's proof and rebuttal to put into context the evidence on the importance of the invertebrate wetland assemblage that was presented in my proof. I then consider the impacts from the loss of ditches on the SSSI to include the loss of protected species of these ditches which I consider in section 5 of this rebuttal.
4. My response to the proof of evidence of Dr Bethan Tuckett-Jones with respect to matters related to air quality and vegetated shingle is included in section 4 of this rebuttal proof. I explain how the Applicant has misunderstood the position of Natural England with regards to air quality and vegetated shingle, the justification for the choice of critical load, and why an appropriate assessment of the effects of Nitrogen deposition on the SAC was required. I explain the significant uncertainty that remains

in the assessment of Nitrogen deposition and its likely impacts. I then go on to explain how this uncertainty necessitates conditions requested in Section 5 of my proof of evidence.

5. My response to the proof of evidence of Dr McLellan with respect to other ecological matters is included in section 5 (below). I review the impacts on medicinal leech and explain why the mitigation suggested by Dr McLellan in his proof and in the application documents is not adequate. I expand on how interactions of various parts of the development proposals including in part some of the mitigation proposals will result in potential effect on the great crested newt population. I expand on how the mitigation offered for water voles, reptiles and great crested newts is either not adequate or inappropriate.
6. Most of the Applicant's proofs referred to above mention planning matters in relation to their cases. I also referred to the South East Plan (CD 7.1) in paragraph 372 of my proof of evidence. I am not a planning expert but I wanted to draw the Inspector's attention to the relevant policies of the South East Plan (CD 7.1) and relate it to the evidence of the Applicant as presented in the proofs listed above. Appendix 1 to this proof includes a note on the planning matters raised by the proofs of the Applicant, which was prepared by Natural England's planning adviser in this case.

## **SECTION 2: BIRDS (ORNITHOLOGY)**

7. I have read and considered the proofs of evidence and rebuttal proofs of Mr Deacon and Dr Armstrong, as well as the proofs of Mr Maskens and Ms Congdon, and my response to their evidence is set out in the following paragraphs. I have also heard the oral evidence given at the inquiry on ornithology and read the conditions and S106 planning obligations submitted on 14 February 2011 (CD17.1 and CD17.2). In this part of my rebuttal proof I consider the main issues which arise from the Applicant's ornithological evidence as it relates to the evidence given in my proof. I have relied on the expert advice and evidence of Dr Allan and Dr Underhill-Day in order to inform my own conclusions on ornithological matters.

### **Failure to consider likely and potential impacts**

8. Some impacts of the Applicant's proposals do not appear to have been considered at all in either Dr Armstrong's or Mr Deacon's proofs. For example, neither Mr Deacon nor Dr Armstrong presents evidence on the effects of the bird control management plan's off-airport land and habitat management proposals, nor do they consider the effects of the proposed netting of water bodies (see eg BHRA paragraphs 9.3-9.4 and BCMP paragraph 6.2.2). Neither of these activities occurs in the airport's existing bird control plan and yet they are referred to in the BHRA and BCMP for the proposed expansion.
9. Also, very little consideration is given to the impacts of off-airport bird control activities. The need for off-airport bird control and land and habitat management is reflected in various parts of the Applicant's BHRA (eg sections 9.2-9.3) and BCMP (eg paras 6.4.1, 7.2.2, 7.7, 7.8.2, 7.9.1, 8.8.1, 12.5.1, 12.5.3).
10. In section 3 of my proof, and in Dr Underhill-Day's proof (sections 4, 5, 6 and 7), the importance of the functional link between the land around the airport both in and outside the designated sites and the rest of the designated sites is described. As an example, the daily commute of birds from within the designated sites to outside them is recognised in the BHRA (Appendix 1 to LAA/6/C) in sections 6.1 and 6.2.
11. Despite this recognition of the use of land outside the designated sites by birds within the Applicant's evidence, and the references to the need to control such activity by land and habitat management, no assessment is provided of the impacts

of these off-airport bird control and land and habitat management measures on birds in the Applicant's evidence.

12. Paragraph 6.2.1 of the BCMP refers to scrub clearance in conjunction with Natural England. Paragraph 9.4c of BHRA refers to the eventual complete removal of scrub to the eastern side of the airfield as an "*approach that appears to be favoured by Natural England*". This is not correct. Removal of significant areas of the tall scrub from within and around the edges of the ponds is supported by Natural England for conservation of the great crested newt and other SSSI interest features, and would be part of works necessary to restore favourable condition. Removal of all the scrub is not desirable and removal of any of the blackthorn scrub in this area of the airport (part of the SAC habitat perennial vegetation of stony banks) would damage this part of the SAC community and would be highly undesirable.

#### **Future of the Designated Sites**

13. In paragraphs 3.24 to 3.27 and 4.6 of his proof, Dr Armstrong makes statements as to the future for the bird interest features of the Dungeness area in relation to climate change "in the near future". As explained within my proof of evidence (paragraphs 77 to 81), a number of SSSIs were consolidated into one in the designation of the SSSI in 2006. This is a comparatively new designation within the SSSI series, and yet the SSSI far exceeded the qualification threshold for the numbers and range of bird species required for the assemblage of birds interest feature (paragraph 95). The SPA is proposed to be expanded and new features added which will more effectively reflect the European interest of the area. The area is being proposed as a Ramsar site to more effectively reflect the international wetland interest present especially with regards to the birds which that wetlands supports. The information supporting the proposed designations is included in the publicly available copy of the departmental brief for the designations (Appendix 2 to this rebuttal proof).

#### **Failure to consider interactions of impacts**

14. The consideration of all impacts from a proposal and how they act together to affect the environment is important. I noted in my proof at paragraph 188 that the various

likely and potential impacts of the operation of the expanded airport on the ornithological interest of the area would combine together to have an overall effect.

15. The need for an integrated assessment of all impacts of a project is reflected in guidance published by the European Commission on assessment of cumulative effects and impact interaction in 1999 (Appendix 3 to this rebuttal proof). This guidance covers interactions of impacts from several projects but also interactions of several impacts from the same project. Impact interactions are defined in this document as the reactions between impacts of a project. The guidance states on page 7 of the executive summary:

*“The assessment of indirect and cumulative impacts, and impact interactions should not be thought of as a separate stage in the EIA process. Indeed the assessment of such impacts should be an integral part of all stages of the process”.*

16. Some impacts of the proposals in this case (eg off-airport land and habitat management, and water body netting) have not been assessed at all. Some elements of the affected environment (eg the SSSI ornithological interest) have not been assessed properly. The result is that a full consideration of the impact interactions cannot have been carried out. However, even those impacts which have been assessed (however poorly), such as the direct effects of aircraft and on-airfield bird scaring techniques, have not been assessed together. An example is the reference in Appendix 5 to Mr Deacon’s proof to the absence of effects on birds from scaring as they are able to return shortly after a single scaring event. This does not take account of the need for multiple scaring events, to create a buffer zone for example, or the fact that the off-site land and habitat management is intended to reduce the number of suitable alternative “loafing and feeding” locations around the airport to which they are able to move. Consideration of the overall effects from the proposals on birds is not provided within the proofs of Mr Deacon or Dr Armstrong.

### **Site safeguarding and conservation of the site**

17. I note paragraph 3.2.9 of his Proof, Mr Deacon only gives his opinion on the effects that the aerodrome safeguarding policy may have on existing conservation works. The issues raised in Section 4 of my proof and the proof of Dr Underhill-Day around prevention of future conservation works are not addressed. Appendix 4 to this

rebuttal proof includes Figure 1 showing the location of some extant and proposed mineral workings which are likely to be subject to some degree of conservation after use.

18. All the mineral workings in Figure 1 are outside of the proposed “*no anticipated objection*” areas apart from Denge Pits. Future restoration proposals necessary for the conservation of a number of bird species could be put under threat by enhanced safeguarding requirements of the expanded airport. I am aware that a number of new potential aggregates areas are due to come on stream in the future and that several of these may be of significance for the future of the pSPA and pRamsar species.
19. As an example of one such area Figure 2 in Appendix 4 contains information from the East Sussex County Council mineral planners showing areas to be worked, areas worked out (to be restored), areas with permission but yet to be worked, and new proposed extensions. The intimate link between these sites and the bird conservation is demonstrated by the pSPA and pRamsar in hashed blue on the map. The reedbeds that exist currently at Scotney Court and Broomhill North already support a small number of winter roosting hen harriers and are included in the pSPA and pRamsar site as a result. It is hoped that future restoration proposals will enable a much larger reedbed to be developed helping restore important habitat for this rare pRamsar and pSPA species.

