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Inner Thames Estuary Airport Feasibility Studies – call for evidence

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**WRITTEN SUBMISSION OF NATURAL ENGLAND**

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## **1. EXECUTIVE SUMMARY**

### **Ecological impacts of a hub airport in the inner Thames Estuary**

- 1.1. The Thames Estuary is an ecologically diverse area with a high number of national and international designations. The inner Thames Estuary supports around 300,000 waterbirds and is protected under European and international law from Gravesend to Sheerness on the Kent side and from Tilbury to Southend on the Essex side. The outer Thames Estuary supports the largest aggregation of wintering red throated divers around England's coast, and is also widely internationally protected (e.g. Foulness SPA/Ramsar, Medway Estuary & Marshes SPA/Ramsar, the Swale SPA/Ramsar, the Outer Thames Estuary SPA). There are at least eleven Sites of Special Scientific Interest (SSSIs) that could be potentially affected by airport proposals on the Isle of Grain. There are also three Marine Conservation Zones (MCZs) in the Thames Estuary: Blackwater, Crouch, Roach and Colne MCZ, Medway Estuary MCZ and the Thanet Coast MCZ, plus two recommended MCZs (Thames Estuary and the Swale). The Greater Thames Marshes are an Nature Improvement Area (NIA) - the NIA includes 21 SSSIs, one SAC, six SPAs, five Ramsar sites, four National Nature Reserves, and five Local Wildlife Sites.
- 1.2. The ecological impacts of a hub airport development and operation in the Inner Thames Estuary would include (but not be limited to):
  - Direct and indirect land take (including supporting infrastructure, loss or deterioration of functional habitat and the impact of the 13km bird strike safeguarding zone around the airport);
  - Air pollution;
  - Water pollution;
  - Lighting;
  - Bird strike and bird control measures;
  - Noise Disturbance;
  - Other environmental impacts including road congestion and soil and sediment pollution.
- 1.3. An Isle of Grain location for a Thames Estuary airport development means that impacts on the marine environment from both construction and operation of the airport will need to be assessed in addition to terrestrial impacts.

### **Bird disturbance**

- 1.4. The Thames Estuary and Marshes SPA, Outer Thames Estuary SPA and other internationally and nationally protected sites within and around the Estuary are designated in large part for their bird populations, including divers, raptors, grebes, geese, seabirds, ducks and waders. Red throated divers, which are a designated feature of the Outer Thames Estuary Marine SPA, are known to be highly sensitive to disturbance from anthropogenic

activities, and compensation for disturbance and/or displacement of seabirds is particularly challenging to achieve. Consideration of the environmental impacts of a Thames Estuary airport would need to focus on bird disturbance and displacement from airport construction and operations as a key issue.

- 1.5. It is likely that quantifying the noise disturbance and displacement impacts to protected bird populations from airport operations would require further research and analysis before meaningful conclusions can be drawn, and before meaningful mitigation or compensation, if possible, can be designed.

### **Bird strike and bird control requirements associated with airports**

- 1.6. The risk of bird-strike associated with an airport in the Inner Thames Estuary is, as might be expected, high. The Thames Estuary and Marshes SPA is of exceptional value for birds, with a wide range of important bird species present. The work carried out on behalf of the DfT by the Central Science Laboratory and the British Trust for Ornithology regarding an airport at Cliffe remains relevant; this work concluded that even an aggressive bird management programme would not be able to reduce the risk to aircraft to levels similar to those prevailing at other UK airports.
- 1.7. International and UK regulations require a 13km safeguarded zone around all major civil and military aerodromes within which any planning application that could increase bird strike risk must be referred to the airport. A new Thames Estuary airport would also be required to produce and apply a bird control management plan that should seek to “*minimise the presence of flocks of birds on, or in the vicinity of, the aerodrome as much as possible*” within this 13km zone.
- 1.8. Given the number of national and international designations within the Thames Estuary relating to birds, this safeguarding requirement would make attempts to conserve or enhance habitat for bird populations in the area extremely challenging. The bird strike risk and the safeguarding requirement would militate against providing compensatory habitat for birds displaced by the airport development within close proximity to the original sites. In addition, it would create a significant barrier to any future development which might require the creation of compensation or mitigation habitat for birds within 13km of the airport boundary.
- 1.9. We recommend that the Airports Commission consider current practices and any lessons that may be learnt regarding the implications of bird control requirements from other UK airports operating within close proximity to SPAs such as Liverpool (adjacent to the Mersey Estuary SSSI/SPA/Ramsar site), Glasgow (adjacent to the Black Cart SPA) and Derry (adjacent to Lough Foyle SPA) airports.

## **Challenges associated with the collection of baseline data and assessment of impact in a dynamic ecological environment**

- 1.10. Under both the Habitats and Environmental Impact Assessment regulations there is a requirement to gather robust baseline data as a prerequisite to understanding ecological impacts and their significance.
- 1.11. The current presence or absence of data for each protected species and site would require consideration, as would the likely survey requirements in order to fill any significant gaps, which may require several years to complete. The implications of data gathering for complex national infrastructure schemes can have a significant bearing on their affordability and deliverability.
- 1.12. In addition, there will be a challenge in collecting the necessary ecological survey data in a dynamic and complex ecosystem such as the Thames Estuary, combined with the dynamic nature of many of its protected species. Marine species, seabirds and marine mammals are particularly difficult to survey for, and for the bird populations under consideration, survey methodology would need to respond to diurnal, annual, seasonal, meteorological and species-specific fluctuations and may need to be carried out for up to five years in order to be robust. This information may be available for some SPA bird populations through the WeBS counts but is unlikely to be available for seabirds. Habitats surveys, hydrodynamic modelling and benthic surveys would all be required in order to fully understand the impacts of an airport development on the SPA qualifying features.
- 1.13. Bird surveys would not necessarily be limited to the Thames Estuary and Marshes SPA and would need to be designed to account for the birds' use of designated and non-designated ('functional') sites within the wider Estuary area. They would need to look at flight lines between sites within and outside the Estuary.
- 1.14. A further issue relevant to data collection and the deliverability of the scheme is the need to ensure the effectiveness of mitigation and compensation measures in short, medium and long term. Within such a dynamic setting, impacts on the interest features of the SPA from airport construction and operation could extend well beyond any initial direct landtake and could potentially play out over decades, thus creating challenges with regard to delivering long-term mitigation and compensation, as well as a requirement for significant and ongoing post-construction monitoring.
- 1.15. Recent large scale developments within the Thames Estuary such as the London Gateway port development mean that relevant, recent data will have been gathered that may be transferable to the development of an Inner Thames Estuary airport.

- 1.16. Consideration of the impacts of an Inner Thames Estuary airport proposal would also need to include other protected sites and species, in addition to considering the impacts on Natura 2000 sites. Environmental legislation requires that Environmental Impact Assessment (EIA), Strategic Environmental Assessment (SEA) and Habitats Regulations assessments (HRA) also include an assessment of cumulative and indirect impacts from the proposed development and its interaction with other plans and developments. The Thames Estuary is undergoing significant development which makes the assessment of cumulative impacts particularly important, and particularly challenging. The impact of climate change and sea level rise on estuarine habitats would also need to be considered, given the sensitivity of the habitats concerned to sea level rise, flooding and coastal squeeze.

### **Relevant issues regarding the provision of compensation under the Habitats Regulations 2010**

- 1.17. If a Thames Estuary airport was found to have an adverse effect on the integrity of the sites affected, the project could only go ahead via the derogation process under Article 6(4) of the Habitats Directive. That process requires that three sequential tests are met: there must be no feasible alternative solutions to the plan or project which are less damaging to the affected European site(s); there must be “*imperative reasons of overriding public interest*” (IROPI) for the plan or project to proceed; and all necessary compensatory measures must be secured to ensure that the overall coherence of the network of European sites is protected.
- 1.18. **Alternatives:** Natural England recommends the analysis of alternatives provided by both the European Commission Article 6(4) guidance (2007/2012) and the European Commission guidance on the assessment of plans and projects. The assessment of the Cliffe airport option in the aviation White Paper (2003) remains relevant; this concluded that despite the many potential benefits of the site, “*reasonable alternatives*” did exist for increasing airport capacity without the resulting damage to N2K sites.
- 1.19. **IROPI:** It is recommended that the Commission consider the analysis of IROPI offered in the 2007/2012 European Commission guidance on Article 6(4). The guidance provides some examples extracted from opinions delivered by the Commission as to what might constitute IROPI. Cases in the UK in which compensation has been considered include the consents for the London Gateway (Thurrock), Bathside Bay (Harwich), Immingham Outer Harbour port proposals and Able Marine Energy Park, and the Inspector’s analysis of IROPI in his report for the Dibden Bay inquiry.

### **Compensation measures to protect the overall coherence of the network of European sites**

- 1.20. Compensation should be derived from the N2K sites' conservation objectives, ensuring that the overall coherence of the N2K network is protected. Issues that are relevant to the provision of compensation include:
- 1.21. **Ratio of compensation provision:** Compensation ratios are best set on a case-by-case basis. In keeping with the European Commission's guidance, ratios should be generally well above 1:1 and ratios of 1:1 or below should only be considered when it is demonstrated that measures will be 100% effective in reinstating structure and functionality within a short period of time. This submission provides some examples of different compensation ratios. Ratios may be affected by a number of variables such as the proximity of the compensation land offered to the area being lost, and the timing and scale of compensation provision.
- 1.22. **Proximity of compensation to area being lost:** The European Commission guidance indicates that compensation should be in comparable proportions to those habitats and species that are adversely affected. They should be within the same bio-geographical region in the territory of the same Member State and should provide functions comparable to those that had justified the selection criteria of the original site. The 'Birds' Directive does not provide for bio-geographical regions but focuses on the accessibility and functionality of the compensation site. For the Thames Estuary airport proposals, functionality and accessibility will be key issues in determining the suitability of compensation sites, rather than distance.
- 1.23. The availability and suitability of compensation land within the Thames Estuary on the scale that would be required by a hub airport development is a key challenge. If compensation land can only be secured outside the Thames Estuary, its ability to serve the bird populations affected potentially diminishes unless it can be ascertained that the SPA bird assemblages affected are capable of moving to sites distant from the Estuary itself without adverse impact occurring. Compensation for disturbance/displacement impacts on seabirds would be even more challenging to assess and deliver.
- 1.24. **'Like-for-like' or "equal value" compensatory habitat:** The BRANCH project examined the potential for a strategic approach to compensation but concluded that *"this will require re-interpretation of key legislation, such as the EC Habitats Directive."* Similarly, at the end of the Severn Tidal Power Feasibility study process, Government concluded that it could not deviate from 'like for like' replacement within the terms of current EC guidance and legal interpretation. It is entirely possible that the promoters of an Inner Thames Estuary airport would need to explore the potential for compensation provision along the bio-geographical and/or 'equal value' lines, thus potentially requiring a reinterpretation of the Habitats Directive.
- 1.25. **Timing of compensation provision:** Compensation measures require an agreed timescale by which they will be operational, and habitat should be established before the loss of the habitat for which it is compensating



occurs. A time lag in compensation provision could require an increased ratio of compensation.

- 1.26. **Scale of compensation:** The scale and complexity of the development proposals drive the scale of compensation required. It is entirely probable that a hub airport development in the Inner Thames Estuary could require well in excess of 2000 hectares of compensation intertidal habitat to compensate for direct and indirect land take impacts. It is difficult to find a comparative development that demonstrates that this can be achieved. The Severn Barrage proposals are a potential (hypothetical) comparator. The scale of compensation required for an Inner Thames Estuary airport presents two specific challenges – firstly with regard to the availability of suitable land, and secondly in delivering and maintaining the ecological functionality of the habitats being lost.
- 1.27. **Availability of sites in the Thames Estuary:** There are already complex pressures from existing and proposed developments in the Thames Estuary area which are creating challenges in finding suitable compensation sites. The Environment Agency's 'Thames Estuary 2100' (TE2100) programme sets out the approach for managing flood defences in the area and the level of compensatory land required to ensure plans do not have an adverse impact on integrity on N2K sites affected (approximately 1000ha). The Agency is seeking, and experiencing significant challenges in securing, this scale of compensation land within the Thames Estuary area. Current and future development proposals will place further demands on the land available.
- 1.28. **Delivering and maintaining intertidal habitat:** Where compensatory land is available, it must also be suitable in its potential for conversion to the habitats it is replacing. The creation of compensatory intertidal habitats is not without its own challenges. Compensation for the loss of intertidal saltmarsh and mudflat can be achieved through managed realignment, and there are a number of studies which indicate that a range of bird species will colonise created intertidal habitats and that the creation of mudflats can be largely successful if sediment supply is sufficient. However, there is also evidence to show that man-made mudflats are subject to natural processes that affect their long term structure and function. Other studies also indicate that the creation of coastal saltmarsh presents challenges both in terms of land use planning and in the resulting quality and functionality of the created habitat. A strategic assessment of land availability and its suitability for conversion to a range of intertidal habitats within the accessibility zones of the impacted SPA bird populations would be required to inform future discussions regarding compensation.
- 1.29. To conclude, there will be multiple challenges relating to the provision of ecological compensation for a hub airport in the Thames Estuary area, some of which will be extremely difficult, and may even prove impossible, to overcome.

## **2. INTRODUCTION Purpose and structure of this submission of evidence**

2.1. Natural England's response is submitted to the Airports Commission's call for evidence regarding the four feasibility studies into an Inner Thames Estuary airport. The focus of our evidence is on the issues raised by the ecology of the Thames Estuary and on the requirements of the Habitats Regulations (2010). The evidence is structured as follows:

- a. Section 3 sets out the status and functions of Natural England.
- b. Section 4 describes the conservation designations, features and interests that may be affected by an Inner Thames Estuary airport and would need to be considered in the Appraisal of Sustainability, should one be undertaken.
- c. Section 5 describes the potential impacts from an airport development in the Thames Estuary area, focussing on aviation impacts on birds.
- d. Section 6 discusses some of the challenges of collecting baseline data relating to a dynamic ecosystem with mobile protected bird populations, and highlights the need for an assessment of cumulative impact.
- e. Section 7 focuses on the issues raised by Article 6.4 of the Habitats Directive with regard to a large scale airport development in an ecologically sensitive and nationally and internationally protected area, in keeping with the terms of reference for the first of the four feasibility studies.
- f. Annex 1 is an account of the legislative framework relevant to the consenting of nationally significant infrastructure projects.
- g. Annex 2 is an account of the national policy framework relevant to the consenting of large scale infrastructure projects.
- h. Annex 3 provides further information regarding protected landscapes and aviation.

2.2. A number of abbreviations and acronyms will be used. These will be introduced where they first appear in the text.

### **3. STATUS AND FUNCTIONS OF NATURAL ENGLAND**

- 3.1. Natural England is a statutory body established under the Natural Environment and Rural Communities Act 2006 ('NERC Act'). Natural England is the statutory advisor to Government on nature conservation in England and promotes the conservation of England's wildlife and natural features. It is financed by the Department for Environment, Food and Rural Affairs ('Defra') but is a Non-Departmental Public Body, which forms its own views based on the best scientific evidence available.
- 3.2. Section 2 of the NERC Act provides that Natural England's general statutory purpose is: '... to ensure that the natural environment is conserved, enhanced and managed for the benefit of present and future generations, thereby contributing to sustainable development.'
- 3.3. Section 2(2) states that Natural England's general purpose includes:
- a. promoting nature conservation and protecting biodiversity;
  - b. conserving and enhancing the landscape;
  - c. securing the provision and improvement of facilities for the study, understanding and enjoyment of the natural environment;
  - d. promoting access to the countryside and open spaces and encouraging open-air recreation; and
  - e. Contributing, in other ways, to social and economic well-being through management of the natural environment.
- 3.5. Natural England is required to keep under review all matters relating to its general purpose<sup>1</sup>, and to provide public authorities with advice where they request this<sup>2</sup>. Natural England's remit extends to the territorial sea adjacent to England, up to the 12 nautical mile limit from the coastline<sup>3</sup>.
- 3.6. Natural England is a statutory consultee in respect of (amongst other matters):
- a. all applications for consent for Nationally Significant Infrastructure Projects which are likely to affect land in England<sup>4</sup>; and
  - b. The environmental information submitted pursuant to the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 ('the EIA Regs')<sup>5</sup>.

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<sup>1</sup> NERC Act, s.3(1).

<sup>2</sup> NERC Act, s.4(1).

<sup>3</sup> NERC Act, s.1(3).

<sup>4</sup> Planning Act s.42; Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009, reg. 3 and sched.1. Section 28I of the 1981 Act.

c. Plans or projects that are subject to the requirements of the Conservation of Habitats and Species Regulations 2010 ('the Habitats Regs') or the Offshore Marine Conservation (Natural Habitats etc.) Regulations 2007 ('Offshore Regs') which are likely to have a significant effect on European protected sites – that is, sites designated as Special Areas of Conservation ('SACs') and Special Protection Areas ('SPAs') for the purposes of the EU Habitats and Birds Directives – in England<sup>6</sup>;

d. proposals likely to damage any of the flora, fauna or geological or physiographical features for which a Site of Special Scientific Interest ("SSSI") has been notified pursuant to the Wildlife and Countryside Act 1981 (as amended) ('WCA 1981')<sup>7</sup>;

e. proposals relating to the English territorial sea capable of affecting, other than insignificantly, any of the protected features of a Marine Conservation Zone ('MCZ') or any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent, where the Examining Authority believes that there is or may be a significant risk of the act hindering the achievement of the conservation objectives stated for the MCZ<sup>8</sup>.

3.7. It is also the Government's policy to consult Natural England in respect of sites listed for the purposes of the Convention on Wetlands of International Importance especially as Waterfowl Habitat signed at Ramsar on 2 February 1971 ('Ramsar sites'), as if they were European protected sites<sup>9</sup>.

3.8. In addition, Natural England performs duties relating to SSSIs under the WCA 1981, and in relation to European protected sites and species under the Habitats Regulations.

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<sup>5</sup> Regs. 2(1), 8(6), 9(1), 13(2)(b), 17(3)(g), 18(3)(f), 19(3)(e) of the EIA Regs.

<sup>6</sup> Regulation 61 of the Habitats Regs; regulations 24(1) and (3) and 25(3)(b) of the Offshore Regs

<sup>7</sup> Section 281 of the 1981 Act.

<sup>8</sup> Marine and Coastal Access Act 2009, ss.126(2) and 147(1). The first MCZs are anticipated to be designated in the course of 2013. It is submitted that where an expanse of sea is under consideration for designation as an MCZ this is a material consideration.

