RSPB 4/A

Proof of Evidence
of
Dr John Underhill-Day
for the
Royal Society for the Protection of Birds

22nd December 2010

Town & Country Planning Act 1990 (as amended)

In the matter of:

Planning Applications for Construction of a runway extension and erection of a terminal building at London Ashford Airport, Lydd, Kent

Planning Inspectorate Refs: **APP/L2250/V/10/2131934**
APP/L2250/V/10/2131936

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1. INTRODUCTION

1.1. I am John Underhill-Day and I hold a BSc degree in Biology and a PhD research degree. I am a member of the Institute of Biology and a Chartered Biologist, and a member of the Institute of Ecology and Environmental Management and a Chartered Environmentalist. I am a retired Fellow of the Royal Institution of Chartered Surveyors.

1.2. During over 35 years with the Royal Society for the Protection of Birds (the RSPB), I was responsible for managing reserves at various times as a site manager, reserves manager, head land agent and ecologist.

1.3. Between 1970 and 1987 I was employed by the RSPB in the acquisition and management of their wildlife reserves. During this time, my positions within the RSPB included hands-on site management as warden, as reserves manager, in regional and national reserves management positions, as an ecologist, and as the Society's head land agent. In these roles I had experience of managing wardened and un-wardened sites with grasslands, heathlands, uplands, woodlands, intertidal areas and coastal lagoons, reedbeds and wetlands. I was responsible for supervising the management of many wetland sites for the benefit of their waterbirds, including reedbeds, wet meadows and managed inundation grasslands, fens, and other habitats. This included, for many years, responsibility as line manager for the staff and management plans for the Dungeness RSPB Reserve (the Reserve).

1.4. My work included supervising the implementation of plans for managing land for wintering waders, ducks, geese and swans, as well as breeding waders, ducks and other wetland birds.

1.5. I was also responsible for supervising a number of reserves with breeding seabirds including terns and gulls. Over the years this included consideration, supervision and implementation of a huge range of management projects on RSPB reserves, including reedbed creation and management, the creation of islands for breeding birds, grazing and other management of wet grassland and the negotiations leading up to the design of the Dungeness pits within the Reserve.

1.6. I moved from the senior management team in 1986 to a role as senior site manager, first in the Lake District, where I was responsible, inter alia, for advising on management of wet grassland for breeding waders and managing a coastal site with wintering waders and

wildfowl, and later, to Dorset where I had direct responsibility for management of heathlands, woodlands, coastal habitats including mires and saltmarshes and coastal wet grasslands.

1.7. During my time as a full time staff member of the RSPB, I served for many years on an Internal Drainage Board, was a member, and for four years Chairman of the Environment Agency's South Wessex Environment Group, and served on numerous other groups and Committees. I have appeared as expert witness at public inquiries, court hearings and before a House of Lords Select Committee enquiring into plans for a port extension at Felixstowe and for mitigating wetland creation on the coastal marshes nearby.

1.8. In April 2006, I retired as a full time officer of the RSPB but have been retained as an adviser to the RSPB on ecological and land management issues. I have been called as an expert witness by the RSPB and Natural England (NE) at several public inquiries to give evidence with regard to the ecological consequences of development on sites and species on adjacent Special Protection Areas (SPAs), Ramsar sites and Sites of Special Scientific Interest (SSSIs). I also work part-time for an ecological consultancy and in this capacity I have advised on management of wetlands, coastal sites, grasslands and heathlands.

1.9. I have published and contributed to papers on aspects of conservation land management and carried out site inspections and the writing of reports, management plans and condition assessments for management of wet grasslands, coastal lagoons, coastal grasslands and grazing management of heaths and grasslands. I have also written peer reviewed papers on reedbed bird ecology and contributed to a number of books on UK bird populations and distribution. I supervised a PhD student working on the role of livestock grazing in conservation of lowland heaths and acid grasslands from 1999-2002, an MSc student working on the effects of deer grazing on semi-natural grasslands and heathlands from 2002-2004, and a PhD student working on human disturbance and the population dynamics of Dartford warblers from 2004-2007. I am currently supervising a PhD student working on alien wetland plants.

1.10. I have run training courses for the RSPB for nearly 20 years and have also run training courses for National Parks staff, Department for the Environment, Food and Rural Affairs (DEFRA), NE and many others on ecology and conservation on a variety of habitats including coastlands, grassland, uplands and heathlands. I have organised and undertaken survey work on wetland

and coastal birds. I have taken part in inland and coastal breeding and non-breeding seabird and waterbird surveys in numerous counties across England and have been a Wetland Bird Survey (WeBS) participant since the early 1970s.

1.11. I have therefore been closely involved in the conservation and management of wildlife reserves and research, survey and management of wetland and coastal birds for 40 years.

2. THE RSPB

2.1. The RSPB was founded in 1889. It is a registered charity incorporated by Royal Charter and is Europe's largest wildlife conservation organisation, with a membership of over 1 million. The RSPB manages 209 nature reserves in the UK covering an area of 143,271 hectares. The Society attaches great importance to the conservation of the 'Natura 2000' network of sites of European nature conservation importance (made up of SPAs and SACs), as well as the national network of SSSIs notified by NE.

2.2. The principal objective of the RSPB is the conservation of wild birds and their habitats. The RSPB therefore strongly supports all international, EU and national law, policy and guidance that assist in the attainment of this objective. The RSPB campaigns throughout the UK and in international fora for the development, strengthening and enforcement of such law and policy. In so doing, it also plays an active role in the domestic processes by which development proposals are scrutinised and considered.

2.3. The RSPB has been actively involved in wildlife conservation in Kent for many years, working with a wide range of partners, including Local Authorities, Wildlife Trusts and Natural England. The RSPB has over 232,800 members in south-east England representing some 2.7% of the region's population, of which 32,900 are in the county of Kent. The RSPB manages 12 nature reserves in Kent covering an area of 3,817 hectares.

2.4. The RSPB has been actively involved in conserving wetland and coastal habitats and its associated wildlife for many years. The Society manages 60 nature reserves with significant areas of wetland and coastal habitat in England, Scotland and Wales which collectively support important populations of most breeding, passage and wintering wildfowl, waders and seabirds found in the UK. The RSPB has contributed to the funding of research into the requirements of wetland and coastal birds; produced a considerable literature giving

information on wetlands and their wildlife; argued the case for the protection and conservation of wetlands and coastal habitats and their wildlife at public inquiries; and lobbied in national and local government for better protection and management of these habitats.

3. SCOPE OF EVIDENCE

3.1. My evidence will generally concentrate on the qualifying bird species of the International European and nationally designated sites. The first part of this proof will consider the bird species of the Dungeness area and their habitats. This will summarise the considerable variety and importance of the bird species populations in the area and their year round use of almost all the available habitats for feeding, roosting or nesting. This will be followed by a consideration of the adequacy of the bird survey work and desk studies undertaken by the applicant to assess the impact of their proposals on these important bird species and their populations.

3.2. The next section (6) then examines the issue of birds overflying the airport, the adequacy of the appraisal of this behaviour by the applicant and its failure to appreciate the likely numbers, range of species and spatial, diurnal and seasonal patterns of over flights by wintering, breeding, and migrant birds over the airport. The reason I examine this in detail is because the applications and supporting documentation does not properly explain or understand the significance of these overflying birds and for present purposes more importantly, the potential for the proposed development to come into conflict with the large numbers of birds of many species that currently use the airspace over the airport and its approaches.

3.3. This then leads to an examination of the applicant's assessment of the effects of their scaring trials and their proposals for scaring and safeguarding. There are serious concerns that in the event of the proposals for the airport expansion being consented, the current failure by the applicant to realise the extent of the problems, particularly from overflying birds, will result in scaring and safeguarding measures that are far more extensive and intensive than presently indicated.

3.4. I will then summarise the literature on the general impacts on birds by aircraft noise and associated factors and then assess the validity of the conclusions the applicant has drawn

from their noise studies, comparison with other airports and literature review on the predicted effects from the proposed future use of the airport for passenger jets.

3.5. Finally, I look at the effectiveness of the proposed mitigation and the extent to which this might remove the anticipated adverse effects on the SPA, other designated sites and their qualifying bird species.

4. OVERVIEW

4.1. In order to assess the potential bird scaring and safeguarding measures needed for the safety of an expanded airport, the applicant needs to carry out a risk assessment based on the existing numbers, distribution and movements of birds in the vicinity of the airport.

4.2. The applicant has failed to properly assess the size and location of important local bird populations, movement patterns of locally wintering and breeding birds and the size and extent of migrant bird movements both by day and night, together with the importance, use and extent of functionally linked land for feeding and roosting by qualifying species outside the designated sites. With all these shortcomings the applicant is not able to properly assess the bird strike risk and seems unaware of the extent of the potential problems for the future operation of the airport.

4.3. As Dr. Allan comments in his proof, bird flight lines have not been properly assessed but are a critical issue in relation to air safety, and over-flying birds are not amenable to normal scaring methods. Dr. Allan has carried out necessarily limited surveys which show that large numbers of birds of many species are crossing the airport. Birds flying across the airport and its approaches will, in many cases be flying between feeding, roosting and nesting locations.

4.4. Waders such as lapwings or golden plovers in fields to the north, west and south of the airport will not only overfly the airport when moving between feeding grounds but will also fly around for considerable distances and for some time if disturbed particularly by predators such as peregrines or harriers. This is well illustrated by Figures 9 and 10 in Dr. Allan's proof.

4.5. The applicant has relied on WeBS counts of specific gravel pits and a very limited survey around the north and west of the airport for data on wintering birds. The WeBS data is of limited value as it does not give a comprehensive picture of roosting birds, important species

such as gulls are not always counted, and smaller water bodies and areas of agricultural land, important to many bird species, are not covered. For example, mute swans move between areas of open water in ponds, ditches, pits and agricultural crops around the wider area on all of which they may feed or roost. Lapwings, golden plovers and other species of wader and wildfowl will move between grassland and arable areas across much of Romney Marshes to feed and roost (both activities taking place by day and at night).

4.6. As Mr Gomes has shown in his proof (see Mr Gomes' proof, section 5) considerable numbers of migrants move through or stop-off in the Dungeness area. Night time movement of migrant birds can involve huge numbers of birds and could pose a considerable threat to the proposed aircraft movements after dark. Despite this the applicant has carried out no studies of night time movements either of locally wintering birds or during the main migration periods.

4.7. Some wintering birds roost in considerable numbers on the SPA such as lapwings and golden plover, large gull flocks and wigeon (see Mr Gomes' proof, section 5) and flocks of all of these species will at times, fly out to feed on arable and pasture land in the areas around the SPA, pSPA, pRamsar and SSSI [1] and further out to the west and north west.

4.8. The measures that the applicant has available to deal with these problems are agreements with landowners for management of farmed areas to deter feeding birds, scaring both on and off the airport, and safeguarding by opposing planning applications for projects that might increase the risk of bird strikes, by the improvement of nearby bird habitat, for example.

4.9. The applicant has accepted that negotiations on the timing and location of crop management practices on the small areas directly under the flight paths will be vital to ensure that specific land use practices which may attract birds are moved. It accepts that until these agreements have been finalised it is difficult to determine or confirm the exact extent of any impacts. The applicant has produced no evidence that such agreements are in place.

4.10. Further afield, such specific agreements would be difficult, not only as wintering birds use all the habitats on the marshes including grassland, arable and bare ground (and it is therefore difficult to see how these could be changed to make them unattractive to birds), but also

[1] The designations of the sites and status of the birds of the SPA, pSPA, pRamsar and SSSI will be simply referred to as "**the SPA**" in the remainder of this proof unless the context requires a fuller description).

because it would need the cooperation of a significant number of landowners. If habitat management was either not possible or failed to achieve the aim of moving flocks of feeding birds resorting to scaring and shooting over such a substantial area would pose similar problems. These habitat management and other measures over such a large area will probably prove impossible, so that the applicant would, instead of seeking to move birds from their feeding areas, seek to try and change the roosting behaviour of the birds which could involve attempts to restrict their use of the SPA.

4.11. Deterrence of local birds on and around the airport by scaring from within the airport boundary has been tested by a limited number of trials with mixed results but there is a clear indication that birds can be disturbed out to at least 1000m from the disturbance source. Bird scaring on an increased scale is anticipated by the applicant, and this will affect birds both on and around the airport and could also disturb non-target species on the SPA.

4.12. Areas close to the airport are an important resource for feeding and roosting birds, so scaring could disturb qualifying bird species from roosting and foraging on sites near the airport on land which is functionally linked for these species to the SPA. Scaring will be designed to create a buffer around the airport, effectively sterilising this land for the use of the birds, and could also have effects such as a reduction in feeding at times when this is a critical factor in winter survival or important for breeding birds feeding young. It could also lead to nest abandonment, delays in the onset of breeding and the choice of lower quality nest sites.

4.13. Despite the inadequacy of the current state of knowledge of the effects of scaring at Lydd airport, it is my view that it will have an adverse effect on the qualifying species of the SPA. Such activities could be directed at qualifying breeding and wintering bird species both within the European and nationally designated sites and on land nearby which is used by such species and therefore functionally linked to the designated sites. Scaring could affect breeding birds within the SPA such as harriers or nesting geese, and if this was ineffective, destroying nests, removing eggs, and as a last resort, shooting individual birds. None of these measures would be effective in changing the flight patterns of overflying birds or the large movements of migrant birds described by Mr Gomes (see Mr Gomes' proof, section 5), many of which migrate at night.

4.14. Safeguarding takes place around many UK airports to a distance of 13km. In order to assess the need for, and effects of, safeguarding it is necessary to carry out surveys to understand

the numbers and distribution and regular movement patterns of birds in this area. The applicant has not carried out these wider surveys, though I understand that it is now undertaking some surveys at this late stage.

4.15. It is probable that the RSPB and others will seek to maintain and increase the population of wintering, passage and summering birds on the SPA as well as carrying out management for other species such as plants and invertebrates for which the site is nationally important. This could involve activities such as bank grading, creation of additional islands, extension of reedbeds and accompanying excavation and movement of materials to achieve these aims. Some of these activities may well require planning consent, and could be opposed by the applicant on the grounds that it will increase bird strike risk (starlings roosting in reedbeds or gulls and terns nesting on islands for example). This could seriously inhibit management to maintain and restore the interest features of SPA.

4.16. The applicant's failure to appreciate the full extent of the risk posed by the huge populations of birds on Dungeness and Romney Marsh will, in my opinion, lead to a high probability of the adoption of greater scaring and more stringent safeguarding policies than are indicated in the application which will seriously compromise the future management of the SPA.

4.17. The evidence on noise and visual effects of aircraft on birds is incomplete and conflicting. Noise trials carried out for the applicant did not address the effect on the qualifying bird species. Modelling of noise contours has been presented in ways that have little meaning in relation to the assessment of the impact on birds and did not include the southern route across the firing ranges.

4.18. A range of comparator airport sites were given as examples where impacts on birds were not apparent, but no details were given on almost all aspects of these sites that would have allowed any sensible comparison to be made with the current proposals or any conclusions to be drawn on the issue of noise and birds.

4.19. A selection of references have been given from the large body of literature on the subject of birds and aircraft, but many of these were based on military aircraft and helicopters rather than passenger aircraft and were of aircraft over flying rather than landing or taking off. Most of the SPA species have not been studied in this regard. The evidence, such as it is, suggests that there are wide differences between species in levels of tolerance and habituation and

differences between sites and seasons. The overall conclusion is that increased aircraft noise and disturbance cannot be ruled out as having an adverse effect on the qualifying species of the SPA.

4.20. The applicant has not put together a coherent and credible package of mitigation measures to avoid impacts on the SPA and its birds. It has have confused mitigation with monitoring, and suggested a research programme for investigating the effect of aircraft noise on birds after, rather than before, expanding the airport. Other mitigation proposals are couched in such qualified general terms as to provide little meaningful information.

4.21. In conclusion, the failure of the applicant to collect an adequate evidence based dataset on the birds of the area and their behaviour patterns, the lack of information on the effects of aircraft noise and vision and the uncertainties associated with proposed scaring and other measures and safeguarding, do not in my opinion, make it possible for the competent authority to conclude no adverse effect on the European designated sites, and in these circumstances the applications should be rejected.

5. STATUS OF HABITATS AND BIRD SPECIES

Priority Species and Habitats

5.1. In what follows I give a brief summary of the relevant habitats and status of each species under the European and national designations, adding those species or additional species that are included within the UK Biodiversity Action Plan and the Birds of Conservation Concern red list. A fuller description of the European and nationally designated sites and status of the birds of the SPA, pSPA, pRamsar and SSSI are given in the proof of evidence of Mrs Dear from Natural England (**NE**)(see Mrs Dear's proof, section 1).

Biodiversity Action Plans-Birds

5.2. The following section gives a brief explanation of the listing of bird species under Biodiversity Action Plans (BAP) and under the Birds of Conservation Concern (BoCC) to assist in the interpretation of Table 1. Following the signing by the UK Government of the Convention on Biological Diversity at the 1992 Earth Summit, the UK BAP was published by the Government in 1995. This set out their intention to publish action plans, with targets, for key species and

habitats. Subsequently, lists of priority species and habitats were published and revised, and the UK Biodiversity Group carried out a comprehensive review of all species and habitat action plan targets. These were published on the UK BAP web site in 2002[2].

5.3. Section 74 of the Countryside and Rights of Way Act 2000 (CD5.26) has now imposed a legal duty on the Government in respect of the Biodiversity Convention. This states that 'It is the duty of … any Government department … in carrying out … its functions, to have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biological diversity in accordance with the Convention'. Section 74(2) of the Act lists the species and habitats which are of principal importance for the purpose mentioned in 74(1).

5.4. Section 74(3) imposes a specific duty for Government to take, or to promote the taking by others, of such steps as appear to be reasonably practicable to further the conservation of the species and habitats listed under Section 74(2). Thus the Government therefore now has a legal duty to take, or encourage the taking by others, of steps to further the conservation of coastal saltmarsh, coastal sand dunes, coastal vegetated shingle, intertidal mudflats, saline lagoons, aquifer-fed naturally fluctuating water bodies, lowland fens, wet woodland, reedbeds, coastal grazing marsh, all of which occur on the SPA.

5.5. In December 2002, DEFRA published its original list of species and habitats of principal importance in England for the purpose of conserving biological diversity as required by Section 74(2).

5.6. Under Section 41 of the Natural Environment and Rural Communities Act 2006 the Secretary of State must, for England, publish a list of habitats and species which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity. The Secretary of State must keep this list under review. This S 74 list was superseded in May 2008 by the new S41 list, and now includes 943 species and 56 habitats[3]. PPS9 refers to species and habitats of principal importance but refers to this as the S 74 list. With regards to species this list differs from the UK BAP Priority species list only with the addition of the Hen Harrier. The habitat lists are the same.

[2] http://www.ukbap.org.uk.
[3] http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/habsandspeciesimportance.aspx.