### **Integrity**

20. In Section 3 of my proof of evidence I drew attention to a series of definitions of integrity and referred to guidance on how to assess effects on integrity. I used that guidance to help assess the impacts of the proposals on the ornithological interest of the European designations (pSPA, SPA, and pRamsar sites). No such systematic assessment of effects upon integrity is provided within the proofs of Mr Deacon or Dr Armstrong. Although both Mr Deacon (paragraphs 3.2.8 and 4.1) and Dr Armstrong (paragraph 2.2) make assertions as to there being no effect on integrity, neither presents any systematic explanation of how they have reached their conclusions.
21. Dr Armstrong seems to equate integrity with size of the population or size of the area of designated sites. Though the former is a clearly a component of integrity, it is also clearly not the only component which is to be taken into account in assessment of the



sites' integrity. The definitions of integrity provided in my proof also emphasise the importance of the structure and function of a site, as well as the populations of species and habitat for which the site is classified. The effects upon functionality of the designated sites and those areas of land functionally linked to the designated sites by off-site use for example (as explained in section 3 of my proof) are not assessed within the proofs of Dr Armstrong or Mr Deacon to any meaningful degree.

22. The references to the use of "refuges" from the disturbance caused by the airport expansion proposals contained in Dr Armstrong's proof (e.g. 3.17 and 3.21) fail to take account of the importance of site functionality in the concept of integrity. The statements on use of refuges in Dr Armstrong's proof can be read to imply that the area of SSSI and pRamsar within the airport, and areas of pSPA and pRamsar and SSSI outside the airport but also outside the RSPB reserve (such as Lade Pits), and even parts of the RSPB reserve, can be disturbed because the RSPB reserve is large enough to maintain the population levels. Even if this were correct (which in my opinion, as explained above, is not the case) this is contrary to my understanding of integrity based on the relevant guidance. Considering that Dr Armstrong has not visited the RSPB reserve or the surrounding area around the airport it is difficult to understand how he has arrived at this opinion.
23. In suggesting the use of the RSPB reserve as a buffer or refuge for birds Dr Armstrong has failed to take account of the heterogeneity in the habitats found across the site both inside and outside of the RSPB reserve. As I describe in my proof (NE/3/A) there is a mix of wetland habitats on the reserve that lie within the shingle and each wetland type offers opportunities for feeding, roosting and breeding for different range of species.
24. One of the closest parts of the reserve, south of the airport across the railway line, are the Water Tower Pits. These are smaller water bodies that were created as a result of shingle extraction. Generally these are fringed with willow, secluded from public disturbance and offer a range of pSPA and SSSI species shelter, food and roosting for example mute swan, tufted duck, pochard, shoveler, smew. Some of these water bodies have established reed bed areas – hosting breeding Marsh Harrier and also wintering Bittern and summer visiting Bittern which could potentially breed in the larger reedbed sites. Also within the Tower Pits area are shallow wet flushes in the shingle that are very prevalent in the wetter winters which can be used by duck and wader throughout the year.

25. Moving further east from the Water Tower Pits, lies the wide open water expanse of the ARC Pit. This is used by a wide variety of species swan, geese, and duck. The ARC pit is a traditional roosting area for the SPA Bewick's swan which used this regularly over the last winter 2010-11. The Bewick's are roost faithful to the ARC pit and have not moved to other apparently similar water bodies in the area on the RSPB reserve to roost. Hen Harriers also show a high degree of roost fidelity (eg Clarke and Watson 1990, 1997). Lade Pits are another area of open water.
26. If disturbed and displaced as suggested by Dr Armstrong, the displaced species will move south to the remaining areas in the RSPB reserve. Again this shows a mosaic of habitat. Each species will seek out suitable areas of wetland in the diverse RSPB habitat.
27. This increased density or "bunching up" could be exacerbated by adverse weather conditions. Winter low temperatures cause the freezing over of smaller shallower water bodies. This causes a migration of birds from the small iced-over water bodies to those larger water bodies that remain ice free. This increased density can cause stress to bird species that would not normally occur together (eg Stillman and Goss-Custard 2002, 2010). Displacement of species from aircraft or bird hazard control could exacerbate this by displacing more birds into these restricted areas of ice free water.
28. As set out in Table 3.1 of my proof, European Commission guidance (CD 5.9) recommends considerations to examine to judge effects on integrity. One criterion is whether it can be concluded that a plan or project "*results in disturbance that could affect population size or density or the balance between key species*". If the population remained the same, as suggested by Dr Armstrong, but disturbance resulted in the redistribution, as he suggested, then the population density would be affected, because the same population would be occupying a smaller area (as the area disturbed by the airport would not be available). The guidance raises as relevant factors; changes in the balance of species present, changes in species density, changes in the distribution of species, fragmentation of species and habitats, and reductions in the areas of habitats available and actually supporting species. All these could apply here.
29. It is obvious that this could have effects on the successful use of the land by the bird population. So the removal of disturbed species during airport operating hours to the RSPB reserve would in fact result in an adverse effect on the integrity of the

population for example by altering the species population density and by indirect loss of key supporting habitats (through disturbance). As described by Dr Underhill-Day in his evidence (e.g. rebuttal proof paragraph 1.6), there is a material risk that the population size of some species will be affected by the combined effects of the aircraft movements, site safeguarding and the various aspects of bird hazard management.

30. I felt it would be helpful to consider the Applicant's position in its evidence against my summary of the ornithological impacts of the proposals provided in paragraph 220 of my proof. In my conclusion I noted that:

- a. The Airport expansion proposal is a large development located within or near to the various designated sites. The location and size and scale of the development is not contested in the Applicant's proofs of evidence and nor could it be.
- b. The likely and potential effects of the operation of the expanded airport will act through a combination of habitat reduction or fragmentation, prevention of appropriate conservation works, direct exclusion (from water bodies near the airport), disturbance, displacement and reduction in appropriate feeding habitat both within but also outside of the designated sites' boundaries.
- c. The adverse effects act cumulatively and are likely to be of significant magnitude and of permanent duration. As set out above, the Applicant's evidence does not address impact interaction or cumulative effects of the impacts and some impacts are not addressed at all. Though the duration of disturbance is contested in Dr Armstrong's proof to some degree, in that he asserts that birds can return to the disturbed areas at night, I find his evidence on disturbance unconvincing, as considered in the rebuttal proof of Dr Underhill-Day.
- d. The impacts of the proposals will affect the key relationships in the environment which define the structure and function on a large scale. The Applicant's ornithological evidence does do not address structure or function of the designated sites and their functionally linked land and so this conclusion also remains unaltered.

**Conclusion**

31. In short there is nothing in the Applicant's ornithological evidence that leads me to alter my proof of evidence or my conclusions. Taking account of all the evidence available to me, including that presented in the Applicant's ornithology proofs, and Dr Allan's and Dr Underhill-Day's rebuttals to these, and that given orally at the inquiry, my conclusion remains that it cannot be ascertained that the proposals will not have an adverse effect on the integrity of the SPA, pSPA, and pRamsar because the effects on the integrity are uncertain but could be significant in relation to the likely effects on birds I described in my proof of evidence. Moreover, it cannot be said that no reasonable scientific doubt remains as to the absence of such effects. Indeed, it is likely that there would be significant effects on the ecological functioning of the sites in relation to birds. Furthermore, the Applicant's proposals are likely significantly to damage the assemblages and species of birds for which the Dungeness, Romney Marsh and Rye Bay SSSI is of special interest.

**SECTION 3: INVERTEBRATES**

32. Drawing on Mr Heaver's rebuttal and proof of evidence, I am of the opinion that there is nothing in the Applicant's evidence that changes my opinion from that set out in my proof of evidence. There is no further information supplied by either Dr McLellan's proof or Mr Mead's proof and rebuttal to change my opinion from my view that the development will substantially damage the SSSI wetland assemblage invertebrate fauna. I would like to highlight some key points in the following paragraphs.
33. The application ditches represent part of the overall SSSI wetland assemblage interest feature. The ditches form a network which allows the invertebrate assemblage to disperse and move between the ditches. The results of the surveys undertaken by the Applicant, although only restricted to the footprint of development, indicate that the ditches support most of the species that form part of the SSSI wetland assemblage invertebrate species feature, including great silver diving beetle *Hydrophilus piceus*, the soldierfly *Odontomyia ornata* and the scarce emerald dragonfly *Lestas dryas* which has only been recorded from one other location on the SSSI. I regard these ditches to be well established and an important component of the SSSI ditch community with a good SSSI wetland assemblage invertebrate interest and rare species. Should 801m of the ditch complex be lost to development this is likely to damage substantially the special interest features of the SSSI in relation to the wetland invertebrate assemblage. The importance of this impact should not be under-estimated.
34. Included in the invertebrate interest of the SSSI is the medicinal leech. This is widespread throughout the SSSI and was noted in the application ditches during a great crested newt survey in 2006. Invertebrate surveys carried out in the ditches in 2007 did not record its presence but the Applicant's December 2010 survey acknowledges the possibility of its presence based on detailed surveys of the SSSI across ponds and ditches (Appendix 5 to this proof), Ausden *et al* 2002 and Leyshon 2004.
35. It is proposed by the Applicant that the loss of 801m of the application ditches would be mitigated with 1300m of replacement ditch. Mr Heaver's rebuttal demonstrates how the replacement ditches will not provide suitable habitat in terms of mitigating the impacts of the proposed development on invertebrates. Based on the information provided, the replacement ditches will be functionally substantially different. The 1300m of replacement ditches cannot be considered as providing suitable

replacement habitat. It is clear that this is also the view of the Environment Agency who in their response to the application (Appendix 6 to this rebuttal) state "*The ecological surveys carried out demonstrate that the ditches to be infilled are of very good quality therefore we would be expecting as good or better as compensation. We do not accept the current proposal for replacement ditches bordering the runway*".