<sup>9</sup> National Planning Policy Framework (March 2012), para 118; PINS Advice Note 10: Habitats Regulation Assessment for nationally significant infrastructure projects, p.4.

#### 4. DESIGNATIONS, FEATURES AND INTERESTS THAT COULD BE AFFECTED BY THE PROPOSED PROJECT

4.1. The inner Thames Estuary supports around 300,000 waterbirds and is protected under European and international law from Gravesend to Sheerness on the Kent side and from Tilbury to Southend and beyond on the Essex side. The outer Thames Estuary supports the largest aggregation of wintering red throated divers around England's coast, and is also widely internationally protected (e.g. Foulness SPA/Ramsar, Medway Estuary & Marshes SPA/Ramsar, the Swale SPA/Ramsar, the Outer Thames Estuary SPA). There are 3 Marine Conservation Zones (MCZs) in the Thames Estuary: Blackwater, Crouch, Roach and Colne MCZ, Medway Estuary MCZ and the Thanet Coast MCZ and 2 recommended MCZs (Thames Estuary and the Swale). The Greater Thames Marshes are an Nature Improvement Area (NIA) - the NIA includes 21 SSSIs, one SAC, six SPAs, five Ramsar sites, four National Nature Reserves, and five Local Wildlife Sites.

4.2. The following is a brief summary of the interest features of the relevant designated areas of concern relating to a potential hub airport development in the Inner Thames Estuary Isle of Grain area. Full designation citations and maps can be found at <http://jncc.defra.gov.uk>, <http://naturalengland.org.uk>. Given the lack of detail regarding the exact nature of the airport's size and location, this summary is not exhaustive.

#### 4.3. International conservation designations

Natura 2000 site	Reason for designation
Thames Estuary and Marshes Special Protection Area (SPA)  <a href="#">Conservation objectives</a>	Covering 4838.94 hectares, the Thames Estuary and Marshes SPA is situated within the Thames Estuary of southern England and includes Mucking Flats and Marshes from the Essex side and the South Thames Estuary and Marshes from the Kent side The marshes extend for about 15 km along the south side of the estuary and also include intertidal areas on the north side of the estuary. To the south of the river, much of the area is brackish grazing marsh, although some of this has been converted to arable use. At Cliffe, there are flooded clay and chalk pits, some of which have been infilled with dredgings. Outside the sea wall, there is a small extent of saltmarsh and broad intertidal mud-flats. The estuary and adjacent grazing marsh areas support an important assemblage of wintering waterbirds including grebes, geese, ducks and waders. The site is also important in spring and autumn migration periods. In winter, the Thames Estuary and Marshes SPA regularly supports an internationally important assemblage of over 20,000 waterbirds and those species occurring in internationally important numbers (and also national thresholds ) are listed in the adjacent Conservation objectives link. In addition to this, species with nationally important populations wintering within the SPA include Little Grebe, Shelduck, Gadwall, Teal, Shoveler, Avocet, Grey Plover, Knot (also internationally important), Dunlin and Black-tailed Godwit.
<a href="#">Thames</a>	Covering 5588.59ha, the <a href="#">Thames Estuary and Marshes Ramsar</a> is a

<a href="#">Estuary and Marshes Ramsar</a>	complex of brackish, floodplain grazing marsh ditches, saline lagoons and intertidal saltmarsh and mudflat. These habitats together support internationally important numbers of wintering waterfowl. The saltmarsh and grazing marsh are of international importance for their diverse assemblages of wetland plants and invertebrates.
Benfleet and Southend Marshes SPA  <a href="#">Conservation objectives</a>	Covering 2251.31ha, the site comprises an extensive series of saltmarshes, cockle shell banks, mud-flats, and grassland that supports a diverse flora and fauna. The productive mud-flats, cockle shell banks and diverse saltmarsh communities provide a wide range of feeding and roosting opportunities for internationally important numbers of wintering wildfowl and waders. Over winter, the area regularly supports an internationally important assemblage of over 20,000 waterfowl (e.g., 5 year peak mean 1991/2 – 1995/96 of 34,789 individual waterfowl including internationally important aggregations of Dark-bellied Brent Goose, Grey Plover, Red Knot and nationally important aggregations of Dunlin, Ringed plover, Redshank and Pied Avocet, Sanderling, Bar-tailed Godwit, Turnstone.
Foulness (Mid-Essex Coast Phase 5) SPA  <a href="#">Conservation objectives</a>	Covering 10968.9ha, Foulness is located on the coast of Essex, on the east coast of England north of the mouth of the Thames estuary. The site is part of an open coast estuarine system comprising grazing marsh, saltmarsh, intertidal mud-flats, cockle-shell banks and sand-flats. It includes one of the three largest continuous sand-silt flats in the UK. The diversity of high quality coastal habitats present support important populations of breeding, migratory and wintering waterbirds, notably very important concentrations of Dark-bellied Brent Goose (though the Thames Estuary as a whole is of particular significance and Benfleet and Southend Marshes SPA is also very important for this species). Over winter, the area regularly supports an internationally important assemblage of over 20,000 waterfowl (e.g., 5 year peak mean 1991/2 - 1995/6 of 107,468 individual waterfowl) including internationally important aggregations of Bar-tailed Godwit, Dark-bellied Brent Goose, Grey Plover, Red Knot, Oystercatcher, Redshank and nationally important aggregations of Curlew, Dunlin, Shelduck and Black-tailed Godwit, Greenshank, Sanderling, Pied Avocet, Golden Plover, Little Egret and Hen Harrier. The five breeding species of SPA significance are listed in the adjacent Conservation objectives link.
<a href="#">Foulness (Mid-Essex Coast Phase 5) Ramsar</a>	10932.95ha, Foulness is part of an open coast estuarine system comprising grazing marsh, saltmarsh, intertidal mudflats and sandflats which support nationally rare and nationally scarce plants, and nationally and internationally important populations of breeding, migratory and wintering waterfowl.
Medway Estuary and Marshes SPA  <a href="#">Conservation objectives</a>	Covering 4684.36ha, the Medway Estuary feeds into and lies on the south side of the outer Thames Estuary in Kent, south-east England. It forms a single tidal system with the Swale and joins the Thames Estuary between the Isle of Grain and Sheerness. It has a complex arrangement of tidal channels, which drain around large islands of saltmarsh and peninsulas of grazing marsh. The mud-flats are rich in invertebrates and also support beds of Enteromorpha and some Eelgrass Zostera spp. Small shell beaches occur, particularly in the outer part of the estuary. Grazing marshes are present inside the sea walls around the estuary. The complex and diverse mixes of coastal habitats support important numbers of waterbirds throughout the year. In summer, the estuary supports breeding waders and terns, whilst in winter it holds important numbers of geese,

	ducks, grebes and waders. The site is also of importance during spring and autumn migration periods, especially for waders.
<a href="#">Medway Estuary and Marshes Ramsar</a>	4696.74ha, A complex of rain-fed, brackish, floodplain grazing marsh with ditches, and intertidal saltmarsh and mudflat. These habitats together support internationally important numbers of wintering waterfowl. Rare wetland birds breed in important numbers. The saltmarsh and grazing marsh are of international importance for their diverse assemblages of wetland plants and invertebrates.
Swale SPA <a href="#">Conservation objectives</a>	Covering 6514.71 ha, the Swale is located on the south side of the outer part of the Thames Estuary in south-eastern England. The Swale is an estuarine area that separates the Isle of Sheppey from the Kent mainland. To the west it adjoins the Medway Estuary. It is a complex of brackish and freshwater, floodplain grazing marsh with ditches, and intertidal saltmarshes and mud-flats. The intertidal flats are extensive, especially in the east of the site, and support a dense invertebrate fauna. These invertebrates, together with beds of algae and Eelgrass <i>Zostera</i> spp., are important food sources for waterbirds. Locally there are large Mussel <i>Mytilus edulis</i> beds formed on harder areas of substrate. The SPA contains the largest extent of grazing marsh in Kent (although much reduced from its former extent). There is much diversity both in the salinity of the dykes (which range from fresh to strongly brackish) and in the topography of the fields. The wide diversity of coastal habitats found on the Swale combine to support important numbers of waterbirds throughout the year. In summer, the site is of importance for Marsh Harrier <i>Circus aeruginosus</i> , breeding waders and Mediterranean Gull <i>Larus melanocephalus</i> . In spring and autumn migration periods, as well as during winter, the Swale supports very large numbers of geese, ducks and waders.
<a href="#">Swale Ramsar</a>	6514.71ha, A complex of brackish and freshwater, floodplain grazing marsh with ditches, and intertidal saltmarsh and mudflat. These habitats together support internationally important numbers of wintering waterfowl. Rare wetland birds breed in important numbers. The saltmarsh and grazing marsh are of international importance for their diverse assemblages of wetland plants and invertebrates. The site supports nationally scarce plants and at least seven British Red data book invertebrates. Species with peak counts in winter: 77501 waterfowl (5 year peak mean 1998/99-2002/2003)
Essex Estuary Special Area of Conservation (SAC) <a href="#">Conservation objectives</a>	Covering 46140.82ha, the SAC includes marine areas, sea inlets (30%) tidal rivers, estuaries, mud flats, sand flats, lagoons (including saltwork basins) (56.5%), salt marshes, salt pastures, Salt steppes (11%), shingle, sea cliffs, Islets (0.5%), and improved grassland (2%). The Annex I habitats that are a primary reason for selection of this site are: <ul style="list-style-type: none"> <li>• Estuaries</li> <li>• Mudflats and sandflats not covered by seawater at low tide</li> <li>• Salicornia and other annuals colonizing mud and sand</li> <li>• Spartina swards</li> <li>• Atlantic salt meadows</li> <li>• Mediterranean and thermo-Atlantic halophilous scrubs</li> </ul>
<a href="#">Margate and Long Sands</a>	Margate and Long Sands starts to the north of the Thanet coast of Kent and proceeds in a north-easterly direction to the outer reaches of the

<a href="#">SAC</a>	Thames Estuary. It contains a number of Annex I Sandbanks slightly covered by seawater at all times, the largest of which is Long Sands itself. The fauna of the bank crests is characteristic of species-poor, mobile sand environments, and is dominated by polychaete worms and amphipods. Within the troughs and on the bank slopes a higher diversity of polychaetes, crustacea, molluscs and echinoderms are found. Mobile epifauna includes crabs and brown shrimp, along with squid and commercially important fish species such as sole and herring. Although this site is being put forward for designation on the basis of the presence of Sandbank Annex I interest feature, there is a significant amount of the reef-forming ross worm ( <i>Sabellaria spinulosa</i> ) at this site, which when formed as a reef qualifies as an Annex I habitat (biogenic reef). However, the available data indicate that the distribution of <i>S. spinulosa</i> is patchy, or that the aggregations form crusts rather than reefs. Areas of high <i>S. spinulosa</i> density support a diverse attached epifauna of bryozoans, hydroids, sponges and tunicates, and additional fauna including polychaetes, bivalves, amphipods, crabs and lobsters. These diverse communities are usually found on the flanks of the sandbanks and towards the troughs.
Outer Thames Estuary Marine SPA	Covering 379268.14ha, the Outer Thames Estuary SPA comprises three sections. The western boundary of the southern section runs between Sheerness and Shoeburyness. From here the SPA extends eastwards as far as Margate on the Kent coast and northwards to Walton on the Naze. The two more northern sections of the SPA lie adjacent to and offshore from the coast from Felixtowe to Great Yarmouth. The site was classified as a marine SPA in 2010 for its non-breeding aggregations of red-throated diver. The Outer Thames holds over 6,000 red-throated divers in winter, the largest concentration in UK waters (Webb et al. 2009) <sup>10</sup> . Within the SPA the main supporting habitats are the subtidal, and in some cases intertidal, sandbanks.

#### 4.4. National conservation designations

SSSI	Reason for designation
<a href="#">South Thames Estuary and Marshes</a>	Covering 5449.14 (ha.), the South Thames Estuary and Marshes SSSI from Gravesend to the eastern end of the Isle of Grain forms a major component of the Greater Thames Estuary. The site consists of an extensive mosaic of grazing marsh, saltmarsh, mudflats and shingle characteristic of the estuarine habitats of the north Kent marshes. Freshwater pools and some areas of woodland provide additional variety and complement the estuarine habitats. The site supports outstanding numbers of waterfowl with total counts regularly exceeding 20,000. Many species regularly occur in nationally important numbers and some species regularly use the site in internationally important numbers. The breeding bird community is also of particular interest. The diverse habitats within the site support a number of nationally rare and scarce invertebrate species and an assemblage of nationally scarce plants.
<a href="#">Holehaven Creek</a>	Covering 272.87ha, the site consists of Holehaven Creek and part of the connecting Vange Creek and East Haven Creek. The tidal creek system acts as the principal drain for the surrounding grazing marshes and forms

<sup>10</sup> Webb, A., Dean, B.J., O'Brien, S.H., Sohle, I., McSorley, C., Reid, J.B Cranswick, P.A, Smith L.E and Hall, C. 2009. The numbers of inshore waterbirds using the Greater Thames during the non-breeding season; an assessment of the area's potential for qualification as a marine SPA. JNCC Report 374



	a confluence at Holehaven with the River Thames. The site is linked geographically and functionally with the wider Thames Estuary. The intertidal mudflats and saltmarsh habitats of Holehaven Creek support a nationally important number of black-tailed godwit. This species also regularly occurs in Holehaven Creek in numbers of international importance.
<a href="#">Benfleet And Southend Marshes</a>	Covering 2099.69ha, Benfleet and Southend Marshes comprise an extensive series of salt marshes, mudflats, scrub and grassland which support a diverse flora and fauna. The south-facing slopes of the downs, composed of London Clay capped by sand, represent the line of former river cliffs with several re-entrant valleys. At their foot lies reclaimed marshland, with its associated dyke system, based on alluvium. Outside the sea walls there are extensive salt marshes and mud-flats, with associated eelgrass beds on which wintering wildfowl and waders reach both nationally and internationally important numbers. Nationally uncommon plants occur in all of the habitats and parts of the area are of outstanding importance for scarce invertebrates.
<a href="#">Medway Estuary And Marshes</a>	6,840.14 (ha.) The Medway Estuary and Marshes form the largest area of intertidal habitats which have been identified as of value for nature conservation in Kent and are representative of the estuarine habitats found on the North Kent coast. A complex of mudflats and saltmarsh is present with in places grazing marsh behind the sea walls which is intersected by dykes and fleets. The area holds internationally important populations of wintering and passage birds and is also of importance for its breeding birds. An outstanding assemblage of plant species also occurs on the site.
<a href="#">Mucking Flats and Marshes</a>	311.56 (ha.) Mucking Flats and Marshes comprise an extensive stretch of Thames mudflats and saltmarsh, together with sea wall grassland. Wintering wildfowl and waders reach both nationally and internationally important numbers on the mudflats, roosting and feeding on adjacent saltmarsh and disused silt lagoons. The mudflats form the largest intertidal feeding area for wintering wildfowl and waders west of Canvey Island on the north bank of the Thames. Ringed Plover occur in internationally important numbers, with nationally important populations of Shelduck, Grey Plover, Dunlin, Black-tailed Godwit and Redshank. Other species occur in good numbers, with Avocet regularly present, sometimes in nationally important numbers. The mudflats and saltmarsh are also an important staging post for passage migrants, with significant numbers of waders such as Curlew sandpiper and an important late summer flock of yellow-legged herring gulls. The saltmarshes provide an important high tide roost for birds and in association with the disused silt lagoons at Coalhouse Fort support a notable invertebrate assemblage. The value of the site is enhanced by its proximity to Cliffs and Cooling Marshes SSSI and Higham Marshes SSSI across the Thames in Kent, with which there is an interchange of roosting and feeding birds.
<a href="#">Vange and Fobbing Marshes</a>	164.6ha Vange & Fobbing Marshes lie on the alluvial plain of the lower River Thames. The unimproved coastal grassland and associated dykes and creeks support a diversity of maritime grasses and herbs. Many of these species are nationally uncommon or rare, and together form an outstanding assemblage of plants. The combination of grazing land, water courses and fringing saltmarsh also provides an ideal habitat for numerous invertebrates and birds. Two species with very restricted national distributions, the Scarce Emerald Dragonfly <i>Lestes dryas</i> and Roesel's Bush Cricket <i>Metrioptera roeselii</i> , occur as well as such locally important species as the Great Green Bush Cricket <i>Tettigonia viridissima</i> and the Velvet Ant <i>Mutilla europaea</i> . Anthills formed by the Meadow Ant <i>Lasius flavus</i> are numerous in the grassland. Significant numbers of Redshank breed on the pastures, while Short-eared Owls frequently hunt along the sea walls during the winter.
<a href="#">Foulness</a>	10,702ha. Foulness lies on the north shore of the Thames Estuary