Birds of Conservation Concern

5.7. Since the mid to late 1980s, the RSPB has been involved in several initiatives at UK and European level to review the status of birds that regularly occur in the UK with a view to identify priorities for action. The first of these was the joint publication in 1990 (with the then Nature Conservancy Council) of the book "*Red Data Birds in Britain*". This identified a 'red list' of 119 bird species in need of priority action, based on their conservation status and population trends.

5.8. This list has been revised and updated on three occasions, the latest in 2009. Bird species are prioritised and categorised as red, amber or green. These can be summarised as follows:

5.9. Red list species are demonstrably threatened at global or national level, have declined historically (since 1800) or rapidly in numbers or breeding distribution during the last 25 years or since 1969 (the year of the first review).

5.10. Amber list species are in moderate decline, are rare or localised in the UK, present in internationally important numbers or of an unfavourable conservation status in Europe. All other species are listed as Green status.

5.11. The BoCC lists form the biological basis for the assessment of priority bird species in the UK BAP, and the criteria have been agreed by a range of bodies including the Governments national adviser on wildlife conservation, the Joint Nature Conservation Committee and the three national conservation advisers including NE as well as the RSPB.

Qualifying and other species of the Designated sites

5.12. This section gives a description of the qualifying and other species (BAP & BoCC) of the designated sites in the Dungeness and Romney marshes area.

5.13. In Table 1 I have listed those species which are qualifying within the SPA, pSPA, pRamsar or SSSI either in their own right or as part of a larger assemblage, together with some other species which are not qualifying, but are present in the area, both on and off the designated sites and are either BoCC or red listed species or both. The qualifying bird species are categorized as breeding, wintering and passage species, depending on their categories in the

designations, with some species meeting all three criteria (e.g. shoveler) or two of the three (e.g. bittern).

5.14. By way of explanation a simple example of a qualifying species in Table 1 is the great-crested grebe, which is part of the winter assemblage of birds in the pSPA, and in the SSSI, or common tern which is a qualifying breeding species within the SPA, pSPA and noted as part of the breeding assemblage in the SSSI designation. A more complex example is gadwall, which was not at the time of the original SPA designation, in nationally or internationally important numbers, but was listed as a non-qualifying species of interest, but is one of the species newly included in the wintering assemblage in the pSPA, and was also included as having nationally important breeding and wintering numbers in the SSSI designation (based on the information available at that time). Bearded tit is included in the SSSI designation only, and tree sparrow is not included in any of the designations but is both a BoCC and red listed species.

5.15. The species in Table 1 are all mentioned in one or more categories as part of a designated or proposed designated site or as declining or rare. There are a further suite of species found in the Dungeness area, including on designated sites that do not fall into any of these categories but can still occur in substantial numbers. These include several species of gull (with numbers reaching and sometimes exceeding the total populations of all the other species put together), feral geese such as greylag and Canada geese, waders such as black-tailed godwits and curlew and other flocking species including rooks, crows, starlings and winter thrushes. Most of these species can pose a similar or greater risk of bird strikes as the qualifying and listed species of the designated sites.

Table 1. Species listed and designated under European and national legislation or as Birds of Conservation Concern or Biodiversity Action Plans

Species	Designation status						Comments
	SPA	pSPA	pRamsar	SSSI	UK BAP	BOCC Red	Status of species within: the Dungeness to Pett Level SPA, and the Proposed Dungeness, Romney Marsh and Rye Bay pSPA
Aquatic Warbler	L(p)	P	P	P	P	P	National importance-over 1% passage population
Avocet		B		A(b)			National importance-over 1% breeding population
Bearded Tit				A(b)			National importance – over 1% breeding population
Bewick's swan	W	W A(w)		A(w)			National importance-over 1% wintering population
Bittern		W A(w)		A(w)	BW	BW	National importance-over 1% wintering population
Black-headed Gull				A(b)			National importance – over 1% breeding population
Cetti's Warbler				A(b)			National importance – over 1% breeding population
Common sandpiper		A(w)		A(p)			National importance-over 1% passage population
Common tern	B	B		A(b)			National importance-over 1% breeding population
Coot	L(bpw)	A(w)		A(w)			National importance – over 1% winter population
Cormorant	L(bpw)	A(w)		A(bw)			National importance – over 1% breeding and wintering population
Corn bunting					B	B	
European white-fronted goose		A(w)		A(w)	W		National importance – over 1% winter population
Gadwall	L(bpw)	A(w)		A(bw)			National importance – over 1% winter population
Garganey				A(b)			National importance – over 1% breeding population

B - breeding P – passage W – wintering

A – Assemblage (with season of interest in lower case)

L = listed as non-qualifying species (with season of interest in lower case). Non qualifying species are bird species which are not featured as being of national importance (1% or more of the GB populations) but are species of interest and are listed in Annex I of the EC Birds Directive For full details see Natural England Statement of Case-Annex A

Species	Designation status						Comments
	SPA	pSPA	pRamsar	SSSI	UK BAP	BOCC Red	Status of species within: the Dungeness to Pett Level SPA, and the Proposed Dungeness, Romney Marsh and Rye Bay pSPA
Golden plover		A(w)		A(w)			National importance-over 1% wintering population.
Great Crested Grebe		A(w)		A(w)			National importance – over 1% winter population
Grey partridge						B	
Hen Harrier	L(pw)			W			National importance-over 1% wintering population
Herring Gull					B	B	
Kingfisher		L(w)					
Lapwing		A(w)		A(w)		B	
Linnet					B	B	
Little grebe	L(bpw)	A(w)		A(bw)			National importance – over 1% winter population
Little Stint	L(p)						
Little tern	B	B		A(b)			National importance-over 1% breeding population
Marsh Harrier	L(pw)	B					National importance-over 1% breeding population
Mediterranean gull	BW	B		B			National importance-over 1% breeding population
Merlin	L(pw)						
Mute swan			W	A(w)			National importance – over 1% winter population
Peregrine	L(pw)						
Pochard	L(bpw)	A(w)		A(bw)			National importance – over 1% national population

B - breeding P – passage W – wintering

A – Assemblage (with season of interest in lower case)

L = listed as non-qualifying species (with season of interest in lower case). Non qualifying species are bird species which are not featured as being of national importance (1% or more of the GB populations) but are species of interest and are listed in Annex I of the EC Birds Directive For full details see Natural England Statement of Case-Annex A

Species	Designation status						Comments
	SPA	pSPA	pRamsar	SSSI	UK BAP	BOCC Red	Status of species within: the Dungeness to Pett Level SPA, and the Proposed Dungeness, Romney Marsh and Rye Bay pSPA
Reed bunting					B		
Ruff	L(pw)	W A(w)		A(w)		B	National importance-over 1% wintering population.
Sanderling		A(w)		A(w)			National importance – over 1% winter population
Sandwich tern	L(bp)	B		A(b)			National importance-over 1% breeding population
Short-eared Owl	L(pw)						
Shoveler	BWP	W A(w)	W	A(bw)			National importance-over 1% passage and winter population
Skylark					B	B	
Smew	L(w)						
Spotted Crake	L(p)						
Teal				A(w)			National importance – over 1% winter population
Tree sparrow					B	B	
Tufted Duck				A(b)			National importance – over 1% breeding population
Water Rail				A(b)			National importance – over 1% breeding population
Whimbrel		A(w)		P		W	National importance – over 1% passage population
Wigeon		A(w)		A(w)			National importance – over 1% winter population

B - breeding P – passage W – wintering

A – Assemblage (with season of interest in lower case)

L = listed as non-qualifying species (with season of interest in lower case). Non qualifying species are bird species which are not featured as being of national importance (1% or more of the GB populations) but are species of interest and are listed in Annex I of the EC Birds Directive For full details see Natural England Statement of Case-Annex A

Species	Non qualifying SPA and pSPA species[4]		Comments
	Original SPA	pSPA	
Aquatic warbler	p		
Bittern		b	
Coot	bwp		
Cormorant	bwp		
Gadwall	bwp		
Hen harrier	wp		
Kingfisher		b	
Little grebe	bwp		
Little stint	p		
Marsh harrier	wp		
Merlin	wp		
Peregrine	wp		
Pochard	bwp		
Ruff	wp		
Sandwich tern	b		
Short eared owl	wp		
Smew	w		
Spotted Crake	p		

b - breeding w –wintering p – passage

[4] Non qualifying species are bird species which are not featured as being of national importance (1% or more of the GB populations) but are species of interest and are listed in Annex I of the EC Birds Directive For full details see Natural England Statement of Case-Annex A

5.16. All these species, both those within Table 1 and the others are found in a wide variety of habitats in the area. Some will roost in one habitat and feed or nest in another. Many species move around between roosting and feeding sites depending on the season and patterns of food availability.

5.17. Table 2 gives a simplified general summary of the bird species expected in each of the main habitats, notes each species as wintering (W), passage (P) and breeding (B) and classifies each species according to the use it makes of that habitat for roosting (r), feeding (f) and nesting (n). Thus Bewick's swan is a wintering species using grassland and arable habitats for feeding and roosting and open water also for roosting. Lapwing is a species which occurs as a passage migrant but is also a wintering and breeding species in the area. Lapwings can be found feeding and roosting on grassland, arable and around open water habitats. Specialist species, e.g. hen and marsh harriers hunt mostly over grasslands, arable, ditches and reedbeds, and will both roost in grassland or reedbeds. However, hen harrier are winter and passage birds and do not stay to breed whereas marsh harriers are a breeding species nesting in reeds at Dungeness.

5.18. It can be seen from this table that there are bird species using all the available habitats on and around the SPA and the airport for roosting, feeding, hunting and nesting. Coastal inter-tidal areas have not been included, but these are used by many ducks, waders, gulls and terns for feeding or roosting.

Table 2. Broad habitats used by wintering, passage and breeding birds for roosting, feeding and nesting at Dungeness, Rye Bay and Romney Marsh

Species	Wintering	Passage	Breeding	Roosting	Feeding	Nesting
Grassland:						
Mute swan	W				f	
Bewick's swan	W			r	f	
European white-fronted goose	W			r	f	
Canada Goose	W		B		f	
Greylag goose	W		B		f	
Shoveler	W	P	B	r	f	n
Wigeon	W				f	
Mallard	W		B		f	n
Shelduck			B			n
Coot	W				f	
Golden plover	W	P		r	f	
Lapwing	W	P	B	r	f	n
Ruff	W	P		r	f	
Whimbrel		P		r	f	
Black-headed gull	W				f	
Marsh harrier	W	P	B	r	hunting	
Hen harrier				r	hunting	
Merlin					hunting	
Short-eared owl				r	hunting	
Oystercatcher	W		B	r	f	n
Redshank	W		B	r	f	n
Skylark	W	P	B	r	f	n
Arable:						
Mute swan	W				f	
Bewick's swan	W			r	f	
Golden plover	W	P			f	
Lapwing	W	P	B	r	f	n
Black-headed gull	W				f	
Marsh harrier	W	P	B		hunting	
Hen harrier	W				hunting	
Merlin	W				hunting	
Redshank	W		B	r	f	
Oystercatcher	W		B	r	f	n
Grey partridge	W		B	r	f	n

Species	Wintering	Passage	Breeding	Roosting	Feeding	Nesting
Skylark	W		B	r	f	n
Corn bunting	W		B	r	f	n
Linnet	W		B		f	
Tree sparrow	W		B		f	
Open water:						
Common tern			B	r	f	
Sandwich tern			B	r	f	
Mediterranean gull	W		B	r	f	
Mute swan	W			r	f	
Bewick's swan	W				f	
European white-fronted goose	W			r		
Canada goose	W		B	r		
Greylag goose	W		B	r		
Shoveler	W	P	B	r	f	
Wigeon	W			r		
Mallard	W		B	r	f	
Coot	W			r	f	
Avocet	W				f	
Gadwall	W		B	r	f	
Garganey		P	B	r	f	
Pochard	W			r	f	
Tufted duck	W			r	f	
Black-headed gull	W		B	r	f	
Teal	W			r	f	
Smew	W			r	f	
Little grebe	W		B	r	f	
Great-crested grebe	W		B	r	f	
Shelduck	W		B	r		
Herring gull	W			r	f	
Cormorant	W		B		f	
Open water edges and islands:						
Common tern			B	r		N
Sandwich tern			B	r		N
Mute swan			B	r		N
Canada goose	W		B	r		n
Greylag goose	W		B	r		n
Coot	W		B			n

Species	Wintering	Passage	Breeding	Roosting	Feeding	Nesting
Mediterranean gull			B	r		n
Avocet	W			r		
Lapwing	W	P	B	r	f	n
Gadwall	W		B			n
Shoveler	W		B			n
Teal	W				f	
Mallard	W		B		f	n
Little grebe	W		B			n
Great-crested grebe	W		B			n
Cormorant	W		B	r		n
Ringed plover			B			n
Herring gull			B	r		n
Common sandpiper		P			f	
Reedbeds:						
Marsh harrier	W		B	r	hunting	n
Hen harrier	W			r	hunting	
Bittern	W		B	r	f	n
Water rail	W		B	r	f	n
Bearded tit	W		B	r	f	n
Aquatic warbler		P		r	f	
Reed bunting	W		B	r	f	n
Spotted crake		P	B	r	f	n
Cetti's warbler	W		B	r	f	n
Ditches:						
Marsh harrier	W		B	r	hunting	n
Hen harrier	W				hunting	
Bittern	W		B	r	f	n
Little grebe	W		B	r	f	n
Coot	W		B	r	f	n
Cetti's warbler	W		B	r	f	n
Spotted crake		P	B	r	f	n
Mallard	W		B		f	n
Shoveler			B		f	n
Garganey		P	B		f	n

6. ASSESSMENTS OF BIRD NUMBERS AND DISTRIBUTION

Introduction and summary

6.1. I have examined the applicant's field and desk surveys of birds around the airport in some detail, and it is apparent that these studies are not sufficient to guide an informed view as to the bird strike risk with an expanded airport. This is of serious concern in relation to the future of the SPA and its birds. All these species, both those within Table 1 and the others are found in a wide variety of habitats in the area. Some will roost in one habitat and feed or nest in another. Many species move around between roosting and feeding sites depending on the season and patterns of food availability.

6.2. Data from the applicant's winter fieldwork and desk studies are outdated and incomplete. They do not cover all the relevant times of year, neither the fieldwork nor the WeBS counts cover large parts of the area including much of Romney Marshes, gull species are particularly poorly covered over most of the area, no studies have been carried out on roost locations, or at night when many species will have a different distribution, and there have been no studies on winter or migrant flightlines.

6.3. As a result, the assessment of the bird strike risk for wintering birds will be deeply flawed and in the event that consent for the proposals was given, the airport authorities would find that the risk of bird strikes is unexpectedly and unacceptably high, and seek to carry out scaring measures on a far bigger scale than those suggested in the draft Bird Control Management Plan (CD1.45, Appendix 6) and to enforce draconian measures across the safeguarding zone to the detriment of the qualifying habitats and species of the designated sites.

6.4. This is not because the main concern is the potential to damage populations of birds through deaths from bird strikes (although some local populations of rare species could be affected), but because the applicant has so seriously under-estimated the risk of bird strikes from inadequate data, that it will attempt to carry out highly damaging actions and enforce restrictions on the SPA sites and species once it realises the extent of the problem, should consent for the expansion be granted.

6.5. Without adequate data and, based on this, a clear explanation by the applicant of the actions it will need to take to maintain safe conditions in respect of bird strikes in the event of the applications being granted, I do not believe that an appropriate assessment of the adverse effects on the designated sites can be carried out. And without a clear description of such actions, it is not possible to assemble or appraise the likely effectiveness of a mitigation package (assuming mitigation is possible, or a compensation package if it is not), to avert such adverse effects.

Field surveys-wintering birds

Introduction

6.6. This section appraises the three winter birds surveys carried out in 2005, 2005/06 and 2006/07, and the two breeding bird surveys carried out in 2005 and 2006. This is then followed by an examination of the applicant's desk study of the wintering birds data and an account of the birds which migrate through the area. It is concluded that in order to properly assess the numbers, locations and movement patterns of the birds in the vicinity of the airport, the applicant should have:

6.6.1. widened their surveys to cover the 13km safeguarding zone and included most of the designated sites to the south and south-east of the airport.

6.6.2. carried out surveys throughout the year, to include late summer when large numbers of birds can be present and to include night time surveys for movements of local bird populations between roosting, nesting and feeding areas.

6.6.3. undertaken radar studies in order to understand the likely movements and numbers of night time migrants moving through the area.

6.6.4. at least updated the counts from the WeBS database in order to have up to date figures of the numbers and distribution of birds on the main counted sites.

6.7. The named locations within the text are shown in Figures 8 and 9 Appendix I 9.

6.8. In the text where the word 'waterfowl' is used, this includes swans, geese, ducks, waders, cormorants, coot and moorhen, 'Wetland birds' includes all the above together with water rail, herons and egrets, gulls and terns. 'Waders' includes wading birds such as curlew, godwits, lapwing, plovers, sanderling and dunlin.

Description of winter field surveys

6.9. A wintering bird survey was carried out for the applicant on 16th and 21st February and 5th March 2005, covering an area 3 km out from the airport and excluding much of the RSPB reserve and Lade Pits. The report (Appendix 11.3 of the Runway Extension ES, CD 1.17[5]) noted that the survey was conducted towards the end of the winter and recommended further surveys to cover the whole of the winter period. Despite the very limited observations on only three days, the surveyor found flocks of swans, lapwings and gulls across many parts of the adjoining marsh grasslands and arable fields on Denge Marsh, Romney Salts, and the south-east corner of Romney Marshes. Lade Sands, the largest area of intertidal habitat close to the airport was only examined on one occasion at low tide, in 2005, when no count could be made.

6.10. This survey was a snapshot of only three days of an entire winter and so the data collected were extremely limited, but did show enough to suggest that a much fuller survey was necessary covering a larger area over a longer time span. The visit to Lade Sands when a number of wader species were noted, was not followed up by any further visits during this, or subsequent winter counts and therefore species on this site which might be expected to feed or roost inland, such as gulls and waders such as lapwing, golden plover and curlew would not have been counted.

6.11. A further survey was carried out with six visits on Oct 18th, Nov 8th and Dec 6th 2005 and Jan 17th, Feb 14th and March 14th 2006, to coincide with high tides when, it was noted, some coastal waders may move inland to roost or feed (Appendix 11.4 of the Runway Extension ES). As before, the survey was limited to a 3km area around the airport but excluded all areas to the south-east of the airport. Once again, the surveyor found flocks of swans, lapwings and gulls across the marshes together with flocks of golden plovers, curlews, wildfowl and thrushes. This showed that large numbers of birds which could pose a bird strike risk were present on fields to the north, west and south of the airport.

6.12. He noted that the Bewick's swans had apparently largely moved on from the site they had occupied the previous winter, that areas of sheep pasture throughout the area supported mixed flocks of gulls, lapwing and golden plover and that the number of mute swans varied

[5] the Runway Extension ES 2006 including Appendix 11, is CD1.17, all further references to Appendix 11 in this section are to CD1.17, unless otherwise stated.

considerably from month to month and from site to site suggesting that the birds move widely throughout the area. He also noted that areas north of the airport were largely devoid of birds, although he had recorded flocks of lapwings and gulls here the previous winter. All these observations make clear that there is considerable movement of birds from place to place between years and months, that fuller surveys both more frequently and over a longer time period would be necessary to clarify patterns of distribution and movement.