36. The draft conditions (CD 17.2) have a list of proposals to assess the water quality, invertebrates and vegetation of all the water bodies and ditches both before and after the runway is completed. Since the surveys are not linked to mitigation, contingency or action then the value of such surveys would be purely academic. Had those surveys been before the inquiry they may have enabled the full and proper extent of the impacts to be assessed.
37. In order to present a complete picture of the potential impacts arising from the ditch removal, I make reference to the water vole that is present in the ditches following surveys undertaken by the applicant. I cover this in Section 5 of my rebuttal as it is a vertebrate.
38. It is clear from all the evidence that the site is highly constrained. The new ditches and waterbodies on the site must:
  - a. avoid damaging the designation features and must not be sited on the vegetated shingle,
  - b. be linked to the ditches (to allow easy migration of existing species, especially those less mobile),
  - c. whilst at the same time preventing over draining of the site in a water constrained area (EA response letters, Appendix 6 to this rebuttal)
  - d. provide sufficient drainage to drain the runway and avoid a flood risk (EA response letters, Appendix 6 to this rebuttal)
  - e. whilst at the same time provide sufficient variety of profile, depth, width and temperature (see Mr Heaver rebuttal proof for detail)
  - f. be of sufficient water quality for species recolonisation
  - g. have sufficient variety of management to maintain habitat variety described above

- h. reduce the bird hazard by netting some if not all the onsite water bodies (as recommended in the BHRA in LAA/6/C Appendix 2)
- i. whilst at the same time allowing sufficient birds to access the ditches and waterbodies to provide sufficient warm blood meal for medicinal leech

39. Leaving aside the time delay in colonisation and establishment of fauna and flora (described in the Mr Heaver's proof and rebuttal) it is not clear to me that it is even theoretically possible to produce ditches or other waterbodies on the application site which meet all the constraints listed above necessary to enable this development and protect the special interest of the site.

### **Conclusion**

40. Nothing in the Applicant's evidence, including the proofs of Dr McLellan and Mr Mead, leads me to change my opinion from my view that the development will substantially damage the SSSI wetland assemblage invertebrate fauna, including protected and rare species, on a large scale. In addition, the mitigation proposals are both unclear and insufficient, and it is not apparent that it is possible to produce adequate mitigation for the impacts of the proposals given the interest of the ditches and the Application site constraints.

## **SECTION 4: VEGETATED SHINGLE (AIR QUALITY)**

### **Introduction**

41. I have read the proof of evidence and appendices of Dr Bethan Tuckett-Jones (LAA/8/A, B & C) and my response to her evidence is set out in the following paragraphs. My rebuttal evidence should be read in conjunction with my proof of evidence (NE/3/A, B and C) in particular Section 5 and in conjunction with the Statement of Common Ground on Air Quality Matters in Relation to Ecosystems that was signed by both parties on 26<sup>th</sup> January 2011. A brief review of technical points related to assumptions and methodology used in the air quality modelling is provided in the report by Dr Paul Taylor of Atkins in Appendix 7 to this rebuttal proof. In preparing my evidence on air quality matters I have been advised and assisted by Dr Taylor of Atkins and Dr Zoe Russell, Natural England's Senior Air Quality Specialist.
42. First, I explain why, in my opinion, Dr Tuckett-Jones has not correctly interpreted Natural England's position. I outline below the potential harmful effects on the environment of the proposed development, the evidence to support the use of the critical load and the uncertainty inherent in the assessment of the emissions. I explain what Natural England's position is with regards to air quality impacts of the Applicant's proposals and, with reference to my proof of evidence, why I believe there is the potential for an adverse effect from the proposals without suitable conditions. I also explain why there is sufficient uncertainty to necessitate the requirement for robust conditions and why the conditions referred to by Dr Tuckett-Jones do not fully reflect those that Natural England are seeking. Lastly I make reference to the technical appendix setting out the key points.

### **Position of Natural England on Air Quality**

43. In paragraph 2.2.7 and 5.5.3 of her proof, Dr Tuckett-Jones purports to set out the position of Natural England and to what we have, in her opinion, agreed. I do not agree with statements made in paragraph 2.2.7 that there is sufficient scientific certainty, nor the opinion that there is no likely significant (adverse) effect. In addition, Natural England's position is not precisely reflected in Dr Tuckett-Jones proof, in particular paragraph 5.5.3. The position of Natural England is set out clearly in paragraphs 278 to 283 of my proof (NE/3/A). The key points of this position, which



I believe are not clearly reflected in Dr Tuckett-Jones' proof, are explained in subsequent paragraphs but can be summarised below:

- a. There is sufficient justification for the 10KgN/ha/yr critical load for this habitat type on this site.
- b. The evidence presented by the Applicant to-date shows a likely significant effect in relation to air quality on the vegetated shingle habitats, including the SAC and SSSI, necessitating an appropriate assessment.
- c. There is significant scientific uncertainty as to the absence of adverse effects upon the integrity of the SAC (because the best available scientific information is uncertain, estimated or a proxy) unless appropriate conditions can be secured.
- d. The scientific uncertainty necessitates the conditions requested by Natural England in my proof (NE/3/A paragraph 285) and these conditions are not fully reflected in those referenced in the proof of Dr Tuckett-Jones.

### **The 10KgN/ha/yr critical load**

44. Paragraph 3.4.11 of the proof of Dr Tuckett-Jones' suggests that the recommended critical load of 10KgN/ha/yr is "*overly conservative*". The reasons Dr Tuckett-Jones provides for this statement are that the estimated nitrogen deposition has been above the 10KgN/ha/yr critical load, it has been above this level for "the last few decades" and, despite this, a well established lichen community remains. I agree that there is a well established lichen community close to the airport which is supported by both the survey work described in Dr Ferry's report (Appendix 9, NE/3/B) and by the findings of Dr Thus's report (Appendix D to LAA/8/C).

45. I found the statements made about the historic nitrogen deposition potentially somewhat misleading when read in isolation. In paragraph 3.4.11 of her proof Dr Tuckett-Jones states "*There is evidence to suggest that nitrogen deposition levels over Dungeness SAC have exceeded the 10KgN/ha/yr critical load over the last few decades (APIS)*". In addition in paragraph 3.4.6 of her proof Dr Tuckett-Jones states "*In their report on site relevant critical loads, the CEH assigned critical loads to*

*individual designated sites according to local conditions.*” She does not clearly recognise any of the limitations or uncertainties in this process. These statements may lead to the mistaken conclusion that the historic nitrogen deposition on the site generally and at the airport in particular has been measured. In fact the APIS figures used by Dr Tuckett-Jones are subject to a series of uncertainties which are both recognised and recorded in the source website ([www.APIS.ac.uk](http://www.APIS.ac.uk)). As such, these estimates are not measurements (they are primarily modelled estimates) and are at a 5km grid square resolution. The background nitrogen deposition (for 2003 and 2010) given on the Dungeness site-relevant critical load pages on APIS (and used in the Applicant’s assessment) are from the FRAME model (Fine Resolution Atmospheric Multi-pollutant Exchange <http://www.frame.ceh.ac.uk/index.html>). The APIS website recognises the uncertainty of its own models when it states:

*“Concentration and deposition are mostly available at a 5 km grid resolution. The exception to this is for ozone exposure which is mapped at a 1 km grid resolution. For many pollutants there is real sub-grid variability which is not revealed in the 1km or 5 km averages. The uncertainties are particularly large for the concentrations of primary pollutants e.g. NH<sub>3</sub>, NO<sub>x</sub> and SO<sub>2</sub>.”*