	<p>between Southend in the south and the Rivers Roach and Crouch in the north. It comprises extensive intertidal sand-silt flats, saltmarsh, beaches, grazing marshes, rough grass and scrubland. The flats are of national and international importance as winter feeding grounds for nine species of wildfowl and wader, with the islands, creeks and grazing land forming an integral part as sheltered feeding and roosting sites. The shell banks support nationally important breeding colonies of Little Terns, Common Terns and Sandwich Terns. The complex matrix of habitats also supports nationally important numbers of breeding Avocets along with plants and invertebrates. Numerous species are locally restricted in their distribution and nationally uncommon or rare.</p>
<a href="#">Dalham Farm</a>	<p>9ha. Dalham Farm is one of very few undisturbed areas which show mass movement phenomena on low-angled, inland slopes of London Clay. It shows failure by successive rotational landslipping on a slope of about 8°, the effects of which are visible as a series of ridges and small scarps crossing the slope. Dalham Farm illustrates what is possibly the lowest angled slope failure in Great Britain and is important in demonstrating slope degradation in the absence of coastal erosion and removal of material from the base.</p>
<a href="#">Northward Hill</a>	<p>52.5ha The most important feature of the site is the heronry which at over 200 the pairs is the largest in Britain. There is a diverse breeding bird community and the insect fauna is also of interest particularly moths and butterflies. The site consists of mixed deciduous woodland and scrub with some open areas of grassland and bracken. A number of small ponds are present and also a few open ditches. The eradication of sycamore and thinning of dense scrub are part of the current management of the reserve to establish and maintain open areas for breeding shelduck, mallard, and heathland birds. The mosaic of woodland, scrub and glades forms an attractive breeding habitat for warblers. A number of scarce moths have been recorded in recent years including the sloe carpet and least carpet. There is a colony of the white-letter hairstreak butterfly on the Reserve, a species which has declined as a result of Dutch elm disease. In addition 9 species of dragonfly have been recorded recently including the scarce ruddy darter.</p>
<a href="#">The Swale</a>	<p>6568.45ha The Swale includes the largest remaining areas of freshwater grazing marsh in Kent and is representative of the estuarine habitats found on the north Kent coast. The habitats comprise chiefly mudflats, saltmarsh, and freshwater grazing marsh, the latter being intersected by extensive dykes and fleets. The area is particularly notable for the internationally important numbers of wintering and passage wildfowl and waders, and there are also important breeding populations of a number of bird species. Associated with the various constituent habitats of the site are outstanding assemblages of plants and invertebrates.</p> <p>The mudflats of the Swale are extremely rich in invertebrates, over 350 species having been recorded. Some of these, such as the polychaete worm <i>Clymenella torquata</i> are known from nowhere else in Britain, while other more widespread species are present at high densities and provide food for the huge numbers of birds, especially waders, which use the Swale. The saltmarshes are among the richest for plant life in Britain with for example particularly good representation of the saltmarsh-grasses <i>Puccinellia</i> and the glassworts <i>Salicornia</i>.</p> <p>The bird interest of the Swale is centred on the large numbers of waders and wildfowl which use the area in winter, and on autumn and spring migrations. Several species: wigeon, teal and grey plover regularly overwinter in numbers of international importance. Others, including shoveler, knot, dunlin and spotted redshank are regularly present in winter in nationally significant numbers. Many of the birds use more than one habitat, some for example feed on the mudflats at low tide and then move up to roost on the saltmarsh or on fields inland of the sea wall. The</p>

	commoner breeding dry-land birds include skylark, meadow pipit and yellow wagtail, and among the wetland birds mallard, shelduck, coot, moorhen, lapwing and redshank. Scarcer breeding birds include teal gadwall, and pochard. Garganey, pintail, ruff and black-tailed godwit have bred, or attempted to do so in recent years.
<a href="#">Chattenden Woods And Lodge Hill</a>	351.03ha. Chattenden Woods and Lodge Hill SSSI comprises a mosaic of habitats, including ancient and other long-established semi-natural woodland, scrub, and neutral grassland. It is a nationally important site due to the following biological features of special interest that occur within and are supported by the wider habitat mosaic: ancient and long-established semi-natural woodlands, predominantly of the National Vegetation Classification (NVC) type W10 pedunculate oak <i>Quercus robur</i> – bracken <i>Pteridium aquilinum</i> – bramble <i>Rubus fruticosus</i> woodland; unimproved neutral grassland of the nationally scarce NVC type MG5 crested dog's-tail <i>Cynosurus cristatus</i> – common knapweed <i>Centaurea nigra</i> grassland; and breeding nightingales <i>Luscinia megarhynchos</i> .

<b>Marine Conservation Zone</b>	<b>Reason for designation</b>
Blackwater, Crouch, Roach and Colne MCZ  <a href="#">Factsheet</a>	Blackwater, Crouch, Roach and Colne Estuaries MCZ is located on the Essex coast. It extends from the mean high water mark to where the estuary mouths join the North Sea, and is the largest inshore MCZ covering an area of 284 km <sup>2</sup> . MCZ features include: <ul style="list-style-type: none"> <li>• Intertidal mixed sediments</li> <li>• Native oyster (<i>Ostrea edulis</i>) beds</li> <li>• Native oyster (<i>Ostrea edulis</i>)</li> <li>• Clacton Cliffs and Foreshore</li> </ul>
Medway Estuary MCZ  <a href="#">Factsheet</a>	Medway Estuary MCZ is an inshore site located on the Kent coast. It encompasses the Medway Estuary from Rochester down to its mouth, and extends seaward to include an area between Sheerness and the Isle of Grain. A total area of 60 km <sup>2</sup> is protected by this MCZ. MCZ features include: <ul style="list-style-type: none"> <li>• Low energy intertidal rock</li> <li>• Intertidal sand and muddy sand</li> <li>• Intertidal mixed sediments</li> <li>• Subtidal coarse sediment</li> <li>• Subtidal sand</li> <li>• Subtidal mud</li> <li>• Estuarine rocky habitats</li> <li>• Peat and clay exposures</li> <li>• Tentacled lagoon-worm (<i>Alkmaria romijni</i>)</li> </ul>
Thanet Coast MCZ  <a href="#">Factsheet</a>	Thanet Coast MCZ is an inshore site located on the Kent coast. The site boundary stretches from the east of Herne Bay, around Thanet to the northern wall of Ramsgate harbour. The site protects an area of approximately 64 km <sup>2</sup> . Thanet Coast MCZ partially overlaps with an existing Special Area of Conservation (SAC). MCZ features include: <ul style="list-style-type: none"> <li>• Subtidal coarse sediment</li> <li>• Subtidal mixed sediments</li> <li>• Subtidal sand</li> <li>• Moderate energy infralittoral rock</li> <li>• Moderate energy circalittoral rock</li> <li>• Blue mussel (<i>Mytilus edulis</i>) beds</li> <li>• Peat and clay exposures</li> <li>• Ross worm (<i>Sabellaria spinulosa</i>) reefs</li> </ul>

	<ul style="list-style-type: none"> <li>• Subtidal chalk</li> <li>• Stalked jellyfish (<i>Haliclystus auricula</i>)</li> <li>• Stalked jellyfish (<i>Lucernariopsis cruxmelitensis</i>)</li> </ul>
The Swale rMCZ and the Thames Estuary rMCZ	The Swale and the Thames Estuary have been recommended as MCZs and the Swale is currently under consideration in the second tranche, which will lead to a further round of MCZ designations in 2015.

- 4.5. **European Protected Species** As highlighted in sections 3.27 – 3.34 above, an Inner Thames Estuary airport development would need to assess and avoid impacts on the following European Protected Species (EPS):

Common name	Scientific name
Bats, Horseshoe (all species)	Rhinolophidae
Bats, Typical (all species)	Vespertilionidae
Butterfly, Large Blue	<i>Maculinea arion</i>
Cat, Wild	<i>Felis silvestris</i>
Dolphins, porpoises and whales (all species)	Cetacea
Dormouse	<i>Musccardinus avellanarius</i>
Frog, Pool*	<i>Rana lessonae</i>
Lizard, Sand	<i>Lacerta agilis</i>
Moth, Fisher's Estuarine*	<i>Gortyna borelii lunata</i>
Newt, Great Crested (or Warty)	<i>Triturus cristatus</i>
Otter, Common	<i>Lutra lutra</i>
Snail, Lesser Whirlpool Ram's-horn*	<i>Anisus vorticulus</i>
Snake, Smooth	<i>Coronella austriaca</i>
Sturgeon	<i>Acipenser sturio</i>
Toad, Natterjack	<i>Bufo calamita</i>
Turtles, Marine	<i>Caretta caretta</i> <i>Chelonia mydas</i> <i>Lepidochelys kempii</i> <i>Eretmochelys imbricata</i> <i>Dermochelys coriacea</i>

Table 1: Conservation of Habitats and Species Regulations 2010, European protected species - Schedule 2

\*These species were added to Schedule 2 via Statutory Instrument 2008 No.2172 The Conservation (Natural Habitats, &c.) (Amendment) (England and Wales) Regulations 2008.

- 4.6. **Landscape designations** The Kent Downs is a designated Area of Outstanding Natural Beauty and lies approximately 15km to the south of the Isle of Grain.
- 4.7. Additional landscape information relevant to the development area can be found from the following, although these are not designated sites and are not therefore accompanied by protective provisions:
- 'London Natural Signatures' – landscape character assessment.

- Greater Thames Estuary National Character Area (NCA)
- North Kent Plain NCA
- Northern Thames Basin NCA

4.8. **Non-designated interests and features of concern**

4.9. **Nature Improvement Area** The presence and objectives of the Greater Thames Estuary Nature Improvement Area (NIA) are relevant to an Inner Thames Estuary airport development.

4.10. **Ancient woodland** In keeping with the National Planning Policy Framework, development resulting in the loss or deterioration of irreplaceable habitats, including ancient woodland and the loss of aged or veteran trees found outside ancient woodland, should be avoided – Natural England's [Standing Advice on ancient woodland](#) can be accessed via this link. An inner Thames Estuary airport development would need to assess and seek to avoid impacts upon ancient woodland.

4.11. **Local sites** Other sites with nature conservation value that could be adversely impacted by an inner Thames Estuary airport development include:

<b>National Nature Reserves</b>	<b>Local Nature Reserves</b>
Elmley	Belton Hills
Leigh	Canvey Lake
High Halstow	Southend On Sea Foreshore

## 5. POTENTIAL ECOLOGICAL IMPACTS OF A HUB AIRPORT DEVELOPMENT AND OPERATION IN THE INNER THAMES ESTUARY

- 5.1. **Land take** Land take for a new hub airport in the Inner Thames Estuary (ITE) is difficult to determine but as an illustration Heathrow is currently 1227ha (with two runways). The 2008 proposals for a new runway and terminal at Stansted required 8km<sup>2</sup> (800ha). The Fosters 'Isle of Grain' hub airport would process twice as many passengers per annum as Heathrow (150m passengers a year compared to 65m for Heathrow in 2011). It is possible that a hub airport at the Isle of Grain would require land take of at least 2500ha, with direct land take from the Thames Estuary and Marshes SPA. The necessary connecting transport infrastructure would require additional land take.
- 5.2. The site option map included in the Airport Commission's interim report<sup>11</sup> (see Figure 1 below) indicates that the airport could build out into the estuary, with the direct loss of both mudflat and grazing marsh within the Thames Estuary and Marshes SPA. Building out into the estuary will affect how the tide propagates in and out of the estuary and will affect the high and low water mark. This can result in intertidal habitat becoming subtidal and therefore not available as a food resource for birds. In addition, change to currents can affect sediment movement and cause erosion or accretion of intertidal flats or change in their characteristics. These indirect impacts on habitat would need to be accounted for.

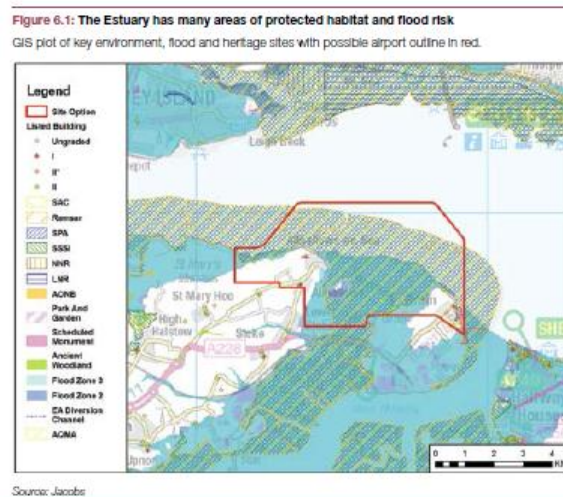


Figure 1: site option map, Airports Commission (2013)

<sup>11</sup> Interim Report, Airports Commission (2013)

- 5.3. In addition to direct land take for the airport itself, land take for supporting infrastructure, loss of functional habitat and the impact of the 13km safeguarding zone around the airport (see section 5.9 below for a more detailed discussion of safeguarding) would need to be factored into the environmental impact assessment and the calculations regarding mitigation and compensation. If the airport extends out in to the estuary this would add quite significantly to the amount and type of compensation required.
- 5.4. Functional habitat is the term given to an undesignated area lying beyond the boundary of a protected site, which is nevertheless used by designated bird populations. At the simplest level, birds requires a secure roost and / or nest site, and sufficient food, all encompassed within a home range. Where an essential ecological function, such as foraging, occurs beyond a site boundary, then the area within which this occurs is known as functional habitat. As the presence of this land is essential in meeting a species' needs, damage or deterioration of this habitat could in turn impact upon the designated population. The maximum distance over which designated bird populations will travel beyond a site boundary (reflecting the distribution of functional habitat) will differ between species. This means that loss of or severance from functional habitat is an indirect impact that will need to be considered. This indirect effect can extend several kilometres from a development boundary, and as many populations of designated bird species are highly mobile, a wider assessment of the potential for impact is required.
- 5.5. **Air pollution** Emissions due to aviation come from a variety of sources:
- Exhaust gases from aircraft.
  - Supply/support/maintenance facilities for aircraft on the ground.
  - Fuel depots and storage tanks from which VOCs evaporate.
  - Road traffic generated by airports.
  - Pollutants include: VOCs, NOx, ground level ozone, particulate matter, carbon monoxide and sulphur dioxide<sup>12</sup>.
- 5.6. Air dispersion modelling<sup>13</sup> for a number of airports in England suggested that they may contribute an additional 2.9 - 20 ug/m3 of NOx (nb. the NOx contributions from airport-related sources, such as car parks, access roads, and the local road network are not included in these data). Elevated concentrations of NOx are toxic to vegetation. Emissions of NOx and the secondary compounds formed from these also contribute to nitrogen deposition, which can harm sensitive habitats through nutrient enrichment and acidification. Critical loads for acidity and the fertilising effects of atmospheric nitrogen are exceeded in 54% and 75% of the area of sensitive

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<sup>12</sup> <http://www.aet.org.uk/PDFs/5389SainsburyDoc.pdf>

<sup>13</sup> Derivation of Criteria for Review and Assessment of Airports – 2008 update, Air Quality Consultants Ltd, Bristol (2008)

UK natural and semi-natural habitats, respectively.<sup>14</sup> An airport development in the Thames Estuary would need to consider air quality impacts on sensitive European sites within a 5km radius of the airport<sup>15</sup>. It would also need to assess impacts on nationally designated sites with features sensitive to air pollution.

- 5.7. **Water pollution** Airport impacts upon surface waters are mainly as a result of run-off from paved areas, with de-icers posing a particular risk as runoff. A Thames Estuary airport development would need to consider the risk of marine pollution from both the construction and operation of the airport, and ensure the prevention of polluted run-off entering the estuary and impacting not only on the designated sites and species within the Estuary but also on Water Framework Directive and Marine Strategy Framework Directive targets.
- 5.8. **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.”*<sup>16</sup> Lit structures can attract migrating birds resulting in collision.
- 5.9. **Bird strike and bird control measures** Bird scaring and bird culling are routine bird control activities undertaken by airports in order to reduce the risk of bird strike. These activities can occur up to 13km from an airport, significantly extending the development's footprint. The Civil Aviation Authority guidance on aerodrome bird control states:

*“Hazardous birds are either large or occur commonly in dense flocks, or both. Historically, the most significant have been gulls, corvids and starlings. Lapwings and other waders, although hazardous on aerodromes, use a narrower range of habitats, have smaller daily ranges, and are of lesser importance in safeguarding. With increasing value being placed on the natural environment and wildlife sites, lakes and other wetlands are proliferating generally, including around aerodromes. Thus waterfowl are becoming rapidly more hazardous to aviation.”*<sup>17</sup>

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<sup>14</sup> UK Biodiversity Indicators in Your Pocket, <http://jncc.defra.gov.uk/page-4245>

<sup>15</sup> For European sites, based on current expert advice from the Inter-agency Air Pollution Group, potential impacts of air quality from airport proposals should be assessed for sites within 5km of the airport.

<sup>16</sup> Gauthreaux and Belser in Ecological consequences of artificial night lighting, Rich, C., and T. Longcore, editors. (2006)

<sup>17</sup> CAP 680 Aerodrome Bird Control, Chapter 26, page 1. Civil Aviation Authority (2002)



- 5.10. The risk of bird-strike associated with an airport in the Inner Thames Estuary is, as might be expected, high. The Thames Estuary and Marshes SPA is of exceptional value for birds, with a wide range of important bird species present. This is a function of the mosaic of habitats in the SPA and the surrounding land, which gives the area its ornithological interest, including a wide range of areas functionally linked to the SPA. The Thames Estuary WeBS count indicates that the area regularly supports over 15,000 dark-bellied brent geese (second nationally only to the Wash) which is over 20% of the total UK overwintering population. The role it plays in conserving this species in international terms should therefore not be underestimated – these large birds may be particularly vulnerable to bird strikes. Work carried out on behalf of the DfT by the Central Science Laboratory and the British Trust for Ornithology concluded that an airport at Cliffe, even with an aggressive bird management programme in place, would not be able to reduce the risk to aircraft to levels similar to those prevailing at other UK airports<sup>18</sup>.
- 5.11. International and UK regulations require a 13km safeguarded zone around all major civil and military aerodromes within which any planning application that could increase bird strike risk must be referred to the airport<sup>19</sup>. The Department for Transport circular on safeguarding identifies the following types of development as potential hazards: *“...facilities intended for the handling, compaction, treatment or disposal of household or commercial wastes, which attract a variety of species, including gulls, starlings, lapwings and corvids; the creation or modification of areas of water such as reservoirs, lakes, ponds, wetlands and marshes, which attract gulls and waterfowl; nature reserves and bird sanctuaries; and sewage disposal and treatment plant and outfalls, which can attract gulls and other species. Planting trees and bushes normally creates a bird hazard only when it takes place relatively near to an aerodrome, but a potential starling roost site further away from an aerodrome can create a hazard. Mineral extraction and quarrying can also create a bird hazard because, although these processes do not in themselves attract birds, the sites are commonly used for landfill or the creation of wetland.”*<sup>20</sup>

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<sup>18</sup> Bell, J.C., Burton, N.H.K., Walls, R., Musgrove, A.J., Allan, J.R., Rehfisch, M.M. & Watola, G. (2003) Study on the potential safety risks from birds at and around a potential new airport at Cliffe Marshes and measures for mitigating those risks. Report by the Birdstrike Avoidance Team, Central Science Laboratory and British Trust for Ornithology to the Department for Transport. Department for Transport, London.