6.13. This survey was limited in extent; it did not cover the potential safeguarding area around the airport out to 13km, it excluded the RSPB Reserve and the designated sites and coastline, and it was confined to one count a month despite evidence from the first winter counts that there were considerable short term changes in numbers and distribution of birds from place to place. If there was doubt as to the advisability and validity of carrying out counts more often than monthly, a series of weekly counts for two months would have informed a decision as to whether more frequent counts were necessary. This simple test was not carried out.

6.14. A third and final survey was undertaken with six visits on Oct 18th, Nov 21st and Dec 16th 2006 and Jan 13th and 14th and Mar 8th 2007 (Overwintering Bird Survey results 2006/7 April 2007) This survey covered the same part of the 3km area around the airport as in the previous winter. In his results (April 2007), the surveyor noted that numbers of birds were reduced from the previous surveys and he suggested that this might be due to the mild weather as southern England recorded its warmest ever winter. He also noted that there was a significant reduction in use of a complex of gravel pits due to human disturbance, and that the birds would probably relocate to pits scattered elsewhere across the area.

6.15. Once again the survey was limited in extent and carried out monthly. Surprisingly no birds were recorded on the 1km square south of the airport, TR 0519 and on TR 0520 only 2 mute swans on 21st Nov and 11 on 16th Dec on TR 0520. On a visit to the areas I made on Dec 8th 2010. I saw over 100 mute swans and some 800 wigeon in this area. TR 0518 was not included in the 2006/07 survey. This provides further confirmation of the need for more detailed surveys over a longer timeframe. No gull counts were carried out on Lade Sands, despite for example in 2000 there being over 80,000 gulls recorded on Lade Sands and 43,000 in 2001 (Dungeness Bird Observatory Reports for 2000 and 2001 Appendix III). As a result of these failures, the data collected by the applicant for wintering birds is inadequate.

Conclusions on winter bird field surveys

6.16. A number of points arise from these surveys:

6.16.1. CAP 772[6] recommends that the airport operator should develop a systematic method of obtaining information regarding potential bird strike risks out to 13km from the airport, and recommends that details of existing bird locations and movements relative to these locations and the aerodrome (i.e. flight lines affecting the aerodrome) will need to be ascertained before any risk assessment can be conducted with any degree of accuracy [paras 2.1 & 2.2]. The applicant has not collected data out to 3km.

6.16.2. Although the RSPB advised in September 2005 (e-mail to bird surveyor 13th September 2005 (Appendix II) that monthly counts out to two miles were sufficient for counting birds in the vicinity of the airport, this recommendation was followed on 5th October by further recommendations that there should be vantage and radar flightline surveys and radar studies at night to detect night time movements of wintering, passage and migrant birds (letter and attachment to Shepway DC copied to Parsons Brinckerhoff October 5th 2005, CD3.1) and was included in the scoping opinion by Shepway DC (page 17, CD3.7). It was however up to the applicant to decide the extent of their surveys in relation to bird strike issues and safeguarding; it ignored the RSPB (and the scoping opinion) advice to collect flightline data. Had it obtained flightline data it would have pointed strongly to the advisability of carrying out surveys more frequently than once a month and over a wider area. It also ignored the advice to collect night time data and survey gull roosts on Lade Sands.

6.16.3. The applicant has, I understand, finally taken the advice of the CAA that it should also obtain information on bird strike risks (which can only be done by assessing the numbers and species of bird present) out to 13km from the airport, but this study is being carried out during the current winter and the results will not be available until after the dates for submission of proofs (Letter from Pinsent Masons to NE dated 1 December 2010). It is unfortunate that after five years the applicant has only now decided to carry out wider surveys of wintering birds, and as far as I am aware has

[6] CAA Guidance on birdstrike risk management for aerodromes September 2008.

not consulted either NE or the RSPB on the area to be covered or methodology to be used.

6.16.4. The first winter survey, albeit for only three days towards the end of the winter, showed that potential strike risk birds, such as mute swan, lapwings and gulls were widely scattered in areas to the north and west of the airport. The survey noted that areas of permanent sheep pasture throughout the study area supported mixed flocks of black-headed gulls and common gulls and also lapwing. This survey should have alerted the applicant to the fact that large numbers of birds that posed a bird strike risk were present across a wide area (including areas of agricultural land to the west and north of the airport outside the designated sites) and that flightline studies would be necessary to unravel the movements of birds between the designated sites and areas to the north and west of the airport.

6.16.5. Following the first winter survey, showing considerable movements of birds between fields outside the airport to the north and west, the initial view that monthly counts were appropriate should have been revisited and counts at intervals of two weeks or weekly considered, as providing much fuller and more meaningful data than monthly counts to allow a proper understanding of the numbers, distribution and pattern of bird movements around the airport. Support for this view is given by the two surveys on 16th and 21st February in 2005, (Appendix 11.3 of the Runway Extension ES) when, on the first visit there were in the OS 1 km square TR0321, 300 wigeon, 10 greylag geese, 29 Canada geese and 17 mute swans, all of which had gone by 21st, and in TR 0522 where nothing had been recorded on 16th, and less than a week later, there were 54 wigeon, 18 pochard and 23 coot. These figures suggest substantial movements of birds on and off these areas within the space of a few days, and suggest the necessity of more frequent counts than monthly.

6.16.6. The comments of the surveyor carrying out the winter bird counts clearly indicated that there was a great deal of movement of birds both between years and between counts, and he specifically mentions human disturbance as the reason in one example. He also noted differences between years due to weather conditions. Once again this suggests more frequent counts were needed over a longer period of years

6.16.7. The surveys confirm that the numbers, distribution and movement of birds within and between years is highly unpredictable, and will depend on weather locally and across the UK and Europe (in severe winters birds from elsewhere in the UK and Europe can move long distances to less affected areas), local food supplies and cropping patterns, timing and methods, distribution of predators and human disturbance. Any plans in relation to bird strike hazards need to be based on sufficiently robust data to cope with these changes, but the monthly counts over two winters do not provide this in my opinion.

Winter bird desk studies

Wetland Bird Survey purpose and methodology

6.17. The Wetland Bird Survey (**WeBS**) is a joint scheme of the British Trust for Ornithology (**The BTO**), the RSPB and the Joint Nature Conservation Committee in association with the Wetlands and Wildfowl Trust to monitor non-breeding waterbirds in the UK. Monthly coordinated counts are made at some 2,000 wetland sites, principally between September to March, but with some sites also counted during the summer months. The counts are carried out by volunteers, each of whom is assigned a local site, or for larger sites, part of a site, called a sector which they go out and count on the day. There are gaps in the data when volunteers cannot carry out a count and a replacement cannot be found, and data quality is variable depending on the expertise and experience of each volunteer. Counts of gulls are optional and are not counted by many volunteers or included in the results which are analysed for each species and area and published in a report. The latest published report describes the results for 2008/09[7].

6.18. The monthly WeBS counts of wildfowl and waders are regular counts carried out each year (these, and the predecessor counts have been carried out since 1947) to obtain comparative data within and between sites nationally over extended periods of years. They are not suitable as a means of assessing the distribution and behaviour of bird populations around the airport, as they provide only monthly count data for selected species, some months and even years are missed from the counts, they do not identify where birds are at dawn and dusk, where they roost (except for inter-tidal species) and how they utilise the area at night.

[7] Austin, G., Collier, M., Calbrade, N., Hall, C. & Musgrove, A. 2008. Waterbirds in the UK 2006/07: The Wetland Bird Survey. British Trust for Ornithology, Wildfowl and Wetlands Trust, RSPB & Joint Nature Conservation Committee. Thetford.

WeBS data and assessment

6.19. As mentioned above WeBS counts are not suitable as a means of assessing the distribution and behaviour of bird populations around LAA. Counts on the RSPB reserve, (other than WeBS) are collected for the purposes of assessing habitat use and determining management and so will not provide a complete picture either. The RSPB first expressed concern at the limitations of using RSPB reserve and WeBS data in an e-mail on 13th October 2005 to the consultants (see Appendix II) carrying out the ornithological assessments.

6.20. The main data on wintering birds collected by the applicant is from the WeBS counts and is presented in the Runway Extension ES Appendix 11.2, (Desk study of bird populations Dungeness Peninsula) (**the desk study**). Appendices 1-9 of the desk study show five year average and peak monthly count summaries for each species, 1999/00-2003/04, five year spring, autumn and winter peak counts for each species and a five year summary of international and national importance for each species over the same period for a number of key sites in the Dungeness area.

Land functionally linked to the designated sites

6.21. There are movements by birds between sites and areas within and beyond the SPA (see the figures attached to Dr. Allan's proof and Mr Gomes' proof, para 5.8, and Appendix 1, Map 1). Birds that may roost on open water or intertidal areas, may feed on the agricultural areas around the airport or on Romney Marshes and vice versa. For a number of species such links are essential. Swans, geese and some wildfowl and waders require land outside the designated sites for part of their ecological requirements, and without such areas, would not be present on the SPA. These areas are referred to here as functional areas, as they are functionally linked to the designated sites, but are not fixed in time or space, as birds can move from place to place within and between years.

6.22. For example, Bewick's or mute swans roosting on the SPA at night are likely to fly out to feed on fields of oil seed rape during the day. The fields chosen will change from time to time depending on the birds' assessment of the available food, the weather, the risk of predators and any human disturbance factors. The crop patterns in the fields will change from year to year and the distribution of the birds will change with them.

6.23. There are strong links between birds that are either qualifying species or part of the assemblage on the SPA site, and nearby agricultural land. During the day there are many movements between the designated sites and agricultural land nearby. It is highly probable that, in common with other areas studied (in this proof paras. 6.43-44) that there are links between the SPA and the surrounding agricultural land to the north and west for those birds that feed at night. Neither of these aspects has been examined either by day or night via field surveys of the whole safeguarding zone, or by studies of flightlines. Areas of agricultural land which may be affected by scaring measures around the airport or further afield by habitat changes initiated by the airport authorities within the 13km zone, will affect land that for many qualifying bird species is functionally linked to the SPA site.

6.24. The ornithologist who carried out the desk study clearly appreciated the link between the sites on which WeBS counts had been made and the wider area, although he did not refer to it as functional land. In the text accompanying the desk study, he did however point out that the WeBS counts cover nine individual sites within the Dungeness area but that it would be "*more meaningful to consider the Romney Marshes Natural Area as a single entity given that some species such as Bewick's swans and white-fronted gees are likely to move between sites over the course of the winter"* (Appendix 11.2 to the Runway extension ES Nov. 2006). The field surveyor, clearly recognised the connection between the individual WeBS sites (some or all of which are within the SPA and/or the pSPA, pRamsar and SSSIs)(see Figure 8 Appendix I) and the wider area of Romney Marsh outside the 2 mile zone. The applicant should have taken heed of the clear view of its own surveyor and widened the scope of the field surveys over the winter 2006/07.

6.25. The Natural Area includes that part of Romney Marshes which is in the safeguarding zone (see Figure 7 Appendix I).

<u>The Use of WeBS Tables for the desk study</u>

6.26. The WeBS tables accompanying the Desk Study (Appendices 1-9 of Appendix 11.2) includes Scotney, Whitehalls and Lydd West gravel pits to the west of Lydd, and Walland Marsh well to the north-west, all of which are outside the area of the field surveys, and therefore relied on wholly by the applicant for sufficient data to carry out a risk analysis and provide information for an appropriate assessment. Figure 8 attached (Appendix I) shows WeBS sectors in the Dungeness area.

6.27. Although useful, there are a number of problems with these data. The WeBS data used by the applicant is now out of date (2003-2004) and does not therefore reflect the current numbers and distribution of birds within the WeBS sites in the area. This shortcoming is unfortunate as the applicant is relying on this data having carried out no fieldwork on these sites themselves. For some species this may not be important (for example, on the RSPB reserve great-crested grebe or moorhen where the numbers have remained fairly stable, or smew and dunlin where the numbers are small). However for some species it is important that the numbers are updated (see Table 3 for a summary of the latest available count data).

6.28. For example, on sites for which there is count data for both periods 1999/00-2003/04 and for 2004/05-2008/09 (RSPB, Long Pits, Lade Sands, Lydd West, Bretts Pit, Scotney and Walland, see Figures 6 and 9 Appendix I) the mean five year peak counts of greylag geese have increased from 829 birds to 1072 birds (up 29%), mute swans have increased from 311 to 414 (up 33%), cormorants have increased from 274 to 314 (up 15%) and golden plover have increased from 3388 to 4993 (up 47%).

Table 3. WeBS mean winter peak counts made up of sectors of the Dungeness to Pett Level SPA plus additional sites within the 13km safeguarding zone for 2004-2009. Data provided by The BTO

All 2004-09 Species	RSPB	Long pits	Lade Sands	Bretts Pits	Walland	Fairfield	Scotney	Lydd West	Camber	Totals
Little Grebe	25	2		2	18	1	9	14	14	85
Great Crested Grebe	31		664	13	4		13	1	4	730
Cormorant	260			16	9	2	17	12	42	358
Bittern	1				1					2
Little Egret					4	2	1		3	10
Grey Heron	8			1	9	4	1	2	8	33
Mute Swan	78	2		49	208	6	18	59	19	439
Bewick's Swan	6			2	123					131
Whooper Swan	2			1	1					4
White-fronted Goose					171		110			281
Greylag Goose	132	1		39	378	13	520	2	18	1103
Bean Goose					20					20
Canada Goose	62			20	13		65	47	101	308
Barnacle Goose	22				19		31		1	73
Shelduck	20				6		38	9	15	88
Wigeon	1186				2034	221	600	525	14	4580
Gadwall	179				49	10	7	2	3	250
Teal	415		1		342	95	31	22	40	946
Mallard	201	3		13	226	67	73	27	151	761
Pintail	132				122	1	16			271
Shoveler	237			5	82	7	9	48	4	392
Pochard	266	1		15	27		233	50	43	635
Tufted Duck	284	6		7	32		36	41	28	434
Goldeneye	24						1	2		27
Smew	16						4		2	22
Goosander	4									4
Common Scoter			6							6
Water Rail					1	2				3
Moorhen	31	6		16	1	11	3	2	28	98
Coot	837	29		32	70	11	455	163	216	1813
Oystercatcher	23		491	2			2	4	9	531
Avocet							2	1		3
Golden Plover	172			1	4420	107	400		440	5540
Lapwing	1220			120	6740	1013	500		1515	11108
Knot			172							172
Sanderling			190						23	213
Dunlin	7		282		81		3	6	88	467
Ruff	5		1	1	17				6	30
Snipe	20				4	9			3	36
Curlew	9		182						157	348
Redshank	5		32				15	5	126	183
Turnstone			39				2			41
Mediterranean Gull			3							3
Ringed Plover			5				7	2		14
Grey Plover			26							26
Totals	**5920**	**50**	**2094**	**355**	**15232**	**1582**	**3222**	**1046**	**3121**	**32622**

6.29. The numbers of several species have also gone down, for example Canada geese from 215 to 207 (down 4%) and white fronted goose from 518 to 281 (down 46%). These figures can only give a general indication as they represent peaks on different sites, perhaps in different months, and need to be examined in detail for each site to draw conclusions about changes in numbers and distributions. However, in the absence of up-to-date field data, any attempt to assess the bird strike risk should use the latest numbers and locations of the main risk species from WeBS which is the only data available for most sites.

6.30. When using the WeBS data it is also important to have counts for all the main areas where birds may be present and for these counts to be as complete as possible, otherwise estimates of the numbers and distribution of birds in the area will be inaccurate. Two important sites have changed since the key sites data in Appendix 11.2 was collected. The northern water body of Lade Pits is not included in the 1999/2000-2003/2004 count data, but has been counted since 2006 and the pit at Whitehalls has now been filled in and earlier counts from here are no longer relevant Both these sites have been excluded from Table 3 as the counts are not continuous 1999-2009. A number of sites were not counted every year, so for example Bretts Pits were not counted during the spring (April-June) in 2002 or 2003 or in autumn (July-October) 2001, and Walland was not counted in spring 2001 or autumn 2003, and Scotney Pits were not counted in spring 2001 or 2002.

6.31. It is also important to understand the disadvantages of data collected for one purpose, which is then used for another. The counts used in the 2008 Ornithology report para (para2.5.7) are mean peak counts. This is an acceptable measure when considering trends over time but could be misleading when considering the total numbers of birds present at any one time. For example, the mean peak number of wigeon for Scotney Pit 1999/2000-2003/2004 is 794 (Appendix 11.2 App. 8, p 10), but the maximum number during that time was 1100 in December 2001, and the mean peak for greylag goose at the RSPB reserve (Appendix 1, p6) in spring is 112 but the maximum count in June 2000 is 225. An extreme example of how mean peak figures can underestimate the maximum numbers that can be present is the winter peak count for lapwing at Walland Marsh (Appendix 9, p10) where the five year mean of 7400 conceals a peak in February 2000 of 17,500 birds.

6.32. The WeBS counts will only cover defined count areas, usually water bodies or wetlands, so that, for example large flocks of lapwings or golden plovers out on the agricultural fields around the airport or on Romney Marsh may not be counted. WeBS counts should therefore

be considered in all cases as minima, with some high profile and easily counted birds such as Bewick's swans probably being accurately counted and others such as lapwings (on fields) and mallard (in ditches and on ponds) being under-estimated.

6.33. The WeBS counts obtained by the applicant were presumably before making decisions on where and when to carry out field work at least in 2005/6 and 2006/7. The mean peak counts for a number of species were larger during April-August than during September-March. These included the highest peaks during both periods for mute swan, mallard and coot at Scotney Pits (Appendix 8 pgs 4-5), and cormorant, Mute swan and Canada goose at the RSPB reserve (Appendix 1, p4). There were also significant numbers of geese, ducks and waders at other sites including Lade Sands and Lade Pits during April-August.

6.34. The point is that there were substantial numbers of birds on these wetland sites outside the normal WeBS count period of September-March, but despite this, the applicant decided to restrict their winter field studies to the period October-March even though the WeBS showed that many species were in bigger numbers on key sites outside this period. Many of these birds, including swans, geese, ducks and waders might have commuted between the SPA sites where they were counted on their roosts by WeBS, to fields adjoining the airport to feed in mid to late summer, following a similar pattern observed for wintering birds of the same species. These late summer gatherings could therefore both be affected by, and could pose a risk to, large passenger jets. The applicant has completely ignored this period of the year in their assessments.

