

Airports Commission,
Sanctuary Buildings,
20 Great Smith Street,
London,
SW1P 3BT

23 May 2014

Dear Sir/ Madam,

Inner Thames Estuary Airport Feasibility Studies – call for evidence

Thank you for consulting the RSPB in regard to the call for evidence. This submission should be read alongside earlier RSPB submissions to the Airports Commission during 2013 and, more recently, comments on the Appraisal Framework. As part of the call for evidence, we have also provided the Commission with copies of the RSPB's 2003 submission on the Future Development of Air Transport in the UK – South East (Second Edition) and submissions relating to the Severn Tidal Power Feasibility Studies as an example of a major infrastructure scheme with similar magnitude of impacts on sites of European and international wildlife importance.

The RSPB's approach to the aviation sector is led by two principles: that all development should avoid unacceptable harm to wildlife and that the UK must continue on the path to meeting its carbon budgets, as legislated for in the Climate Change Act 2008. The RSPB believes that the aviation sector needs to make a fair contribution to reducing the UK's climate change emissions, in line with other sectors of the economy. As the fastest growing source of emissions, new aviation infrastructure should only be approved if it can be built and operate within the UK's legally binding climate change limits.

It is in this context that we submit our comments to the call for evidence, focusing on the Environmental/Natura 2000 strand of the Commission's four studies, but also providing evidence about the operational feasibility in terms of bird strike and potential surface access impacts. We hope this will provide the Airports Commission with a better understanding of the risks and challenges which would be involved in building a new international hub airport in the inner Thames Estuary and will then be used to decide whether it is a credible option to take forward.

Our detailed submission is set out in the Annex to this letter and addresses:

- The legal and policy framework for the conservation of statutorily designated nature conservation sites and biodiversity;
- The ecological impact of an Inner Thames Estuary Airport on the wildlife of the Greater Thames; and
- Consideration of Habitats Regulations tests on alternative solutions, imperative reasons of overriding public interest and compensatory measures.

**Eastern England
Regional Office**
Stalham House
65 Thorpe Road
Norwich
Norfolk NR1 1UD

Tel 01603 660066
Fax 01603 660088
rspb.org.uk

The Inner Thames Estuary Airport option is located in the Greater Thames Estuary, a complex of estuarine, marshland and marine habitats, whose importance for wildlife is recognised through designation under national, European and international legal instruments. These wildlife sites provide a vital interchange for around 300,000 wading birds and wildfowl that arrive from their arctic breeding grounds each autumn, as well supporting a wide range of other wildlife of national and international importance.

In addition, the RSPB and other wildlife NGOs own and manage land as nature reserves throughout the Greater Thames to safeguard them for wildlife and people. In recent years, as part of the wider Thames Gateway regeneration, the RSPB has invested over £50m through partnership schemes such as Parklands. This has opened up large areas of formerly industrial land and enabled people to visit, access and enjoy these places once again and the often rare wildlife these support. Through the Greater Thames Marshes Nature Improvement Area we are currently working with businesses, communities and government to deliver sustainable development which will provide significant improvements for wildlife and people, by creating new and restoring existing habitats. This work would be at very serious risk if an Inner Thames Estuary Airport option was pursued.

It is clear even from the high level analysis set out in the Annex that an Inner Thames Estuary Airport option would cause unacceptable harm to wildlife, in particular the national, European and international wildlife sites of the Greater Thames. For the sake of illustration, the RSPB has used the footprint of the Foster's proposal to give an indication of the possible scale of impacts. These impacts include, among other things:

- Permanent loss of c.1700 ha of SPA/Ramsar/SSSI coastal and wetland habitats from direct land take by an airport. This does not take into account impacts from associated infrastructure (road/rail connections, housing and associated facilities);
- Indirect land take of up to 5,500 ha of SPA/Ramsar/SSSI habitat through measures to control bird strike hazard within the 13km safeguarding zone;
- Impacts on morphology and coastal processes in the estuarine system, potentially some distance from the airport;
- Noise, light and air pollution;
- Human disturbance from increased human population in previously undisturbed areas.

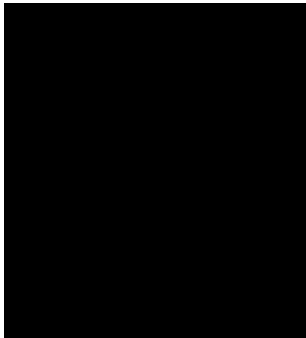
A proper understanding of these impacts would be required under the Habitats Regulations and Environmental Impact Assessment legislation. Gathering the comprehensive and robust data to support such assessments poses very considerable challenges, especially in a dynamic and complex ecosystem such as the Thames Estuary and should not be underestimated.

Notwithstanding those challenges, it is readily apparent that the ecological impacts of an Inner Thames Estuary Airport would be massive and on an unprecedented scale in the UK. This poses significant legal and policy challenges to an Inner Thames Estuary Airport option including:

- The ability to demonstrate that there are no less damaging alternative solutions to meet the UK's public interest objectives in the aviation sector, including meeting the UK's carbon emission commitments;
- The ability to provide the necessary compensatory measures for an unprecedented level of damage poses very significant challenges that must not be underestimated. The creation of habitat at this scale and complexity has never been attempted in the UK and raises very serious doubts as to its feasibility and sustainability.

In conclusion, the evidence presented in this submission reinforces the RSPB's view that an Inner Thames Estuary Airport option remains wholly unsustainable and should be rejected by the Airports Commission.