<sup>19</sup> CAP 738 Safeguarding of Aerodromes, Civil Aviation Authority (2006)

<sup>20</sup> Safeguarding aerodromes, technical sites and military explosives storage areas Department for Transport (2005)

- 5.12. A preventative approach is adopted in relation to the consideration of Mineral Site Allocations within 13km airport safeguarding zones. Essentially, this prevents a requirement for any additional culling or disturbance of bird populations (as undertaken as part of a Bird Control Management Plan), that might otherwise be attracted to new wetlands created from mineral sites post extraction. The risk posed by birds to air safety is consistent regardless of whether or not the concentration of birds pre-dated the airport or vice versa, yet there is a risk of a very contradictory approach being adopted; one that might allow consideration of new airports immediately adjacent to existing internationally important concentrations of birds, whilst simultaneously preventing the establishment of, what might be predicted to be comparatively small, new bird populations becoming established up to 13km from existing airports.
- 5.13. A new Thames Estuary airport would also be required to produce and apply a bird control management plan that should seek to “*minimise the presence of flocks of birds on, or in the vicinity of, the aerodrome as much as possible*”<sup>21</sup> within this 13km zone.
- 5.14. Given the number of national and international designations within the Thames Estuary relating to birds, this safeguarding requirement would make attempts to conserve or enhance habitat for bird populations extremely difficult. This would run counter to the purposes of the Habitats Directive which is “*...to enable the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range.*”<sup>22</sup> In addition, it would create a significant barrier to both current and future developments which might require the creation of compensation or mitigation habitat for birds within 13km of the airport boundary. The airport would be likely to object to any such developments on safeguarding grounds. The bird strike risk and the safeguarding requirement are likely to militate against providing compensatory habitat for birds displaced by the airport development within close proximity to the original sites; the knock-on implications of this are discussed in greater detail in section 7.1.3.9.
- 5.15. The hours of airport operation would also be a significant variable in determining the impact on birds. The Fosters proposals for a hub airport on the Isle of Grain<sup>23</sup> indicate that 24 hour operation would be a key element of the proposals’ appeal. However, the Bird Hazard Risk Assessment for the Lydd airport proposals<sup>24</sup> recognised that dawn and dusk movement of

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<sup>21</sup> CAP 772 Birdstrike Risk Management for Aerodromes, Civil Aviation Authority (2008)

<sup>22</sup> Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive)

<sup>23</sup> Thames Hub: Outline Proposal to the Airports Commission, Foster and Partners (July 2013)

<sup>24</sup> Page 27, Lydd closing submission, Natural England, REF 49 LAA/6/C, Appendix 1

wildfowl and gulls was an example of an acute hazard; a similar issue would apply to an Inner Thames Estuary airport if bird flightpaths between roosting and feeding areas posed unacceptable risks to airport operations.

- 5.16. Bird control relating to airports can include netting of waterbodies, use of pyrotechnics, land and habitat management<sup>25</sup>. We recommend that the Airports Commission consider current practices and any lessons that may be learnt regarding bird control from other UK airports operating within close proximity to SPAs such as Liverpool (adjacent to the Mersey Estuary SSSI/SPA/ Ramsar site), Glasgow (adjacent to the Black Cart SPA) and Derry (adjacent to Lough Foyle SPA) airports.
- 5.17. Should any culling be required, then the significance of any losses would need to be predicted in advance and considered against the provisions of the Habitat Regulations 2010 (as amended). The scale of acceptable losses (and hence unacceptable losses) must be understood. European Guidance has been used in order to determine threshold levels for judging significance in relation to other developments; notably mortality linked to the assessment of off-shore wind farms and the collision of SPA seabirds with turbines. European Commission guidance<sup>26</sup>, formulated by the ORNIS committee, states: *“The overall annual mortality is an appropriate parameter to quantify small numbers because it takes population size, status and population dynamics into account. Within this framework “small numbers” should be considered as being any taking of around 1% of the annual mortality for species which may be hunted, it being understood that conformity with Article 9 of the Directive depends in any event on compliance with the other provisions of the Article.(3.5.36).”*<sup>27</sup>
- 5.18. **Noise Disturbance** 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:
- Aircraft movements;
  - Engine testing and other noise sources at airports.
- 5.19. Noise is one of the dominant environmental costs of air travel due to its impacts on communities living close to the airport or under flight paths. However, it can also cause disturbance to wildlife, particularly birds. As stated at 5.2 above, the Thames Estuary and Marshes SPA, Outer Thames Estuary SPA and other internationally and nationally protected sites within

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<sup>25</sup> CAP 680 Aerodrome Bird Control. Civil Aviation Authority (2002)

<sup>26</sup> Guidance document on hunting under Council Directive 79/409/EEC on the conservation of wild birds “The Birds Directive”. (sections 3.5.27 – 3.5.47), [http://ec.europa.eu/environment/nature/conservation/wildbirds/hunting/docs/hunting\\_guide\\_en.pdf](http://ec.europa.eu/environment/nature/conservation/wildbirds/hunting/docs/hunting_guide_en.pdf)

<sup>27</sup> ORNIS Committee for the Adaptation to Technical and Scientific Progress under the Directive, instituted under Article 16 of the Birds Directive

and around the Estuary are designated in large part for their bird populations, including divers, raptors, grebes, geese, seabirds, ducks and waders. Article 4(4) of the Birds Directive provides that Member States must take steps to avoid pollution or deterioration of habitats or any disturbance affecting the birds, in so far as those effects would be significant. Article 4(4) also provides that outside the SPAs, Member States must strive to avoid pollution or deterioration of habitats. It is apparent that the Birds Directive is intended to protect the habitats of birds, in particular in relation to breeding, wintering and migration, and to avoid significant effects from the deterioration of habitats and disturbance affecting birds.

- 5.20. Consideration of the environmental impacts of a Thames Estuary airport would therefore need to focus on bird disturbance and displacement from airport construction and operations as a key issue. Disturbance can be defined as “*any situation in which human activities cause a bird to behave differently from the behaviour it would exhibit without the presence of that activity*”<sup>28</sup>. The effects of disturbance include birds taking flight, changing their feeding behaviour, or being more vigilant; there is general evidence that disturbance can significantly reduce food intake rates<sup>29</sup>. There can also be physiological impacts, such as changes in the levels of stress hormones or changes in heart rate<sup>30</sup>. Single disturbance events and especially repeated or ongoing activities which disturb birds can lead to permanent displacement of birds from certain areas. In effect this constitutes indirect habitat loss due to the behavioural avoidance by the birds of the disturbing activity.
- 5.21. Levels of disturbance from aviation are affected by a number of variables including aircraft type, sound levels, and frequency of flights; “*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 dependent 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)*.”<sup>31</sup> The proof submitted on behalf of the Royal Society for the Protection of Birds (RSPB) to the Public Inquiry into the Lydd airport expansion provides a useful summary of the literature on bird disturbance from aircraft. It

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<sup>28</sup> Disturbance effect of aircraft on birds, Drewitt, A. for English Nature (1999)

<sup>29</sup> Ibid

<sup>30</sup> Proof of Evidence of Dr John Underhill-Day for the Royal Society for the Protection of Birds 22nd December 2010

<sup>31</sup> Ibid, section 10.43

concludes that no studies could be found to aid understanding of aircraft impacts on (amongst other species) Grey Plover, Knot and Dunlin, (populations of which are present in the Thames Estuary and Marshes SPA).<sup>32</sup> Also 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.”*<sup>33</sup>

5.22. This conclusion reflects that of the Drewitt paper which agrees that simple generalisations regarding the effects of aircraft on birds cannot be made, but concludes:

- Low-flying helicopters and ultra-lights cause the greatest level of disturbance.
- Low flight altitudes cause most disturbance; flights over sensitive bird areas should be at least 500m above surface levels, and preferably over 1000m (especially for helicopters).
- Unpredictable, curving flight lines are more disturbing than predictable, straight flight lines; birds can often habituate to regular and predictable events.
- The impact of aircraft disturbance may be increased if other sources of disturbance affect the same area.
- Cliff-nesting and other colonial seabirds during the breeding season and flocks of waterfowl during the winter are most vulnerable, especially during severe weather conditions.
- No-fly zones should be sought if serious disturbance is apparent<sup>34</sup>.

5.23. A recent Defra literature review<sup>35</sup> looking at the impacts of anthropogenic noise on UK protected species identified that there is overlap of the hearing range of birds (up to 10kHz) with the dominant frequencies of air traffic (up to 5kHz). The review makes reference to four studies on the impacts of aviation noise on birds. It concludes that the studies are observational and show possible impacts, though it is not possible to draw strong evidence from these studies because they are unable to remove confounding factors.

5.24. Red throated divers, which are a designated feature of the Outer Thames Estuary Marine SPA, are known to be highly sensitive to disturbance from anthropogenic activities. In recent reviews of the vulnerabilities of a wide variety of seabird species to human activities associated with windfarm development, red throated divers have been assigned the highest rank

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<sup>32</sup> Ibid, section 10.75

<sup>33</sup> Ibid, section 10.81

<sup>34</sup> Disturbance effect of aircraft on birds, Drewitt, A. for English Nature (1999)

<sup>35</sup> The Effects of Noise on Biodiversity, NO0235, Defra (2013)

score for sensitivity to disturbance by ship and helicopter traffic<sup>36</sup> and to displacement by offshore windfarms<sup>37</sup>. In the latter study, populations of red throated divers were assessed as having the highest vulnerability to displacement from windfarms and associated traffic of 50 species considered. In recognition of the shyness of the species, traditional survey methods using ships and low level (76m) flights by light aircraft have largely been abandoned and superseded by use of digital photography conducted from light aircraft flying at higher altitudes. Current guidance<sup>38</sup> recommends that minimum flight height for light survey aircraft should be set at 450m to avoid disturbance to birds such as red throated diver. It is logical to conclude that flights of commercial airliners on approach to or departure from Inner Thames Airport, if routed over the Outer Thames SPA, would need to be above this height, and probably considerably so, to avoid disturbance to red throated divers.

- 5.25. In conclusion, it is likely that quantifying the noise disturbance and displacement impacts to protected bird populations from airport operations would require further research and analysis before meaningful conclusions can be drawn, and before meaningful mitigation (if possible) or compensation (if possible) can be designed.
- 5.26. Airport construction noise is also an issue; if the airport development involves building out into the estuary, significant piling work will be required, affecting fish, birds and marine mammals for an extended period of time.
- 5.27. **Other forms of bird disturbance** (impacts of man-made landscape features): Many wintering waterbirds require open sightlines to enable the early detection of predators. New development that removes uninterrupted views has the potential to 'disturb'. Taller buildings closer to the coast can also provide convenient new look-outs for predatory birds, such as the peregrine falcon. In addition, the presence of roads and railways can also affect bird density (Burton et al. 2002)<sup>39</sup>.

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<sup>36</sup> 1.1. Garthe, S., Hüppop, O., 2004. Scaling possible adverse effects of marine wind farms on seabirds: developing and applying a vulnerability index. *J. Appl. Ecol.*, 41, 724-734.

<sup>37</sup> MacArthur Green Ltd & WWT Consulting Ltd. 2013. Seabird sensitivity mapping for English territorial waters. Spatial modelling, wind farm sensitivity scores and GIS mapping tool. Appendix III Species sensitivity scores. Unpublished Report to Natural England. 70pp.

<sup>38</sup> Thaxter, C.B. & Burton, N.H.K. (2009) High Definition Imagery for Surveying Seabirds and Marine Mammals: A Review of Recent Trials and Development of Protocols. British Trust for Ornithology Report Commissioned by Cowrie Ltd.

<sup>39</sup> 1.1. Burton, N.H.K, Armitage, M.J.S, Musgrove, A.J. and Rehfisch, M.M. (2002). Impacts of Man-Made Landscape Features on Numbers of Estuarine Waterbirds at Low Tide. *Environmental Management* Vol. 30 (6): 857–864.

- 5.28. **Other environmental impacts** In addition to the impacts listed at 5.1 – 5.23 above, there are other activities and events associated with airport construction and operation aviation that could negatively impact upon biodiversity and geological interests:
- Congestion and delays in routes leading to and from the airport (roads).
  - Soil and sediment pollution near airports (storm runoff, leakage from storage tanks).
  - Serious aircraft/vehicle fire or accident leading to fuel spillage or ignition.
  - Spillages of fuel during refuelling or de-fuelling of aircraft and other vehicles.
  - Spillages of sewage and waste during transfer from aircraft.
  - Spillage of substances from damaged freight.
  - Aircraft cleaning/paint spraying – leading to spillage of cleaning liquids, paints, paint strippers, oils and solvents.
  - Herbicide and pesticide application on tarmac.
  - Overflow of oil from oil/water interceptors (drainage and balancing ponds).
  - Fuel jettisoning by aircraft in flight (particularly when approaching destination airport).
  - Rupturing of underground drainage or fuel piping (due to drilling and laying of foundations).
  - Top soil stripping and landscaping causing biodiversity impacts.
  - Spillage from trucks of materials or fuels.
  - Serious vehicle fire or accident involving fuel spillage or ignition.
  - Air pollution as a result of dust.
- 5.29. The location of an inner Thames Estuary airport development means that impacts on the marine environment from both construction and operation of the airport will need to be assessed in addition to terrestrial impacts. Impacts could include:
- marine pollution and impacts to shellfish beds and fisheries;
  - construction noise and piling impacts;
  - impacts associated with sourcing material to create the build out into the estuary. This could require new marine aggregate extraction sites.
  - impacts associated with the construction plant used and access across sensitive habitats;
  - laying of piling lines, outfalls and draining schemes.
- 5.30. With regard to the mitigation of biodiversity impacts on non-designated sites, biodiversity offsetting may be relevant and is currently being considered by another large scale project (High Speed Two).

## 6. CHALLENGES ASSOCIATED WITH THE COLLECTION OF BASELINE DATA AND ASSESSMENT OF IMPACT IN A DYNAMIC ECOLOGICAL ENVIRONMENT

- 6.1. Under both the Habitats and Environmental Impact Assessment regulations there is a requirement to gather robust baseline data as a prerequisite to understanding ecological impacts and their significance. The European Commission 2011 guidance on the application of the Habitats Directive in estuaries and coastal zones notes that *“Estuaries and coastal zones are among the most productive ecosystems in the world, with both high ecological and economic values. They are of prime importance for wildlife, especially migrating and breeding birds and of major value in terms of their rich natural resources (e.g. as nursery grounds for commercially important fish). In addition, they also offer a wide variety of ecosystem services such as shoreline stabilization, nutrient regulation, carbon sequestration, detoxification of polluted waters and supply of food and energy resources...”*<sup>40</sup> This multifunctional complexity raises two challenges that should be considered with regard to the development of an Inner Thames Estuary airport.
- 6.2. Firstly, the current presence or absence of data for each protected species and site would require consideration, as would the likely survey requirements in order to fill any significant gaps, which may require several years to complete. The implications of data gathering for complex national infrastructure schemes can have a significant bearing on their affordability and deliverability; for example, the Energy and Climate Change Committee’s Severn Barrage inquiry highlighted the challenges in attempting even a high level assessment of likely environmental impacts and their magnitude in the absence of robust and long-term basic data for the estuary<sup>41</sup>. The recent decision not to progress with the phase two expansion of the London Array off shore wind farm was influenced, in part, by the survey requirements for assessing the impacts on red throated diver, and by the possibility that impacts would be adverse<sup>42</sup>.
- 6.3. Secondly, it is worth noting the challenge of collecting the necessary ecological survey data in a dynamic and complex ecosystem such as the Thames Estuary, combined with the dynamic nature of many of its protected species. Marine species, seabirds and marine mammals are particularly difficult to survey for, and for the bird populations under consideration, survey methodology would need to respond to diurnal, annual, seasonal,

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<sup>40</sup> Page 6, EC Guidance on the implementation of the EU nature legislation in estuaries and coastal zones (2011)

<sup>41</sup> A Severn Barrage? Energy and Climate Change Committee Inquiry, Second Report of Session 2013–14 Volume I (2013)

<sup>42</sup> <http://www.londonarray.com/2014/02/19/london-array-to-stay-at-630mw/>



meteorological and species-specific fluctuations and may need to be carried out for up to five years in order to be robust. The European Commission guidance on the assessment of plans and projects affecting N2K sites recommends that “*developments which potentially impact on roosting or feeding areas of migratory species should be accompanied by data indicating peak site use by the species under consideration, for a minimum of the last five years.*”<sup>43</sup> This information may be available for some SPA bird populations through the WeBS counts but is unlikely to be available for sea birds. Habitats surveys, hydrodynamic modelling and benthic surveys would all be required in order to fully understand the impacts of an airport development on the SPA qualifying features.

- 6.4. The birds within the Thames Estuary are evidently not confined to the boundaries of the designated sites of which they are a designated feature, and move between different feeding and roosting sites at different times of the day. Each species has its own feeding and roosting requirements; for example, ringed plover, avocet, dunlin and black tailed godwit depend on the invertebrate food sources present in the mudflats within the Estuary, whilst others (for example Brent geese) depend upon saltmarsh, eelgrass beds and grassland for grazing. Thus, bird surveys would not necessarily be limited to the Thames Estuary and Marshes SPA and would need to be designed to account for the birds’ use of designated and non-designated sites within the wider Estuary area. They would need to look at flight lines between sites within and outside the Estuary.
- 6.5. The dynamic nature of both the protected bird populations and habitats within the Thames Estuary, combined with the multiple potential impacts identified in sections 6.1 – 6.8 from airport construction and operation, means that the zone of influence within which the development’s impacts on specific receptors can be determined will potentially be large. The zone of influence will not be limited to the boundaries of the Thames Estuary and Marshes SPA or to the direct land take within the SPA. It will need to account for the functional interconnectivity between the Thames Estuary and Marshes SPA and the surrounding designated and non-designated sites, establishing how birds move between and use these sites and how airport construction and operation may limit or prevent these movements, then determining the significance of this intervention on the long-term viability of the bird populations in question.
- 6.6. The likely impacts from airport safeguarding and on and off-site bird control measures would also need to be factored into the zone of influence. The Inspector’s report for the Dibden Bay inquiry highlighted the need to take supporting habitat into account when assessing both adverse impacts on

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<sup>43</sup> Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC, European Commission (November 2001)

site integrity and compensation requirements; the application was refused in part by the Inspector on the grounds of the insufficient compensation measures proposed by the applicant<sup>44</sup>. The National Planning Policy Framework (NPPF) also highlights that “*sites identified, or required, as compensatory measures for adverse effects on European sites, potential Special Protection Areas, possible Special Areas of Conservation, and listed or proposed Ramsar sites*”<sup>45</sup> should be given the same protection as European sites.