Conclusions and additional points from winter field work and desk study

Roosting birds

6.35. No roosting bird data was collected as part of the bird surveys, although this is information that would have supplemented any flightline data and provided valuable additional evidence. Birds move between feeding and roosting sites, often in considerable numbers, and often at dusk or after dark. With inadequate bird flightline data and no counts of bird strike risk species such as gull or starlings, knowledge of roost sites and sizes would have given the applicant some idea of where the main concentrations of such species were likely to be, where they might go and what flight paths they might follow. For example, if there was a large pigeon roost in the scrub to the east of the airport or a wader roost on fields to the

south of the runway, appropriate observation would have confirmed whether or not these were a source of birds over-flying the airport and its approaches. The field surveyor employed by the applicant had drawn attention to the possibility of inland roosting birds in his report for 2005/06 when he commented that "*coastal species such as curlew and gulls may move to the study area to roost"*.

Gull Counts

6.36. The field work and desk study has failed to carry out gull counts of birds roosting, feeding flocks and movements. WeBS counters are not required to count gulls, although some counters include them from choice, so the results of WeBS counts for this group of species is piecemeal and incomplete. For each WeBS species for each five year period (on which mean peak counts are based), there would normally be five counts within each month, one for each year. The counts of gulls on Lade Sands were very incomplete for the years 1999/2000 to 2003/2004 when gulls were counted in only two of the five years in January and February and only in one year for other months (Appendix 11.1 Lade Sands pg 2). As noted above at para 6.15 there were more than 80,000 gulls recorded roosting on Lade Sands in 2000 and 43,000 gulls in 2001 (Appendix III). The RSPB recommended that the bird surveys carried out by the applicant include a systematic count of the gull roost on Lade Sands. This advice was ignored, and as a result, the applicant seems to have little comprehensive data on gull roost locations or sizes, or on gull movements, despite this being a major strike risk group.

Night Time Movement Surveys

6.37. No survey work on the movements of birds has been carried out after dark – this is a serious omission because aircraft movements are proposed to continue to 23:00 hrs (Revised Chapter 16 para 16.3.37, CD 1.41a). Flights up to 23.00 hours could mean aircraft landing and taking off in winter for up to 6.5 hours after dark, and there is no information on the bird strike risk during this time, when visual observations will be difficult or impossible. Studies elsewhere have shown that many birds feed at night and that this can be accompanied by flight movements between feeding grounds or between roosting and feeding grounds. Wintering lapwings and golden plover feed at night, when the flocks are more dispersed and occur in many more fields than during the day (Gillings, Fuller & Sutherland, 2005). Nocturnal flocks also feed on a wide variety of habitats including cereal fields, oilseed rape, and sugar

beet and bean stubbles. Gillings et al found that the birds regularly moved up to 15km between daytime areas and night time feeding grounds.

6.38. Night time feeding and the movements that accompany this behaviour by wildfowl and waders have not been considered by the applicant. Feeding activity among many wading birds takes place at night in winter (Liley, Sharp & Underhill-Day, 2008). Ducks and geese have also been recorded flying from winter daytime roosting sites to night time feeding sites. In a major study on the Somerset levels over two winters, wigeon, teal and shoveler were found to move in substantial numbers between daytime roosts and night time feeding grounds with smaller numbers of pintail and Bewick's swans (Chown, 2003). Brent geese feed at night throughout the winter (Owens, 1977b).These studies all show that waders, ducks and geese all feed at night, usually in different areas to those they use during the day and that they can fly considerable distances to do so. All these characteristics are likely to apply to the designated sites at Dungeness and linked land at Romney Marsh.

6.39. No studies have taken place on night time movements of birds over or around the airport. The SPA at Dungeness has large numbers of waterbirds including swans, geese, ducks and waders that, from the studies referenced above, would be expected to fly out to feeding grounds on the agricultural fields on Romney Marsh. In his proof, Mr Gomes (see Mr Gomes' proof, paragraphs 5.12 and 5.13) gives a number of examples of birds which fly at dawn and dusk to feed on the agricultural fields beyond Lydd. Lapwings and golden plovers are numerous in the area and other coastal waders known to feed on grassland, and which also feed at night, including curlew and oystercatcher are also widespread in the area. It might therefore be expected that there would be considerable movements of birds after dusk, some of which would pose a bird strike hazard to aircraft taking off and landing after dark. The applicant has carried out no studies to assess these night time risks despite being advised to do so by RSPB in a letter to Shepway DC copied to the applicant on 5th October 2005 (CD3.1) The applicant has given no indication that it has given any thought to how it intends to protect flights from night time bird strike risk nor has it carried out necessary studies of where birds are concentrated and in what numbers in relation to the airport when flights are operating during the hours of darkness.

Surveys of Birds Using the Airport

6.40. No assessment has been made by the applicant of the use of the airport or the ditches by a number of birds of prey. It is known that marsh and hen harriers and short-eared owls hunt over grassland, particularly long grass for small birds and mammals. All three species have been seen hunting over the airport by RSPB staff and the applicant has recorded hunting hen harrier.

6.41. Both the harrier species will also hunt along ditch systems and bittern will feed in ditches, particularly at night. Other birds that feed in ditches are herons and egrets.

Conclusions on winter field surveys and desk studies

6.42. The data from the applicant's winter fieldwork and desk studies is outdated and incomplete, It does not cover all the relevant times of year, neither the fieldwork nor the WeBS counts cover large parts of the area including much of Romney Marshes, gull species are particularly poorly covered over most of the area, no studies have been carried out on roost locations, or at night when many species will have a different distribution, and there have been no studies on winter flightlines.

Effects of incomplete surveys on risk assessments and consequent actions

6.43. The wildlife conservation concern here is not generally that some birds may be killed by aircraft (although the loss of even a single bird could be significant for some species, for example bittern, purple heron, marsh and hen harriers) but that there has been no serious attempt by the applicant to gather the necessary information to be able to understand the numbers, distribution and diurnal and nocturnal movements of birds either around and across the airport or across the whole safeguarding area. As a result any assessment of the bird strike risk for wintering birds will be deeply flawed and in the event that consent for the proposals was given, the airport authorities would find that the risk of bird strikes is unexpectedly and unacceptably high, and seek to carry out scaring measures on a far bigger scale than suggested in the draft Bird Control Management Plan (CD1.45) and to enforce draconian measures across the safeguarding zone to the detriment of the habitats and qualifying species of the designated sites.

6.44. If the airport expansion is allowed to proceed, the airport authorities may be required to object to any proposal which they are advised could increase the risk of bird strikes. In other words, any undertakings they give now about future representations they may make in relation to developments on the SPA (for example habitat management on the RSPB reserve requiring planning permission) cannot be relied on. Future decisions on whether to object to proposals will of necessity depend heavily on advice the applicant receives from other with specialist knowledge.

6.45. In my view, the potential for the need for more extensive scaring and less flexible safeguarding measures and their possible impact on the SPA habitats and species needs to be properly assessed before proper consideration can be given to expansion of the airport. To do this, a comprehensive and in depth study is needed of the numbers, distribution and movements of the birds in the area, including Romney Marsh and coastal sites as far as Rye Harbour, all of which are in the safeguarding zone for nature reserves and bird sanctuaries. Without this information it will not be possible for an appropriate assessment to properly consider the effect of the likely safeguarding on the designated features of the European sites. However, later in this proof I seek to do the best on the information I have to identify the consequences for the bird populations of the proposals.

Field surveys-breeding birds

Description of surveys

6.46. A very limited breeding survey was undertaken in 2005, by the applicant (Appendix 11.5 and 11.6, CD1.17) with four visits on April 22nd, May 18th, June 7th and July 6th. This survey did not extensively survey the airport but visited an area of 15ha of arable land by the airport access road and some 32 ha of sheep pasture between the airport and the golf course.

6.47. The bird records are presented as numbers of each species within each 1km². Given the limited number of visits and the lack of information on where the birds actually were, this survey is of limited use other than giving information on the range of species found. This included ten red listed BoCC species (see paras 5.7 -5.11 above for definition of BoCC red list).

6.48. A second breeding bird survey with 10 visits between 31st March and 6th July in 2006 was carried out within the airport perimeter and an area 500m beyond this. This is illustrated with

a number of maps showing segments of the surveyed area and bird locations marked by coloured symbols and British Trust for Ornithology species codes. It is, however, unclear what these actually show. To take an example, the list of species recorded shows 13 yellow wagtail territories (a particularly important species, as the report notes) but the maps show 18 territories. It is not clear whether the maps are intended to show something other than breeding territories or the numbers have simply been under-estimated.

Assessment of surveys

6.49. Since the report was written, a review of the red list has added yellow wagtail to the list and removed the reed bunting (Eaton *et al.*, 2009). This leaves 103 pairs of red data species on and around the airport of which about half are skylarks. There are concentrations of important species around the proposed northern extension to the runway with segments A1, E1, E2 and E3 (Figure 11.1 to Section 11.6 of Runway Extension ES November 2006, CD1.17) between them having 57 pairs of red data birds including 15 of the 18 yellow wagtails and twelve of the 17 pairs of corn buntings. Areas of segment A2, B1 and D also have between them a further 12 pairs of red data species.

6.50. This data gives useful (if limited) information on the breeding birds on and around the airport though it is now dated and does not include some significant changes such as the arrival of marsh harrier as a breeding species.

Responses of breeding birds to noise

6.51. Although no airport studies appear to have assessed noise levels for passerines (small perching birds), there is plenty of evidence from studies of road noise that there can be adverse effects from noise. There will be greater levels of noise from the increased numbers and size of aircraft and from increased traffic on the airport approach road. Noise effects on small birds reported in the research literature include: reductions in pairing success and a weakening of pair bonds (Habib, Bayne & Boutin, 2007; Swaddle & Page, 2007); masking of the songs of breeding birds (Rheindt, 2003) resulting in changes in the bird's behaviour which could impose energetic costs (Brumm, 2004; Patricelli & Blickley, 2006) and reduced breeding success and densities of birds nesting in areas closer to noisy roads (Reijnen & Foppen, 1991; Reijnen, Foppen & Meeuwsen, 1996).

6.52. No assessment of the potential effects on local breeding bird populations of lengthening the runway, increasing aircraft noise and increasing traffic to the airport has been made by the applicant. The work of Riejnen, Foppen & Meeuwsen 1996 shows a clear connection between increased traffic levels and declines in meadow breeding birds including breeding waders, skylark and meadow pipit, an effect they ascribed to noise.

6.53. While the ornithological consultant rightly drew attention to the importance of the bird community on farmland around the airport and recommended some steps to reduce the effects of construction work, he made no recommendations with regard to operational noise. Steps could be taken to reduce noise and visual disturbance along the road (by the construction of earth banks) and to improve conditions for nesting passerines in areas away from the airport.

Migrant birds

6.54. The Dungeness peninsula extending from Greatstone-on-sea in the east to the beginning of Camber Sands in the west and north to Lydd (see Figure 9 Appendix I) has been known for many years as a major migration route for birds. Huge numbers of birds can be involved in migration movements, some, such as swallows, pigeons, finches and birds of prey migrating by day and others like warblers, thrushes and most small passerine species by night. Some species such as waders and wildfowl can migrate either by day or night. South-east England is a particularly important and busy migration route for birds wintering in the UK but breeding on the continent, and for birds that breed in Britain and winter further south. It is also a location where, from time to time there are severe weather movements by large numbers of birds usually moving from north east or east to the south west. Most of these journeys are two-way as birds return to breeding or wintering grounds or return after the hard weather has ameliorated.

6.55. Many of the species concerned such as starlings, pigeons, thrushes and waders like lapwings, migrate in flocks. When birds are moving north and encounter adverse weather conditions, they can be held up, so that when weather conditions change, tens or even hundreds of thousands of birds are able to simultaneously continue their journey, so that at a migration point such as Dungeness, on these occasions, birds can be streaming through in huge numbers with many thousands of individuals (McMinn, 1989 see Appendix IV tab 12). Some examples of the movements of migratory birds are included in Mr Gomes' proof (for example

see paragraphs 5.27 & 5.30). Conversely, if birds migrating south are held up by bad weather, they can collect in considerable numbers as they wait for the right conditions to make a sea crossing.

6.56. Migrating birds tend to arrive and depart from areas of land that extend out into the sea such as peninsulas and points, which is why Dungeness is such an important flyway. They will also stop off to feed and fatten up for the ongoing journey and some of the secondary habitats on and around Dungeness provide important shelter and food for birds waiting to continue their journey either because they need to fatten up or because they have been held up by adverse weather.

6.57. The height that birds fly when migrating will partly depend on the direction and strength of the wind and on cloud cover and height. Birds can migrate at heights of up to 4000m although most movements are below 500m. Flocks of migrating birds can therefore pose a considerable threat to aircraft over a wide altitudinal range. No attempt has been made to assess this by the applicant.

6.58. Although it is not possible to closely predict when large numbers of birds will be passing through or stopping off, either travelling north in spring or south in autumn, or moving through ahead of hard weather during winter, an aerodrome sited on a major migration route such as Dungeness will need to have in place and use, a system of early warning such as radar, if it is to avoid a high risk of bird strikes from this source. Migrating birds, although concentrated at certain seasons, can occur in high numbers at any time of year. The risk and uncertainties for an airport sited close to substantial wetlands with large numbers of resident and transient birds are considerably increased where the site is also on a major migration routes as well.

7. FLIGHTLINES

7.1. It is clear from Dr. Allan's proof that large numbers of birds of many species overfly the airport (see Dr. Allan's proof, e.g. pg 19, Figure 7). Had he conducted his vantage point surveys at a different time of year, late spring or autumn, for example, the numbers and mix of species would have been different. This is not a feature of the area that is confined just to the winter. The vantage point surveys were limited to the areas observable around the immediate perimeter of the airport, and if the exercise was to be carried out

comprehensively, additional observers would be needed further out to get a better idea of where birds are coming from and going to. Surveys over a longer period would also assist in reinforcing the limited data available from just a few surveys and would allow the tracking of seasonal patterns.

7.2. However some patterns are apparent. For lapwing and golden plover, the pattern of movements suggest some birds flying between feeding or roosting locations to the north and west of the airport but also flocks flying around above the airport possibly as a result of disturbance. When flocking species such as these are disturbed, perhaps by a bird of prey or an overflying plane, they tend to take to the air and fly around in flocks, sometimes for considerable distances or for some time, with this behaviour repeated several times a day.

7.3. The movements of pigeon species suggest longer distance flights with straight lines across the airport as the birds fly to or from roosts in the scrub on and around the airport and out to the fields on the wide expanses of Romney Marshes. Other birds that will feed on Romney Marshes but come back to roost on the foreshore and flooded pits in the area are gulls and wildfowl such as wigeon and swans.

7.4. Crows seem to feed and roost more locally, but rooks will travel much further to feed, and in the winter, local birds can be joined by continental birds coming to the UK for the winter and making up large flocks, feeding out on the Marshes and roosting in trees and scrub. The vantage point map for mute swan is also not unexpected, as these birds are widespread across the area, feeding out on Romney Marshes with small groups coming together often in large flocks, but roosting in smaller groups on pits and smaller water bodies in the area. Often small family parties move between roosting and feeding sites and between feeding sites at almost any time of day and from any direction.

7.5. It is clear from Dr. Allan’s surveys (see Dr. Allan's proof, pgs 17 to 30, section 5) that there are considerable movements of bird across the airport and its approaches, and that the links are between the foreshore and wetlands of Dungeness and the agricultural areas of Romney marshes. Had these studies been carried out at night by radar, it is highly likely that similar movements would have been recorded for night feeding species such as waders and some wildfowl.

7.6. If full data was available on where birds were coming from and going to, then as Dr. Allan has noted (see Dr. Allan's proof, e.g. paragraphs 60, 61 and 68), dispersal from one end or the other would be the conventional approach. However, birds can be found spread over a wide area of Romney Marshes, often in considerable numbers and it seems inconceivable that the applicant could disperse them from such a wide area or get agreement to do so. Dispersing birds off the fields nearer the airport would also affect a substantial area of land resulting in potential damage to the wintering populations of SPA qualifying species by denying them feeding areas on land which is clearly functionally linked to the SPA.

7.7. If efforts to disperse birds from feeding and roosting grounds on fields across the area were impractical or failed, the applicant would need to have recourse to more intensive measures to deter birds from the roosting sites around the airport, including the SPA.

7.8. In summary, it seems highly unlikely that the applicant could put in place an effective scaring and dispersal strategy for the expanded airport without serious adverse affects on the qualifying bird species of the SPA, either indirectly by denying them existing feeding grounds and roosting areas on functionally linked land off the SPA or by direct disturbance on the SPA.

<u>The applicant's surveys</u>

7.9. This whole issue has been under-researched or ignored by the applicant, despite having been raised as early as 2005 by the RSPB, NE and Shepway DC (Shepway DC, Scoping Opinion, CD2.7, pgs 17-18). In relation to these matters, the applicant has responded by claiming that:

> "*the current situation is well understood with survey data, observations from airport personnel and pilots and bird strike records dating back many years*". (the applicant's Ornithological Report, SEI August 2008, Volume 6, Appendix 4, CD1.33d, para 2.4.6 (the Report 2008))

The applicant has produced no survey data, nor any data or reports from pilots to support this claim. The observations from airport personnel contained in the bird strike logs have been shown by Dr. Allan to be unrepresentative and unreliable as an indication of risk at the airport, and the bird strike records averages 1-2 a year (Dr. Allan's proof para 19). It seems clear that the applicant claim that the situation in respect of over flying birds is well understood is unfounded.

7.10. As mentioned above, apart from the breeding and wintering birds in the Dungeness area, there are also large numbers of migrants moving through at all hours of the day and night and at all seasons. A study looking at bird deaths as a result of collisions with power lines at Dungeness over a six year period found that the most numerous night time migrants were starlings and thrushes, both flocking species, and that larger coot and moorhen were also nightime migrants. The authors also noted that gulls flew inland on a regular basis to visit Romney Marsh and that such movements may take place at twilight or after dark. Gulls of five different species were killed in collisions with the power lines as well as waders such as lapwing and golden plover (Scott, Roberts & Cadbury, 1972). As well as these more or less regular migrant birds, there are also local movements of resident and wintering birds and other birds moving along the coast.

7.11. These movements are likely to include (Durman, 1976; McMinn, 1989; Newton, 2010), (Gomes pers. comm.):

7.11.1. Birds from the gravel pits on the RSPB reserve flying out first thing in the morning to feed on grass and arable land on Romney Marshes to the west, north-west and north of the airport, and returning later in the day or early evening to roost on the pits.

7.11.2. Birds moving between the various gravel pits on Dungeness and to the pits west of Lydd.

7.11.3. Birds moving off Lade Sands in the morning to feed inland to the west and north-west and returning during the day and in the evening to roost.

7.11.4. Birds flying out from the gravel pits scattered across the area at dusk or after dark to feed on the farmland to the north and north-west and returning before or just after first light to roost on the pits during the day.

7.11.5. Birds flying off the grassland at Denge Marsh to feed on Romney Marshes both during the day and at night, or moving off Romney Marshes to feed on Denge Marsh.

7.11.6. Movements of birds between roost sites as weather conditions change and some areas provide more sheltered conditions.

7.11.7. The movement of migrant birds off the sea, making their way inland in spring with the main migration period from the end of February to mid May (Newton 2010 see Appendix IV tab 14).