We trust these comments are useful and would welcome further correspondence with the Airports Commission.



Annex

RSPB comments on Inner Thames Estuary Airport feasibility study Environment/Natura 2000

1. Introduction

The RSPB

The Royal Society for the Protection of Birds (RSPB) is a wildlife conservation charity supported by a subscribing membership of over one million people, of whom some 31,800 live in Kent where an Inner Thames Estuary Airport (TEA) is being proposed. We seek to influence society, including Government, to encourage the adoption of environmentally sustainable policies which embrace economic, social and environmental objectives. Conservation of biodiversity is regarded as a key test of sustainability. We seek to ensure that our views are informed by sound scientific understanding and policy analysis. We safeguard and enhance biodiversity more directly through the acquisition and management of land as nature reserves: we currently own or manage 212 reserves, extending over 150,000 ha of land, of which 13 sites are located within the safeguarding zone of a TEA option.

2. Legal and policy framework for the conservation of statutorily designated nature conservation sites and biodiversity

Duties in respect of internationally important sites

This section deals with the duties on Government in respect of the conservation of:

- SPAs;
- SACs; and
- Ramsar sites.

The main protective provisions in respect of SPAs, SACs and Ramsar sites are set out in the Conservation of Habitats and Species Regulations 2010 (as amended) (**'the Habitats Regulations'**). The Habitats Regulations transpose, for the most part, the requirements of the Habitats Directive into British law. Articles 6(2) to 6(4) set out the main protection regime that must be applied to SPAs and SACs.

Regulations 61, 62 and 66 of the Habitats Regulations transpose the protective regime of Articles 6(3) and 6(4). These regulations set out the main tests that the Government, as the competent authority, would have to apply to any plan or project likely to have a significant effect on European Sites i.e. SPAs and/or SACs¹. It is Government policy (paragraph 118 of the National Planning Policy Framework (NPPF)) that the same protection is afforded to:

- Potential SPAs;
- Possible SACs;
- Listed and proposed Ramsar sites;
- Sites identified, or required, as compensatory measures for adverse effects on European sites.

¹ Protection extended to cSACs by virtue of Regulation 8

For the purposes of the comments below, we will group these all under the general heading of “European Sites” given that the Government has chosen to subject them to the same level of protection as European Sites.

Policy guidance on the interpretation of these legal requirements can be found in national² and European³ guidance documents. By virtue of paragraph 119 of the NPPF, the presumption in favour of sustainable development (paragraph 14) does not apply where development requiring appropriate assessment under the Birds or Habitats Directives is being considered, planned or determined.

Given that a TEA option would not be connected with or necessary for the management of an SPA, SAC or Ramsar site, it would be necessary to consider it against the sequence of steps set out in the Habitats Regulations to be taken by the competent authority when considering authorisation for a project that may have an impact on a European site before deciding to authorise that project. These are as follows:

- a. Step 1: Under regulation 61(1) (b), consider whether the project is directly connected with or necessary to the management of the European Site(s). If not –
- b. Step 2: Under regulation 61(1)(a) consider, on a precautionary basis, whether the project is likely to have a significant effect on the European Site(s), either alone or in combination with other plans or projects (the LSE Test).
- c. Step 3: Under regulation 61(1), make an appropriate assessment of the implications for the European Site(s) in view of its conservation objectives. Regulation 61(2) empowers the competent authority to require an applicant to provide information for the purposes of the appropriate assessment. There is no requirement or ability at this stage to consider extraneous (non-conservation e.g. economics, renewable targets, public safety etc) matters in the appropriate assessment.
- d. Step 4: Pursuant to regulation 61(5) and (6), consider whether it can be ascertained that the project will not, alone or in combination with other plans or projects, adversely affect the integrity of the European Site(s), having regard to the manner in which it is proposed to be carried out, and any conditions or restrictions subject to which that authorisation might be given (the Integrity Test).
- e. Step 5: In light of the conclusions of the assessment and in accordance with regulation 61(5) and (6), the competent authority shall agree to the project only after having ascertained that it will not adversely affect the integrity of the European Site(s), alone or in combination with other plans or projects.
- f. Step 6: a competent authority may only derogate from Regulation 61 where there is an absence of alternative solutions, and it is satisfied that there are imperative reasons of public interest that override the protection of the European Site(s) and that compensatory measures have been secured that protect the overall coherence of the Natura 2000 network

² ODPM Circular 06/2005 *Biodiversity and Geological Conservation – statutory obligations and their impact within the planning system*

³ European Commission (2000) *Managing Natura 2000 sites: the provisions of Article 6 of the Habitats Directive 92/43/EEC* and European Commission (2007/2012) *Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC*.

(Regulations 62 and 66). If there are less damaging alternative solutions, no derogation is permitted and consent must be refused.

The tests set out in Regulations 61, 62 and 66 are extremely strict as they concern the protection of sites that are of recognised international importance. Relevant effects on a site may be direct (e.g. direct loss of habitat) or indirect (e.g. eutrophication due to increased NO_x emissions). They may also arise from operations outside the boundary of a site e.g. changes to drainage systems, bird strike risk management. The extent to which any such effects can be removed or reduced by mitigation measures will vary.