- 6.7. The Holehaven Creek SSSI on the north shore of the Thames Estuary near Canvey Island, provides a useful illustration regarding functional links between the SPA and the wider Thames Estuary. The SSSI supports an internationally important population of overwintering black-tailed godwit (a Thames Estuary & Marshes SPA bird feature). The London Gateway Port submissions and Public Inquiry highlighted the functional link between the existing SPA and this Creek which led to its SSSI notification and which will be followed in due course by designation as an extension to the SPA. Any assessment of the impacts of a hub airport would need to account for the interconnectivities between the Thames Estuary and Marshes SPA and the Holehaven Creek SSSI, and also with other adjacent sites such as Benfleet and Southend Marshes SPA, Mucking Flats and Marshes SSSI, Medway Estuary and Marshes, and, potentially, other sites, in order to understand whether land take within the Thames Estuary and Marshes SPA will have an adverse effect on the integrity of the SPA by leading to a long-term decline in its birds populations.
- 6.8. A further issue relevant to data gathering and the deliverability of the scheme is the need to ensure the effectiveness of mitigation and compensation measures in short, medium and long term. Within such a dynamic setting, impacts on the interest features of the SPA from airport construction and operation will extend well beyond any initial direct landtake and could potentially play out over decades, thus creating challenges with regard to delivering mitigation and compensation and a requirement for significant and ongoing post-construction monitoring. Other infrastructure developments with major impacts on estuaries indicate that the equilibrium of estuary habitats can take decades to recover, and in some cases, has never returned to a steady state<sup>46</sup>. Article 1 of the Habitats Directive refers to long-term (rather than short-term) effects and the Inspector’s report for the

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<sup>44</sup> Page 741, Dibden Bay Inquiry Inspector’s Report, Michael Hurley (2003)

<sup>45</sup> Page 28, paragraph 118, National Planning Policy Framework, Communities and Local Government (2012)

<sup>46</sup> A Severn Barrage? Second Report of Session 2013–14 Volume I, House of Commons Energy and Climate Change Committee (2013)

Dibden Bay public inquiry references the judgment in RSPB v Secretary of State for Scotland (EN/0/3, Case B) which also stresses the importance of long-term effects in applying the European legislation:

*“At paragraph 30, the Lord President said: .... disturbance should not impair the protection of the quality of the living conditions of the birds on the site and so affect their ability to maintain themselves on a long-term basis ....*

*And at paragraph 32 he said: .... although the effects of any disturbance on the relevant birds in a SPA must be taken into account, it does not, of course, follow that no disturbance whatever of the birds is permitted. What is not permitted is disturbance which adversely affects the ability of the species to maintain itself on a long-term basis on the site, or - as the Commission puts it - "which could contribute to the long-term decline of the species on the site"<sup>47</sup>*

- 6.9. Regarding post-construction monitoring requirements relating to impacted bird populations and the functional quality of created mudflat and saltmarsh habitats, lessons may usefully be learnt from other large scale estuarine infrastructure projects such as the Severn Barrage proposals, the Harwich channel deepening, and the London Gateway development. Lessons may also be learnt from post-construction monitoring for off shore wind developments.
- 6.10. The Harwich channel deepening has required ongoing monitoring and annual reporting of monitoring data, associated with requirements under the compensation monitoring and mitigation agreement, and overseen by a Regulators group. Monitoring at Harwich includes benthic surveys, fisheries studies, annual bird population monitoring based on WeBs data and low tide bird counts, changes to the extent of saltmarsh and mudflats using aerial photography, and sediment accretion and erosion monitoring (Harwich has commissioned an analysis of intertidal and subtidal area and volume based on combined 2005/2006 and 2010/2011 bathymetric and LiDAR data). Regarding post-construction monitoring requirements relating to the disturbance and displacement of birds at sea within the Outer Thames Estuary SPA, London Array Limited have conducted a programme of digital aerial surveys of bird distribution since 2008 and have developed detailed habitat usage models in order to improve understanding of the magnitude and population level consequences of the displacement of red throated divers arising from the construction and operation of offshore windfarms in the estuary.
- 6.11. Evidently, recent large scale developments within the Thames Estuary such as the London Gateway port development mean that relevant, recent data

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<sup>47</sup> Page 43, Dibden Bay Inquiry Inspector's Report, Michael Hurley (2003)

will have been gathered that may be transferable to the development of an Inner Thames Estuary airport. For example, the site of the proposed Local Development Order (LDO) at London Gateway, and the wider London Gateway site, have been subject to a large number of ecological surveys, Habitats Regulations Assessments and protected species licences to support their applications.<sup>48</sup> The ecological surveys to inform the Outline Planning Application and Harbour Empowerment Order were initiated in 2000<sup>49</sup>. In addition, on-going monitoring has taken place as part of and to inform ten ecological management plans (including an Invertebrate Ecological Action Plan, Scare Plants Ecological Action Plan and a Wintering Birds Action Plan)<sup>50</sup>. The LDO Habitats Regulations screening provides a useful summary of the ecological surveys and resulting reports undertaken to date<sup>51</sup>. The data from the offshore wind farms (London Array), and marine aggregate sites, plus the MCZ surveys will also provide valuable information.

#### 6.12. **Consideration of impacts on other protected sites and species**

6.13. In keeping with the terms of reference for Feasibility Study 1, the emphasis of this submission is mainly on assessing SPA impacts and the implications of regulation 62(1) of the Habitats Regulations. However, the Commission should also note:

- the Ramsar, Marine SAC, Marine Conservation Zone, and SSSI designations listed at section 4 of this submission;
- the presence of the Kent Downs AONB approximately 15km to the south of the Isle of Grain. Further information regarding aviation and protected landscapes is provided at Annex 3;
- the requirements regarding internationally protected species as set out at section 4 of this submission.

6.14. Impacts on estuaries and coastal water bodies are also of interest under the Water Framework Directive 2000/60/EC (WFD). The WFD establishes a framework for the protection of all surface waters (rivers, lakes, transitional and coastal) and groundwater at EU level and aims to achieve a good ecological status (or a good ecological potential for heavily modified water bodies) and a good chemical status by 2015. Estuaries and coastal waters are identified as transitional or coastal water bodies. According to the WFD

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<sup>48</sup> London Gateway Logistics Park Local Development Order Habitat Regulations Information to Inform Screening Assessment Report (2013) Environ

<sup>49</sup> Ibid

<sup>50</sup> Ibid

<sup>51</sup> Ibid, Annex E

their deterioration should be prevented and their aquatic ecosystem status protected and enhanced.

#### 6.15. Assessing cumulative and indirect impacts

- 6.16. Environmental legislation requires that Environmental Impact Assessment (EIA), Strategic Environmental Assessment (SEA) and Habitats Regulations assessments (HRA) include an assessment of cumulative and indirect impacts from the proposed development and its interaction with other plans and developments. Schedule 4 of the Environmental Impact Assessment Regulations 2011<sup>52</sup> highlights the need for the environmental statement to include “*a description of the likely significant effects of the development on the environment, which should cover the direct effects and any indirect, secondary, cumulative, short, medium and long-term, permanent and temporary, positive and negative effects of the development, resulting from—*  
*(a) the existence of the development;*  
*(b) the use of natural resources;*  
*(c) the emission of pollutants, the creation of nuisances and the elimination of waste.*”
- 6.17. Cumulative impacts have been defined as “*impacts that result from incremental changes caused by other past, present or reasonably foreseeable actions together with the project.*”<sup>53</sup> The ‘Managing Natura 2000’ guidance makes clear that the ‘in combination with other plans or projects’ assessment required in Article 3(3) refers to cumulative effects caused by the projects or plans that are currently under consideration together with the effects of any existing or proposed projects or plans<sup>54</sup>.
- 6.18. Indirect impacts have been defined as “*impacts on the environment, which are not a direct result of the project, often produced away from or as a result of a complex pathway. Sometimes referred to as second or third level impacts, or secondary impacts.*”<sup>55</sup>
- 6.19. The European Commission 2011 guidance highlights the multiple pressures facing Europe’s estuaries, where “*human activities in coastal and estuarine areas include navigation, dredging, aggregate and sand extraction,*

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<sup>52</sup> 2011 No. 1824 TOWN AND COUNTRY PLANNING The Town and Country Planning Environmental Impact Assessment) Regulations 2011

<sup>53</sup> [Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions](#), European Commission (1999)

<sup>54</sup> MANAGING NATURA 2000 SITES The provisions of Article 6 of the ‘Habitats’ Directive 92/43/EEC

<sup>55</sup> [Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions](#), European Commission (1999)

*fisheries, aquaculture, industry (including oil and gas extraction, wind farms development), drainage of sewage and waste water, water extraction (e.g. for power stations and industry), safety (including sea defence and flood protection), recreation including bird watching and hunting, urbanisation, cover for cables, pipes and tunnels, military activities and research activities.*"<sup>56</sup> The Thames Estuary area is used for all of these activities and is undergoing significant development which makes the assessment of cumulative impacts particularly important, and particularly challenging; other projects recently given consent include:

- London Gateway Port and associated developments of the Harbour Empowerment Order
- The Gateway Energy Centre (GEC), Underground Gas Pipeline and power transmission lines connecting GEC to the National Grid;
- The London Gateway Access Road;
- The London Gateway Administration Building;
- Thames Estuary 2100;
- The London Array offshore windfarm
- Warehousing at the former BP Oil Refinery, Grain
- 5 wind turbines at the BP site south of the former BP Oil Refinery
- A second power station at Damhead Creek, Kingsnorth

6.20. Other likely proposals include the Lower Thames Crossing (currently at options identification stage), Paramount's plans for a theme park at Swanscombe Peninsula, the North Thames Link Road from Canvey Island across Holehaven Creek and a hazard waste disposal site at Perry's Farm, Grain (NSIP project at pre-application stage). There are also proposals for a new power-station at Tilbury, although these are currently on hold.

6.21. In the five Local Planning Authorities making up North Kent (Dartford, Gravesham, Medway, Swale and Canterbury) housing growth is approximately 68,000. If the airport goes ahead the Local Plans will need to be revised to include greater numbers of houses to house the numbers of people that will need to work at the airport.

6.22. The impact of climate change and sea level rise on estuarine habitats would also need to be considered, given the sensitivity of the habitats concerned to sea level rise, flooding and coastal squeeze. In its final report, the European BRANCH project (which aimed to show how spatial planning could help biodiversity adapt to climate change) concludes that "*intertidal coastal habitats will decline everywhere in Europe if the policy of 'holding*

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<sup>56</sup> Page 6, EC Guidance on the implementation of the EU nature legislation in estuaries and coastal zones (2011)

*the line' of existing sea defences continues.*"<sup>57</sup> With regard to understanding the impact of climate change and sea level rise on the Thames Estuary, the Environment Agency's Thames Estuary 2100<sup>58</sup> flood risk management programme is seeking to deliver compensatory habitat to address intertidal losses in the Thames estuary, and has undertaken an assessment of potential sites for habitat creation in North Kent and South Essex informed by the Kent and Essex shoreline management plans.

- 6.23. The Marine Management Organisation (MMO) has completed a review of the cumulative effects of offshore wind farms<sup>59</sup>, the findings of which (particularly those relating to seabirds) will be of relevance to an Inner Thames Estuary airport. Natural England has also produced a report on Cumulative Impact Assessments (CIA) related to Marine Protected Areas<sup>60</sup> which will also be relevant. Should a Thames Estuary airport option be progressed, the initial Sustainability Appraisal and the EIA would need to work through the potential for cumulative and indirect impacts on all of the ecologically sensitive receptors in the Estuary.
- 6.24. Evidence indicates that biodiversity in the Thames Estuary area is already struggling; bird numbers are declining in Medway SPA and there are WeBS alerts on a number of species. The area is vulnerable to coastal squeeze, erosion of intertidal habitat, disturbance from water borne recreation, hydrological impacts and development pressures<sup>61</sup>. Habitat quality and species diversity are continuing to decline, with huge decreases in certain species: Defra's figures for farmland birds show dramatic declines in the South East, greater than in any other region. For the period 1994 to 2006, the population index for farmland birds shows a decrease of 21%, with 12 of the 19 species showing declines of over 10%<sup>62</sup>. The initial Sustainability Appraisal of the South East Plan acknowledged that many aspects of the

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<sup>57</sup> Page 7, BRANCH final report (BRANCH stands for Biodiversity Requires Adaptation in North West Europe under a CHanging climate) 2007

<sup>58</sup> Thames Estuary 2100 Plan: Managing flood risk through London and the Thames estuary, Environment Agency (2012)

<sup>59</sup> Evaluation of the current state of knowledge on potential cumulative effects from offshore wind farms (OWF) to inform marine planning and marine licensing, MMO (2013)

<sup>60</sup> NECR147 edition 1 - Development of a generic framework for informing Cumulative Impact Assessments (CIA) related to Marine Protected Areas through evaluation of best practice, Natural England (2014)

<sup>61</sup> 'State of the Natural Environment' report for the south east, Natural England (2008)

<sup>62</sup> Wild bird population indicators for the English regions: 1994 – 2007, Defra (2007)

region's environment are already under stress, for example the South East is the most water stressed regions in England<sup>63</sup>.

- 6.25. Habitat declines are evident at the wider bio-geographical level as well, with the European Environment Agency's summary of the Atlantic biogeographic region noting: *"The low-lying coastal wetlands are declining both in quality and area. In the Seine estuary, industrial development and river channelling operations have reduced the surface area of tidal mudflats from 31 000 hectares to 14 000 hectares between 1980 and 1990. The same trends are evident in the Loire estuary, where 30 000 hectares of wetlands have been lost by river channelling, while over 5 000 hectares of mudflats have been lost since 1962. In addition, coastal areas have been affected by developments in the catchment basin upstream. The Thames estuary is one of the most developed estuaries in the world, but still houses large biodiversity resources, though these are much changed."*<sup>64</sup>
- 6.26. Recent evidence (Amec 2013) indicates that aircraft movement associated with Southend Airport (i.e., Easy Jet >300 metres overhead) are occasionally flying over Holehaven Creek and contributing to disturbance incidents to the SSSI bird population during the winter period. There is a need to consider the 'in combination' & 'cumulative' effects of operational flight paths & the consequences of expansion towards permitted capacity (likely to increase stacking & flightpath usage in sensitive areas), as part of any environmental baseline situation and 'in combination/cumulative' assessment.
- 6.27. The outer Thames area has seen significant 'pioneering' large scale developments over the last decade (e.g. London Gateway Port and the London Array) with additional managed realignment sites. These developments have required significant post-development monitoring due to uncertainty regarding final impact. It will not be possible to fully understand the longer-term impacts of these multiple projects on the Thames Estuary's nature conservation resource for some time to come. On this basis, the introduction of another large scale development would need to be carefully considered. The cumulative and indirect impacts on the biodiversity, landscape and ecosystems services of the Thames Estuary from a new hub airport, increased traffic, new road and rail infrastructure and other separate and related developments are likely to be significant.

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<sup>63</sup> Sustainability Appraisal Report on the Draft South East Plan. South East England Regional Assembly (2006)

<sup>64</sup> Page 25, European Environment Agency Europe's biodiversity – biogeographical regions and seas  
Biogeographical regions in Europe The Atlantic region



## 7. COMPENSATION FOR ADVERSE IMPACT ON THE INTEGRITY OF N2K SITES

### 7.1 Relevant issues regarding the provision of compensation under the Habitats Regulations 2010

7.1.1 **Mitigation or compensation for an inner Thames Estuary airport** The European Commission guidance on Articles 6(3) and 6(4) of the Habitats Directive defines mitigation as “*measures aimed at minimising or even cancelling the negative impact of a plan or project, during or after its completion*”<sup>65</sup>. For a recent judgement regarding mitigation and compensation, the Airports Commission could consider the recent ECJ ruling on the Briels case<sup>66</sup>. Mitigation measures should be considered in accordance with a hierarchy of preferred options, starting with avoidance:

Approach to mitigation	Preference
Avoid impacts at source	Highest
Reduce impacts at source	
Abate impacts on site	
Abate impacts at receptor	Lowest

Figure 2: Mitigation hierarchy<sup>67</sup>

7.1.2. Compensatory measures are those that are related to the residual adverse effects that cannot be reduced or avoided by mitigation, and are intended to maintain the overall ecological coherence of the Natura 2000 Network<sup>68</sup>.

<sup>65</sup> Page 14, Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, European Commission (November 2001)

<sup>66</sup> (Environment – Directive 92/43/EEC – Article 6(3) and (4) – Conservation of natural habitats – Special areas of conservation – Assessment of the implications for a protected site of a plan or project – Authorisation for a plan or project on a protected site – Compensatory measures – Natura 2000 site Vlijmens Ven, Moerputten & Bossche Broek – [Project on the route of the A2 ‘s-Hertogenbosch-Eindhoven motorway](#)) Case C-521/12,

<sup>67</sup> Page 14, Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC, European Commission (November 2001)

<sup>68</sup> Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission (2007/2012)

Mitigation measures would need to be a significant element of any Thames Estuary airport proposal, however, given the scale and nature of the development and supporting infrastructure, the resulting impacts on protected bird populations and the environmental sensitivities of the Thames Estuary area, it is highly unlikely that all the impacts of an airport could be fully mitigated. Therefore an inner Thames Estuary airport would most likely result in residual adverse effect on the integrity of the European sites affected and would require consideration of alternatives and Imperative Reasons of Overriding Public Importance (IROPI) in accordance with Article 6(4) of the Directive and regulation 62 of the Habitats Regulations 2010 (see below). If it passed this threshold then compensation would need to be considered.

**7.1.3 Article 6(4) of the Habitats Directive** If a Thames Estuary airport was found to have an adverse effect on the integrity of the sites affected, the project could only go ahead via the derogation process under Article 6(4) of the Habitats Directive. That process requires that the following three sequential tests are met:

- I. There must be no feasible alternative solutions to the plan or project which are less damaging to the affected European site(s);
- II. There must be “*imperative reasons of overriding public interest*” for the plan or project to proceed; and
- III. All necessary compensatory measures must be secured to ensure that the overall coherence of the network of European sites is protected (see regulation 66 of the Habitats Regulations 2010).<sup>69</sup>

These sequential tests are considered in further detail in the following sections.