7.11.8. The autumn movement of migrant birds flying south to south-east in autumn, heading towards southern Europe and Africa. At Dungeness the main autumn

migration extends from the end of August to mid November (Newton 2010 see Appendix IV tab 14).

7.11.9. Cold weather movements of birds along the coast and between the coast and inland.

7.11.10. A build up of birds locally at times during autumn, when weather conditions are unsuitable for migration and birds have no choice but to wait for conditions to improve. This can sometimes involve thousands o f birds (Durman, 1976).

7.12. It can be seen from the above that there are constant, unpredictable and at times, large scale movements of birds in the area, with the possibility of flocks of birds moving above or around the airport at any hour of day or night throughout the year.

7.13. The Report 2008 and Appendix I (Appendix I is at pgs 97-101) to that Report refers to radar and/or vantage point surveys (paras 2.4.1-2.4.6, CD1.33d). It noted that RSPB raised the desirability of carrying out radar and vantage point studies in 2006 and that the purpose was *to determine flightlines of birds using the area around the airport* (my italics). Para 2.4.4 tells us that "suitable vantage points" were used during all ornithological studies of over-wintering and breeding bird studies. This completely misses the point. The wintering bird studies were intended to record the locations of birds on the ground or on water; at no point do any of the surveys describe birds flying over, when they are a risk to aircraft. Similarly the breeding bird survey was intended to record the location of breeding birds, and although some of these might have been singing from above the ground, skylarks for example, they were not flying over. Thus the wintering and breeding bird surveys provide no records of birds flying from one place to another. In the context of recording flightlines, the use of vantage points is the selection of points with a clear field of view to record birds flying over and past a defined area, a section of the airport for example. As such, the use of vantage point surveys has a specific purpose in risk assessments as Dr. Allan explains in his proof (para 51).

7.14. Para 2.4.5 then goes on to suggest that flightline data have been inferred from these surveys together with the WeBS data using grid squares, and shown on Figures 1-18 (The Report 2008, CD 1.33d pgs 103 to 120). Given the generally poor quality of the available information for these purposes in the absence of any flightline fieldwork, this is probably the best that the applicant could do. However the results are seriously flawed. Maps 1-18 do not include many of the main species which could pose a bird strike risk, e.g. there has been no mapping of any information for mute swan, greylag or Canada geese, large or medium size gulls, mallard, teal, corvids or birds of prey.

7.15. This lack of information is illustrated by mute swans which are large birds (big enough to cause serious bird strikes individually although they usually fly in small flocks). These swans feed on arable fields during the day and return to a number of wetlands (some of which are not counted by WeBS) to roost at dusk. Counts around the area of Walland Marsh, Rye Harbour and Dungeness SSSIs have produced counts in excess of 700 birds within the area (B. Banks pers Comm.). Dr. Allan's vantage point map confirms the movements of Mute swans across and around the airport

7.16. Moreover, the maps which have been produced by the applicant only cover a limited part of the area. They exclude Scotney Pit, Brett Pit, most of the RSPB reserve, Long Pit, Lade Sands and Lade Pit. In other words the applicant has produced a series of maps which purport to show data on flightlines but without the inclusion of most of the sites from or to which birds in the area might be expected to fly. The information given does not therefore inform a proper assessment of the bird strike risk, nor the preparation of possible scaring and safeguarding activities required to mitigate it.

7.17. The only map that makes any serious attempt to plot flightlines is Figure 45 (CD1.33d, pg 149) for Bewick's swans, which, significantly, covers a much larger area than all the other maps and shows considerable movements across the airport and its approaches. It is also worth noting that although it is accepted that, without a proper study, the best that can be done is to join up the locations where concentrations of feeding or roosting birds have been recorded with straight lines to illustrate their possible lines of flight, as can be seen from Dr. Allan's vantage point surveys (see Dr. Allan's proof, pg 19, Figure 7), very often birds do not fly in straight lines and movements will be far more random and widespread. Thus if two locations for a particular bird species do not join with a straight line across the airport, that does not mean that individuals or flocks of that species will not cross the airport. Only observation of the airspace on and around the airport will accurately show the actual flightlines of the birds. The Bewick's swan map is derived from recorded locations from the field studies and WeBS data, but this is from only a limited data set, and as noted, the birds will move around depending on crop patterns and other factors within years and from year to year. The conclusion drawn in para 2.1 of Appendix I of the Report 2008 (CD1.33d, pg 98) that Bewick's swans flight lines would not be over the airport, is simply a hoped for result not a conclusion based on comprehensive over flight studies at the airport.

7.18. The reasons given by the applicant in the Report 2008 for not attempting to map other species (pg 12, para 2.5.3) is that the level of detail cannot be provided for other species because other potential bird strike species are much harder to count, move around much more and hence are less often reported by birdwatchers. However the work of Dr. Allan in gathering data on birds overflying the airport shows that these excuses are invalid. The evidence in Dr. Allan's proof shows that other species can be counted, their routes mapped and the frequency with which they cross the airport timed (see Dr. Allan's proof, section 5).

7.19. The applicant, in the Report 2008, notes that tufted duck, black-headed gull, lapwing, mute swan, coot, teal and Mediterranean gull have been observed within the airport boundary (pg 13, para 2.5.9), and that the flight-lines for these species will inevitably cross the airport, so no further flight-line analysis has been completed. This conclusion is surprising. If these species have been identified as ones that will overfly the airport, then a greater understanding of the numbers and timing of such over-flights is surely necessary to inform the proposed (and only) policy for overflying birds, that of passing warnings of bird hazards to pilots. This is a group of birds which, excluding the gulls, have collectively reached mean peaks of some 16,000 birds on the WeBS sites over the period 2004/09[8] (Table 1).

7.20. A further large group of species are listed, that the applicant accepts have potential to overfly the airport, (pg 13, paragraph 2.5.11). These species make up some 14,500 of the bird numbers constituting the total mean peak of 2004/09 WeBS counted species. The lists of actual or potential species featured by the applicant on these lists are all SPA/pSPA/pRamsar or SSSI species. The lists do not include bird strike risk species such as greylag goose, carrion crow, rook, jackdaw, stock dove and wood pigeon, curlew, common gull and starling, all of which have been left out of this assessment, and all of which were recorded, some in large numbers, crossing the airport by Dr. Allan (see Dr. Allan's proof, pgs 19 to 22, Table 2)

7.21. The Report 2008 then goes on to accept (pg 14, para .5.13)

> "*this realistic worst case scenario assumes that all the species considered present a significant bird strike risk and have flight lines which cross the airport. The Bird*

[8] These mean peak figures are the sum of the individual mean peaks for each species. They therefore indicate the total numbers of birds that might be expected to be present over the winter rather than the numbers present at any one time. Some birds will be counted more than once, others will move in, be counted and move out, while others will not be counted at all. However as guides to the numbers of birds summarised within a single figure, they give an indication of the numbers.

Control Management Plan details how this potential risk will be managed" (my italics).

7.22. An examination of the draft Bird Control Management Plan (CD1.45) reveals that scaring measures are considered to be ineffective against overflying wildfowl and that the primary means of mitigating for overflying birds will be warnings passed to aircraft as required (Appendix B of the Report 2008, pg 46, para 12.4.3) . Dr. Allan has commented on this approach in his proof.

7.23. Dr. Allan has commented (see Dr. Allan's proof, para 24) on the bird log kept by the airport (attached to Pinsent Mason letter to NE on December 8th 2010). I agree with Dr. Allan's view that this is clearly inadequate as a guide to the numbers and species overflying the airport

7.24. Well over 30,000 water birds overwinter in the area, most of them large ducks, geese and swans or flocking species such as lapwing and golden plover. There is also a substantial number of breeding wetland birds and the area is also notable for its large flocks of gulls, and at times, huge numbers of migrants (see Mr Gomes' proof for examples of migrant movements, paragraphs 5.18 to 5.19 and 5.22 to 5.30). With tens of thousands of birds in the area from late summer to spring, unpredictable arrivals and departures of migrants and large resident breeding populations, the airport is sited in an area where birds are constantly moving around the area during the day and at night. The applicant has made little attempt to assess the year round risk that these birds will pose to larger passenger jets.

8. BIRD SCARING

Introduction

8.1. Concerns over bird scaring addressed in this section are related to the effects this can have on birds. Scaring can affect both the target species and non target species that are close enough to also be affected and both or either can be species of conservation importance featured in the designation of the SPA, pSPA, pRamsar or SSSI. Studies show that disturbance (and scaring is deliberate disturbance) can significantly reduce food intake rates as birds stop feeding and exhibit alert behaviour, or move away from their feeding areas. At certain stages, birds are very vulnerable to reduced food intakes, including in hard weather, when they are moulting and when they are feeding young. Interruptions to their feeding rates at these times

can lead to weight loss, interruption to courtship and abandonment of breeding attempts, lower feeding rates to young and reduced breeding productivity or breeding failure, abnormal or incomplete moult and a reduction in future fitness (Drewitt 1999 see Appendix IV tab 5).

8.2. If the result of the disturbance is for the birds to take flight and move to another area (and for the target species that will be the hoped for result of a scaring operation, but it may be the result for non target species as well), the consequence will be increased energy expenditure by the birds concerned. If the disturbances are repeated resulting in the birds being continually moved on, this, combined with a reduction in feeding time will exacerbate all the effects noted above, as birds feed less, but expend more energy.

8.3. Frequent disturbance can result in effective habitat loss as the disturbance repeatedly moves the birds of a feeding or roosting site so that it no longer used. This too would be the objective of a scaring programme such as that proposed for Lydd airport, but it would also affect the surrounding area, and it is indeed the stated aim of the policy to create a buffer zone around the airport to a distance of some 300m. This would effectively sterilize a substantial area currently used by SPA species for feeding and roosting.

Scaring trials

8.4. Three scaring trials have been undertaken, over two days in June 2008 (the Report 2008, CD1.33d, pg 85, Appendix H), over two days (November 30th & December 1st) 2009 (CD1.45, Appendix 5 October 2009) and on one day in November 2010(Spatial Records December 2010, attached to Pinsent Mason's letter to NE dated 8th December 2010, Appendix 3).

8.5. The first two trials in June 2008 and November/December 2009 consisted of the emission of seven bird species distress calls for two minutes each followed by the release of several bird scaring cartridges. In both cases the source points for these activities were stated to be the nearest points on the airfield to the SPA areas to the south and east, but in June 2008 the eastern source point was some distance from the edge of the airfield and in November/December 2009 the southern source point was also well away from the airfield edge closest to the SPA. On November 24th 2010, the trials consisted of three rounds of pyrotechnic cartridges (no distress calls), fired at the southern extremity, in the north east of the airport and on the eastern side of the runway.

8.6. In the June 2008 and November/December 2009 trials, the wind direction was away from the SPA although the noise source was pointed towards the SPA, in the third trial the wind was N-W. The receptor points for the first two trials were on the edge of Lade Pits to the east and on the northwest corner of the SPA to the south. Receptor points for the 2010 trial were at the source points north and west In addition to these, in all three trials, observers were also stationed in the RSPB hide overlooking the western end of the ARC pit.

8.7. In the June 2008 trials, a three dimensional model was constructed to give noise levels from the noise sources, although in neither case is the model centered on the source locations mapped. No model was presented for the November/December 2009 or November 2010 trials.

8.8. In the June 2008 trials, there was recorded disturbance to herring gulls from the distress calls but no other species and disturbance from the cartridges to pochard, tufted duck and mallard (although only mallard flew off), and a grey herons, which also flew off. Other birds present on Lade pits and ARC pits included, Mute swan, Canada goose, a number of duck and two grebe species, coot, black-headed gull and herring gull, grey heron and common tern. None of these are reported to have shown any observable response.

8.9. In November/December 2009, a similar set of trials found that great black-backed, lesser black-backed, herring and common gulls lifted off the water at Lade Pits and left the area in response to distress calls, and on another occasion herring gulls already in flight over Greatstone (about 1000m away), responded by circling and alarm calling. No other birds were affected.

8.10. The use of bird scaring cartridges in the November 30th 2009 trails immediately caused flocks of oystercatchers and curlews (and red-legged partridges) about 1000m away from the source to fly up and depart completely from flooded fields. On another flooded field 500m away, a cattle egret, a grey heron, 53 black-headed gulls, four common gulls 12 stock doves and 30 starlings flew up and departed (with only the cattle egret returning) as soon as the pyrotechnics commenced. Birds on the water at Lade and ARC pits, including mute swans, duck species, three grebe species, coot, grey heron, several gull species and a single black-tailed godwit showed no signs of disturbance.

8.11. Following the use of bird scaring cartridges on November 24th 2010, none of the birds on ARC pit (1100m from firing source, consisting of Canada geese, duck species, lapwing, a black-tailed godwit, cormorants and a little egret showed signs of disturbance. On a field on the western edge of the airport, a flock of lapwing, black-headed and common gulls 300m from the source took of when firing started but quickly returned, and on a field on the northern edge, a flock of curlew (500m from the source) showed no response, while flocks of black-headed and common gulls 750 m away got up and then settled again. The firing disturbed a small flock of skylarks 75 m away but not a grey heron 100m away in the large ditch.

8.12. The June 2008 report concluded that the bird distress calls, for the species present during the survey will not adversely affect the integrity of the SPA; that whilst the bird scaring cartridges did cause some disturbance behaviour, most bird species present were not disturbed and those that were quickly reverted to normal behaviour, and that it is very unlikely that either birds distress calls or bird scaring cartridges would affect the reproductive success of birds at the SPA.

8.13. The November/December 2009 report concluded that some species were disturbed by distress calls; especially gull assemblages, but that this occurred only at full sound levels and that bird scaring cartridges clearly disturbed birds on nearby flooded fields, but not on the pits.

8.14. The report recommended that bird scaring cartridges are used only on parts of the airfield away from the SPA. However this presupposes that no birds will need scaring by cartridges close to the SPA, and those concentrations of birds, some of which will be qualifying SPA species on functionally linked land away from the SPA boundary, are somehow less important once they have left the SPA.

8.15. These observations do not seem to be confirmed by the reports in Dr. Allan's proof (para 91) that during the observations by Fera staff, bird control operations put flocks of birds to flight, including qualifying SPA species such as lapwing, golden plover and curlew on fields close to the airport.

Scaring Trial Conclusions

8.16. In my view the conclusions to be drawn from these trials are:

8.16.1. It is not clear why the results of existing bird scaring have not been used to inform the results of bird scaring on the airport. While formal trials are necessary to record the effects at defined distances on identified species, existing scaring measures presumably take place all the year round, happen at all times of day and all points on the airfield and could record effects on nearby birds (as was done by Fera staff), including how quickly the birds return after scaring operations and what species are involved.

8.16.2. The trials took place on two days in June, two in November and one in December, with sound sources from effectively six locations. In the event that enhanced bird scaring was needed for the extended airport, such activities would take place all the year round, at locations all over the airport, throughout the day and presumably after dark.

8.16.3. Given the range of variables in relation to weather conditions, the species of bird present, the times of day and night, the seasons, other sources of disturbance including aircraft and the location of the bird scaring activities on and off the airport, these trials, are in my view, inadequate on which to base any firm conclusions. This view is supported by the observation that birds of the same species either showed no response, or reacted by flying away at different times, (e.g. curlew were disturbed in one trial at 1000m but not in another at 500m and common and black-headed gulls flew off from a field 500m away and did not return on one occasion, but on another occasion, at 300m they took off and then returned shortly afterwards). The responses of birds can vary, perhaps depending on the prevailing weather, other sources of disturbance or the condition of the birds and their activity at the time e.g. feeding or roosting. Trials would be needed in my view over at least a year and in every month, at different times in daylight and darkness and in different conditions before any firm conclusions could be drawn on the full effects of an increased scaring programme.

8.16.4. The use of bird scaring cartridges was shown to cause disturbance to a wide range of species, including ducks, waders, herons and egrets, gulls, stock doves and starlings at 500m, disturbed oystercatcher and curlew that were on a field 1000m away, and gulls over Greatstone also about 1000m away. Greatstone Village (although this was at maximum amplitude of distress calls).

8.16.5. This suggests that the effects of the bird scaring could extend well beyond the airport boundaries. Many species which occur in important numbers at Dungeness either as wintering or breeding species were not present in the test area on the days of the test, and therefore their reactions could not be recorded. These include a number of wader species, other waterbirds and raptors.

8.16.6. Birds on the water seem to be more resilient to the sound of scaring cartridges than birds on fields, including many species which pose the greatest risk of bird strikes, e.g. swans, geese and ducks. A grey heron on a field at 500m was lifted but another grey heron down in a ditch at 100m was not. It is not clear whether and to what extent wildfowl such as mute swans geese and wigeon on islands, fields or other habitat which they regularly use, on and off the SPA will be affected.

8.16.7. Any large concentrations of species that are unaffected by more distant scaring operations close to the airport, could pose a threat if they lift into operational air space, either because they fly to other feeding or roosting locations or are disturbed by other activities, e.g. farming operations, walkers, bird-watchers, or by raptors such as harriers or peregrines, which are regularly seen throughout the year on and around the airport. If such movements are at all common (and at present the applicant has not indicated that it keeps full records of such concentrations of birds on fields around the airport) only by moving scaring activities out of the airport and onto the adjoining land could such measures be effective in dispersal

8.16.8. The recorders noted the reactions of the birds they could see. However, the reactions of grey herons on one occasion and also the cattle egret suggest that birds in this group may be easily disturbed. A closely related species the bittern, is a shy bird of reedbeds, (a habitat that is found around the fishponds next to the airport); a qualifying wintering species in the proposed revised SPA and a breeding species on the RSPB reserve in 2010. Bitterns could be disturbed by bird scaring activities.

8.16.9. Although nesting herring gulls were not put to flight by the scaring measures, this species is known to be highly resistant to many forms of disturbance. The conclusion from the June trial that “It is highly unlikely that either the bird distress calls or bird scaring cartridges would affect the reproductive or rearing success of birds at the SPA in the breeding season” based on observation of herring gulls alone, is both unsafe

and unjustified. Further trials involving other breeding species such as breeding raptors, waders, herons and terns would be necessary to form a conclusion.

8.16.10. The report for June (CD1.33d, Appendix H, pg 85, para 4.1.1) notes that only bird scaring activities are assessed and that a separate report assesses aircraft movements. This is clearly inadequate. The two sources of noise should be assessed in combination, not only because this is required for a proper appropriate assessment, but also because it is obvious that bird scaring activities are likely to be followed shortly afterwards by aircraft landing or taking off, the disturbance from one, being followed by disturbance from the other

8.16.11. Given the clear concerns of the conservation organisations about the potential for disturbance to SPA species from bird scaring, it is somewhat surprising that neither the RSPB nor NE staff were invited to any of the scaring trials as observers.

8.17. The bird scaring trials were too limited to come to any general conclusions. Inevitably there will be considerable differences in the results (as we have seen) due to the large number of variables involved. Additional trials over a longer period through a year (to cover a fuller range of species and circumstances, including after dark) and with more comprehensive recording (for example, other sources of disturbance) would give a clearer picture. As it is, there is a high level of uncertainty as to the effect that scaring, particularly if it becomes more intensive and moves off the airport as Dr. Allan suggests, will have on the qualifying species of the SPA.