Where it is not possible to conclude there will be no adverse effect on a site, it is necessary to consider whether there are alternative solutions. European Commission guidance states that this must examine whether there are alternatives to the plan or project that better respect the integrity of the site in question i.e. are there alternatives that are less damaging to the SPA, SAC or Ramsar site? Such alternatives could include different designs, locations or even policy approaches that meet the public interest objectives of the plan or project.

If no such alternatives exist, it would then be necessary to assess whether there are imperative reasons of overriding public interest. The grounds for derogating from the protective provisions of the Habitats Directive must be exceptional and not every kind of public interest will be sufficient when weighed against the objectives of the Directive.

Finally, if the Government considers that all these tests have been passed, it is under a further duty to ensure habitat compensation is provided so that the overall coherence of Natura 2000 is protected. It would be necessary to have legal and ecological certainty that such habitat compensation could be secured.

We address the tests on alternative solutions, IROPI and compensatory measures in more detail in section 4 below.

Duties in respect of nationally important sites

Under section 28G of the 1981 Act, public authorities, including the Government, have a duty to take reasonable steps to further the conservation and enhancement of the flora, fauna, geological and physiographical features for which an SSSI has been designated. The duty applies to all SSSIs and is in addition to those duties described above in respect of SSSIs also designated as SPAs, SACs or Ramsar sites.

Duties in respect of wild bird habitat

In addition to the specific duties relating to European Sites, by virtue of Regulation 9A of the Habitats Regulations, the Secretary of State (and other competent authorities) is under a series of duties designed to protect wild bird habitats in accordance with Articles 3 and 4 of the Wild Birds Directive:

- Take steps to preserve, maintain and re-establish a sufficient diversity and area of habitat for wild birds, including by means of the upkeep, management and creation of such habitat, having regard to the requirements of Article 2 of the Wild Birds Directive (Regulation 9A(3), transposing Article 3 of the Wild Birds Directive); and
- In exercising any function, use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds (Regulation 9A (8), transposing the second sentence of Article 4(4) of the Wild Birds Directive).

3. The ecological impact of an Inner Thames Estuary Airport on the wildlife of the Greater Thames

The sites identified in the Thames Estuary (e.g. Isle of Grain) for a new hub airport are within the Greater Thames, a complex of estuarine, marshland and marine habitats, of national, European and international importance for wildlife.

The Greater Thames estuary's coastal wetlands are a vital interchange for around 300,000 wading birds and wildfowl arriving from their arctic breeding grounds in the autumn, some stopping only to re-fuel before heading further south on their international migrations. These wetlands are the remnants of a formerly more extensive estuarine wetland system that historically has suffered damage due to urban expansion and agricultural intensification. Their importance has been recognised by designation under national, European and international conservation legal instruments. In addition, the RSPB has acquired lands as nature reserves to underpin the legal protection of these sites and to safeguard them for the enjoyment of wildlife and people.

As a result of the Marine and Coastal Access Act 2009 the marine environment is also gaining greater legal protection with powers for the government to designate Marine Conservation Zones. These are aimed at halting the deterioration of the state of the UK's marine biodiversity and promoting recovery. Within the 13km safeguarding zone for a TEA there are two designated Marine Conservation Zones: the Medway Estuary and the Blackwater, Crouch, Roach and Colne Estuaries. Further downstream of the proposed airport is the Thanet Coast MCZ which could potentially be impacted as a result of sediment changes from the construction of the airport. There are also two recommended MCZ's (Thames Estuary and the Swale) and it is possible these could be designated within the timescale of an airport proposal coming forward.

Intertidal and subtidal habitats support a variety of marine life. Cockle bank systems are also present. For example the South Thames Marshes has one of the largest intertidal habitats in Kent, composed of the extensive intertidal flats of Blyth Sands. Subtidal sandbanks form an important feature within the Outer Thames Estuary SPA which is used by red-throated divers for foraging and is also important for a number of seabirds.

Internationally Important sites

The internationally designated sites in the Greater Thames estuary are of year round importance to a wide range of bird species. Their primary value is to wintering and passage waders and wildfowl. However, they are also support important populations of breeding birds. The main qualifying interests are outlined below.

Wintering and passage birds

Taken together, the SPA and Ramsar sites likely to be most affected by a TEA regularly support in the order of 300,000 wintering wildfowl. Within this assemblage, a number of species are listed in Annex I of the Birds Directive, regularly occur in nationally important numbers, or numbers exceeding 1% of the relevant international bio-geographical populations.

There are also large areas of important but currently undesignated grazing marsh and arable fields that are likely to be functionally linked to designated sites and used by wintering waders and

wildfowl such as Brent geese. These areas are also important to the wider functioning of the ecosystem. The Commission should note the implications of the implementation of the UK SPA Review 2008-2014, Phase One of which is due to report later this year. One of the key issues that this review will tackle is the requirement to include areas of cropped habitats within the SPA network where they are used by SPA birds. This will include consideration of landward areas adjacent to existing estuarine SPAs; relevant to all of the coastal and freshwater SPAs within the 13km safeguarding zone. Therefore it is a realistic possibility that Phases Two and Three of the UK SPA Review will bring forward proposals to extend the boundaries of some or all of the SPAs (and associated Ramsar sites) within the safeguarding zone.

Breeding birds

The Greater Thames supports important breeding populations of a number of species, including the Annex 1 species avocet, marsh harrier, Mediterranean gull and little tern.