**7.1.3.1 Alternatives** Natural England recommends the analysis of alternatives provided by both the European Commission Article 6(4) guidance (2007/2012)<sup>70</sup> and the European Commission guidance on the assessment of plans and projects<sup>71</sup>. These state that in line with the need to prevent

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<sup>69</sup> Habitats and Wild Birds Directives: Guidance on the application of Article 6(4), DEFRA, December 2012

<sup>70</sup> Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission (2007/2012)

<sup>71</sup> Section 3.3, Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC, European Commission (November 2001)

undesired impairment to the Natura 2000 network, the thorough revision and/or withdrawal of a proposed plan or project should be considered when significant negative effects on the integrity of a site have been identified. All feasible alternatives, in particular, their relative performance with regard to the conservation objectives of Natura 2000 sites, the integrity of Natura 2000 sites and the overall coherence of the Natura 2000 Network have to be analysed. Alternative solutions could include different locations or routes, a different scale of development, alternative ways of meeting the project's objectives, and a number of other variables. For the Thames Estuary airport, the project's objectives would need to be clearly defined and the Competent Authority (in this case the Secretary of State for the Department for Transport), would assess whether alternative means of meeting these objectives exist that would avoid adverse impact on Natura 2000 site integrity. The assessment of the Cliffe airport option in the aviation White Paper<sup>72</sup> (2003) concluded that despite the many potential benefits of the site, "*reasonable alternatives*" did exist for increasing airport capacity without the resulting damage to N2K sites.

**7.1.3.2. Imperative reasons of overriding public interest (IROPI)** Where a project has a negative assessment – i.e. where there is an adverse effect or it cannot be ascertained that a project would not adversely affect the integrity of a European site – and must be consented or carried out by the competent authority, the IROPI test applies. It is recommended that the Commission consider the analysis of IROPI offered in the 2007/2012 European Commission guidance on Article 6(4)<sup>73</sup>. The guidance provides some examples extracted from opinions delivered by the Commission as to what might constitute IROPI. Cases in the UK in which compensation has been considered include the consents for the London Gateway (Thurrock), Bathside Bay (Harwich), Immingham Outer Harbour port proposals and Able Marine Energy Park. The decision to refuse the Dibden Bay port development application<sup>74</sup> is also a useful case study with regard to IROPI, where the Inspector concluded that the proposals did not constitute

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<sup>72</sup> Page 112, The Future of Air Transport, Department for Transport (2003)

<sup>73</sup> Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission (2007/2012)

<sup>74</sup> Dibden Bay Inquiry Inspector's Report, Michael Hurley (2003)

‘imperative reasons of overriding public interest’<sup>75</sup>, and that the ecological compensation offered by the applicant was insufficient<sup>76</sup>.

7.1.3.3. IROPI may be determined by reasons of a social or economic nature unless a priority habitat or species could be affected; a list of the Annex I and II habitats and species that are also priority habitats and species can be found [here](#). Where a site hosts a priority natural habitat or species on the Directive, a plan or project can only be approved if there are imperative reasons of overriding public interest concerning human health, public safety or beneficial consequences of primary importance to the environment. The Thames Estuary and Marshes SPA/Ramsar/SSSI include the saline lagoons at Cliffe which are a listed feature of the Ramsar site ‘Coastal lagoons’ (EU code [1150](#)) are listed as a priority habitat under the Directive. However, the site selection process on the JNCC website explains that only near-natural lagoon sites have been selected for inclusion in the SAC series: “*Sites that are entirely artificial in origin, e.g. some docks, have been excluded, even though in some cases the communities present may be similar to those of more natural sites*”.<sup>77</sup> The Cliffe lagoons do not qualify as priority habitat under the Habitats Directive.

#### 7.1.3.4. **Compensation measures to protect the overall coherence of the network of European sites**

Compensation measures for adverse impact on the N2K network could consist of:

- *“restoration — restoring the habitat to ensure the maintenance of its conservation value and*
- *compliance with the conservation objectives of the site;*
- *creation — creating a new habitat on a new site or through the enlargement of the existing site;*
- *enhancement — improving the remaining habitat proportional to that which is lost due to the project or plan;*
- *preservation of habitat stock — measures to prevent further erosion of the coherence of the Natura 2000 network.”*<sup>78</sup>

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<sup>75</sup> Page 658, Ibid

<sup>76</sup> Pages 658-660, Ibid

<sup>77</sup> <http://jncc.defra.gov.uk/protectedsites/sacselection/habitat.asp?FeatureIntCode=H1150>

<sup>78</sup> Page 39, Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC, European Commission (November 2001)

7.1.3.5. Compensation should be derived from the N2K sites' conservation objectives, ensuring that the overall coherence of the N2K network is protected. In the estuary context section 3.3.4 of the European Commission's guidance on the application of the Birds and Habitats Directives in estuaries and coastal zones<sup>79</sup> provides that compensatory measures must accomplish the ecological function necessary to support the affected species. The Government's 2010 report on compensatory measures for the Severn Barrage<sup>80</sup> (and the Sustainable Development Commission's assessment of the implications of the Habitats Regulations for the same proposal<sup>81</sup>) provide a useful overview of the issues relating to the provision of compensation for a large scale estuarine development with major adverse impact on Natura 2000 sites. The CEEweb report "*Compensation of loss in natural habitats and species Guidance for naturalists involved in Habitats Directive Art. 6(4) implementation, and in other environmental procedures*"<sup>82</sup> is also recommended. The issues relevant to the assessment and provision of compensation are considered in further detail in the following sections.

7.1.3.6. **Ratio of compensation provision** A key reference regarding the ratio of compensation land offered to that being lost can be found in the EU guidance on compensation for Natura 2000 sites, which states the following: *"Consequently, compensation ratios are best set on a case-by-case basis and must be initially determined in the light of the information managed during Article 6(3) assessment and ensuring the minimum requirements to meet ecological functionality. The ratios may then be redefined according to the results observed when monitoring the effectiveness, and the final decision on the proportion of compensation must be justified. There is wide acknowledgement that ratios should be generally well above 1:1. Thus, compensation ratios of 1:1 or below should only be considered when it is demonstrated that with such an extent, the measures will be 100% effective in reinstating structure and functionality within a short period of time (e.g.*

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<sup>79</sup> The Implementation of the Birds and Habitats Directives in estuaries and coastal zones, European Commission (2011)

<sup>80</sup> [SEVERN TIDAL POWER Potential for Compensatory Measures](#), Department for Energy and Climate Change, 2010

<sup>81</sup> Equal Value Can a major Severn Tidal Power scheme be compatible with enhancing the Natura 2000 Biodiversity Network? Recommendations to the Severn Tidal Power Project Board as part of the Severn Tidal Power Feasibility Study, Sustainable Development Commission (December 2010)

<sup>82</sup> [Compensation of loss in natural habitats and species Guidance for naturalists involved in Habitats Directive Art. 6\(4\) implementation, and in other environmental procedures](#), Ceeweb (2012)

*without compromising the preservation of the habitats or the populations of key species likely to be affected by the plan or project)*".<sup>83</sup>

7.1.3.7. Annex C to the Severn Tidal Power Feasibility Study Working Paper<sup>84</sup> provides a key analysis of issues relating to the compensation of a large scale estuarine development with significant adverse impacts on SPA bird assemblages and migratory fish. It provides some examples of ratios adopted for other schemes, as does Table 2 below:

Case	Ratio
Harwich Approach channel deepening, Trimley Marshes	1:1  16.5ha intertidal habitat created; this includes 1:1 replacement of 4ha of intertidal habitat lost due to the scheme plus 12.5ha to mitigate losses that could occur before sediment replacement measures are expected to be fully effective <sup>85</sup> .
Harwich – Bathside Bay International Container Terminal	2:1  69ha of intertidal habitat lost, 112ha compensatory habitat offered <sup>86</sup> . Based on the spatial displacement of compensation into the adjacent SPA
London Gateway	1:1  In reality the ratio was slightly higher relating to the uncertainty surrounding the future use of this area by SPA birds. Site A estimated to create 20-27ha of mudflat and 5-12ha of saltmarsh Site X 60-70ha of mudflat and 3-8ha of saltmarsh.
Container Terminal III, Bremerhaven,	3:1  Loss of 105ha estuary habitat, 348ha offered in

<sup>83</sup> Page 18, Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission (2007/2012)  
[http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance\\_art6\\_4\\_en.pdf](http://ec.europa.eu/environment/nature/natura2000/management/docs/art6/guidance_art6_4_en.pdf)

<sup>84</sup> [ANNEX C Severn Tidal Power Feasibility Study Working Paper: Compensatory Measures – Application of Compensation Ratios under Article 6 \(4\)](#). A technical contribution to the work of the study by the HRA Expert Group.

<sup>85</sup> Mitigation and Monitoring for the Stour and Orwell Estuaries SPA and Hamford Water SPA Annual Review 2012, Harwich Haven Authority

<sup>86</sup> Bathside Bay Container Port, [Environmental Statement](#) Hutchinson Ports Ltd (2003)

Germany	compensation <sup>87</sup>
Able Marine Energy Park 1:1	The project predicted the loss of 50ha of mudflat, and offered 100ha as compensation, supported by Regulated Tidal Exchange to prevent accretion to saltmarsh. Regulated Tidal Exchange has not been done on this scale in the UK before and so this constitutes an untested approach. The project is also offering approx. 40ha of wet grassland to support the intertidal habitat. Natural England concluded that the final ratio of compensation for sustainable mudflat in the Able case was just over 1:1.

7.1.3.8. Ratios may also be affected by the proximity of the compensation land offered to the area being lost; see the following section for further discussion of this issue

7.1.3.9. **Proximity of compensation to area being lost** In order to ensure the overall coherence of the Natura 2000 network, EC guidance indicates that compensation should be in comparable proportions to those habitats and species that are adversely affected. They should be within the same bio-geographical region in the territory of the same Member State (the Thames Estuary is within the Atlantic bio-geographical region<sup>88</sup>), and should provide functions comparable to those that had justified the selection criteria of the original site.<sup>89</sup>

7.1.3.10. The EC 2007/2012 guidance highlights that the 'Birds' Directive does not provide for bio-geographical regions. It allows that: "...by analogy, it could be considered that the overall coherence of the network is ensured if:

- compensation fulfils the same purposes that motivated the site's designation in accordance with Article 4(1) and 4(2) of the Birds Directive;
- compensation fulfils the same function along the same migration path;
- the compensation site(s) are accessible with certainty by the birds usually occurring on the site affected by the project."<sup>90</sup>

<sup>87</sup> [Sustainable port development container terminals in Bremerhaven](#), Ulrich Filbrandt (2008)

<sup>88</sup> European Environment Agency Europe's biodiversity – biogeographical regions and seas  
Biogeographical regions in Europe The Atlantic region

<sup>89</sup> Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission 2007/2012

<sup>90</sup> Ibid

7.1.3.11. The latter point regarding the accessibility of the compensation site to the bird populations affected by the development is critical to the Thames Estuary airport proposals. As discussed later in sections 7.1.6.8 and 7.2, the availability and suitability of compensation land within the Thames Estuary on the scale that would be required by a hub airport development is a key issue, as is the effect of the bird strike safeguarding requirement discussed in section 5.8. If compensation land can only be secured outside the Thames Estuary, its ability to serve the bird populations affected potentially diminishes unless it can be ascertained that the SPA bird assemblages affected are capable of moving to sites distant from the Estuary itself without adverse impact occurring. The European Commission Article 6(4) (2007/2012) guidance concludes: *“The distance between the original site and the place of the compensatory measures is not necessarily an obstacle as long as it does not affect the functionality of the site, its role in the geographical distribution and the reasons for its initial selection.”*<sup>91</sup>

7.1.3.12. For the Thames Estuary airport proposals, functionality and accessibility will therefore be key issues in determining the suitability of compensation sites, rather than distance. Compensation for disturbance/displacement impacts on seabirds would be even more challenging to assess and deliver.

7.1.3.13. **“Like-for-like” or “equal value” compensatory habitat** In its discussion of compensation relating to the Severn Barrage proposals, the Sustainable Development Commission identifies three options for ensuring that all compensatory measures necessary to secure the overall coherence of the Natura 2000 network are taken:

- *Compensation using the same features as those affected (“like for like” or “within type”) and located within the same functional ecological unit as the affected site (the preferred option);*
- *Compensation using the same features as those affected but located within a different functional ecological unit;*
- *Compensation by substituting different features to those affected (“out of type”), whether within the same or a different functional ecological unit.*<sup>92</sup>

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<sup>91</sup> Page 13, Ibid

<sup>92</sup> Page 7, Equal Value Can a major Severn Tidal Power scheme be compatible with enhancing the Natura 2000 Biodiversity Network? Recommendations to the Severn Tidal Power Project Board as part of the Severn Tidal Power Feasibility Study, Sustainable Development Commission (December 2010)



7.1.3.14. These options indicate a range of approaches, from the accepted practice of 'like for like' compensation (option 1) through to the legally untested approach of option 3, where the achievement of Favourable Conservation Status at a wider bio-geographic scale is the driver, and the substitution of different habitats and species to those adversely impacted by development could be a delivery mechanism. The SDC report concludes "*such an approach might be feasible, albeit involving an unprecedented level of challenge*"<sup>93</sup>. The BRANCH project also examined the potential for a strategic approach to compensation; it concludes "*The opportunities for local or regional habitat re-creation are limited. Planners need to take a larger-scale approach and plan to replace habitats across regions, countries or even across Europe. This will require re-interpretation of key legislation, such as the EC Habitats Directive.*"<sup>94</sup> Similarly, at the end of the Severn Tidal Power Feasibility study process, Government concluded that it could not deviate from 'like for like' replacement within the terms of current EC guidance and legal interpretation.

7.1.3.14. The preferred option for in situ compensation outlined in option 1 above presents a specific challenge for an Inner Thames Estuary airport, due to the scale of compensation required (see section 7.1.6.8 below) and the availability of land in the Estuary (see section 7.2 below). The likelihood of achieving compensation provision in line with option 2 would be partly determined by the functionality and accessibility of alternative sites outside the Thames Estuary (as outlined in sections 7.1.6.3 - 7.1.6.5 above). It is entirely possible that the promoters of an Inner Thames Estuary airport would therefore need to explore the potential for compensation provision along the bio-geographical and/or 'equal value' lines set out in option 3, thus potentially requiring a reinterpretation of the Habitats Directive.

7.1.3.15. **Timing of compensation provision** Compensation measures require an agreed timescale by which they will be operational, and habitat should be established before the loss of the habitat for which it is compensating occurs. Failure to provide compensation measures at the time of loss increases the risk of harm to the coherence of Natura 2000. The text to the Commission's 2011 guidance on estuaries and coastal zones states: "*compensation measures must ensure the continuity of the ecological*

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<sup>93</sup> Page 2, Ibid

<sup>94</sup> Page 9, BRANCH final report (BRANCH stands for Biodiversity Requires Adaptation in North West Europe under a CHanging climate) 2007

*processes essential for maintaining the overall coherence of the Natura 2000 network. The compensation scheme should be 'effective' at the time the negative effects occur on the site concerned. Early implementation is of the essence. The application of specific mitigation measures to overcome possible interim losses may be necessary.*"<sup>95</sup>

7.1.3.16. The European Commission's Art.6(4) (2007/2012) guidance states (at p.13) that: *"best efforts should be made to assure compensation is in place beforehand and in the case that this is not fully achievable, the competent authorities should consider extra compensation for interim losses that would occur in the meantime."*<sup>96</sup>

7.1.6.17. Accordingly it is the clear expectation that effective compensation will be in place at the time of loss in order to meet the Art.6(4) duty. The European Commission's Art.6(4) guidance sets out a number of factors on timing at section 1.5.6. The four main factors listed are:

- *A site must not be irreversibly affected before compensation is in place.*
- *The result of compensation should be effective at the time the damage occurs on the site concerned. Under certain circumstances where this cannot be fully achieved, overcompensation would be required for the interim losses.*
- *Time lags might only be admissible when it is ascertained that they would not compromise the objective of 'no net losses' to the overall coherence of the Natura 2000 network.*
- *Time lags must not be permitted, for example, if they lead to population losses for any species protected in the site under Annex II of Directive 92/43/EEC or Annex I of Directive 79/409/EEC, requiring particularly attention when it entails priority species.*<sup>97</sup>

7.1.6.18. The guidance is clear that irreversible damage, net losses and population losses of important species would have to be avoided.

7.1.6.19. **Scale of compensation required** Evidently the scale and complexity of the development proposals drive the scale of compensation required.

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<sup>95</sup> Page 31, The implementation of the Birds and Habitats Directives in estuaries and coastal zones, European Commission (2011)

<sup>96</sup> Page 13, Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the Commission 2007/2012

<sup>97</sup> Page 19, Ibid

It is entirely possible that a hub airport development in the Inner Thames Estuary could require well in excess of 2000 hectares of compensation habitat. It is difficult to find a comparative development that demonstrates that this can be achieved. The Severn Barrage proposals are a potential (hypothetical) comparator – it was estimated that the Cardiff-Weston barrage would require measures to compensate for the loss of up to 16,300 hectares of intertidal habitat, which at a 2:1 ratio would require the implementation of upwards of 30,000 hectares of compensatory habitat.<sup>98</sup> The Severn Annex C paper on compensatory measures acknowledges that *“An argument exists that larger tracts of land will recreate a stable and ecologically functioning environment more successfully than many smaller schemes.”* The scale of compensation required for an Inner Thames Estuary airport presents two specific challenges – firstly with regard to the availability of sufficient and suitable land, and secondly in delivering and maintaining the ecological functionality of the habitats being lost. These challenges are discussed in greater detail below.

## **7.2 The availability, suitability and deliverability of compensation land in the Inner Thames Estuary**

- 7.2.1. In applying the issues set out in 7.1.1 through to 7.1.6 above to the Inner Thames Estuary, it is evident that there are already complex pressures from existing and proposed developments in the Thames Estuary area. The Environment Agency’s ‘Thames Estuary 2100’ (TE2100) programme sets out the approach for managing flood defences in the area and the level of compensatory land required to ensure plans do not have an adverse impact on integrity on N2K sites affected (approximately 1000ha). The Agency is seeking, and experiencing significant challenges in securing, this scale of compensation land within the Thames Estuary area. The Severn Barrage inquiry report highlights the lead in time that may be required to secure large scale compensation measures: as part of the Severn Estuary flood risk management strategy, Environment Agency proposals to create 400 hectares of compensatory intertidal habitat were reported to have taken *“eight years in the negotiations.”*<sup>99</sup>

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<sup>98</sup> Page 44, SEVERN TIDAL POWER Feasibility Study Conclusions and Summary Report, DECC (2010)

<sup>99</sup> Page 28, A Severn Barrage? Second Report of Session 2013–14 Volume I, House of Commons Energy and Climate Change Committee (2013)

7.2.2. The London Gateway port development in the Thames Estuary also has to secure land for compensation and the Kent, Essex and Medway Swale shoreline management plans require land for offsetting the impacts of coastal squeeze. A Thames Estuary airport would potentially build on land earmarked for compensation/mitigation for other schemes currently in development in addition to requiring its own compensation land. Current mitigation and compensation provision includes:

- London Gateway Port compensation for impacts on the SPA – site A (Essex) delivered (now known as Stanford Wharf nature reserve); Site X (Cooling Marshes, Kent) to be delivered.
- TE2100 – various sites proposed over the 100 year period, including Bowers Marsh and West Canvey Marshes.
- Wallasea – Lappel Bank/Felixstowe Fagbury retrospective compensation (Defra schemes) and RSPB Shoreline Management Plan compensation.
- Chetney Marshes – Compensation for a new bridge over the Swale on the A249.
- Great Bells Farm, Sheppey – Environment Agency habitat creation programme for loss identified in the Shoreline Management Plan.
- Harty Marshes, Sheppey – mitigation for loss of off-site usage land at Neats Court and Kingsnorth.
- Cooling Marsh and land at Lower Stoke, Hoo Peninsular – mitigation for loss of SSSI from widening of A228.