46. Therefore it is not possible to be certain that the lichen community around the airport, and in particular within the areas of the SAC south and east of the runway, have been subject to a very high nitrogen deposition above the suggested critical load “for the last few decades” as stated by Dr Tuckett-Jones.
47. The detailed consideration of the evidence that lead to the recommendation of a critical load of 10KgN/ha/yr is described in paragraphs 258 to 277 of my proof and I have not repeated that here. It is clear from this process that a lower critical load than the one ultimately identified was considered (8KgN/ha/yr) but that the balance of evidence available from the proxy habitats shows that the 10KgN/ha/yr provided the best “fit” to the vegetation communities, substrate and other relevant conditions found at Dungeness near the airport. The proxy habitats considered (for which empirical evidence on critical load does exist) included acidic grassland, lowland heathland, lowland acidic grassland, as well as both fixed and shifting coastal sand dunes. The lower end of the recommended critical load range for all of these habitats (with the exception of stable dunes on an acidic substrate) is 10KgN/ha/yr so this is a commonly applied critical load in the closest habitat equivalents to vegetated shingle. It is clear that the judgements have been reasonable and not “overly conservative” as

suggested by Dr Tuckett-Jones. The use of the 10KgN/ha/yr critical load is also supported by the report of Dr Thus in the Applicant's own evidence (Appendix D, LAA/8/C) which states "*I therefore conclude that 10KgN/ha/yr is an appropriate critical load to use at present*".

48. In paragraph 7.3.1 of her proof Dr Tuckett-Jones also states "*The critical load of 10KgN/ha/yr has been agreed with Natural England as an appropriate assessment level...*". Since Dr Tuckett-Jones has used the 10KgN/ha/yr as the critical load benchmark I do not contest the critical load used by the Applicant in their most recent air quality assessment but I do not agree that it is overly conservative.

**The evidence presented by the Applicant to-date shows a likely significant effect in relation to air quality on the vegetated shingle habitats, including the SAC, necessitating an appropriate assessment**

49. In her proof Dr Tuckett-Jones contends that there is no likely significant adverse effect upon the designated sites for a range of reasons (paragraph 5.4, LAA/8/A) including the estimated background exceedance (a point I have addressed above) and that in Dr Tuckett-Jones' opinion only a relatively small percentage of the total area of the SSSI is subject to the increased nitrogen deposition as a result of the airport expansion. The use of total area of the SAC and SSSI is an over-simplification. In my proof, I have explained that at Dungeness there is a whole series of different vegetation communities that develop across the shingle, some of which are unique to the site, some of those are found near the airport (section 2 in particular table 2.1). The importance of this area for lichens is reflected within the reports of both Dr Thus (Appendix D to Dr Tuckett-Jones' proof) and Dr Ferry (Appendix 9, NE/3/B).
50. I believe, though it is not clearly set out, that Dr Tuckett-Jones is arguing that the precautionary principle does not need to be applied because she contends there is no likely significant effect upon the SAC from air quality impacts. For example, in paragraph 6.3.2 of her proof she states that the proposals are '*not considered to have a significant effect*' and in paragraph 8.3.6 that '*there are no significant impacts so an appropriate assessment is not required*'. I disagree with these statements and they are not supported by the evidence presented within Dr Tuckett-Jones' proof. Dr Tuckett-Jones describes Process Contributions (PC) and Predicted Environmental

Concentrations (PEC) in paragraph 3.5.1. of her proof. A PC of >1% (as is the case with the airport's contribution to nitrogen deposition) combined with a PEC of >70% of the critical load (as is the case at the boundary of the SAC and the SSSI) is used by Natural England, as agreed with the Environment Agency, to show a likely significant effect and warrant further work through an appropriate assessment (Appendix 7 of the Habitats Directive Handbook, Appendix 9 to this rebuttal proof). Therefore, applying this guidance, it is apparent that the proposals would have a likely significant effect. Natural England do not assume that a PC>1% and a PEC of >70% automatically results in an adverse effect upon integrity. The assessment of adverse effect upon integrity must be based on the modelled outputs but also the sensitivity of the receptor vegetation, the significance and distribution of that vegetation community within the European site, uncertainty in the modelling and other relevant site specific information. An appropriate assessment is required of the impacts of the proposals including air quality on the European protected sites.

51. In paragraph 5.1.9 of her proof, Dr Tuckett-Jones states that the “*area of SSSI over which the deposition exceeds the critical load is limited to the area of improved grassland within the airport hardstanding. Deposition levels over the vegetated shingle within SSSI remain below the critical load, even with the extension of the runway and increase in passenger numbers*”. This is not correct. As highlighted in my proof at paragraph 263, there is predicted critical load exceedance at the SSSI adjacent to the airport access road and this is an issue that Natural England still intends to pursue with the Applicant in relation to the discussions on planning conditions.

**There is significant scientific uncertainty as to the absence of adverse effects upon the integrity of the SAC (because the best available scientific information is uncertain, estimated and/or a proxy) unless appropriate conditions can be secured.**

52. Dr Tuckett-Jones makes reference to the certainty (in her opinion) of her evidence. For example in paragraph 5.4.8 – “*I have been able to demonstrate beyond reasonable scientific doubt...*”.
53. I have already explained the uncertainty linked to the estimation of background nitrogen deposition (above). In addition, other areas of uncertainty include:

- a. The use of a proxy habitat to estimate the critical load because there is no direct empirical evidence of the effects of atmospheric emissions on vegetated shingle habitats that would enable a critical load to be drawn for habitats that actually occur on Dungeness (and there is evidence that some of the individual plant species are sensitive to nitrogen deposition from studies in other habitats).
- b. The effects of atmospheric pollution on terricolous (ground living) lichens that form such an important part of the ecosystem at Dungeness, especially near the airport, are comparatively poorly studied, compared to their epiphytic counterparts (Appendix 9, NE/3/B).
- c. The nearest weather monitoring station (at Herstemonceux weather station) is some distance from the site (approximately 44km from the airport). The locations of the weather station and nearest continuous monitoring sites are shown in Figure 3.2 Appendix 10 of my proof (NE/3/B).
- d. The nearest regular air quality monitoring sites are a considerable distance from the application site. The Lullington Heath site quoted in figure 2 of LAA/8/C Appendix B of Dr Tuckett-Jones' proof is shown on Figure 3.2 Appendix 10 of my proof (NE/3/B) and is approximately 55km away from the airport.
- e. The air quality monitoring undertaken on the site did not provide a transect of values with increasing distance, due to limitations on site selection arising from aircraft operational requirements and health and safety. The monitoring was relatively short-term (6 months and so not accounting for seasonal variations) and it did not include a 'true background' site (one well away from any local sources of emissions). The monitoring did not directly measure nitrogen deposition so it cannot be directly compared to the critical load.
- f. There is general uncertainty in the prediction of process contribution from a proposed development. This is because models are a mathematical representation of reality and, whilst they are an essential tool in environmental assessment, it is important to remember that there is inherent uncertainty in all air quality models.

54. The uncertainties in the use of proxy habitats for critical loads (as is the case at Dungeness) are recognised in the APIS website ([www.APIS.ac.uk](http://www.APIS.ac.uk)) which states:

*“The habitat specific critical loads and levels data are only available for a limited number of habitat types. In this case the most similar habitat is assigned to the habitat being considered. There are, therefore, uncertainties in both the best estimates of the critical loads and levels and in the assignment of habitats.”*

55. The inherent uncertainty of models is recognised in the Environment Agency report entitled “*Uncertainty in critical load assessment models*”. (EA Science Report: SC030172/SR). Which states on page 112:

*“In the calculation of exceedance both the deposition and the critical load estimates are uncertain, because they depend on uncertain estimates of model input parameters. Furthermore, the models used to calculate deposition are also inherently uncertain because of the assumptions made in their derivation and implementation.”*  
(extract in Appendix 8 to this rebuttal proof).

56. Therefore almost every element of the assessment of air quality impacts in this case, from the use of a proxy habitat for the threshold for measurement to the modelled inputs and outputs, are estimates, approximations or models, including the background and the predicted decline in background, and as such are uncertain. These uncertainties will remain unless confirmation can be obtained from on-site monitoring and other conditions (discussed below).

57. In Paragraphs 246 to 250 of my proof of evidence I describe some of the literature related to the impacts of increased nitrogen on vegetated shingle and its vegetation communities. In summary, nitrogen deposition above the critical load has the potential to adversely affect the site integrity in terms of structure and function in a number of ways, including –

- a. Direct effect on the lichens which are a designated feature of the site.
- b. Changes in species composition (of lichens or/and higher plants), with an increase in weed species/graminoids and loss of more sensitive species.
- c. Altered competitive interactions - higher plants outcompeting the lichens for light and hence suppressing growth rate of the lichens.
- d. Reduction in overall biodiversity (due to loss of sensitive species).