Non-qualifying but regularly occurring breeding bird species within the Thames Estuary and Marshes SPA/Ramsar site include little grebe, gadwall, garganey, shoveler, pochard, tufted duck, oystercatcher, ringer plover, lapwing, redshank, barn owl, yellow wagtail, together with a suite of farmland birds of high conservation concern and red list species.

Other ecological interests

There are a number of important non-avian species that use the SPA and Ramsar sites affected. As an example, the Thames Estuary and Marshes Ramsar site alone is designated (in addition to avian interests) for a number of aquatic floral and invertebrate interests, including 1 endangered and 14 nationally scarce plant, and 1 endangered, 10 vulnerable and 12 rare invertebrates.

Conservation designations that could be affected by an Inner Thames Estuary Airport

Below we identify the main statutory and RSPB reserve interests that could be affected by a TEA.

As noted above, the NPPF extends protection to other sites relevant to a TEA option, including listed Ramsar sites, and sites identified, or required, as compensatory measures for adverse effects on European sites. It is possible that in the medium term this could include potential Special Protection Areas and proposed Ramsar sites. We have identified these where relevant and provided additional information.

Table 1

Statutorily designated sites likely to be directly affected by a TEA option centred on the Isle of Grain

Name	Nature conservation designation(s)	Description
Thames Estuary and Marshes	SPA, Ramsar	Intertidal habitats and grazing marsh
South Thames Estuary and Marshes (part of Thames Estuary and Marshes SPA/Ramsar site)	SSSI	Intertidal habitats and grazing marsh
Medway Estuary and Marshes	Ramsar, SSSI	Intertidal habitats and grazing marsh

Table 2
Statutorily designated sites within 13km safeguarding zone a TEA option centred on the Isle of Grain:

A significant number of statutory designated sites lie within the 13 kilometre safeguarding zone.

Name	Nature conservation designation(s)	Description
Thames Estuary and Marshes	SPA, Ramsar	Intertidal habitats and grazing marsh
South Thames Estuary and Marshes (part of Thames Estuary and Marshes SPA/Ramsar site)	SSSI	Intertidal habitats and grazing marsh
Medway Estuary and Marshes	SPA, Ramsar, SSSI	Intertidal habitats and grazing marsh
Crouch & Roach Estuaries	SPA, Ramsar, SSSI	Intertidal Habitats
Foulness	SPA, Ramsar, SSSI	Intertidal habitats and grazing marsh
The Swale	SPA, Ramsar, SSSI	Intertidal habitats and grazing marsh
Benfleet and Southend Marshes	SPA, Ramsar, SSSI	Intertidal Habitats
Outer Thames Estuary	SPA	Marine (designated for red-throated diver populations)
Essex Estuaries (includes Foulness and Crouch & Roach Estuaries SSSIs)	SAC	Intertidal Habitats
Hockley Woods	SSSI	Woodland
Pitsea Marsh	SSSI	Coastal marsh, reedbed and open water
Thundersley Great Common	SSSI	Acid Grassland & Heath
Vange & Fobbing Marshes	SSSI	Grazing marsh
Great Wood & Dodds Grove	SSSI	Woodland
Garrolds Meadow	SSSI	Meadow
Northward Hill	SSSI	Ancient woodland
Mucking Flats and Marshes (part of Thames Estuary and Marshes SPA/Ramsar site)	SSSI	Intertidal habitats and grazing marsh
Tower Hill To Cockham Wood	SSSI	Woodland
Queendown Warren	SSSI	Chalk downland
Chattenden Woods and Lodge Hill	SSSI	Ancient and semi-natural woodland, scrub, and neutral grassland, nightingales
Sheppey Cliffs & Foreshore	SSSI	Geological, botanical
Dalham Farm	SSSI	Geological
Holehaven Creek	SSSI/pSPA	Intertidal Habitats and saltmarsh islands
Canvey Wick	SSSI	Wildflowers, scrub and bare ground and sandy mound

Name	Nature conservation designation(s)	Description
Great Crabbles Wood	SSSI	Woodland
Medway Estuary	MCZ	Low energy intertidal rock, Intertidal sand and muddy sand, intertidal mixed sediments, subtidal coarse sediment, subtidal sand, subtidal mud
Blackwater, Crouch, Roach and Colne	MCZ	Intertidal mixed sediments, Native Oyster, Clacton Cliffs and Foreshore

With regards to potential SPAs and proposed Ramsar sites, it is important for the Commission to be cognisant of the implications of the implementation of the UK SPA Review 2008-2014, Phase One of which is due to report later this year. One of the key issues that this review will tackle is the requirement to include areas of cropped habitats within the SPA network where they are used by SPA birds. This will include consideration of landward areas adjacent to existing estuarine SPAs: relevant to all of the coastal and freshwater SPAs within the 13km safeguarding zone. Therefore it is a realistic possibility that Phases Two and Three of the UK SPA Review will bring forward proposals to extend the boundaries of some or all of the SPAs (and associated Ramsar sites) within the safeguarding zone.

Table 3

Sites identified or required as compensatory measures for adverse effects on European Sites and within 13km safeguarding zone

Site	Location	Comments
Stanford Wharf Nature Reserve	Essex	Intertidal mudflat and saltmarsh as part compensation for impact of London Gateway Container Port. See also RSPB reserves below.
"Site X"	Kent	Proposed intertidal and saltmarsh site as part compensation for impact of London Gateway Container Port.
Great Bells Farm	Kent	Coastal grazing marsh. Compensation for long-term effects of sea level rise under Environment Agency Shoreline Management Plan.