Proposed Airport bird scaring activities.

8.18. Bird scaring activities on the airport are unlikely to be effective in dispersing some bird species outside the airport, including some swans, geese, ducks, gulls and terns. This appears to be recognised by the applicant as Appendix 6 of the Technical Appendices dated December 2009 (CD1.45) contains a number of references to scaring activities off the airport. The draft Bird Control management Plan (CD1.45, pg 3, para 3) states as its aim:

> "*The processes and procedures described in this document are designed to reduce the risk of hazardous bird strikes to aircraft using LAA to acceptable levels, whilst minimizing disturbance to protected bird habitat near to the airport".*

8.19. It is clear from this statement that the applicant does not see it as possible to avoid creating disturbance to the protected bird habitat near the airport, but will attempt to minimise such disturbance compatible with their (understandable) main aim of reducing the risk of hazardous bird strikes to aircraft. The issue is whether such disturbance can be mitigated and whether there will be residual adverse affects following mitigation measures.

8.20. In order to come to a conclusion on this issue, a competent authority would wish first of all, to ascertain where such disturbance measures will take place and what they will be. The Draft Bird Control Management Plan (CD1.45) makes clear that distress calls can be played anywhere on the airport (pg 9, para 7.2.1) and that use of bird scaring cartridges will not be used in off airfield operations (pg 13, para 8.3.2 j). The BCMP also notes that there are no effective distress calls available for many species (this includes swans, geese, other wildfowl, many waders, raptors, pigeons and doves and herons), and suggests using other methods which are unspecified (pg 12, para 8.2.1.i).

8.21. However it is anticipated that bird scaring will also take place off the airport. For example, pg 3-4, para 5.3.1) includes to "organise, supervise and undertake control/dispersal action as necessary at breeding, feeding and roosting sites on and off the airfield" in the duties of the Bird Control Coordinator (BCC). Bird Control operatives are to undertake "active dispersal of birds from the airfield and its immediate environs", and the operating area refers (pg 9, para 7.2.2) to "birds may be dispersed from adjacent fields" while under Special Operations (pg 10, para 7.8.1) it is noted that "bird control activities may take place…..well beyond the airfield boundary". Only in 7.2.2 is an actual distance mentioned where it notes that" it is often possible to clear flocks of gulls, corvids and grassland plovers from fields up to 300m from the dispersal point". However, nowhere does the BCMP give clear guidance as to the distance from the airfield over which active dispersal activities will be confined, and there is therefore no way of judging the effect these activities will have on the qualifying species of the SPA.

8.22. Those carrying out the scaring operations will not know whether they are disturbing species other than the target species, either of which may or may not be a qualifying species under the international designations. For example, para 8.2.1 j) notes that starlings react less well to distress calls than other species and may need to be pursued as they fly away and re-alight. The main concentrations of starlings are found roosting in the reedbeds of the RSPB Reserve, (with up to 45,000 birds recorded in 2000 although numbers are currently lower), and the main concentrations in June, July and August. At this time of year there are still other species

breeding in reedbeds including marsh harrier, bittern, water rail, little grebe bearded tit and Cetti's warbler, all of which are either qualifying species, part of the species assemblage or mentioned within the SSSI designation. So scaring starlings will disturb other breeding birds, which could cause nest desertions, interruptions in feeding activities by adults to unfledged or fledged young, panic movements, particularly of young birds, possibly making them more vulnerable to predators, and disruption of territorial and other activities.

8.23. This could lead to a reduction in feeding rates to nestlings and resulting lower productivities from fewer fledged young and greater nest failures. These effects will be even more acute during the hours of darkness when bird patrols will still be active so long as the airport remains open (pg 9, para 7.3.1).

8.24. It is to be noted from the above that a distinction is made between dispersal and control, and that the management plan contemplates the shooting of hazardous bird species from within the airport itself and the surrounding area and the removal of nests and eggs when non-lethal measures prove ineffective. The plan undertakes to consult NE and the RSPB before undertaking such control, and for the special operations, agrees to coordinate with local landowners. As far as I am aware no approaches to the RSPB have been made, and I have seen nothing that suggests that local landowners (including the RSPB) have been approached. The importance of this issue is that the applicant is contemplating having to prevent or control the nesting of hazardous species in the vicinity of the airfield, or to shoot individuals or groups where other measures fail, even though these may be species for which the SPA is designated.

8.25. Hazardous species have not been defined. If birds such as marsh harrier, Mediterranean gull or bittern were deemed hazardous, would the airport close to commercial passenger jets or seek permission to carry out control measures? In order for the appropriate authority to carry out an appropriate assessment the applicant needs to be clear now as to what actions it will take if SPA, pSPA, pRamsar or protected or endangered birds were to become a hazard to aircraft at Lydd airport.

8.26. The Plan also provides that the Bird Control Coordinator (pg 4, para 5.3.1 e) will monitor habitats on and around the aerodrome, develop appropriate mitigation measures and make recommendations to the Airfield Operations Manager. However, it is not clear from this,

where the off airfield operations will take place, what they will be, who will give final consent, what species will be affected and what mitigation measures are proposed, if any.

Concerns of the Proposed Airport Scaring Activities

8.27. There are concerns that:

8.27.1. Scaring will affect SPA qualifying species off the airport (this has already been shown by the bird scaring trials)

8.27.2. Non-target species, including SPA qualifying species will be disturbed by scaring activities on the airport.

8.27.3. Scaring activities off the airport could also cause disturbance to SPA qualifying species but the description by the applicant of the nature and extent of such activities are ill defined and uncertain. The results of the three bird scaring trials are not sufficiently clear to offer any degree of certainty.

8.27.4. There has been no assessment of bird scaring activities after dark nor any detail as to what these might entail.

8.27.5. That no assessment of bird scaring activities in combination with other sources of disturbance has been carried out.

8.27.6. That the resilience of some species to scaring activities will result in unacceptable methods to resolve the issue such as shooting.

8.27.7. If all other methods fail, there could be pressure from the airport authorities to obtain licences to destroy the nests or shoot protected or SPA qualifying species.

8.27.8. Bird scaring activities could temporarily or permanently adversely affect part of the SPA, by effectively sterilising part of the European site. Once an extended airport is consented, public safety becomes paramount and there is no present means of knowing what the full effect on the SPA species will be.

8.28. In my view, the level of uncertainty with respect to the effects of bird scaring is such that it is not possible for the appropriate authority to conclude that there will be no adverse affect on the integrity of the SPA, pSPA and pRamsar from these activities. The results of the trials are uncertain and it cannot be concluded from these that there will not be unacceptable disturbance to the designated sites. Nor is it possible to conclude that such operations will not damage the SSSI interests.

8.29. Scaring and other measures could deny birds important feeding and roosting sites around the airport, resulting in a reduction of populations with less resources, and could have direct affects on birds on and off the airport in terms of reduced breeding productivity and lowered winter survival. The information supplied by the applicant on future scaring and other control methods is inadequate for an appraisal of the effects on the qualifying bird species and their habitats to be made.

9. SAFEGUARDING

9.1. A description of safeguarding is included in the Report 2008 (CD1.33d, pg 15 and described in more detail in Appendix D, pg 63). The potential effects of safeguarding on the future habitat management on the RSPB Reserve has been summarised by Mr Gomes (see paragraph 10.6). I shall therefore concentrate on the potential affects of safeguarding on the SPA and on areas of land which are, or could be, functionally linked to the European site.

9.2. I have already drawn attention to the failure by the applicant to fully investigate the ornithological links between the SPA and relevant parts of Romney Marsh inland, which should have included all those parts of the safeguarding zone to a distance of 13km from the airport, both by night and day.

9.3. Annex 14 of the Convention on Civil Aviation (CD12.7) states that "when a bird strike hazard is identified at an aerodrome, the appropriate authority should take action to decrease the number of birds constituting a potential hazard to aircraft operations by adopting measures for discouraging their presence on, *or in the vicinity of* an aerodrome" (my italics). CAP 772 (Introduction Para 4), says in relation to Annex 14 that "*in the vicinity of* is taken to be land or water within 13km of the aerodrome reference point". It then goes on to say (Chapter 1 Para 2.2) that "For aerodrome operators, the emphasis should be to minimise the presence of flocks of birds on, or in the vicinity of, the aerodrome as much as possible".

9.4. Guidance from the Airport operators Association, supported by the Civil Aviation Authority, on safeguarding of aerodromes (Advice note 3 d) Water) tells us that "Where water features are absolutely necessary, measures to reduce the ecological diversity of water features and minimise their usefulness to waterfowl should be adopted".

9.5. It is clear from the above that the recommendations on safeguarding aerodromes are in direct conflict with the objectives for managing sites designated for their bird populations and that if these applications are granted, it seems inevitable and logical that the applicant would be seeking at every opportunity to reduce numbers of potentially hazardous birds, many of which are qualifying species of the SPA, pSPA and pRamsar sites, both within the designated sites and in the functionally linked farmland within the surrounding area.

10. AIRCRAFT NOISE AND VISION

Introduction and effects of noise on birds

10.1. I have relied on the relevant literature in reviewing noise effects in this section, as most research has been carried out in the United States, much of it on the effects of military jets and helicopters on species which are either scarce, or do not occur in the United Kingdom. It is clear that this is an area of research where there are substantial differences in the impacts in different locations and on different species, with many authors underlining this by pointing out that care should be taken in extrapolating their results in circumstances elsewhere. In most studies, the noise measurement used is L_{max} (the maximum sound pressure level recorded). This represent the highest noise level per event, rather than sound averaged over a period. In other words this represents the loudest noise made by an overflying aircraft rather than the noise made by a number of aircraft averaged over a longer period of say 16 hours.

10.2. The affects of noise and vision (for example a plane flying over, or a shadow moving over the ground) cannot easily be separated with most studies combining the total impacts for assessment without attempting to unravel the contribution of different effects. Exposure to visual stress will also vary with, sunlight, precipitation and vegetation. Moreover, the larger size and different shape of the jet aircraft that are proposed be used at Lydd Airport if the applications were to be successful could have a greater visual impact than the smaller aircraft currently in use. Much of Dungeness is relatively flat and the habitats are either open water

or sparsely vegetated shingle and therefore visual stress is likely to play a greater part in these open environments than in more topographically and vegetationally complex biotopes.

10.3. Furthermore, sound will bounce off hard surfaces rather than being absorbed in vegetation, another consideration on a site where much of the surface consists of bare or poorly vegetated shingle. The approach taken in the ES and other documentation has been to combine the effects of noise and vision, (although visual stress is rarely mentioned), as without careful experimentation it is not possible to separate these two effects. However it should not be forgotten that when discussing noise, visual effects could also be playing a significant part in the overall impacts.

10.4. The effects of noise on birds can affect them physiologically, can impair hearing and mask their communications. Measuring physiological stress has used a surrogate measurement such as heart rate (Harms *et al.,* 1996). Usually, the physiological stresses have been inferred from the responses of the birds, stopping feeding, raising their heads, alarm calling, walking, swimming or flying away from the noise. Further signs of stress can occur after the disturbance has ceased, for example taking time to resume feeding or other normal activities such as courtship, increasing feeding rates or a change in feeding behaviour e.g. more night time feeding (perhaps to try and compensate for the period when feeding was disturbed), or indulging in greater or longer bouts of agonistic behaviour than in an undisturbed situation.

10.5. Breeding birds generally seem to be more resilient to aircraft noise than wintering birds, although they are probably more vulnerable to disturbance during courtship and nest building than later in the breeding season (Drewitt, 1999). There are conflicting reports of the reactions of colonial breeding birds to aircraft. With some studies reporting a high degree of habituation to regular overflying and others showing panic responses leading to wholesale loss of chicks or eggs (Drewitt, 1999).

10.6. Birds rely heavily on vocal communications, not only, by singing to establish and retain territories and attract a mate in the breeding season (and for some species to maintain winter feeding territories), but also to keep in contact, signal an approach to the nest with food (by adults), beg for food (by young) or to exchange nest guarding or incubation duties, to warn of the approach of a predator or deter a competitor for food or other resources.

10.7. The effect of human induced noise can be to mask these vocal communications, so that birds are less able to communicate. This effect can be inferred by the responses of the birds, with studies showing changes in singing behaviour (a greater tendency to sing at night for example) changes in sound frequencies of song or an increase in song amplitude e.g. (Brumm, 2004; Fuller, Warren & Gaston, 2007; Patricelli *et al.*, 2006)

10.8. Calls and songs are likely to have evolved to reduce the chances of eavesdropping or location fixing by predators, with such protection mechanisms being reduced if songs or calls are changed. Changes in song frequency or amplitude can also result in energetic costs to the bird. It has also been shown, for example that increased noise levels can reduce pairing success and weaken pair bonds (Habib *et al.*, 2007; Swaddle *et al.*, 2007).

10.9. Virtually no studies have been carried out on the effects of noise disturbance during darkness or on night time roosting birds. As one of the observed characteristics of daytime disturbance by aircraft has been a response by birds before the aircraft has appeared or been heard by an observer (e.g. Trimper *et al.*, 1998), it might be expected that birds will hear approaching aircraft earlier, and may be disturbed for longer, when ambient noise levels are lower at night.

The applicant's case

10.10. The documentation in relation to aircraft noise ES Chapter 11 (2006, CD 1.17) and revised Chapter 16 (March 2009, CD1.41a) , Appendices 6.1 and 6.2 (SEI October 2007, Volume 3A, CD1.23i) and Volume 4 A statement to inform (CD1.25a) and Appendix 9 (CD1.23i, SEI2007, Volume 3), trial flight essentially puts forward three arguments[9]:

10.11. That the noise from departing aircraft are already at high levels and that under the development proposals there would be no increase in peak noise to the SPA in the south and only a moderate impact to the SPA to the east (App. 6.1 & 6.2, CD1.23i).

10.12. A literature review shows that birds can tolerate noise levels up to 80-90 dB9(A) or higher.

[9] Chapter 16 of the 2006 ES for the runway extension, Appendix 15.1 of Volume 3B of the 2007 Supplemental Information and Volume 7, Appendix 8 of the 2008 Supplemental Information have since been superseded by Chapter 16 of the ES dated March 2009 (the revised Chapter 16).

10.13. Other airport case studies suggest that airports with much heavier volumes of air traffic than LAA lying adjacent to SPA and other bird conservation sites are not reported to significantly affect bird populations present.

Measured noise levels

10.14. Ambient noise levels were investigated in February and March 2005 and are described in Appendices 16.2 (CD1.41a, pg 80), Figure 16.1 (pg 47) and Annex C of revised Chapter 16 (pg 106), although it was made clear that this chapter did not assess the noise impact on birds. Two monitoring methods were used. In the first unattended monitoring took place for periods of at least 48 hours at four locations close to the airport and in the second, later tests, attended monitoring took place at ten locations. All locations for monitoring were chosen to represent centres of human population surrounding the airport and none were on the SPA, the pSPA or the pRamsar site. The results are averaged over various time periods rather than presented as maximum noise levels or sound exposure levels, (SEL) which combine maximum noise with duration, both more usually used to record effects on wildlife. Moreover, as the time periods presented for the attended and unattended tests are different, the results cannot be compared.

10.15. Ambient noise levels were generally relatively low. For the four unattended sites noise levels ranged from $L_{Aeq\ 1\ hour}$ 40-62 by day and 30-65 by night. For the attended sites the range was $L_{Aeq\ 10\ mins}$ 40-72 for day time and 35-54 for night time. The highest noise levels for both samples were recorded at sites close to the Dungeness Road and off the end of the runway. It is not clear however whether the higher noise levels recorded were due to traffic on the road or aircraft taking off or landing. Appendix 6.1 (SI to SE, October 2007, CD1.23i)) concludes in the executive summary that "the SPA already receives peak noise levels from departing aircraft of 90 dB(A)". It is apparent that there are no BAE 146 or B737 jet aircraft currently using the airport from the raw fleet mix data for 2005 given in Appendix 6.4 to the Ornithology report. It therefore appears that this statement on noise is derived from modelled data using a baseline of the 300,000 passengers that the airport is licensed for, not the baseline of the aircraft that actually do use the airport, and as such it is highly misleading as a measure of future noise increases.

10.16. The unattended tests recorded a maximum L_{Aeq} just over 65 dBA at Holmefield Farm to the south of the existing runway and just over 60 dBA to the east at Seaview Road, the closest

points to the SPA (Annex C to the Report 2008, CD1.33d) both considerably lower than a peak of 90dBA. The data recorded from the attended noise tests at sites to the south and east of the airport suggests that currently the background noise environment is much lower than 90dBA, with one of the conclusions of the study stating that "Current airport activity does not significantly influence the existing noise climate" adding in relation to light aircraft that " the noise from the aircraft was surprisingly inaudible" (Technical Appendix 16.2 revised Jan 2009, CD1.41a))". The results from these attended ambient level measurements are not presented as L_{max} or SEL levels and no details are given of traffic levels or aircraft movements during the times the measurements took place. The results of the unattended noise measurements are presented within different time scales to those in the attended tests, making it difficult to make a comparison between the two.

10.17. The other measured trail was of a Boeing 737 trial flight on 24th February 2007. Measurements were carried out at three locations, at Dunes Road to the north-west of the airport, at Lydd Cemetery in the centre of Lydd, and at Greatstone Primary School to the east of the airport. Measurements were recorded as SEL levels. In the revised Chapter 16 Table 16.8, dated March 2009 the unladen departing aircraft over Lydd Cemetery at 1000ft is generating a sound of 91 dB at 1000 ft (305m). The noise level was more than that the predicted by the modelling, which, it was suggested, was due to the predicted values being from a more modern model of the aeroplane.

10.18. The purpose of the measurements and trial was to consider the effects of noise on adjoining urban and rural human communities so it is unsurprising that the results do not allow any conclusions to be drawn about significant noise effects from planes taking off with respect to the SPA. The ambient monitoring points were away from the designated sites and did not therefore reflect with any accuracy the noise levels experienced there. In the case of the flight trial, the Cemetery measuring point was the closest of the three measuring points to the SPA, although it is some 1830m away from the edge of the SPA.

10.19. What is surprising, however, is that given the importance and proximity of the European designated sites, the applicant did not carry out any ambient noise measurements on or around the SPA, it did not take the opportunity to site a noise meter on the SPA for the aircraft trial, nor were there any observations on the effect of the 737 take off or landings on the birds in the surrounding area. It did not even advise their neighbours that the trials were to take place, which would have allowed the RSPB and others to observe for themselves what

effects there were on birds or other wildlife. The trial report gives neither information on weather conditions during take off, including wind speed or direction, nor information on other sources of disturbance. That the sound recorded at ground level was over 90 dBA when the aircraft was flying at 1000 ft and nearly 2 kilometres from the edge of the SPA, is perhaps the most telling statistic from all the measured noise level data. It seems inconceivable that it was not producing considerably more noise as it left the ground not far from the SPA boundary.