58. The result of prolonged exposure to elevated nitrogen levels would be the degradation of the vegetated shingle communities and, ultimately, a negative impact on the unique cycle of shingle vegetation succession that has been well-documented for this site which is strongly related to the low nutrient levels (Scott 1995, Randall and Sneddon 2001, Randall et al 2001). The integrity guidance checklist in the EC guidance on assessment of plans and projects significantly affecting Natura 2000 sites (2002) (CD 5.9) refers to changes in species composition, diversity and structure as factors affecting the integrity of the site. In addition the English Nature guidance on assessment of criteria in Appendix 7 to my proof (NE/3) also uses interruption of chemical or biological processes that support habitats as an indicator of adverse effects upon integrity. Since (as set out in my proof) vegetated shingle is a low nutrient habitat, moving from a low to a higher nutrient system from nitrogen deposition will effectively interrupt the chemical process of the shingle that supports the vegetation community and would therefore be an adverse effect upon integrity of the SAC.

59. As explained above, the scale of the impacts should not be related merely to the whole SAC (and SSSI) but to the relative area of the component communities that make up the SAC and SSSI. Table 1 below shows the relative area of different vegetated shingle communities within 1km of the airport (which encompasses the whole of the air quality contours from the Applicant's air quality mapping CD 1.45). This is taken from the SSSI to give a full picture of all the Annex I habitats near the runway but since the SAC is smaller than the SSSI the percentage values would be higher and therefore this is the least worst case. This is a rather crude measure, but it shows that disproportionate areas of certain habitats occur relatively close to the runway, in particular calcifuge grassland types including the important A2S community that is so unique to vegetated shingle (as described in Section 2 of my proof NE/3/A). When this is combined with information on the lichen distribution at Dungeness which shows that lichen forms part of the climax community (e.g. Ferry 2010 – Appendix 10 to my proof NE/3/C) it is clear that much of the lichen dominated heath within the SSSI (and therefore the SAC) is within a few hundred metres of the airport and therefore at risk from any significant increased nitrogen emissions from the airport.

Table 1

Comparison of the Dungeness vegetation types to NVC and location in relation to the LAA runway.

Shingle vegetation communities	NVC equivalent	Habitats Directive Annex I habitat	Area within whole SSSI (ha)	Distance of Nearest Vegetation community to existing runway (Km)	Area of habitat within 1km of airport (Ha)	Percentage of SSSI feature within 1km (%)
C – strand line communities	SD1 <i>Rumex crispus</i> – <i>glacium flavum</i> shingle community; MC6 <i>Atriplex prostrata</i> – <i>Beta vulgaris</i> ssp. <i>maritima</i> seabird cliff community	PVSB	19.5	>1Km	0.0	1.0
B3 – <i>Arrhenatherum elatius</i> grassland	MG1 <i>Arrhenatherum elatius</i> mesotrophic grassland; coastal and a few non-coastal stands fit MG1a <i>Festuca rubra</i> sub-community closely	PVSB	88.4	0.46	11.923	13.5
A1 – <i>Cytisus scoparius</i> scrub	W23 <i>Ulex europaeus</i> – <i>Rubus fruticosus</i> underscrub community; some affinity with W23b <i>Rumex acetosella</i> sub-community	PVSB	63.8	0.36	6.265	9.8
A2 – calcifuge grassland	U1 <i>Festuca ovina</i> – <i>Agrostis capillaris</i> – <i>Rumex acetosella</i> calcifuge grassland community; a close fit to U1a <i>Cornicularia aculeata</i> – <i>Cladonia</i> sub-community	PVSB	220.9	0.00 (immediately adjacent)	38.926	17.6
A3 – slightly mesotrophic calcifuge grassland	U1 <i>Festuca ovina</i> – <i>Agrostis capillaris</i> – <i>Rumex acetosella</i> calcifuge grassland community; some affinity with U1f	PVSB	33.0	0.00 (immediately adjacent)	15.408	46.7



	<i>Hypochaeris radicata</i> sub-community.					
A2S – shingle margin calcifuge grassland	U1 <i>Festuca ovina</i> – <i>Agrostis capillaris</i> – <i>Rumex acetosella</i> calcifuge grassland community; no obvious affinity with any sub-community	PVSB	72.8	0.00 (immediately adjacent)	6.94	9.5
B1 – mesotrophic vegetation	U1 <i>Festuca ovina</i> – <i>Agrostis capillaris</i> – <i>Rumex acetosella</i> calcifuge grassland community; in part a good fit to U1d <i>Anthoxanthum odoratum</i> – <i>Lotus corniculatus</i> sub-community	PVSB	54.4	0.00 (immediately adjacent)	13.524	24.9
I – <i>Ilex aquifolium</i> scrub	No described NVC category	PVSB	2.1	>1Km	0	0
E – <i>Sambucus nigra</i> scrub	No described NVC category	PVSB	1.2	> 1 Km	0	0
IE – <i>Ilex aquifolium/Sambucus nigra</i> scrub	No described NVC category		0.9	> 1Km	0	0
P – <i>Prunus spinosa</i> scrub	No described NVC category	PVSB	11.4	0.11	2.732	24.0
U – <i>Ulex europaeus</i> scrub	No described NVC category	PVSB	17.0	0.11	0.695	4.1
B2 – wetlands	W24 <i>Rubus fruticosus</i> – <i>Holcus lanatus</i> underscrub; M23 <i>Juncus effusus</i> – <i>Galium palustre</i> mire	PVSB	34.1	0.02	6.066	17.8
B2S – wetlands with <i>Salix cinerea</i>	W1 <i>Salix cinerea</i> – <i>Galium palustre</i> woodland community	PVSB	19.9	0.05	6.683	33.6

A2F – <i>Festuca rubra</i> grassland/ G – <i>Geranium robertianum</i> community (coincides very closely with distribution of A2F)	A2F matches: MC8 <i>Festuca rubra</i> – <i>Armeria maritima</i> maritime cliff community; close to MC8a typical sub-community; also MC5 <i>Armeria maritima</i> – <i>Cerastium diffusum</i> therophyte communities. No described NVC category for G.	PVSB	29.7	1.00	0.235	0.8
Bare shingle		PVSB (if lichen component in bare shingle)	981.5	0.00 (immediately adjacent)	Not calculated	
<b>Total area:</b>			<b>1,650.6 ha</b>			

AVDL = Annual Vegetation of Drift Lines

PVSB = Perennial Vegetation of Stony Banks

Sources: Ferry *et al.* (1990); Fuller (1989). NVC descriptions after Rodwell (1991a; 1991b; 1992; 2000). Shingle vegetation communities after Ferry *et al.* (1990).

Area calculated on GIS from the GIS data held by Natural England

60. As I explained in my proof (paragraphs 246 to 250) lichen dominated communities are particularly sensitive to increased nitrogen. When the vulnerability of the communities nearest the airport is combined with their comparative scarcity on the SSSI, and their uniqueness to Dungeness or vegetated shingle habitats, it becomes clear that the potential change of these communities caused by elevated nitrogen would fundamentally alter their unique character. The potential scale of change of lichen heath community to other communities (in terms of percentage of the community on the site) would therefore be significant.

61. One other site integrity factor to consider is the interruption of nitrogen on the chemical and biological processes that support the vegetated shingle habitat. One key biological process at Dungeness is the vegetation cycle as described in Sneddon and Randall 2001. In my proof (paragraph 245), I note in Dr Ferry's report his reference to the 'final climax stage' of

succession being very well represented in the 'airport environs'. This is characteristic of low nutrient (oligotrophic), base poor (acid soils), summer parched habitat in lowland Britain (Ferry et al 1990). These low nutrient conditions occur due to harsh and dry conditions in the summer allowing the humic material and 'soils' to blow away together with leaching at times of rainfall. If nitrogen inputs were so high that they outweighed losses of nutrients, they could bring about changes (such increased grass growth, build up of humic material) that would result in a loss of the typical vegetation succession found at Dungeness. Elevated nitrogen therefore has the potential to irreversibly alter the chemical and biological processes that support the low nutrient vegetated shingle.

**The scientific uncertainty necessitates the conditions requested by Natural England (NE/3/A paragraph 285) and these conditions are not fully reflected in those referenced in the proof of Dr Tuckett-Jones.**

62. If the modelled outcome does not occur, i.e. critical load/level is exceeded as a result of the airport expansion, then there would be an adverse effect on the integrity of the SAC and damage to the interest features of the SSSI, as described above and in my proof paragraphs 246-250 (NE/3/A). Since it cannot be certain that the model outcome will occur in the real world, it follows that it cannot be certain that there will be no adverse effect on the SAC without conditions. In addition conditions are needed to ensure there is no harm to the SSSI. In section 6 of her proof Dr Tuckett-Jones lists potential mitigation and conditions. I welcome these but as explained in my proof they are incomplete and insufficiently detailed. These require substantive work to make them robust in order to provide confidence in their efficacy. In order to progress this matter further Natural England has provided revised draft text with respect to our air quality objection to the Applicant and is in discussions to enable progress on this subject.