In the context of the TEA option, there are three compensatory measures sites within the 13km safeguarding zone. Two of these are compensation sites for the impacts on the Thames Estuary and Marshes SPA/Ramsar site arising from development of the London Gateway port. One site is in Essex (known as Stanford Wharf Nature Reserve) and one is in the process of implementation on the Hoo Peninsula (known as "Site X", to be located due north of the RSPB's Northward Hill nature reserve and to the west of Egypt Bay). The third site, Great Bells Farm (Kent) is compensation long-term effects of sea level rise under Environment Agency Shoreline Management Plans. In addition, just beyond the northern limit of the 13km safeguarding zone Wallasea Island supports the Defra Wallasea compensation site and the RSPB's Wallasea Island Wild Coast Project which includes a compensatory element within it.

Table 4
RSPB reserves within 13km safeguarding zone

RSPB reserve	Location	Habitat
Bowers Marsh	Essex	Coastal floodplain grazing marsh, reedbed, wet grassland, lagoon, ditch network
Canvey Wick	Essex	Wildflowers, scrub and bare ground and sandy mound
Cliffe Pools	Kent	Saline lagoons, freshwater pools and saltmarsh.
Great Bells Farm	Kent	Coastal grazing marsh. Compensation for long-term effects of sea level rise under Environment Agency Shoreline Management Plan.
Nor Marsh and Motney Hill	Kent	Saltmarsh and mudflats.
Northward Hill	Kent	Woodland and saltmarsh.
Shorne Marshes	Kent	Coastal grazing marsh, saltmarsh and mudflats.
Stanford Wharf Nature Reserve	Essex	Intertidal mudflat and saltmarsh. Part compensation for London Gateway Container Port.
Vange Marsh	Essex	Reedbed and tidal lagoon, brackish lagoon, meadow, and saltmarsh.
Vange Wick	Essex	Wet grassland, grazing marsh and saltmarsh.
West Canvey	Essex	Meadow, wet grassland and grazing marsh, hedgerows.

Environmental Impacts

Direct impacts

In the absence of a firm proposal, it is not possible to be definitive about the scale and nature of direct effects, including those from associated infrastructure and development. However, based on the footprint shown in Figure 1 below, we calculate the following putative direct losses from statutorily designated sites:

Table 5
Illustrative direct impacts on protected sites of TEA option centred on Isle of Grain

Statutorily designated sites	Area lost to airport footprint (ha)
Thames Estuary and Marshes SPA	1,598
Thames Estuary and Marshes Ramsar	1,598
South Thames Estuary and Marshes SSSI	1,607
Medway Estuary and Marshes Ramsar	7
Medway Estuary and Marshes SSSI	17

The scale of these direct losses to SPA and Ramsar sites would be unprecedented in the UK. The outright loss of land of national, European and international importance for nature conservation would clearly destroy its ecological value and prevent its use by those species (birds and other taxa) that currently do so. In respect of damage to SPAs and Ramsar sites, it would clearly constitute an adverse effect on integrity that could not be mitigated.

Impacts outside the footprint

The construction and operation of a major international hub airport in the Inner Thames Estuary would be likely to have severe adverse impacts over a much wider area than the “footprint” of the airport itself.

These include:

- **Noise**

In addition to on-airport noise, it is important to consider noise levels under flight paths which are not in the immediate vicinity of the airport. Noise results from:

1. Aircraft movements;
2. Engine testing and other noise sources at airports.

It can impact not only people living under the flight path but also wildlife, particularly bird species.

- **Lighting**

Airport lighting is likely to have impacts on birds, particularly birds flying at night. A 2006 literature review of the ecological impacts of artificial lighting concluded that *“all evidence indicates that the increasing use of artificial light at night is having an adverse effect on populations of birds, particularly those that typically migrate at night.”* Lit structures can attract migrating birds resulting in collision.

- **Disturbance through vehicle movements**

There will be considerable vehicle movements associated with the airport itself but also with the people arriving at the airport to catch a plane. Taken together these vehicle movements could significantly increase the noise and disturbance around the Airport footprint.

- **Disturbance from increased human population in a previously undisturbed area;**

Many wintering waterbirds require open sightlines to enable the early detection of predators. New development that removes uninterrupted views has the potential to ‘disturb’. In addition the likely increase in housing required to accommodate the workers for a new hub airport would in all likelihood increase recreational disturbance pressures on the SPA bird species and increase predation risks.

- **Changes to the hydrology of the surrounding area;**

The construction of large areas of hard standing, warehouses, and terminals will significantly change the hydrology of the surrounding area potentially increasing the rate of surface water runoff and reducing the area available for infiltration.

- **Impacts upon the morphology and coastal processes in the estuarine systems;**
The Fosters proposal will extend into the intertidal and subtidal areas of the Thames Estuary. This will prevent the natural processes of coastal erosion and sediment build up taking place, potentially result in increased erosion elsewhere and give rise to upstream and downstream changes in coastal processes.
- **Emissions leading to reduced air quality;**
For example the exhaust gases from aircraft, the supply/support/maintenance facilities for aircraft on the ground, fuel depots and storage tanks from which VOCs evaporate and road traffic generated by airports. Pollutants include: VOCs, NOx, ground level ozone, particulate matter, carbon monoxide and sulphur dioxide
- **Water pollution**
The hard standing areas of the airport including the runway and car parks will collect dust, oil and other pollutants and during storm events this will runoff potentially impacting on water quality. In addition the use of de-icers on aeroplanes will lead to the risk of pollution.
- **Significant habitat fragmentation and isolation**
A new hub airport with four runways would require considerable upgrading of the existing road and rail infrastructure in order for people to be able to get to and from the airport. At this stage it is not clear where this infrastructure would go but it is highly likely it will result in further habitat fragmentation and isolation. There would also be significant numbers of new houses required to accommodate the airport workers and again this is likely to result in habitat fragmentation and loss.