10.20. The ES (Table 16.21 of revised Chapter 16, CD1.41a)) gives a range of 99-110 SEL (dB) for the more modern 737 within 200m of the ground, and on take-off, and fully laden with passengers, luggage and fuel, an aircraft could be expected to be at the upper end of that range. In this connection it is also worth noting that, the applicant has increased its assumptions of stage lengths for B737s, A319s and BAe 146s from 500 nautical miles to 1,000, which would presumably require higher fuel loads requiring more engine thrust at take-off and therefore creating higher noise levels. With respect to the aircraft trial the ES (revised Chapter 16, para 16.4.13) makes the point that it is expected that more modern, and quieter aircraft than that used in the trial will be used on the expanded airport, but there are no guarantees that more modern aircraft will be used if the airport expands.

Modelled noise levels

10.21. The modelled noise levels of most value in assessing the effect on wildlife are either L_{max} .Most of the modelled figures give sound contours averaged over a year (Chapter 16 of the ES Figures16.2-16.5) or 16 hours (revised Chapter 16 in March 2009, numbered 16:1-27). The latter have been supplied without any background context on the maps (unlike all earlier maps) None of these are of much value in assessing the effect on wildlife, where the intensity and length of peak noise levels of individual aircraft are those of most relevance in relation to disturbance.

10.22. Table 16.21 of revised Chapter 16 gives a range of expected noise levels for a Boeing 737-800 with between 99-110 dB at 200ft to 88-104 dB at 1000 and 82-97dB at 2000 ft. The trial of the Boeing 737-300 gave a noise level of 91 dB(A) at 2000 ft (Appendix 6.1 Table 1) This noise level of 91 dB(A) was recorded at ground level some 1500m away from the end of the runway at a point where the aircraft had gained considerable height. At the end of the runway it would be just above ground level and only some 500m away from the edge of the SPA. Future

aircraft taking off will presumably be fully laden resulting in an increased thrust from the engines on take-off which will produce more noise. Furthermore, those aircraft flying out will be turning soon after they leave the ground to avoid the no-fly zone around the firing range and nuclear power station, so that their engine exhausts will be pointing directly at the SPA, producing a noise level, even for the quieter Boeing 737-800 of up to 110dBA at 200ft.

10.23. The modelling has failed to include those situations when the firing range is closed and aircraft can fly out south in a direct line with the runway. It is anticipated that this will be possible after dark and possibly at weekends and Bank Holidays. It has been found that the firing range is not active before 8.00 and that the route for aircraft to the south could be available for up to 37% of the time, and the applicant has stated that it will adopt the southerly route whenever the firing range is inactive (revised Chapter 16). The only modelling of the noise contours from Scenario 3 (use of the southern route) is shown in Figures 16.21-16.27, modelled only on a 16 hour basis. No L_{max} modelling is given and in the latest map versions the background detail is omitted making them almost meaningless. The southerly route for aircraft flying in and taking off across the firing ranges, will take them much closer at a low altitude to the existing SPA and directly over one of the pSPA water bodies as well as above a substantial part of the pRamsar site.

10.24. The existing licence for the airport is for 24 hours, and current proposals suggest that there be a formalised agreement for no night flying. However, as daytime flying has been defined in revised Chapter 16 of the ES as 07.00-23.00 this will include times which would be after dark, particularly in winter when it can be getting dark by 16.30. Whilst the human population may still be active, many birds will either go to roost at dusk or will be moving out to feed at night after this time.

10.25. The ambient noise levels at night are lower than daytime, usually by about 10 dBA, and therefore aircraft noise can be more intrusive than during the day It can also have different effects on birds that roost by day and feed at night and vice versa. High noise levels which disturb birds could make them more vulnerable to night time predators, and possibly cause panic and mortality or injury through collisions, of species which normally roost at night and whose night time vision is poor. In addition to noise, night time flying will involve the use of bright lights, particularly on landing which will add to the disturbance effects. None of these issues have been considered in the assessments prepared by the applicant and no night time noise modelling or measurements of aircraft noise have been carried out.

10.26. A further issue which has not been considered fully is the flying of helicopters, which, it is generally agreed can cause more disturbance to birds than fixed wind aircraft (Komenda-Zehnder, Cevallos & Bruderer, 2003; Smit & Visser, 1993). It is noted that a proposal to approximately double the number of helicopter flights to 2000 by encouraging a heli-charter has been dropped due to the cessation of trading of the company concerned. Although there are no plans currently to pursue a heli-charter at the airport, this does not prevent such plans being revived at some point in the future and the applications continue to include it. Figure 16.28 to revised Chapter 16 gives a suggested flight path area in a north-easterly direction. This could be the best route with regards to avoiding potential effects on designated sites and birds, but no assessments have been carried out in relation to birds from the SPA that may feed on this area by day or at night or on the effects that helicopter flights may have on the pSPA to the west of Lydd which is less than 700m away from the proposed flight path.

Summary on modelled and measured noise

10.27. It has been shown in numerous studies that aircraft noise can impact birds, but no attempt has been made by the applicant to quantify this in relation to the birds of the Dungeness designated sites or the associated functional areas of Romney Marsh, even though the noise trial of a Boeing 737 showed that the noise level exceeded the range of 80-90 dB(A) given by the applicant as a threshold for aircraft disturbance to birds at a height of 2000ft and 1500m from the SPA.

10.28. No serious attempt has been made to investigate the likely noise levels on the designated sites, with all measured assessments aimed exclusively at the noise effects on nearby human settlements, even though it would have been sensible and easy to include other areas in the measurement strategies. Almost all the modelled figures have been presented in ways which do not allow sensible appraisal of the effects on wildlife.

10.29. It is proposed that some 4 flights in 10 will go out to the south across the firing range, a situation which was not envisaged in earlier scenarios. The measured ambient noise levels and measured 737 aircraft trial were carried out at a time when all flights were expected to turn to the left and the right on take-off. On the information available it is not possible to assess the potential effects of these flights close to the RSPB reserve and over parts of the SPA, pRamsar and SSSI on feeding, roosting or nesting qualifying birds or assemblages of birds either on these designated sites or associated functional areas.

10.30. The actual noise levels recorded from the test of a 737 aircraft landing and taking off are the only measured levels to have been taken of aircraft noise and were higher than those given by the models for the same location.

10.31. The evidence does not show that the claims by the applicant that existing noise levels are equivalent to those predicted if the airport development goes ahead.

10.32. No assessments have been made of impacts of aircraft noise after dusk and before dawn.

10.33. Given these uncertainties, the differences between the actual and modelled figures for the only single measurement available, and the absence of any measured data for the designated sites, it is clear that it is not possible, based on the measured and modelled noise data provided, to conclude that there will not be an adverse effect on the integrity of the SPA/pRamsar site from the noise and visual effects of additional jet passenger aircraft.

Comparator sites

10.34. The applicant has produced a list of sites, (Appendices 6.1 and 6.2 SEI October 2007, CD1.23i) which are described as case studies and consist of a list of airports with the types of aircraft found at each and the name of neighbouring bird conservation areas. The known impacts are listed as noise from various types of aircraft and in one case, air ordnance. In each case it is claimed that the SPA status has not been affected.

10.35. This list is supported by appendices, which briefly describe the location and topography of each area and lists the status of qualifying species or assemblages of species for which each site was designated as an SPA. For the Ribble and Alt Estuaries site, Belfast Lough and Lough Foyle, the site accounts include a Google map dating in each case from 2007.

10.36. The Summary to Appendix 6.1 and 6.2 (SEI October 2007) says “Other airport case studies suggest that airports with much heavier volumes of air traffic than LAA lying adjacent to SPA and other bird conservation sites are not reported to significantly affect bird populations present”.

10.37. No studies, reports or analyses are given, quoted or referenced on the affects on the bird populations and whether or not these are significant, other than the unreferenced report on the cliff nesting seabirds at Cape Wrath.

10.38. In the examples given, the boundaries of the SPAs are not shown on a map or aerial photograph and there is no information mapped or otherwise, on the roosting or feeding concentrations of wintering wildfowl or their flight lines, or, where relevant, on breeding bird colonies. No information mapped or otherwise is given on the flight paths and altitude relative to the SPAs of aircraft arriving or leaving airports, on their noise levels or flight frequencies. There is no information on airport management and scaring activities and other disturbances which might act in combination with these. There is no information on distribution and trends in numbers of wetland birds on the SPA sites either before or after the commencement of, or increase in, flying activity, or change in type of aircraft flown, nor whether distribution or numbers have been affected by airport activities and aircraft flights.

10.39. In short, the details given in the case studies do not support the conclusions in the summary and offer little relevant comparison to the situation at Lydd, other than to point out that there are concentrations of wetland birds in the vicinity of some other airports.

10.40. As Dr. Allan points out, however, at other airports, in attempts to control bird strike risk, airport authorities have prevented enhancement of a nearby SPA through safeguarding, increased bird control intensities, preventing birds feeding close to the airport, and sought permission to cull an SPA breeding species which was seen to pose a risk to aircraft.

The applicant's noise References

10.41. There are a considerable number of references on the effects of aircraft on birds. Many of these date back to the 1970s and 1980s, (and therefore relate to aircraft which may no longer be in service) and a high proportion have been generated by concerns over military aircraft and American bird species in the United States. There is no information on the effects of aircraft noise and movement on a large number of bird species, many of which are found on the SPA, most studies are of over-flights rather than takeoffs or landings, and there are no studies of which I am aware of the effects of night flying on feeding or roosting birds.

10.42. In this section of my evidence, I will first of all give a general description of the factors which cause disturbance to birds from aircraft, and the range of effects. These conclusions have been taken from a general assessment of the literature and a number of reviews. I will then go on to discuss some of the studies mentioned by the applicant in its submissions and some other studies which I consider relevant.

10.43. The effects of aircraft on birds will depend on a range of factors. Variables include the type of aircraft, rotary or fixed wing, number of engines, shape, colour, size, sound and frequency of flights. Also relevant are whether the aircraft is flying over, descending, ascending, cruising or turning, approaching or leaving and its height and speed. The effects on birds will depend on species, time of year, whether nesting (colonially or otherwise) or exhibiting other breeding behaviour, whether roosting, feeding, on water or land, whether a solitary or flocking species and if the latter, flock size. The level of impact and response may also be dependant on weather conditions, vegetation, other forms of disturbance nearby and the extent if any, to which birds have become habituated to a particular source of disturbance (habituation), or react to an unusual disturbance event by then over-reacting to other, normally less disturbing events (facilitation).

10.44. Disturbance can affect birds in a range of ways. Most obviously they can stop whatever activity they are doing, say feeding, and fly away to another location. However, their reaction to a perceived threat by flying off may be a decision by a group of well fed birds that see the threat from a potential danger e.g. an overflying aircraft, as being greater than the threat of starvation by stopping feeding. In hard weather, when some birds may need to feed almost continuously during certain times (daylight or low tide for example), they may stay where they are, because the perceived danger from an overflying aircraft is less than the risk of starvation if they leave their feeding grounds. It has been shown, for example, that Brent geese avoid highly disturbed sites when food is abundant (early in the season), but when food is limited they will use disturbed sites (Owens, 1977a). This illustrates the importance of not assuming that because birds remain on a site despite high levels of disturbance, that the disturbance is having no effect.

10.45. Effects from disturbance can include birds taking flight, changing their feeding behaviour, or being more vigilant. There can also be physiological impacts, such as changes in the levels of stress hormones or changes in heart rate, effects which are not apparent to an observer.

10.46. Response to disturbance varies between species and between individuals of the same species. Particular circumstances, such as habitat, flock size, cold weather or variations in food availability will also influence birds' abilities to respond to disturbance and hence the scale of the impact. Birds may also modify their behaviour to compensate for disturbance, for example by increasing the time spent feeding, but with high levels of disturbance possibly causing energy deficits that cannot be overcome by modifications in behaviour resulting in overall harmful energetic consequences (Belanger & Bedard, 1990).

10.47. Birds can become habituated to particular disturbance events or types of disturbance. The ability to habituate varies by species, social organisation, environment and season. The frequency of the disturbance event can influence the extent to which birds can become habituated, and therefore the distance at which they respond. Habituation is probably most common in situations where there is a more or less constant exposure to a particular form of regular disturbance, and is therefore less likely in situations where there are continual arrivals and departures among the bird population. Habituation may differ between species or between individuals of the same species, perhaps depending on their prior experience, and habituation is less perhaps, likely in large flocks.

10.48. Appendices 6.1 and 6.2 (SEI October 2007, CD1.23i) both give the same list of references used in the literature search carried out for the applicant. Of the 20 references given, one, by Weisenberger et al (1996) (para 3.15 Appendix 6.2) is wrongly described as a study which noted that in a range of bird species, disturbance response decreased with increased exposure (of sound levels). In fact Weisenberger's study was exclusively on desert ungulates (desert mule deer and mountain sheep) and did not examine any aspect of bird ecology or behaviour. In the same paragraph, a paper is described as authored by Craig *et al*., (1997); this should be Harms et al (1997). The paper described in the references by Bowles, Aubrey and Kull, is by Bowles and Aubrey only.

10.49. There appear to no papers that directly reflect the situation at Dungeness. Here, the proposals will involve civilian jet aircraft taking off and landing close to an area with wintering raptors, waders and wildfowl, breeding wildfowl and seabirds and breeding red-listed birds.

10.50. The following section looks in slightly more detail at the evidence available from the papers cited in Appendices 6.1 and 6.2 (SEI October 2007) together with a few other relevant papers. I have not included in the reference list attached to this proof the papers listed in Appendices

6.1 and 6.2 as I presume the applicant will produce these for the Inspector. Where I have included additional references I have included these and noted that they are my references in the text.

10.51. The paper by Bowles & Aubrey 1990, is described in the review as finding that aircraft noise only affected the reproductive success of raptorial birds at levels greater than 95 d(BA) and distances less than 150 metres. What the review does not point out is that this distance and noise level are both entirely hypothetical, that they have been put into a preliminary mathematical model based on a range of previous papers, many of which, (as the authors point out) have serious shortcomings, and that the model will be tested and amended to improve the empirical estimates.

10.52. The study mentioned in the review by Delaney et al (1999) on the effect of helicopters and owls seems to have little relevance to noise levels at Dungeness where the main concerns are centred on civil jet aircraft and not helicopters and where the birds are open habitat species. Spotted owls are hole nesting species of conifer forests and like other owls, have markedly different hearing to other birds. The other study noted in the review on a bird of prey is by Trimper et al (1998) on ospreys. This examined the effect of military jets flying at a distance of 1.39-4.63 K from nesting ospreys with median sound levels of 62-89 dBA, and at these levels and distances the study could find no significant affects on the behaviour of the adults, which returned to nest the following year.

10.53. In a study of gyrfalcons, Platt (1977) (in Ellis, 1981) found no disturbance effect on breeding falcons from helicopters flying at a distance of more than 160m and that no birds gave up their nesting attempts. However, he also found that all five nesting sites were abandoned the following year (in my reference list).

10.54. At Dungeness the most important breeding raptor is marsh harrier with a population of national importance in the area. It is a species on which no aircraft disturbance studies have been carried out, but is particularly intolerant of human disturbance. Marsh harriers as well as hen harriers are found at Dungeness in winter, but the effects of aircraft noise on this group of raptors is unknown.

10.55. A paper referenced in the review summarising the research on military aircraft and duck species in North Carolina, (Fleming et al 1996) concluded that waterfowl spent very little time

responding to the presence of aircraft, and there were high numbers in the exit and approach vectors for training aircraft. It is suggested that either wildfowl do not perceive aircraft as stressors or become habituated to aircraft activity. However results suggested there were inter-specific differences in behavioural responses and habituation rates between species. Propeller driven aircraft and helicopters were more likely to draw a response than military jet aircraft. In nesting black ducks, Fleming and his co-workers also found that although nest success was similar in noisier and quieter control sites, a cause and effect relationship was detected between aircraft noise and growth and survival rates in ducklings.

10.56. Another study of the effects of aircraft disturbance found that mallard ducklings exposed to higher noise levels weighed less and grew more slowly than ducklings kept in a lower noise environment (Fleming, Davis & Graham, 1996) (in my reference list).

10.57. The applicant's review noted that helicopters were also found to cause more disturbance than fixed wing light aircraft to diving species, pochard, tufted duck and coot on lakes in Switzerland (Kemenda-Zehnder et al 2003). In another diving species, (Mosbech & Boertmann, 1999) (in my reference list) noted that King Eider ducks dispersed by diving when an approaching plane was still 1 km away and the behaviour was more pronounced when the plane was at higher altitudes 2000ft (600m). Flocks began to exhibit a response by alert behaviour of swimming away when the plane was between 500m and 5km away. Avoidance reactions were less in the morning when the ducks forage than at mid day when most ducks rest.

10.58. Pochard, tufted duck and coot can be found at Dungeness but there have been no studies on other diving duck species such as goldeneye or smew, or on diving cormorant or grebes which are also found on most of the pits on the SPA.

10.59. There are several studies in the review references on black duck, a species which is clearly tolerant of high levels of disturbance and quickly becomes habituated to increased levels of noise (Conomy *et al.*, 1998a; Conomy *et al.*, 1998b; Harms, Fleming & Stoskopf, 1997)

10.60. However the first study by Conomy et al (1998a) also found that habituation had not been achieved in wood duck, and hypothesised that this suggested that there were species specific differences between different waterfowl species to habituation.

10.61. In their second study, Conomy *et al*., (1998b) found that disturbance by military jets did not adversely affect time-activity budgets in American wigeon, gadwall and American green-winged teal. Time spent responding to aircraft disturbance ranged from 1.4% - 7%.

10.62. A further duck study noted in the review looked at harlequin ducks in Canada, and found that although the ducks did not seem to respond to military aircraft below noise levels of 80dB(A), there were residual effects with ducks showing increased agonistic behaviour for two hours and decreased courtship behaviour for one and a half hours after a military jet over-flight (Goudie & Jones 2004).

10.63. I could find no research on aircraft noise effects on the most important surface feeding duck at Dungeness, shoveler, and none on adult mallard or pintail, although studies in the US on gadwall, and the related American species of wigeon and teal suggest that the reactions of these species to aircraft noise is limited. Research cited below (Heinen 1986 in Smit & Visser) suggests that shelduck may be affected by aircraft noise.

10.64. The review also summarises findings from a number of papers on Brant geese (US) and Brent geese (UK) (Owens 1977, Henry 1980 & Ward *et al* 1987). These show that Brent geese are put to flight by any aircraft at a height of 300-500 and a distance of 1.5-6km, that they are very slow to habituate to aircraft, and that there are clear differences in their reaction not only to fixed wing light aircraft and helicopters, but also to single or twin engined small aircraft. Canada geese flocks were less affected by aircraft than Brent geese flocks.