63. Examples to illustrate that the Applicant's current proposals still fall some way short of what is needed are:
- a. the conditions do not appear to include the measurement of nitrogen deposition, which is needed for comparison with the critical load.
  - b. failure to expressly refer to the critical load in the conditions as a threshold for remedial action.

- c. the need for agreed remedial action (not just the production of an action plan) following the trigger is another essential point with regards to the design of the monitoring conditions.

64. I do not consider the current proposals sufficiently robust or comprehensive to mitigate the potential for adverse effects from oxides of nitrogen and nitrogen deposition linked to the expanded airport upon the integrity of the SAC.

#### **Provision of information and technical clarification**

65. A review of technical points related to assumptions and methodology outlined in Dr Tuckett-Jones' proof is provided in the report by Atkins in Appendix 7 to this proof. The new work undertaken, and referenced in paragraph 1.2.3. of Dr Tuckett-Jones' proof, was undertaken in response to the concerns raised by Natural England. This is not referred to in 1.2.3.

66. In paragraph 1.2.6 Dr Tuckett-Jones refers to the clear demonstration of the robustness of the model and assumptions and early provision of data. Natural England's technical advisors (Atkins) were unable to confirm the robustness of the modelling and data until additional information requested was made available (such as the model files and assumptions).

67. In paragraph 1.2.8 all the modelling assumptions were not provided in the December 2009 supplementary evidence (e.g. CD 1.38, 1.39) as is suggested. The modelling assumptions were not clear until the files and associated data were provided and subsequent discussions between technical experts had been undertaken.

#### **Conclusions**

68. I have explained why, in my opinion, Dr Tuckett-Jones has not correctly interpreted Natural England's position. The key points of this position, which I believe are not clearly reflected in Dr Tuckett-Jones proof, are:

- a. The 10KgN/ha/yr critical load recommended is appropriate to apply, and this is agreed by Dr Thus in his evidence (Appendix D to LAA/8/C). Furthermore, I have explained why it is not "overly conservative".

- b. The evidence presented by the Applicant to-date shows a likely significant effect of air quality on the vegetated shingle habitats, including the SAC, necessitating an appropriate assessment. This is due to the sensitivity of the habitats, the pathway for effect and the predicted process contribution of the airport expansion proposals.
  - c. There is the potential for an adverse effect upon integrity of the SAC from elevated nitrogen through altering of biological and chemical processes and through alteration of the vegetated shingle community which could be of large scale in terms of community affected and permanent duration.
  - d. There is significant scientific uncertainty as to the absence of adverse effects upon the integrity (because the best available scientific information is uncertain, estimated and/or a proxy) unless appropriate conditions can be secured.
69. The scientific uncertainty necessitates the conditions requested by Natural England in my proof (NE/3/A) and these conditions are not fully reflected in those currently proposed by the Applicant.
70. In conclusion, it is still not currently certain that the Airport expansion proposals will not adversely affect the integrity of Dungeness SAC and SSSI, as it cannot be said that no reasonable scientific doubt remains as to the absence of such effects. In my opinion, a conclusion of no adverse effect on site integrity could only be reached if comprehensive planning conditions (beyond those currently proposed) are included to ensure:
- d. that the operation of the expanded airport remains within the parameters on the basis of which it has been assessed,
  - e. that the future year air quality is as predicted by the modelling, and
  - f. the vegetation community shows no deterioration.
71. It is essential that requirements for local monitoring are accompanied by provisions which clearly provide for action to be taken in the event that the modelling and assessment predictions do not hold true and a foreseeable risk to the site (in line with Article 6(2) as well as Article 6(3) of the Habitats Directive) materialises. Natural England's position was set out in its letters to the Applicant dated 10 December 2010 and 7 February 2011 and has been discussed between the parties. I still hope that suitable conditions can be agreed, at least in large measure.

**SECTION 5: OTHER ECOLOGICAL IMPACTS**

72. I have read and considered the proof of evidence of Dr McLellan, and my response to his evidence is set out in the following paragraphs. In this part of my rebuttal proof I consider the main issues which arise from the Applicant's ecological evidence as it relates to the evidence given in my proof. I have relied on the expert advice and evidence of Mr Heaver in order to inform my own conclusions on invertebrate elements referred to in this section on ecological matters.
73. As detailed in my proof of evidence, I have significant outstanding concerns regarding the wider ecological impacts which will result from this scheme. Many of the concerns raised within my proof were not addressed by Dr McLellan in his proof of evidence (document reference LAA/9/A) or its accompanying appendices (document reference LAA/9/C). The concerns raised in my proof regarding survey effort have not been addressed and the surveys submitted in support of the application do not follow good practice guidelines. A summary of the recommended survey effort can be found within Natural England's protected species standing advice<sup>1</sup>. I have not repeated these concerns here; rather I have addressed what information has been provided by Dr McLellan in his proof. However, the concerns raised in my proof of evidence remain. For ease of cross referencing, below I have followed the layout of my proof of evidence. First I will consider those species which form part of the designated site interest features, followed by additional protected species present within the application site.

**Medicinal leech**

74. For clarity, the medicinal leech is one of the notified interest features of the Dungeness, Romney Marsh and Rye Bay Site of Special Scientific Interest (SSSI) and the proposed Dungeness, Romney Marsh and Rye Bay Wetland of International Importance under the Ramsar Convention (Ramsar Site). It is not a feature of the Dungeness Special Area of Conservation (SAC) as stated in paragraph 4.3.2 Dr McLellan's proof.

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<http://www.naturalengland.org.uk/ourwork/planningtransportlocalgov/spatialplanning/standingadvice/default.aspx>

75. Additionally, the medicinal leech receives protection under Schedule 5 of the Wildlife and Countryside Act 1981 (as amended) (the “1981 Act”). I can confirm that this species does not receive protection under Schedule 2 of the Conservation of Habitat Regulations and Species Regulations 2010 and is therefore not a European protected species as stated in paragraph 1.3.31 of appendix 3 of LAA/9/C<sup>2</sup>.
76. I note the additional survey work undertaken for invertebrates in December 2010 (LAA/9/A, paragraph 4.3.3) which aimed to ‘include the possibility of medicinal leech being present within the ditch network’. The surveyor concluded in the report that *‘The low species richness and absence of rare and uncommon species which have been recorded previously is explained by the time of year’*. This reinforces the concerns set out in my proof regarding the inadequacy of the medicinal leech surveys submitted with the environmental statement and I do not consider this survey provides any further clarification on this matter.
77. I continue to have concerns regarding the proposed mitigation for the medicinal leech as a result of this proposal. The proposed netting of most if not all of the waterbodies on the airport land to exclude birds from them would limit the availability of warm blood prey for the leech. Research in the Dungeness area (Nixon, 1999 and McConnell, 2000; Appendix 5 to this rebuttal) has shown that birds are an important component of medicinal leech food supply. As I detailed in my proof of evidence, great crested newts are known to have been killed by medicinal leeches at Dungeness. In the absence of their preferred food source, any leeches translocated to the ponds could predate upon the great crested newts which may deplete their numbers which could in turn affect the SAC population.
78. I note that it is proposed to net waterbodies to exclude birds flying to land on them. Access to the waterbodies will be maintained for species such as moorhen and coot which are more likely to access the waterbodies by walking (section 6.9 of (BHRA) Appendix 1 of LAA/6/C). Unfortunately, no evidence has been provided by the Applicant to address the concerns regarding the impacts of this proposal upon medicinal leech. Without the provision of the following information, I do not consider

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<sup>2</sup> When the medicinal leech forms part of a Ramsar assemblage it is afforded protection by the assessment of plans or projects as if it were a Natura 2000 site, described in paragraphs 3.7, 3.10 to 3.13 of Natural England’s statement of case.

that it is possible properly to consider the mitigation proposals and residual impacts of this proposal upon the medicinal leech:

- g. Relative population estimates of the leeches proposed to be translocated and the existing populations within the receptor ponds;
- h. Evidence showing that moorhens and coots will continue to use the netted ponds and ditches to feed, breed and rest on, thereby providing a continued food source for the leech;
- i. Baseline data showing the existing numbers of bird species using the ponds and ditches, and an estimate of those likely to be using the ponds after netting to provide confidence that there will be a continued food source for the leech;
- j. Details of other schemes where such an approach has been successfully adopted as Natural England are not currently aware that such a scheme has successfully been undertaken previously;
- k. Information detailing how the pond will be managed to ensure the fen vegetation does not choke the pond with the nets in situ; and
- l. Clarification of which water bodies are to be netted.