Bird Strike

Locating a hub airport in the middle of an estuarine, marshland and marine system which is on an international migratory route for populations of wintering birds will raise the need for bird management measures to control the risk of bird strike. In addition the Fosters proposal for a TEA to operate 24 hours a day would make a bird management programmes extremely challenging. Evidence from the Lydd airport proposals recognised that dawn and dusk movement of wildfowl and gulls was an example of an acute hazard.

Previous research carried out to examine the risk of operating an international airport at Cliffe, which is also on the Hoo Peninsula suggested that this was probably one of the worst locations for an airport in the UK in terms of bird strike risk. Many of the wild birds that inhabit the Greater Thames Estuary complex pose a high bird strike risk to aircraft.

A report carried out for the RSPB by Professor Chris Feare in relation to the Cliffe Airport proposal highlighted the need for much greater understanding of the distribution and movement of birds within and adjacent to the 13km safeguarding zone, before detailed prescriptions on bird hazard management could be identified. A copy of this report was included in the 2003 submission already sent to the Commission.

In order for any bird management strategy to be effective it is likely that a future airport authority would need to seek direct control over areas outside the airport perimeter they consider to pose the greatest risk of bird strike.

Possible alternative options would range from restricting public access in order to minimise disturbance through to total obliteration of the sites themselves. For a Cliffe option, we estimated an additional area of 5,500 ha of designated wetland habitats in the immediate vicinity of the airport would be at risk from possible measures to sterilise them in terms of their value for birds. It is likely that a TEA option located on the Isle of Grain would result in a similar scale of impacts.

The potential impacts of active bird hazard management both inside and outside the airport perimeter would be to increase greatly the effective “bird free” area. This would compound the environmental devastation of international and national conservation interests that would be caused by the construction of the airport itself. It is probable that a majority of the Thames Estuary and Marshes SPA and Ramsar site would be made inhospitable to the tens of thousands of wintering and passage birds it presently supports through a combination of habitat modification and disturbance measures, to sterilise the value of the area to birds. Depending on a detailed assessment of the bird strike risks, it is possible that the effects of bird hazard management might extend throughout the 13 kilometre safeguarding zone, affecting several other internationally important wetlands.

4. Consideration of tests on alternative solutions, imperative reasons of overriding public interest and compensatory measures

It is clear from the high level analysis of potential impacts in the previous section that a TEA option would have very serious and long-lasting adverse effects on the integrity of several European sites.

If the TEA option is taken forward to the next phase, there will be a need to consider the impacts on European sites of all the short-listed options, as well as a more detailed evaluation of the effects of mitigation measures and compensation options.

The following comments set out some of the key issues that would arise with respect to a TEA option in respect of compliance with the Habitats Regulations. Particular attention is paid to the tests under Article 6(4) of the Habitats Directive, transposed by Regulations 62 and 66, as it is evident that a TEA option would not be able to avoid an adverse effect on the integrity of one or more European sites.

Purpose of the Nature Directives

As noted in section 2 above, all SPAs and SACs (including SCIs) are protected formally under the EU Habitats and Birds Directives, implemented in England by the Habitats Regulations.

The legal basis for EU competence in the environment field was established in the 1970s, following the Stockholm environment summit. It was considered that no country should be able to gain an economic advantage over another through adoption of lower environmental standards – especially where this might put a common resource, such as the seas or migratory birds, at risk. The Birds and the Habitats Directives establish a coherent network of protected areas, known as Natura 2000, that cover a relatively small area of the UK’s land and sea.

The Birds Directive took specific action for rare, vulnerable and threatened species, as well as migratory birds as the latter represented a common European heritage where loss of habitat in one country could have knock-on effects on the bird populations of another. The Habitats Directive later extended a similar approach to cover other flora, fauna and habitats of European importance.

The purpose of both Directives is to maintain at, and where necessary restore to, favourable conservation status flora, fauna and habitats of European importance. In simpler language, they aim to create healthy and prospering populations and habitats that have good prospects to remain that way in the future. Conserving the Natura 2000 network is one of the cornerstones of achieving this goal and is central to the achievement of the EU's biodiversity policy.

Complying with the Habitats Regulations

Under the Habitats Regulations, this means the Government will have to be confident that a TEA option could pass the strict sequential tests set out in Regulations 62 and 66 of the Habitats Regulations before consent could be granted:

- Ensuring there are no less damaging alternative solutions to the project proposed;
- Demonstrating that the public benefits of the project outweigh the need to protect the international importance of the affected European Sites (i.e. that there are "imperative reasons of overriding public interest" (IROPI) to proceed); and
- Providing necessary compensatory habitat to protect the overall coherence of the Natura 2000 network.

It is important to consider the relevance of the alternative solutions and IROPI tests given that in the decision-making process they are precursors to any consideration of compensatory measures.