7.2.3. Where compensatory land is available, it must also be suitable in its potential for conversion to the habitats it is replacing. The creation of compensatory intertidal habitats is not without its own challenges; this issue is discussed in greater detail in the next section.

### **7.3 Issues to consider with regard to the creation of compensatory habitats**

7.3.1. Habitats within the Thames Estuary include tidal rivers, estuaries, sub-tidal sandbanks, intertidal mud flats, intertidal sand flats, lagoons, salt marshes, bogs, fens, humid and mesophile grassland. Habitats specifically within the Thames Estuary and Marshes SPA/Ramsar include saltmarsh, grazing marsh and intertidal mudflats. Compensation for a hub airport development would require the creation of a number of these habitats in a way that ensured the coherence of the N2K network, as well as compensating for impacts on the SPA migratory bird and seabird populations using the Estuary. In addition, habitats within the South Thames Estuary and Marshes SSSI include grazing marsh, saltmarsh, mudflats, shingle and woodland. Compensation for the loss

of these SSSI features should also be considered in accordance with paragraph 118 of the National Planning Policy Framework.

- 7.3.2. Compensation for the loss of intertidal saltmarsh and mudflat can be achieved *“through the creation of replacement habitat by the managed realignment of sea defences, often in conjunction with engineered sediment supply to raise intertidal surfaces to levels conducive to vegetation establishment”*.<sup>100</sup> The Defra-funded Wallasea Island Habitat Creation Project in Essex has created 110 hectares of inter-tidal habitat to compensate for losses from Lappel Bank and Fagbury Flats. Approximately 450,000 m<sup>3</sup> of maintenance dredgings were used between November 2005 and April 2006 to raise areas of the existing site to levels which would sustain salt-marsh<sup>101</sup>. The RSPB Wild Coast project is creating 133ha of mudflat, 276ha of saltmarsh, 53ha of saline lagoons, 11ha of brackish marsh, 160ha of grassland (incl. coastal grazing marsh and seawall) and 15ha of rotational arable fields (termed ‘wild bird cover’) (649ha in total)<sup>102</sup>. The project is seeking to compensate for the impacts of coastal erosion and has used spoil from Crossrail to create new habitats. Both projects are an indication that large-scale inter tidal habitat creation can be attempted.
- 7.3.3. Other projects providing intertidal habitat in compensation include the creation of 16.5 ha of additional intertidal area through managed realignment on the Orwell Estuary. This has been undertaken as compensation for the effects of the Approach Channel Deepening at Harwich.
- 7.3.4. There are studies which indicate that a variety of bird species will colonise re-created intertidal habitats<sup>103</sup> and that the creation of mudflats can be largely successful if sediment supply is sufficient<sup>104</sup>. However, there is also evidence to show that man-made mudflats are also subject to natural processes that affect their long term structure and function; a review of the London Gateway

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<sup>100</sup> The Habitats Directive, coastal habitats and climate change - case studies from the south coast of the UK. Gardiner, S.; Hanson, S.; Nicholls, R.; Zhang Zhong; Jude, S.; Jones, A.; Richards, J.; Williams, A.; Spencer, T.; Cope, S et al

<sup>101</sup> Maintenance Dredging Protocol Baseline Document Stour and Orwell Estuaries, Harwich/Felixstowe Harbour and Deep Water Channel V6, (2012)

<sup>102</sup> Wallasea Island Environmental Statement, [Non-technical summary](#), RSPB

<sup>103</sup> Avian response to tidal freshwater habitat creation by controlled reduced tide system Beauchard, O; Jacobs, S; Ysebaert, T; Meire, P

<sup>104</sup> Can we recreate or restore intertidal habitats for shorebirds? ATKINSON, P.W, British Trust for Ornithology (2003)

Port development states: “... recent experience on the Humber Estuary has found that some sites intended to be mudflats have undergone rapid sedimentation, followed by the development of salt marsh vegetation, which will limit their suitability as habitat for wading birds. And deliberate creation of saltmarshes has proved to be much more challenging than we initially expected.”<sup>105</sup>

7.3.5. Other studies also indicate that the creation of coastal saltmarsh presents challenges both in terms of land use planning<sup>106</sup> and in the resulting quality and functionality of the created habitat<sup>107</sup>, concluding that the created wetlands surveyed fail to replicate the bird and plant communities observed on nearby natural reference salt marshes<sup>108</sup>. We recommend the Airports Commission considers the analyses presented in the following papers for a fuller understanding of the complexities relating to the recreation of different intertidal habitats:

- The success of creation and restoration schemes in producing intertidal habitat suitable for waterbirds. English Nature Research Report No. 425, Atkinson, P.W., S. Crooks, A. Grant and M. Rehfish (2001).
- Avian response to tidal freshwater habitat creation by controlled reduced tide system, Beauchard, O; Jacobs, S; Ysebaert, T; Meire, P (2013)
- Can we recreate or restore intertidal habitats for shorebirds? Atkinson, P.W, British Trust for Ornithology (2003)
- Created versus natural wetlands: Avian communities in Virginia salt marshes, Desrochers, DW, Keagy, JC, Cristol (2008)
- Environmental impacts of the proposed London Gateway port development, Thurrock, Essex. Alastair Grant, Centre for Ecology, Evolution and Conservation, University of East Anglia

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<sup>105</sup> [Environmental impacts of the proposed London Gateway port development](#), Thurrock, Essex (Webpage, undated). Alastair Grant, Centre for Ecology, Evolution and Conservation, University of East Anglia

<sup>106</sup> Can we recreate or restore intertidal habitats for shorebirds? ATKINSON, P.W, British Trust for Ornithology (2003)

<sup>107</sup> Does managed coastal realignment create saltmarshes with 'equivalent biological characteristics' to natural reference sites? Mossman, HL; Davy, AJ; Grant, A

<sup>108</sup> Created versus natural wetlands: Avian communities in Virginia salt marshes, Desrochers, DW, Keagy, JC, Cristol (2008)

- Does managed coastal realignment create saltmarshes with 'equivalent biological characteristics' to natural reference sites? Mossman, HL; Davy, AJ; Grant, A (2012)
- The Habitats Directive, coastal habitats and climate change - case studies from the south coast of the UK. Gardiner, S et al (part of the BRANCH project)

7.3.6. In summary, a new hub airport development on the Isle of Grain will face significant spatial planning constraints in finding and securing sufficient compensation sites for intertidal creation; the creation of intertidal habitat as compensation under the Habitats Directive has been questioned by a number of studies; and the airport, should it proceed, would in turn create significant spatial planning constraints for other developments requiring the creation of compensation or mitigation SPA habitat within its 13km safeguarding zone.

#### **7.4 Relevant infrastructure cases involving development affecting N2K sites**

7.4.1. For lessons learnt with regard to meeting the requirements of the Habitats Directive and the provision of compensatory habitat, we recommend that the Airports Commission seeks information from the following developments/proposals; however the use of comparator sites in order to draw meaningful conclusions must be caveated due to the differences in ecology, geology and hydrology at each site:

- Dibden Bay proposals
- Severn Barrage proposals
- Bathside Bay International Container Terminal proposals
- Harwich approach channel deepening
- Able Marine Energy Park
- London Gateway Port development

7.4.2. With regard to airport operational impacts on SPAs, as noted in section 5.14 above, we recommend the Commission look at Liverpool, Glasgow and Derry airports.

## **8. ANNEX 1 LEGISLATIVE FRAMEWORK**

### **8.1. Duty to conserve biodiversity**

8.2. Section 40 of the NERC Act imposes a 'duty to conserve biodiversity' on public authorities. In pursuance of this, section 40(1) states

8.3. 'Every public authority must, in exercising its functions, have regard, so far as is consistent with the proper exercise of those functions, to the purpose of conserving biodiversity.'

8.4. For the purposes of the NERC Act, conservation includes restoring or enhancing a habitat or population of organisms<sup>109</sup>. The Secretary of State must in particular have regard to the Convention on Biological Diversity when performing his duty<sup>110</sup>.

8.5. Section 41 of the NERC Act requires the Secretary of State to publish a list of the living organisms and types of habitat which in the Secretary of State's opinion are of principal importance for the purpose of conserving biodiversity in England. Section 41(3) states: 'The Secretary of State must–

(a) Take such steps as appear to the Secretary of State to be reasonably practicable to further the conservation of the living organisms and types of habitat included in any list published under this section, or

(b) Promote the taking by others of such steps.'

### **8.6. European Sites**

8.7. The Secretary of State is a 'competent authority' for the purposes of the Habitats Regulations, with a duty to have regard to the requirements of Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora ('the Habitats Directive') and Directive 2009/147/EC of the European Parliament and of the Council on the conservation of wild birds ('Wild Birds Directive')<sup>111</sup>. So far as lies within their powers, a competent authority in exercising any function in or in relation to the United Kingdom must use all reasonable endeavours to avoid any pollution or deterioration of habitats of wild birds<sup>112</sup>.

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<sup>109</sup> NERC Act, s.40(3).

<sup>110</sup> NERC Act, s.40(2).

<sup>111</sup> Habitats Regs, regs 7(1)(a), 3(1), and 9(3). Directive 2009/147/EC has replaced Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds.

<sup>112</sup> Habitats Regs, reg.9A(8).



8.8. The Secretary of State is also the ‘appropriate authority’ for the purposes of the Habitats Regulations<sup>113</sup>. He must accordingly exercise his functions which are relevant to nature conservation so as to secure compliance with the requirements of the Habitats Directive and Wild Birds Directive<sup>114</sup>. He must furthermore take such steps as he considers appropriate to secure the objective of the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds in the United Kingdom, including by means of the upkeep, management and creation of such habitat, as appropriate, having regard to the requirements of article 2 of the Wild Birds Directive<sup>115</sup>.

8.9. The Wild Birds Directive applies to all species of naturally occurring birds in the wild state in the European territory of the UK, including their nests, eggs and habitats<sup>116</sup>. Article 2 of the Wild Birds Directive requires populations of wild birds to be maintained ‘at a level which corresponds in particular to ecological, scientific and cultural requirements, while taking account of economic and recreational requirements’<sup>117</sup>. Article 3 requires Member States, in the light of Article 2, to ‘take the requisite measures to preserve, maintain or re-establish a sufficient diversity and area of habitats’. Article 5 requires Member States to take the requisite measures to establish a general system of protection for all their wild birds, prohibiting the deliberate killing or capture, deliberate destruction or removal of nests and eggs, and deliberate disturbance of the birds insofar as this is significant having regard to the objectives of the Directive. Article 4 requires SPAs to be established in respect of particular species, in order to ensure the survival and reproduction of these species in their area of distribution. In respect of SPAs, Article 4 requires that the Member States ‘shall take appropriate steps to avoid pollution or deterioration of habitats or any disturbances affecting the birds, in so far as these would be significant having regard to the objectives of this Article’. It requires that ‘[o]utside these protection areas, Member States shall also strive to avoid pollution or deterioration of habitats.’ Article 13 provides that application of measures taken pursuant to the Directive may not lead to a deterioration in the present situation as regards the conservation of wild birds.

8.10. The Habitats Directive aims to contribute towards ensuring biodiversity through the conservation of natural habitats and of wild fauna and flora. It provides

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<sup>113</sup> Habitats Regs, reg.3(1).

<sup>114</sup> Habitats Regulations, reg. 9(1) and (2).

<sup>115</sup> Habitats Regs, reg 9A(1), (3)

<sup>116</sup> Wild Birds Directive, art.1.

<sup>117</sup> Wild Birds Directive, article 2.

that measures taken pursuant to the Directive shall be designed to maintain or restore, at favourable conservation status, natural habitats and species of wild fauna and flora of community interest<sup>118</sup>. Member States, in consultation with the European Commission, must select and designate areas for protection as SACs pursuant to articles 3 and 4 of the Habitats Directive. Together with SPAs, these sites make up the Natura 2000 ecological network, which is supposed to be a coherent ecological European network that enables 'the natural habitat types and the species' habitats concerned to be maintained or, where appropriate, restored at a favourable conservation status in their natural range'<sup>119</sup>.

8.11. Article 6 of the Habitats Directive applies both to SACs and to SPAs<sup>120</sup>. Article 6(2) requires that Member States shall take appropriate steps to avoid, in the European sites, the deterioration of natural habitats and the habitats of species as well as disturbance of the species for which the areas have been designated, in so far as such disturbance could be significant in relation to the objectives of the Habitats Directive. Article 6(3) requires that any project not directly connected with or necessary to the management of the European site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site the competent national authorities shall agree to the project only after having ascertained that it will not adversely affect the integrity of the site concerned, unless it meets the enumerated criteria for derogation.

8.12. If an adverse effect on the integrity of the site cannot be ruled out, then the effect of Article 6(4) is that the project may only be carried out where (i) there are no alternative solutions, (ii) it must go ahead for imperative reasons of overriding public interest, including reasons of a social or economic nature; and (iii) all compensatory measures necessary to protect the overall coherence of the Natura 2000 network are taken. Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised as 'imperative reasons of overriding public importance' are those relating to human health or public safety,

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<sup>118</sup> Habitats Directive, art.2. Habitats Directive, art. 6 applies to SACs and art.7 applies it to SPAs designated under the Wild Birds Directive.

<sup>119</sup> Habitats Directive, art.3(1).

<sup>120</sup> Habitats Directive, art. 6 applies to SACs and art.7 applies it to SPAs designated under the Wild Birds Directive.

to beneficial consequences of primary importance for the environment or such other matters contained in an opinion of the European Commission<sup>121</sup>.

8.13. SACs and SPAs are protected as European sites in inshore waters off England (up to 12 nautical miles) by the Habitats Regs and in offshore waters (i.e. outside 12 nautical miles) by the Offshore Regs, which transpose the relevant parts of the Habitats Directive into domestic law. The provisions of Article 6 of the Habitats Directive which are noted above are found at regulations 61, 62 and 66 of the Habitats Regs and regulations 25, 26 and 30 of the Offshore Regs. In determining these applications, the Secretary of State will be acting as a competent authority for the purposes of those Regulations.

8.14. The Regulations describe a sequence of steps to be taken by the competent authority in respect of a European site when deciding whether to authorise a project. Those steps are:

Step 1 Consider whether the project is directly connected with or necessary to the management of the site? <sup>122</sup> If not—

Step 2 Consider<sup>123</sup> whether the project is likely to have a significant effect on the site, either alone or in combination with other plans or projects. If such an effect cannot be excluded –

Step 3 Make an appropriate assessment of the implications for the site in view of its current conservation objectives<sup>124</sup>. In so doing, it is mandatory to consult Natural England<sup>125</sup> and have regard to its representations, and optional to obtain the opinion of the general public<sup>126</sup>. The competent authority is empowered to require the Applicant to provide information for the purposes of the appropriate assessment, or to enable the authority to determine whether such an assessment is required<sup>127</sup>.

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<sup>121</sup> Regulations 62 and 66 of the Habitats Regulations, transposing Article 6(4) of the Habitats Directive.

<sup>122</sup> Under regulation 61(1)(b) of the Habitats Regs or reg. 25(1)(c) of the Offshore Regs.

<sup>123</sup> Under regulation 61(1)(a) of the Habitats Regs or reg. 25(1)(b) of the Offshore Regs.

<sup>124</sup> Under regulations 61(1) of the Habitats Regs or 25(1) of the Offshore Regs.

<sup>125</sup> under regulations 61(3) of the Habitats Regs or 25(3)(b) of the Offshore Regs.

<sup>126</sup> under regulation 61(4) of the Habitats Regs or 25(3)(f) of the Offshore Regs.

<sup>127</sup> By regulation 61(2) of the Habitats Regs or 25(2) of the Offshore Regs.

Step 4 Consider<sup>128</sup> whether the project will adversely affect the integrity of the site, 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').

Step 5 Reject the project, unless it is ascertained that the project will not adversely affect the integrity of the site<sup>129</sup>.

Step 6 If the project fails the Integrity Test in respect of the site, consider, whether one is satisfied that there is no alternative solution<sup>130</sup>. If not so satisfied, reject the project; but if so satisfied, proceed to steps 7 and 8.

Step 7 Consider whether one is satisfied that the project must be carried out for imperative reasons of overriding public interest<sup>131</sup>. If not, reject the application. If so, proceed to Step 8.

Step 8 Consider whether one can secure that compensatory measures are taken which would be necessary to secure that the overall coherence of Natura 2000 is protected. If not, reject the application; if so, accept the application subject to requirements securing that the necessary compensatory measures will be implemented in the appropriate timeframe<sup>132</sup>.

8.15 The Directives are both to be construed purposively in the light of Article 191 of the Treaty on the Functioning of the European Union ('TFEU'). Article 191(1) TFEU provides that 'Union policy on the environment shall contribute to the pursuit of the...objectives [of] preserving, protecting and improving the quality of the environment'; and Article 191(2) provides that Union policy on the environment shall aim at a high level of protection, and shall be based on the precautionary principle and on the principle that preventive action should be taken.

8.16. The case law of the Court of Justice of the European Union has established the following points:

a. Articles 6(2) and 6(3) are aimed at achieving the same level of protection. The Habitats Directive therefore requires that Member States take systematic and

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<sup>128</sup> Pursuant to regulation 61(5) and (6) of the Habitats Regs or 25(4) and (5) of the Offshore Regs.

<sup>129</sup> Applying regulation 61(5) of the Habitats Regs, subject to regulation 62, or reg 25(4) of the Offshore Regs subject to reg.26.