79. Medicinal leech is known to occur in the area in significant numbers and Dungeness holds the largest population in the UK. Since the removal of a primary food source has the potential to result in loss of populations from entire water bodies, the potential risk is very high. In addition the methods proposed (both netting of water bodies containing medicinal leeches and translocation of medicinal leech) are novel and unproven. Therefore the above requirements are the least that should be provided in order to fully assess the impacts of the proposals on medicinal leech and assess the mitigation proposed.

80. Without sufficient food sources, such as waterfowl, the medicinal leech would not be able to breed and sustain a viable population. There is research that suggests that the lack of warm blood meal reduces the rate at which reproductive maturity is reached (Davies and McCloughlin (2003) - Appendix 5 to this proof). I note in the Applicant's proposed conditions (CD 17.2), conditions are included requiring medicinal leech surveys to be undertaken and on-going monitoring. Again no actual mitigation is proposed, just that mitigation will be proposed following the surveys. Since this survey information, and subsequent mitigation, is not before the inquiry



(as required by government policy – Circular 06/2005, CD5.23), it is impossible to know if these impacts can be mitigated.

81. I am therefore unable to conclude that the mitigation in its current form, including the conditions, will avoid a negative impact upon the medicinal leech population in this area. Additionally, in the absence of this information, I consider that the mitigation for leeches would be likely to result in a negative impact upon great crested newts which are a notified feature of both the SSSI and SAC and are also European Protected Species. Consequently, I do not consider the impacts upon medicinal leech have been appropriately assessed or mitigated.

### **Great crested newts**

82. I would like to clarify the current condition assessments for units 38 and 48 of the Dungeness, Romney Marsh and Rye Bay SSSI. Both units, based upon the 2009 condition assessment (Swift Ecology, 2009) are currently in favourable condition with respect to great crested newts – unit 38 is not unfavourable as stated in paragraph 1.2.13 of Appendix 3 in LAA/9/C. However, the Swift Ecology report highlights that without habitat management work in the near future, this unit may become unfavourable for great crested newts.
83. As detailed within my proof, the additional newt survey information provided from the Natural England 2009 condition assessment (Swift Ecology, 2010) should not be considered a substitute for detailed great crested newt surveys following good practice guidelines (English Nature, 2001) required for a robust impact assessment. No such survey following good practice guidelines has been provided by the Applicant to date despite our requests.
84. In addition, it appears that Dr McLellan may have misunderstood several of the key points regarding Units 38 and 48 of the Dungeness, Romney Marsh and Rye Bay SSSI. For example, the range for newt numbers recorded during the surveys appears to include the SSSI unit number within the range. Similarly, the calculation of average newt numbers also appears to include the unit number within the calculation (LAA/9/C, Appendix 3, paragraphs 1.2.8 and 1.2.9). This means that the information provided by Dr McLellan does not give a true reflection of the numbers of great crested newts recorded within these units during the 2009 condition assessment survey.

85. I note the proposed enhancement area (paragraph 1.3.3, Appendix 3, LAA/9/C) which is proposed for great crested newts and invertebrates and welcome the proposed creation of new ponds for the benefit of amphibian and invertebrate populations. However, as detailed in my proof, further detail on the proposals for the habitat creation on the disused runway was requested to provide confidence that it would provide suitable habitat for great crested newts. The information provided in Appendix 3 to Dr McLellan's proof of evidence focuses primarily on the creation of new breeding ponds with no mention of terrestrial habitat provision for amphibians surrounding these ponds. This is despite it being acknowledged that the airport grassland represents potential foraging habitat for newts (paragraph 4.2.12, Appendix 3, LAA/9/A).
86. Whilst I acknowledge that the area of vegetation to be lost is outside the normal ranging distance for great crested newts from Pond A, there is no evidence of absence of newts from the waterbodies nearer to the vegetation to be lost. Though I am able to give a view on the quality of the proposed habitat *per se* for newts in general, I cannot comment on whether it is sufficient to address the impacts on the population using the affected area. This is because the Applicant has not provided robust information on the presence or absence of newts from the waterbodies nearer the affected area or how large that population may be. This results from the absence of survey data following good practice guidelines (English Nature 2001) for all the airport waterbodies.
87. As detailed previously, I do not consider there to be sufficient information to properly assess the impacts of this proposal upon great crested newts and therefore I am unable to offer a proper case-specific view on the appropriateness of the mitigation/enhancement provisions at present.
88. As mentioned above, I consider that the Applicant's proposed netting of some or all of the waterbodies to exclude birds would remove a key food source for the medicinal leech. In the absence of sufficient birds, the leeches are likely to become increasingly reliant on amphibians for their blood meal. Given the importance of the site for great crested newts, being a site of European importance, I consider that the exclusion of some bird species from these ponds would be likely to have a significant effect on the newt population. Consequently, the mitigation proposed for this site would appear to be unsuitable as it fails to consider the subsequent knock-

on impacts of the mitigation proposed for one species upon a different species. In the absence of such a holistic mitigation programme, integrating the needs of all species on the site, and the additional information detailed previously, I am unable to conclude that this scheme will not result in significant impacts to local great crested newt and medicinal leech populations. In addition as detailed in section 2 above, European guidance (Appendix 3 to this rebuttal proof), requires the consideration of impact interactions. This also covers impacts of proposals on the mitigation measures and of the mitigation measures on other species. The failure to undertake such a consideration is highlighted by the failure to consider the impacts of proposed experimental medicinal leech translocation on great crested newts.

89. The principles behind the proposed habitat works of reed and reedmace management and scrub control in Pond A and the adjacent ponds to the east of Pond A as set out in Mr McLellan's proof in Part 2 of Appendix 3 LAA/9/A in paragraphs 1.2.38 and 1.2.40 respectively are welcomed. However, Natural England (and formerly English Nature) has discussed and corresponded on the implementation of these works with the airport over a number of years since 1997. These are regarded as part of the ongoing site management that a statutory undertaker and Section 28G body, who is an owner or occupier of land within a statutory designated site, should be undertaking as part of their responsibilities under the Wildlife and Countryside Act 1981 (as amended). The implementation of these works should not therefore be dependent on gaining planning permission for the current proposals and Natural England would encourage the airport to resume discussions regarding an agri-environment scheme (HLS) which is referred to in paragraphs 335 of my proof (NE/3/A). An HLS agreement could provide a funding contribution towards this part of the airport's responsibilities to maintain the biological and geomorphological interest of the SSSI.

### **Water voles**

90. As mentioned in my proof, I have outstanding concerns regarding the survey undertaken for water voles and the mitigation proposed. Whilst no further survey information for water voles has been provided by the Applicant, I acknowledge that 1300 metres of new ditch is to be provided to mitigate the loss of 801 metres of ditch (paragraph 4.3.7 or Dr McLellan's proof). The proposed profile of these replacement drainage ditches on the site is provided in Figure 2 of CD1.42a. Paragraph 4.26 of

CD1.33c states that *'The new drains will contribute to the drainage of the site in the same way as the existing ditches and will play a role in balancing water levels throughout the area... These ditches will be maintained as sewers and are unlikely to provide ideal habitat for species observed on site. For this reason an additional ditch will be created which will focus on enhancing the biodiversity across the site'*. Dr McLellan states in paragraph 2.1.3 of Appendix 4 to his proof that *'The main ecological value of the ditches affected by the ditch removal is for fish, aquatic and terrestrial invertebrates, water vole and reptiles'*. Given the statement by the Applicant that the replacement ditches will not provide ideal habitat for the species affected on the site, a ditch with the primary purpose of providing high quality habitat for medicinal leech, but also water voles and invertebrates, was proposed (CD.1.33c, paragraphs 4.2.7-4.2.16). Although this would have been unacceptable due to its location and lack of connectivity, it would have been welcome in principle. However this proposal is not now to proceed. I consider the ditch profile detailed in Figure 2, CD 1.42a, to offer inappropriate habitat for water vole, medicinal leech and invertebrates, and as such, consider that the impacts of this proposal have not been fully mitigated.

91. The draft conditions require submission of water vole surveys and mitigation, without providing any details of mitigation proposals. Since neither this survey nor the mitigation information is currently available, it is impossible to properly comment on the likelihood of the mitigation succeeding. In addition, as stated in section 2 (above), the site constraints for the proposals are such that it may not be possible to produce adequate mitigation for all species combined.