Alternative solutions

In considering alternative solutions, it is essential to define the high level public interest objectives any plan or project would be contributing towards. In this context, in addition to any specific socio-economic objectives, this must include ensuring the UK meets its carbon emission commitments under the Climate Change Act 2008 and any international agreement negotiated to succeed the Kyoto Treaty over the medium and long-term in order to deliver a low carbon economy.

The test on alternative solutions is therefore wider than just consideration of alternative TEA options. Essentially, to pass this test a plan or project would need to show:

- It was credible and feasible (as per the Government's approach on alternative solutions in the Dabden Bay Container Terminal decision);
- It must go ahead at that particular location and that no other locations and/or solutions, either locally or nationally, could address its contribution to the public need; and critically
- That there were no less damaging alternative solutions to the plan or project that meet or contribute to the public interest objectives.

A consideration of alternatives should therefore explore:

- Firstly, the full range of options available for meeting legal and policy objectives in the short and medium term;
- Secondly, the best means by which the aviation sector can contribute to achieving a low-carbon economy in the medium to long-term
- Thirdly, the range of options which could contribute to these medium to long-term goals, and the environmental and economic costs and benefits of a TEA compared to these.

Even if a TEA option was considered economically feasible, we remain sceptical that it would be possible to prove there were no less damaging alternative solutions to meet the relevant contribution to the public interest objectives.

Imperative reasons of overriding public interest

Should the Government decide there are no alternative solutions to a TEA option to meet the public interest objectives, it will be necessary for the Government to assess whether the damage to European sites can be justified in the public interest. If it is decided that the IROPI test can be met, then the Government will need to consider whether the necessary compensatory measures can be secured to protect the overall coherence of the Natura 2000 network.

Compensatory measures

The potential scale of the impacts of a TEA option requiring compensatory measures are unknown but are likely to be massive compared to any other plan or project in the UK, with the exception of predictions made in respect of the now abandoned Severn Barrage scheme. Based on the high level analysis above, a TEA option would likely give rise to a similar scale of loss and damage in respect of coastal and freshwater wetland habitats i.e. c. 7,000 ha. This could increase further once coastal geomorphological impacts and other areas of uncertainty are taken in to account.

As with a Severn Barrage, this level of damage would be unprecedented and pose very significant challenges that must not be underestimated. The creation of habitat at this scale and complexity has never been attempted in the UK. It is important to place this in context. The RSPB's Wallasea Island Wild Coast project, at 800 ha, is on a scale never before attempted in the UK and the largest of its type in Europe. It has been in development since 2000 and will not be fully functional for another 10-15 years (c. 2025-2030) and it will be several years after that before we have a true picture of how well our objectives have been met. That project would be dwarfed by the compensatory requirements for a TEA option.

Notwithstanding those deliberately very cautionary remarks, we set out below our views in respect of compensatory measures, based on our close involvement in many of the Natura 2000 compensatory schemes in the UK.

In cases where habitat compensation is to be provided, it should adhere to well-established principles, which are consistent with EC and national policy:

- i) **Targeted** at completely compensating for the damage caused by the development (so-called "like for like" or "within type");
- ii) **Effective** in both ecological and legal terms so that it supports the ecological functions of the species affected over the long-term, is legally secured, adequately protected, financially secure and subject to regular monitoring and review;
- iii) **Well-located through** compensation measures realised as close as practicable to the location where the damage will be caused (but not vulnerable to the same pressures);
- iv) **Well-timed** so that the compensation measures are fully functional before the damage is caused, in line with EC and national policy;
- v) **Sufficient** in extent to meet the ecological needs of the affected species and habitats. This should address risks associated with effectiveness, location and timing.

In general terms, as far as possible, the functional loss caused by a plan or project should be replaced. This should be on a like for like/within type basis, **replacing the lost ecological functions on which habitats and species rely**. This will need to be based on an assessment of the ecological functions required by each habitat and species feature affected.

In addition to these general principles, we make a few specific observations below that the Commission should consider in the context of a TEA option.

Targeted/Effective compensation - like for like/within type replacement

Based on the nature and scale of the potential direct and indirect impacts of a TEA option on European Sites, it seems clear that it will not be possible to compensate for all the impacts on a strict like-for-like basis i.e. replicate precisely the habitats that will be lost or damaged. The critical issue is, as far as possible, to compensate for the ecological functions that will be lost and upon which the affected species and habitats rely. This will require a careful analysis of each of the ecological functions lost or damaged, and the species and habitats affected, in order to identify measures needed to restore them to a favourable status. It would need to be placed in the context of the delivery of favourable conservation status for affected species and habitats at a site and network level. Unfortunately, neither the Government (Defra) nor the statutory agencies have yet defined “favourable conservation status” for any bird species in the UK.

To date, most intertidal compensation has been approached in a generic way i.e. the “build it and they will come” model, due to limited availability of suitable sites at the time schemes were being negotiated, with timing and location risks addressed by low multipliers such as 2:1 or 3:1. While this may work for more generalist and tolerant waterbird species, it is likely to be wholly inadequate for more specialist and demanding species. In this situation, simply increasing the area of unsuitable habitat provided is an inappropriate response and would not meet the compensation requirements as the birds would not utilise the compensation areas. Examples of species with such specialist requirements that could be affected by a TEA include wintering avocet and black-tailed godwits.