10.65. A study by (Ward *et al.*, 1988) (see Appendix IV tab 21), found a strong correlation between aircraft noise and flight response by Brant geese. Wind direction was important for helicopters and multi-engined fixed-wing aircraft, with birds more affected downwind of the aircraft than upwind. The direction of aircraft travel also determined the response with a greater effect from aircraft flying towards bird flocks (≤ 4km away) than flying laterally to flocks (>0.4 km away). The threshold for response by Brant geese to aircraft was estimated at SEL 65 dB(A) or a maximum instantaneous noise of L_{max} 60dB(A). The authors thought this noise response was considerably lower than for some other birds.

10.66. A further study by (Ward *et al.*, 1999) (see Appendix IV tab 22), using fixed wing and rotary wing aircraft, reported that about 75% of Brant and 9% of Canada geese flew in response to over-flights at 4000ft (1219m) and 3 miles (4.8 km) lateral distance. Both species responded

more to rotary wing and loud aircraft. Increasing lateral distance was consistently associated with a lower probability of disturbance. Increasing altitude was a less reliable predictor of disturbance.

10.67. In the applicant's review Davis & Wiseley (1974) found that migrant snow geese flushed (flew away) to fixed wing and rotary wing aircraft flying up to four miles away. Although flushing distances were greater for helicopters, the geese flew for longer and showed disturbance behaviour for longer when flushed by fixed wing aircraft. They also flew further when flushed by large than by medium or small aircraft, and their responses to aircraft were related to size rather than height or noise level.

10.68. Another paper on snow geese (Belanger & Bedard, 1989) found that low flying aircraft were responsible for 45% of all disturbances that caused the geese to take flight (20% of cases) and that aircraft disturbance generally affected the entire flock and resulted in a greatest duration of response .

10.69. Snow geese and Brent geese occur only rarely at Dungeness, but these results may have some relevance to white-fronted geese. Studies have found that Canada geese are more tolerant of aircraft than other species studies. No studies could be found on greylag or white-fronted geese, nor on mute or Bewick's swans, all of which are found at Dungeness.

10.70. Other wetland species that may be affected by aircraft noise on which research is lacking are bittern, grey heron and little egret.

10.71. A survey of the Wildfowl count data during the 1990s in the UK referenced in the review, found that Aircraft were significantly more likely to be recorded as disturbing wildfowl on coastal rather then inland sites (Robinson & Pollitt 2002) and a questionnaire survey in the US (Gladwin 1988) recorded that 98% of installations believed wildfowl were disturbed by low-flying aircraft, with issues including flushing, disturbance and birds departing installations during aircraft noise.

10.72. In another reference in the review, Smidt & Visser carried out a review of visible reactions of birds to aircraft disturbance on the Wadden Sea in Holland and noted that helicopters disturb more frequently and over longer distances than jets. They also suggested that small civil aircraft caused more disturbance than military jets. They found that oystercatchers were

more tolerant of aircraft disturbance than bar-tailed godwits which were more tolerant than curlews.

10.73. However a study by Heinen (1986) quoted by Smidt & Visser, found that jets disturbed birds more often than small civil aircraft with helicopters causing most disturbance. The species which reacted most strongly to disturbance were Brent geese (64-92%), curlew (42-86%) and redshank (70%), with shelduck (42%)and bar-tailed godwit (38%) responding less often. Civil aircraft flying above 300m were least disturbing with greater levels of disturbance as aircraft flew lower. In another area low flying military jets had little effect except on birds which had recently arrived on migration.

10.74. Experiments with a small plane (Glimmerveen & Went 1984 in Smidt & Visser 1993) suggested a single pass had little effect on feeding waterbirds but that a plane passing twice resulted in birds flying away and with only 67% and 87% of the oystercatchers and curlews returning to the feeding area 45 minutes later. A number of other studies recorded disturbance effects to waterbirds from aircraft passing as low as 150m up to 1000m and effects lasting for seven to thirty minutes (Smidt & Visser 1993).

10.75. On the SPA, wading birds in winter include lapwing, golden plover, grey plover, sanderling, dunlin and Knot, on which I can find no aircraft disturbance research. The papers referenced above show redshank, oystercatcher and curlew which all also have important populations on the SPA, all appear to be intolerant of aircraft disturbance. There seems to have been no research on aircraft disturbance on passage ringed plover or whimbrel or on breeding lapwing and redshank all of which are found on the SPA, although lapwings are known to feed and nest on airports.

10.76. Two papers mentioned in the review looked specifically at the reaction of colonial nesting species to aircraft noise only. Brown (1990) carried out a series of experiments using simulated sounds from a propeller float plane on a colony of crested and bridled terns. He set up a loudspeaker some 8m from the birds and played aircraft noise at levels of 65-95 dB(A). The background noise of the sea and the terns was in the range 55-85 dB(A). He found the birds responded with alert and scanning movements at sound levels of 65-70 dB(A), Startle or escape behaviour were only exhibited by crested terns at 90-95 dB(A). There was no indication of habituation by the birds. The authors note that subtle behaviours are shown by the birds at noise levels just above background noise but that their ecological implications

have not been assessed. They also assessed the response of the birds to a visual disturbance (a balloon) and recorded a startle or escape response from 98% of birds in one colony and 10% in the other. In brief acoustic trials on bridled terns it was found that escape behaviours were observed at much lower noise levels than for crested terns.

10.77. Finally, a study near Kennedy airport by Burger (1981) found that herring gulls did not fly up when affected by aircraft noise levels from subsonic civilian jet aircraft with aircraft noise as high as 88-101 dB(A) against a background noise level of 77 dB(A). Large numbers of birds flew up when a supersonic aircraft flew over with noise levels ranging from 101-116 dB(A). Burger reported that several authors have noted that gulls are particularly non-responsive to noise.

10.78. Breeding gulls and terns are found at Dungeness, and although large gulls may be tolerant of high levels of disturbance, this may not apply to the smaller species, such as Mediterranean and black-headed gulls, both important species at Dungeness. The research on terns suggests that the level of tolerance to aircraft disturbance varies between species. No research has been carried out on the species breeding at Dungeness.

10.79. Most studies have been carried out on overflying military jets, helicopters and small to medium sized fixed wing aircraft and in most cases these have been flying overhead rather than taking off or landing.

10.80. In terms of noise levels there are a wide range of observed levels at which birds react, and it is clear that the immediate reaction is not necessarily the whole story, for example behavioural changes may go on occurring for some time after the noise event, breeding birds may abandon disturbed sites the following season and immature birds may exhibit changes in growth rates under higher noise levels. Other studies have shown little or no effects from overflying aircraft.

10.81. It can be seen from the above that the number of species studied is limited, that results are varied and conflicting and that effects of aircraft vary depending on height, distance, levels of noise, direction of flight, aircraft type and weather conditions. The reaction of the birds depends on species, social organisation, whether breeding, wintering and within these, the stage in the breeding cycle or the activity at the time (e.g. whether feeding or roosting).

10.82. Other studies of noise levels, for example from traffic have shown a range of effects from reduced breeding success to changes in distribution or behaviour, linked to far lower noise levels than have been reviewed here. It is clear that the research available on this whole subject area is not yet sufficiently comprehensive or definitive to come to firm conclusions. This is in line with the summary from paras 3.1.20 and 3.1.21 of Appendix 6.2 (SEI, October 2007, CD1.23i) concluding that much caution should be used when applying the literature to impact analysis, that studies have not conclusively shown that it is the absolute level of noise that is directly linked to the effects observed and that the bird species under consideration at Lydd Airport have not previously been the subject of bespoke research studies.

10.83. The applicant has accepted that there is a paucity of data on the impacts of the proposed runway extension on wintering birds, and has undertaken to fund a research study to further assess the potential for disturbance impacts of increased air traffic movements on wintering birds (Chapter 11 ES paras 11.9.19 & 11.9.20, CD1.17). Whilst this is a commendable initiative, it also implicitly accepts that in the applicant's own opinion, the existing data is not sufficient and there is doubt on the impacts of the extension on qualifying wintering bird species.

10.84. Under these circumstances and taking into account the precautionary principle it is not possible to conclude that the effects of the additional and larger aircraft proposed at LAA will not have an adverse effect on the integrity of the SPA, the pSPA and the pRamsar site.

11. MITIGATION

11.1. The applicant has offered certain mitigation measures which amount to very little. Much of what is proposed is suggested on the basis that future monitoring will guide the need for additional measures. For example the applicant say:

> *"If it can be demonstrated that any of the (SPA listed species) are being negatively affected by aircraft noise, then management intervention should be implemented to reverse this. (It should be noted that other factors may be responsible for any decline in SPA-listed species and these would have to be carefully taken into account)"* (SEI Oct 2007, Volume 3A, Appendix 6.1, pg 12, para 4.2.4, CD1.23i)

11.2. This sentence encapsulates many of the RSPB concerns. The applicant is saying that action would only be taken once damage has been proven, the phrase suggests that the demonstration of damage will need to be presented by others, no indication is given as to who will assess the evidence, the applicant is already putting up a marker that it may contest any damage as not being due to aircraft noise, and quite rightly, as except for single observed and catastrophic events, it would be very difficult to prove damage from a single cause, and no indication is given as to how it would reverse any demonstrable damage.

11.3. The applicant needs to provide enough information for an appropriate assessment to either conclude no adverse effect or that such adverse effect will be fully mitigated before the airport extension is consented. If an adverse effect cannot be mitigated it should provide an adequate compensation package, before the development of the airport. In my opinion, the data provided by the applicant are insufficient for an appropriate assessment to conclude no adverse effect, its mitigation measures are vague and untargeted and it has given no evidence that it has thought seriously about compensatory habitat. Indeed given that it has not collected enough data to predict the likely affects on the SPA and its birds, it is not surprising that it cannot forward a suitable mitigation or compensation package for damage that cannot, from its studies be assessed.

11.4. Such mitigation or compensation would need to encompass damage to both the bird population on the SPA and to the functionally linked land. It should include replacement land for areas expected to be sterilised off the airport that are important functionally to SPA birds and compensatory habitat for any land on the SPA on which there was an expected adverse effect on integrity either as a result of the airport extension, or due to scaring activity or safeguarding. If the applicant was able obtain consent on the basis of the present submissions, the RSPB would expect that further appropriate assessments would be needed on any change to the existing scaring and safeguarding practices that could generate additional adverse effects.

11.5. Chapter 11 and revised Chapter 16 of the ES dated March 2009 includes measures proposed to mitigate for operational impacts including noise. I understand that a revised Table of mitigation measures is proposed to be submitted by the applicant with its proofs (Pinsent Mason letter to NE dated 1st December 2010), but this is not available for comment in this proof.

11.6. The first section of the mitigation proposals in Chapter 11 (ES 2006, CD1.17, pgs 243 to 247, paras 11.9.1-11.9.18) is wholly concerned with measures to reduce bird strikes, such as improving bird scaring, habitat management to deter birds and safeguarding. Under bird conservation there are sections on further research and monitoring, neither of which can be considered as mitigation. Further measures are included in Appendix 16 of Chapter 6 of ES (CD1.17)(unaltered by revised Chapter 16)(CD1.41a, para 16.3.49) concerned only with noise mitigation. As noted earlier in this proof, this is of concern as these effects could cause interruption of normal activities by wintering species with consequent energetic costs, and disturbance to breeding birds resulting in lowered productivity or breeding failure. Proposed measures are:

Taken from Latest Mitigation Measures Proposed

The applicant proposals	My Comments
A long term agreement to maintain and enhance the ornithological value of the airport for wintering birds	Meaningless-The main value of the airport for wintering birds is for hunting raptors such as harriers which will be dispersed by scaring as a bird strike risk
A Biodiversity Action Plan on the Airport for non bird strike risk breeding birds on the airport	The only species of bird likely to benefit and mentioned in the BAP is skylark
To work with CAA, NE and RSPB to ensure safeguarding is not at the expense of present or future bird habitat provision	A worthy and welcome intention but one the applicant may not be able to meet if it believes proposals conflict with air safety or its commercial interests
Compensatory bird breeding and wintering sites provided off the airport for birds displaced by hazard control methods on the airport	If the relevant authority concludes adverse effects from the proposals in whole or in part, and these cannot be mitigated, compensatory habitat will be needed. I am not aware that the applicant has identified any areas where land may be available, has not carried out any hydrological or other studies, has not identified the species which may require compensatory habitat nor consulted RSPB or NE on what might be required or who might have the relevant expertise to manage such an area. If compensatory habitat proves to be necessary, it should be supplied and in suitable condition before the airport extension goes ahead.
Jet aircraft will take a right turn over Lydd away from the SPA	This is not mitigation. It is a requirement of the non-fly zones around the power station and MOD ranges, and flying south out of the airport large passenger jets will have no choice but to turn right
A management regime for minimising ground noise should be established	Again not mitigation for birds although welcome. Minimising ground noise will be required as a Noise Management Plan under the Balanced Approach to aircraft noise produced by the Civil Aviation Organisation guidelines (Chap 16 paras 16.9.1-16.9.2 and Appendix 16.2. No specific mitigation for the effect of ground noise on birds has been proposed

The applicant proposals	**My Comments**
Aircraft fleet wishing to be based at the site conform to agreed noise performance levels *depending on commercial interest* (my italics)	Presumably if a fleet operator cannot meet the noise performance levels but the commercial interests of the airport (or the operator) strongly dictate that the operator should be allowed to use the airport, the "depending on commercial interest" clause would be activated
Future departure routing will be discussed with stakeholders.	Given the severe limitations on the departure routes that can be used by the airport (prevailing winds, nuclear power station and firing ranges) discussions will allow little flexibility whatever the views of the stakeholders

11.7. One of the ways the applicant has proposed to mitigate the noise of aircraft over Lydd, is by using the flight path over the MOD ranges when they are not in use (revised Chapter 16, pgs 34 to 35). This will take some aircraft further away from Lydd but will also take them directly over the pSPA, pRamsar and SSSI and considerably closer to the existing SPA water bodies on and adjoining the RSPB Reserve. The applicant has assessed this proposal by reference to the earlier noise trials that were designed to measure noise effects on nearby built areas and made no attempt to assess the effects on the designated sites. There have been no attempts as far as I know to consult NE or the RSPB or to make an independent assessment on the possible affects of this route on SPA qualifying species.

11.8. The applicant also suggests it will adapt its noise monitoring system for the protected bird species. "Protected Bird Species" are not defined. No details are given as to how this will be done, and no indication that were it to be done, and deleterious effects on protected bird species confirmed, what actions to mitigate these would be taken.

11.9. The draft Bird Control Management Plan (BCMP)(CD1.45 Appendix 6) also contains a section (8) on mitigation. This refers to the hazards of creating a gull roost closer to the airport than existing sites. However, there are no details given anywhere in the ES of existing roost sites for gulls or (other than data contained in WeBS counts) for any other species, and this also ignores the fact that gulls shift their roost sites from time to time depending on disturbance, predation and changes in prevailing weather.

11.10. The BCMP also accepts that there are no legal mechanisms to change the pattern of local agriculture and mentions such activities as ploughing as well as crop types, stubbles and other farming activities including grass farming which will also attract birds, often in large numbers. As the RSPB pointed out in a letter dated 5th October 2005 to Shepway DC (CD3.1) copied to the applicant, a number of bird species also feed at night and an understanding of both day and night patterns and movements of feeding birds is necessary. This has not been obtained for the agricultural land within the safeguarding zone.

11.11. The BCMP contains measures to net ponds and ditches on the airport against mute swans, Canada and greylag geese and mallard. This appears to be the only measure proposed in relation to these species. The breeding bird surveys found no swans or geese associated with ponds on the airport, but did record a small number of mallard.

11.12. The draft BCMP also notes that the only unusual bird hazard at Lydd Airport is that presented by overflying swans. As the applicant has carried out no overflying day or night studies on the airport site which is close to a range of wetland sites containing in winter up to 40,000 wetland birds and gulls, including almost all the large or flocking bird species known to be a danger to aircraft, this statement lacks all credibility.

11.13. At a very late stage in the preparation of this proof I have seen the overflying records submitted by the applicant for 2007 (Pinsent Mason letter to NE dated 1st December 2010) and 2010 up to the end of November (Pinsent Mason letter to NE dated 8th December 2010). Dr. Allan will be commenting on the credibility and accuracy of these (see Dr. Allan's proof paragraphs 21 and 22).

11.14. The summary to the Bird Hazard Risk Assessment (the Report 2008, Appendix C, CD1.33d, SEI 2008, Appendix 4) suggests that historical bird strike data, local observations, planned aircraft flight paths and wider experience from other airports in areas with comparable or higher local bird populations demonstrates that when best practice is followed the birdstrike risk can be contained within levels comparable to other airports.

11.15. The historical birdstrike data (submitted with Pinsent Mason letter to NE dated 7th October 2010) refers to the existing use which is without regular flights of large passenger jet aircraft. Aircraft flight paths have been planned with regard to the alignment of the present runways the prevailing wind and the exclusion zones around the nuclear power station and the MOD ranges (e.g. Supplementary Information March 2009 Vol 1, pg 42, para 4.7 CD1.38). No evidence has been presented that makes detailed comparisons with other airports either with regard to the numbers, locations and flightlines of birds with respect to these airports, their flight paths and fleet mixes or to other effects that might work in combination with these factors. Given the intensity of bird activity in the area, in order to reduce risk to the levels experienced elsewhere one would have to scare away a very large number of birds and prevent many of the overflying movements. That is precisely what the RSPB's concern is.

11.16. I understand that a Revised BCMP is to be submitted with proofs, which will include an expanded section to deal with crossing wildfowl, together with other information on scaring and safeguarding. If further comment is required on this, on the later report on the safeguarding area fieldwork or on the revised table of mitigation measures which has not been submitted either, or any other information that the applicant supplies after proofs have

been submitted, the comments in this proof may need to be altered or supplemented with further submissions.

12. CONCLUSIONS

12.1. The applicant has not carried out sufficient survey work to understand the risk posed by birds to the increased use of the airport by large jets. There is no information on bird over flights, no surveys of bird movements after dark, no assessment of the use by birds of areas surrounding in late summer, no roost data, winter bird surveys of insufficient frequency and too small an area, no data on migrant birds and a desk study that is dated, and based on a limited number of sites and species. As a result, the applicant does not have a full appreciation of the bird populations and their behaviour around the airport. The applicant has shown no understanding of the importance of functionally linked land outside the SPA and bird populations within the SPA.

12.2. In carrying out its surveys of aircraft noise the applicant has completely ignored the potential effects on nearby bird populations even though it was aware of the importance of these, and has made other changes, for example the introduction of proposed southern flights across the firing ranges, without considering the implication of this major change on the SPA and its birds.

12.3. The case the applicant has presented on the affects of aircraft noise on birds does not show no significant effect as required by European and national legislation. The proposals and undertakings on scaring, other control measures and safeguarding have not taken into account the numbers and risks posed by overflying birds and there is a real concern that it will have to instigate far more intensive and restrictive measures in order to run Lydd as a commercial airport with larger jet planes.

12.4. Nor has the applicant properly considered the mitigation and likely compensation measures needed to avoid or compensate for damage to the SPA. There is considerable concern that the applicant seems to have taken a view that it will get its consent first and then think about the problems afterwards, which is simply not an appropriate course of action when proposing developments which could adversely affect the integrity of European designated sites.

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