## **Reptiles**

92. With regards to the reptile mitigation proposed (paragraph 4.3.9 of LAA/9/A), I consider that deferring mitigation to the Construction Environmental Management Plan (CEMP) or, as now proposed in the draft conditions, the Biodiversity Action Plan (CD 17.2) is inappropriate given the paucity of information provided to date, particularly given the concerns regarding the surveys detailed in my proof. No information is provided by Dr McLellan in his proof regarding the proposed reptile receptor area(s) or details of how the reptile habitat will be replaced. The common lizard requires structurally diverse habitat with sufficient cover to avoid predation (Edgar, Foster and Baker, 2010). Similarly, the grass snake requires cover and

structural diversity but, given the mobile nature of this species, the structural diversity is not as critical as it is for common lizards (Edgar, Foster and Baker, 2010). Consequently, I consider that the bare earth in the drainage ditches will not provide such cover for reptiles in the short to medium term, contrary to Dr McLellan's proof (paragraph 4.3.9). As such I consider the mitigation as currently proposed is insufficient in respect of reptiles. The draft conditions (CD 17.2) do not offer any further mitigation or survey information; they simply condition its provision to a later unspecified date, along with monitoring.

### **EIA Regulations**

93. The environmental information required to assess the environmental impacts of the Application proposals that was lacking (as described in my proof of evidence) is still lacking. There is nothing therefore to change the conclusions in my proof that the information necessary properly to meet the EIA Regulations requirements is absent (as described in 6.17 to 6.21 of Natural England's Statement of Case).

### **Conclusion**

94. It is disappointing that despite Natural England's requests for additional information from the Applicant on several occasions regarding survey effort and ecological mitigation, for designated site interest features and protected species, this information has not been provided. I consider that Dr McLellan's proof has not provided sufficient information on the ecological mitigation proposed and for the reasons detailed above and in my proof. The surveys undertaken provide insufficient information, and the mitigation as proposed is inappropriate to mitigate the effects fully.

**SECTION 6: CONCLUSIONS**

95. I have read and considered the evidence of the Applicant. I believe that nothing presented in the Applicant's evidence leads me to alter the conclusions set out in my proof.
96. The effects of the airport on the ornithological interest of the designated sites will be on a substantial scale, in and close to the designated sites, and will be of permanent duration. The impacts will act together, but impact interaction has not been adequately assessed or addressed by the Applicant's evidence. The Applicant has not presented any detailed assessment of effects upon integrity.
97. My conclusion on ornithology therefore remains that it cannot be ascertained that the proposals will not have an adverse effect on the integrity of the SPA, pSPA, and pRamsar because the effects on the integrity are uncertain but could be significant in relation to the likely effects on birds I described above and in my proof. Moreover, it cannot be said that no reasonable scientific doubt remains as to the absence of such effects. Indeed, it is likely that there would be significant effects on the ecological functioning of the sites in relation to birds for the SPA and pSPA and in relation to birds in relation to the pRamsar. The proposals are likely to damage significantly the special interest of the SSSI in relation to birds and assemblages of birds occurring there, where that damage has not been avoided or minimised.
98. There is nothing in the Applicants evidence to alter my conclusions with regards to the impacts upon the other (non-ornithological) SSSI interest features. The ditches that will be lost on a substantial scale are of very rich and important invertebrate ecology (including medicinal leech) and also contain water voles. The mitigation proposed is unclear, contradictory, insufficient, and, in some cases, could actually damage other interest features. Furthermore, the proposed mitigation does not, and in my opinion probably cannot, work for all the species impacted by the proposals whilst also meeting the requirements of the operational expanded airport. The proposed conditions do not provide any significant additional mitigation. My conclusions therefore remains unaltered and are that the Applicant's proposals are likely significantly to damage the assemblages and species of aquatic invertebrates for which the Dungeness, Romney Marsh and Rye Bay SSSI is of special interest.

99. Elevated nitrogen from atmospheric deposition has the potential to change species composition, alter biological and chemical function and thereby materially alter the community composition of substantial percentage of certain shingle communities in particular the lichen dominated calcifuges grasslands. Though progress on conditions to address the impacts has been made, the conditions proposed are not currently sufficiently robust with respect to monitoring or contingency measures, in particular to address the potential risks to the SAC vegetated shingle. The potential remains for adverse effects upon the perennial vegetation of stony banks feature of the SAC due to nitrogen deposition in relation to the vegetated shingle.
100. The paucity of survey data highlighted in my proof of evidence has not been addressed by the Applicant's evidence. The material presented to date by the Applicant is not sufficiently detailed or robust to be able to reach a certain conclusion on the adverse effects of this development on the environment and ecological interest in particular. As described previously there is potential for significant adverse effects upon protected species including water voles and medicinal leech and these effects have not been mitigated.
101. Overall my conclusion remains that the likely and reasonably foreseeable effects of the application proposals would adversely affect the ornithological interest of the SPA and pSPA and the ornithological and invertebrate interest of the pRamsar site, which in turn would be likely to significantly affect the coherence of the sites' ecological structure and function. It cannot be concluded there will be no adverse effects upon the integrity of the SPA, pSPA and pRamsar sites. There are significant adverse effects upon the SSSI interest features including the ornithological interest, the aquatic invertebrate community and medicinal leech and significant loss of their supporting ditch habitat. There is also the potential for adverse effects upon the perennial vegetation of stony banks feature of the SAC due to nitrogen deposition in the vegetated shingle, although these effects could be addressed through suitable robust conditions.

## References

- AUSDEN, M., BANKS, B., DONNISON, E., HOWE, M., NIXON, A., PHILLIPS, D., WICKS, D. & WYNNE, C. 2002. The status, conservation and use of Medicinal Leech. *British Wildlife*, vol 13, pages 229-238, (Appendix 5 to this proof)
- CLARKE, R. & WATSON, D. 1990 The hen harrier *Circus cyaneus* roost survey in Britain and Ireland. *BIRD STUD.* Vol. 37, no. 2, pp. 84-100
- CLARKE, R. and WATSON, D. 1997 The hen harrier winter roost survey. Thirteen winters' data reveal serious declines. *The Raptor* 24: 41-45
- DAVIES, R & MCCLOUGHLIN, N. 2003 The effects of feeding regimes on the growth and reproduction of the medicinal leech *Hirudo medicinalis*. *Freshwater Biology* 36, 563-568 (Appendix 5 to this proof).
- EDGAR, P., FOSTER, J. & BAKER, J. 2010 *Reptile habitat management handbook* . Amphibian and Reptile Conservation, Bournemouth.
- ENGLISH NATURE 2001 *Great crested newt mitigation guidelines*. English Nature, Peterborough (Appendix 10 to this proof)
- FERRY, B.W., LODGE, N. & WATERS, S.J.P. 1990. *Dungeness: a vegetation survey of a shingle beach*. Nature Conservancy Council Research and Survey No 26 publication
- PACKHAM J.R, RANDALL, R., BARNES, R.S.K., and NEAL A. 2001 *Ecology and Geomorphology of coastal shingle* pages 107-131 and 203-223.
- STILLMAN, R.A & GOSS-CUSTARD, J.D. 2002. Seasonal changes in the response of Oystercatchers *Haematopus ostralegus* to human disturbance. *J. Avian Biol.* 33: 258-365
- STILLMAN, R.A & GOSS-CUSTARD, J.D. 2010. Individual-based ecology of coastal birds. *Biol. Rev.* 85:413-434
- SWIFT ECOLOGY (2010) Great crested newt monitoring 2009, London Ashford Airport, Dungeness. A report to Natural England. Swift Ecology, Warwick (Appendix 13 to Jo Dear Proof LAA/3/C)
- LEYSHON, O. & TATE, M. 2004. *Survey of Medicinal Leech (Hirudo medicinalis) Populations at Lydd Water Sports Centre, June 2004*. Romney Marsh Countryside Project, Kent. (Appendix 5 to this proof)
- LEYSHON, O. & TATE, M. 2004. *A Study of the Medicinal Leech (Hirudo medicinalis) Populations on Walland Marsh SSSI, East Guldeford, 2004*. Romney Marsh Countryside Project, Kent. (Appendix 5 to this proof)
- MCCONNELL, J. 2000. *A study of the medicinal leech (Hirudo medicinalis) population in the Romney Marsh Natural Area 2000* (Appendix 5 to this proof)
- NIXON, A. 1999. *A survey of the medicinal leech (Hirudo medicinalis) in the Romney Marsh Natural Area, 1998/99* (Appendix 5 to this proof)
- RANDALL, R. & Sneddon, P. 2001 Initiation, Development and Classification of Vegetation on British Shingle beaches: a model for conservation management. (In Packham et al above)



SCOTT, G.A.M. (1965) The shingle succession at Dungeness *J Ecol* 52 21-31