<sup>130</sup> In accordance with regulation 62(1) of the Habitats Regs or 26(1) of the Offshore Regs.

<sup>131</sup> In accordance with regulation 62(1) of the Habitats Regs or 26(1) of the Offshore Regs.

<sup>132</sup> As required by regulation 66 of the Habitats Regs or 30 of the Offshore Regs. cordance with regulation 62(1) of the Habitats Regs or 26(1) of the Offshore Regs.

effective measures pursuant to Article 6(3) which guarantee the avoidance in fact of significant deterioration of the habitats or disturbance of the species for which SPAs and SACs have been designated<sup>133</sup>.

b. 'Article 6(3) of [the] Directive makes the requirement for an appropriate assessment of the implications of a plan or project conditional on there being a probability or a risk that that plan or project will have a significant effect on the site concerned. In the light, in particular, of the precautionary principle, such a risk exists if it cannot be excluded on the basis of objective information that the plan or project will have a significant effect on the site concerned... It follows that the Habitats Directive requires that any plan or project undergo an appropriate assessment of its implications if it cannot be excluded on the basis of objective information that that plan or project will have a significant effect on the site concerned'<sup>134</sup>.

c. Under Article 6(3) of the Habitats Directive, 'an appropriate assessment of the implications for the site concerned of the plan or project implies that, prior to its approval, all aspects of the plan or project which can, by themselves or in combination with other plans or projects, affect the site's conservation objectives must be identified in the light of the best scientific knowledge in the field'<sup>135</sup>.

d. 'An assessment made under Article 6(3) of the Habitats Directive cannot be regarded as appropriate if it contains gaps and lacks complete, precise and definitive findings and conclusions capable of removing all reasonable scientific doubt as to the effects of the works proposed on the SPA concerned'<sup>136</sup>.

e. In the context of priority habitats within SACs, 'a plan or project not directly connected with or necessary to the management of a site will adversely affect the integrity of that site if it is liable to prevent the lasting preservation of the constitutive characteristics of the site that are connected to the presence of a priority natural habitat whose conservation was the objective justifying the designation of the site in the list of SCIs, in accordance with the directive. The precautionary principle should be applied for the purposes of that appraisal'<sup>137</sup>.

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<sup>133</sup> CJEU, Case C-241/08 *Commission v France* at paras 30-36; Case C-535/07 *Commission v Austria* at paras 57-58.

<sup>134</sup> CJEU Case C-418/04 *Commission v Ireland* at paras 226 to 227; Case C-127/02, *Landelijke Vereniging tot Behoud van de Waddenzee v Staatsecretaris van Landbouw, Natuurbeheer en Visserij* at paras 43-45

<sup>135</sup> CJEU Case C-127/02 *Waddenzee* at para 61.

<sup>136</sup> CJEU Case C-404/09 *Commission v Spain* at para 100; cf case C 304/05 *Commission v Italy* [2007] ECR I 7495, paras 58-59, 67-70.

<sup>137</sup> CJEU Case C-258/11 *Peter Sweetman and Others v An Bord Pleanála* [2013] ECR-000, para 48.

8.17. A detailed consideration of how the requirements of the Habitats Regulations might apply to an Inner Thames Estuary airport is provided at section 7 of this submission.

#### **8.18. Ramsar Convention**

8.19. Each Contracting Party shall promote the conservation of wetlands and waterfowl by establishing nature reserves on wetlands, whether they are included in the List or not, and provide adequately for their wardening.

8.20. Where a Contracting Party in its urgent national interest, deletes or restricts the boundaries of a wetland included in the List, it should as far as possible compensate for any loss of wetland resources, and in particular it should create additional nature reserves for waterfowl and for the protection, either in the same area or elsewhere, of an adequate portion of the original habitat.

8.21. The Contracting Parties shall encourage research and the exchange of data and publications regarding wetlands and their flora and fauna.

8.22. The Contracting Parties shall endeavour through management to increase waterfowl populations on appropriate wetlands.'

8.23. The Government designates Ramsar sites in accordance with the criteria set out in the Convention, in recognition of the international importance of these sites as a wetland wildlife habitat.

8.24. In accordance with Government Circular: Biodiversity and Geological Conservation Statutory Obligations and their Impact within the Planning System (ODPM 06/2005), and the National Planning Policy Framework (2012), paragraph 118, Ramsar sites are subject to the same procedures described in the preceding section (in relation to European sites) as a matter of UK Government Policy, in order to assist the Government in fully meeting its obligations under the Ramsar Convention.

#### **8.25 Sites of Special Scientific Interest (SSSIs)**

8.26. SSSIs are designated as such by Natural England under section 28 of the WCA 1981, where we are of the opinion that land is of special interest by reason of any of its flora, fauna, or geological or physiographical features.

8.27. Section 28G of the WCA 1981 places legal obligations on public authorities in relation to SSSIs. These authorities are known as 'section 28G authorities', and the definition given at s.28G(3) embraces all public office-holders including the Secretary of State.

8.28. An authority to whom section 28G applies has a duty in exercising its functions so far as their exercise is likely to affect the flora, fauna or geological or physiographical features by reason of which a SSSI is of special interest to:

8.29. 'Take reasonable steps, consistent with the proper exercise of the authority's functions, to further the conservation and enhancement of the flora, fauna or geological or physiographical features by reason of which the site is of special scientific interest.'

8.30. In addition, where the permission of a section 28G authority is needed before proposed operations may be carried out, the section 28G authority must, in accordance with section 28I(5) of the WCA 1981, take any advice received from Natural England into account:

- (a) in deciding whether or not to permit the proposed operations; and
- (b) if it does decide to do so, in deciding what (if any) conditions are to be attached to the permission.

8.31. 'Permission'<sup>138</sup> is defined so as to include any kind of consent or authorisation. As the Applicant requires development consent from the Secretary of State in order to proceed with its proposals, and as the Secretary of State is a section 28G authority, the duties under section 28I(5) apply to the Secretary of State.

8.32. Section 35 of the WCA 1981 empowers Natural England to declare as a 'National Nature Reserve' ('NNR') any land which is managed as a nature reserve and is of national importance. There is no additional protection for these over and above SSSI, European or Ramsar site status.

### **8.33. Marine Conservation Zones**

8.34 The Marine and Coastal Access Act 2009 (Part 5) enables Defra Ministers to designate and protect Marine Conservation Zones (MCZs). These are a type of marine protected area, which exist alongside European marine sites (Special Areas of Conservation (SACs) and Special Protected Areas (SPAs)), SSSIs and Ramsar sites to form an ecologically coherent network of marine protected areas. Similar schemes are operating in Wales and Scotland and soon in Northern Ireland to contribute to a UK wide network of Marine Protected Areas.

### **8.35 European Protected Species**

8.36 Regulation 9(5) of the Habitats Regs, headed 'Exercise of functions in accordance with the Habitats Directive', stipulates that:

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<sup>138</sup> WCA 1981, s.28I(7).

8.37. 'A competent authority, in the exercising of any of their functions, must have regard to the requirements of the Habitats Directive so far as they may be affected by the exercise of those functions'.

8.38 In relation to species of animals and plants listed in Annex IV of the Habitats Directive, article 12 of the Directive provides that the UK must take the requisite measures to ensure that they are subject to a system of strict protection.

8.39. In relation to the animal species, the system must in particular prevent the deliberate capture or killing of specimens of these species in the wild; deliberate disturbance of these species; deliberate destruction or taking of eggs from the wild; and deterioration or destruction of breeding sites or resting places. Disturbance or destruction may be indirect, for instance through noise or light pollution, or loss of habitat<sup>139</sup>.

8.40. The plant species must be protected in particular from deliberate picking, collecting, cutting, uprooting or destruction in their natural range in the wild.

Article 16 of the Habitats Directive provides that this strict protection may be derogated from only where (i) there is no satisfactory alternative, (ii) the derogation is not detrimental to the maintenance of the populations of the species concerned at a favourable conservation status in their natural range, and (iii) the purpose is (a) protecting wild fauna and flora and conserving natural habitats; (b) preventing serious damage to crops, livestock, forests, fisheries and water and other types of property; (c) public health and safety, or for other imperative reasons of overriding public interest, including those of a social or economic nature and beneficial consequences of primary importance for the environment; (d) research, education, and repopulating and re-introducing these species; or (e) to allow, under strictly supervised conditions, on a selective basis and to a limited extent, the taking or keeping of certain specimens of the species listed in Annex IV in limited numbers specified by the competent national authorities.

8.41 Regulation 41 of the Habitats Regs and the provisions of the WCA 1981 make it a criminal offence to engage in the behaviour prohibited by the Habitats Directive. However, prohibitions enforced by penalties for infractions are not in themselves adequate to implement the Directive if they will not prevent significant destruction or disturbance taking place in fact: 'such protection requires that individuals be prevented in advance from engaging in potentially harmful activities'<sup>140</sup>.

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<sup>139</sup> CJEU Case C-103/00, *Commission v Greece*, judgment para 34 and Opinion of Léger AG delivered on 25 October 2001, paras 46, 56 and 57; *R(Morge) v Hampshire CC* [2010] EWCA Civ 608 at [49]. [2011] UKSC 2 at [19].

<sup>140</sup> CJEU, Case C-418/04 *Commission v Ireland* at para 208.



8.42 The Court of Justice of the European Union has accordingly ruled that Member States must not only adopt a comprehensive legislative framework but also to implement concrete and specific protection measures that are coherent, co-ordinated and preventive in nature<sup>141</sup>. Such a system of strict protection must enable the effective avoidance of deterioration or destruction of breeding sites or resting places caused by development<sup>142</sup>. Strict protection must be enforced even if the population of the species is not declining<sup>143</sup>.

8.43. The Secretary of State should follow the guidance in paragraphs 99 and 116 of Circular 06/2005, and take care to ensure that any disturbance of protected species, including harm to their habitats, food-sources, resting-places or breeding sites, is avoided unless he considers that the derogation criteria are likely to be met, in which case he should require any necessary licence to be obtained before development commences<sup>144</sup>.

#### **8.44. Protected landscapes**

8.45. England's National Parks and AONBs are designated under the provisions of The National Parks and Access to the Countryside Act, 1949. Heritage Coasts are 'defined' rather than designated.

8.46. In the legislation, the purposes of AONBs and National Parks are defined as:

- a) AONBs (under the Countryside and Rights of Way Act, 2000): to conserve and enhance the natural beauty of the area. Like all local authorities, AONB managing authorities (including Conservation Boards) have responsibilities to foster the social and economic wellbeing of local communities.

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<sup>141</sup> CJEU Case C-183/05, *Commission v Ireland*, paras 29-30.

<sup>142</sup> CJEU Case C-383/09 *Commission v France*, opinion of Advocate-General Kokott at para 89; judgment at paras 21, 35, 37.

<sup>143</sup> CJEU Case C-103/00 *Commission v Greece* para 31; CJEU Case C-518/04 *Commission v Greece*, para 21.

<sup>144</sup> That was the approach endorsed by the High Court in *R(Woolley) v East Cheshire DC* [2010] Env. L.R. 5 at [27]-[28]. In *Morge v Hampshire CC*, the Supreme Court appears to have thought that it would not be unlawful to grant permission for a development unconditionally, unless it were thought unlikely that the criteria would be met. This was on the premise that it was sufficient for the prohibited conduct to be subject to criminal penalties if no species licence were obtained. However, the CJEU authorities cited above - which the Supreme Court did not consider in that case - make it clear that a preventive approach must be taken by the planning authority. It would be unsafe for the Secretary of State to grant consent without ensuring, so far as he can, that the requirements of the Directive would be met.

- b) National Parks (under the Environment Act, 1995): to conserve and enhance the natural beauty, wildlife and cultural heritage of the area; and to promote opportunities for understanding and enjoyment by the public of the area's special qualities.
- c) The Broads (under the Broads Authority Acts 1988 and 2009): to conserve and enhance the natural beauty, wildlife and cultural heritage of the Broads; to promote opportunities for the understanding and enjoyment of the special qualities of the Broads by the public; and to protect the interests of navigation.

8.47. Current legislation requires that 'in exercising or performing any functions in relation to, or so as to affect land' within these designated landscapes, a 'relevant authority shall have regard to' their statutory purposes. The pertinent Acts are:

- a. AONBs: Section 85 of the Countryside and Rights of Way Act 2000.
- b. National Parks: Section 11A(2) of the National Parks and Access to the Countryside Act (1949) as amended by Section 62(2) of the Environment Act (1995) (sometimes, erroneously, referred to as the 'S62 duty').
- c. The Broads: Section 17A of the Norfolk and Suffolk Broads Act 1988 (as inserted by Section 97 of the Countryside and Rights of Way Act 2000).

8.48. See the Defra 2005 guidance note on 'Duties on relevant authorities to have regard to the purposes of National Parks, Areas of Outstanding Natural Beauty and the Norfolk and Suffolk Broads'<sup>4</sup> for further information.

## **9. ANNEX 2 POLICY FRAMEWORK**

- 9.1. National planning policy and guidance on protected sites and species  
Government Circular: Biodiversity and Geological Conservation – Statutory Obligations and their Impact within the Planning System (ODPM 06/2005) is relevant here.
- 9.2. National Planning Policy Framework (2012). Paragraphs 109, 116, 118, 119 and 120 of the National Planning Policy Framework (NPPF) are all potentially relevant.
- 9.3. The European Commission's has produced guidance on the protected sites and species regimes. This includes the following relevant guidance:
  - a. Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (2000);
  - b. EC (2001) Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC (November 2001)
  - c. Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC (2007);
  - d. The implementation of the Birds and Habitats Directives in estuaries and coastal zones (2011)
- 9.4. Guidance document on the strict protection of animal species of Community interest under the Habitats Directive 92/43/EEC (final version Feb 2007 )
- 9.5. The Commission will also wish to consider relevant marine and coastal policy – including:
  - a. UK marine policy statement (2011);
  - b. Our seas: a shared resource, high level marine objectives (2009);
  - c. Marine plans, to be in place for all English seas by 2022. The east coast plan is finalised, the south inshore and offshore plans are currently under development;
  - d. Marine Strategy Framework Directive (2008), transposed into UK law by the Marine Strategy Regulations (2010);
  - e. Marine and Coastal Access Act (2009).
- 9.6. Further information on marine policies and planning can be found [here](#).

## 10. ANNEX 3 AVIATION AND PROTECTED LANDSCAPES

- 10.1. Natural England recognises that the primary focus of Feasibility Study 1 into the Thames Estuary airport option is the Habitats Directive and the likelihood of the development meeting the sequential tests within IOPI. However, as the Kent Downs AONB lies 15km to the south of the Isle of Grain, this Annex provides a brief overview of the issues that should be considered regarding aviation impacts and protected landscapes. This is based on Natural England's submission to the London airspace change consultation, dated 20/01/2014:
- 10.2. The Government's Aviation Policy Framework (APF), the National Planning Policy Framework (NPPF) and the DfT guidance for the CAA on the environmental objectives in relation to its air navigation functions recognise the requirement to have regard to the purposes of AONBs and National Parks and to take account of these when assessing airspace changes.
- 10.3. Protected landscapes play a significant role in conserving tranquillity, which is a shrinking resource requiring protection; the NPPF states that: 'Planning policies and decisions should aim to identify and protect areas of tranquillity which have remained relatively undisturbed by noise and are prized for their recreational and amenity value for this reason' (para 123). The NPPF also states that: *'great weight should be given to conserving landscape and scenic beauty in National Parks, the Broads and AONBs which have the highest level of protection in relation to landscape and scenic beauty'* (para 115).
- 10.4. Tranquillity is an essential element of many of our nationally protected landscapes, one that makes a significant contribution to people's experience and enjoyment of these landscapes. Tranquillity is one of the 'cultural ecosystems services' that protected landscapes provide; these include the non-material benefits people obtain from ecosystems through spiritual enrichment, cognitive development, reflection, recreation and aesthetic experience , and as such can significantly contribute to people's quality of life.
- 10.5. Seeking to protect both densely populated areas and quiet areas from aviation noise can lead to conflicting priorities. This is leading to increasing pressures on tranquil areas. A House of Commons Transport Committee 2009 report on air space identified that the CAA's West End Area Airspace Changes, implemented in March 2006, had resulted in a 21% overall increase in air traffic flying over the Shropshire Hills Area of Outstanding Natural Beauty. Similarly the changes to the CAA's Terminal Control South West in January 2008 redirected flight paths over parts of the New Forest National Park. The report concluded that 'Tranquillity is a key factor in sensitive areas such as National Parks and Areas of Outstanding Natural Beauty. Current guidance appears to allow unchecked increases in aviation activity over these areas. Without some level of constraint, the noise

environment in these areas might degrade progressively as traffic increases’.

- 10.6. In its recent response to the London airspace change proposals, Natural England recommended that NATS and the airport operators carefully assess the noise impacts of any proposed changes on the surrounding protected landscapes and, in line with the APF and the NPPF, seek to avoid and/or find alternatives where there would be significant adverse effects on protected landscapes. The most significant impacts are likely to occur during take-off and landing and the revised CAA guidance recommends that *‘where practicable, and without a significant detrimental impact on efficient aircraft operations or noise impact on populated areas, airspace routes below 7,000 feet (amsl) should, where possible, be avoided over Areas of Outstanding Natural Beauty (AONB) and National Parks’*. Assuming a Continuous Descent Approach this would correspond to a lateral distance of just over 40km from the airport. Significant adverse impacts can occur above 7000 feet, particularly where there are cumulative impacts from multiple flight paths over protected landscapes (as described above).
- 10.7. The Noise Policy Statement for England offers a balanced approach that seeks to protect both densely populated areas and quiet areas, such as protected landscapes, and is applicable to all sources of noise including aviation noise. It proposes a number of aims for managing noise: firstly to avoid significant adverse impacts on health and quality of life from noise; secondly to mitigate and minimise adverse impacts; and thirdly to improve health and quality of life through proactive management of noise. The protection of quiet places is recognised as part of these aims. Research has shown that there is a strong link between health and quality of life and access to the natural environment.
- 10.8. If there are circumstances where it is not possible to avoid adverse effects on protected landscapes, NATS and the airport operator should consider how the impacts can be mitigated or minimised through proactive management of aviation noise close to protected landscapes, where possible seeking solutions that aim to improve health and quality of life. Such approaches could involve setting limits on the number of flights, limits on noise levels, the use of predictable flight times or predictable periods of respite for protected landscapes, as for residential areas.