Location of compensation

In respect of compensation habitat for coastal and wetland birds, there is likely to be limited availability of suitable land within the Greater Thames. However, unlike every other Natura 2000 compensation scheme to date in the UK, the area of search would by necessity have to be some distance away from the affected SPA and Ramsar sites. This is because, logically, it would need to be located outside the 13 km safeguarding zone or otherwise it would be subject to the same damaging bird control management measures. This immediately increases risk and uncertainty.

Based on similar discussions for a proposed Severn Barrage in relation to the creation of compensatory intertidal habitats, we suspect the two main areas of search (outside of the Thames) will be the east coast of England and, if that is insufficient, north-west England (e.g. around the Ribble and Alt estuaries and Morecambe Bay). The better the functional match, the lower the ecological risk and the lower the compensation ratios required.

However, it cannot be guaranteed to get a close functional match, especially with the distances and different estuarine systems involved. There have been relatively few examples of intertidal habitat compensatory measures in the UK and the results have been mixed. As noted above, the more specialist the ecological requirements, the greater the challenge and uncertainty in creating habitat that meets those requirements (see also “Sufficiency” below). This increases the risks and uncertainties in terms of protecting the coherence of the Natura 2000 network. In addition, there is the strong potential for competition for compensatory habitat with other sectors (see below).

Each potential donor location (i.e. estuary) has its own dynamic coastal processes which dictate the type of habitat and ecological functions it can support. For example, the Defra Wallasea scheme has been successful in maintaining a balance between intertidal mud for feeding waterbirds and saltmarsh for roosting. In contrast, it is evident from several managed realignment schemes on the

Humber that they quickly develop into saltmarsh, offering little if any feeding opportunity for waterbirds.

Competition with other compensation requirements

The detailed UK assessment for the Severn Tidal Power Feasibility Studies revealed only a relatively small area (c. 112,000 ha) which could realistically be used for compensatory areas, 50% of which is located in east England. It cannot and should not be assumed that all of this land would be available or suited to identified compensation needs. The implications are that there is a strong risk that land for intertidal compensation for a TEA option could be in relatively limited supply and compete with emerging plans to provide compensation for the predicted effects of sea level rise and coastal squeeze identified through Shoreline Management Plans and Flood Risk Management Strategies. It would not be acceptable to “double-up” as this would undermine the coherence of the Natura 2000 network.

Timing of compensation

Notwithstanding the considerable ecological, legal and financial uncertainties surrounding the ability to create habitat of the requisite quality at an unprecedented scale, the need to provide fully functional compensation before damage occurs itself raises significant implications. The precise lead-in times will depend on the impacts and related compensation measure and the complexities associated with land assembly.

As noted above, it will have taken around 15 or so years for the RSPB’s Wallasea Wild Coast Project to reach a stage where the first habitat is being created and probably another 15 years before all the intended habitat will be fully functional. Providing suitable mudflats for feeding waterbirds can take anywhere from 5 to 10 years from the creation of the habitat.

The degree to which the timing issue can be addressed will dictate the confidence in the ability to secure fully functional habitat before any damage occurs, and impacts on the compensation ratios required. This could have significant implications for the confidence in protecting the coherence of relevant parts of the Natura 2000 network and for related costs.

Sufficient compensation

All of the above points to considerable risks and uncertainties associated with providing compensatory habitat at the scale that would be required for a TEA option. Even using the typical compensation ratios deployed so far in the UK of 2:1 or 3:1, the potential intertidal compensation requirement is huge, and raises major logistical, political and administrative uncertainties. This does not factor in issues associated with addressing the more complex ecological requirements of specialist species. It must therefore raise serious doubts as to the feasibility of providing such compensatory measures.

Habitat creation and ongoing management costs

Careful consideration needs to be given to this issue. Cost estimates on previous studies have varied widely with the Severn Tidal Power Feasibility Study suggesting a unit cost of creating intertidal mudflats of £65K/ha. The RSPB’s experience has suggested a lower unit cost of £25-30K/ha. However, these cost estimates are several years old and there have been additional projects implemented since then which may shed light on capital and revenue costs over the lifetime of the compensation. However, using a figure of £30K/ha, the overall cost of providing 20,000ha compensation (assuming 3:1 ratio) suggests a cost of £1.8bn, rising to £3.9bn if £65k/ha is used.

A dominant factor in cost is likely to be land acquisition. As the compensation habitat areas become known, landowners are likely to seek premium prices and compulsory purchase may be required if speculative land prices are to be avoided. There have been considerable difficulties experienced in land assembly for relatively small scale schemes. This suggests that the ability to assemble and acquire ecologically-functional blocks of land efficiently and effectively to ensure the ecological objectives can be met would also be a major obstacle to securing compensatory measures.

Compensatory Measures and “equal value” compensation

The challenges outlined above in respect of a TEA option pose serious questions as to whether or not it would be possible to secure compensatory measures on a "like for like" basis that would protect the overall coherence of the Natura 2000 network.

In the Severn Barrage discussions, this led to consideration of so-called 'equal value' compensation due to the inability to identify suitable measures to compensate for key impacts. The RSPB considers this strains the limits of what could be considered "sustainable".

The RSPB considers "equal value" compensation to be flawed, both legally and from a conservation perspective. It argues for a system of species or habitat "substitution" but fails to justify this in legal or conservation terms. It essentially accepts that network coherence cannot be protected for the impacted species and habitats, thus undermining the purposes of the Habitats Directive.

Figure 1

Map showing the proposed airport footprint (based on the Fosters proposal) on the Isle of Grain and the 13km safeguarding zone

