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The Planning Act 2008 (as amended)

Kentish Flats Extension Order

Examining Authority's Report to the Secretary of State

Glyn Roberts – (BA Hons, DTCP, MRTPI, MCIM, FRSA)

Examining Authority's Report in respect of an application for a Development Consent Order for an extension to the existing Kentish Flats Offshore Wind Farm comprising of between 10 and 17 additional turbines increasing the installed capacity of the Kentish Flats Offshore Wind Farm from 90 megawatts to up to 141 megawatts

29 November 2012

File Ref EN010036

Kentish Flats Extension Order

- The application, dated 14 October 2012 was made under Section 37 of the Planning Act 2008 (as amended).
- The applicant is Vattenfall Wind Power Ltd.
- The application was accepted for examination on 10 November 2012.
- The examination of the application began on 22 February 2012 and was completed on 20 August 2012.
- The development proposed is for an extension to the existing Kentish Flats Offshore Wind Farm comprising of between 10 and 17 additional turbines increasing the installed capacity of the Kentish Flats Offshore Wind Farm from 90 megawatts to up to 141 megawatts.

Summary of Recommendation:

Subject to the outcome of his appropriate assessment, it is recommended that the Secretary of State grants the application for development consent for the KFE project. The Order is recommended to be made on the basis of the provisions set out in the draft Order at Appendix F to this report.



ERRATA SHEET – Kentish Flats Extension - Ref EN010036

Examining Authority's Report of Findings and Conclusions and Recommendation to the Secretary of State for the Department of Energy and Climate Change, dated December 2012

Corrections agreed by the Examining Authority prior to a Decision being made

Page No.	Paragraph	Error	Correction
2	Para 1	14 October 2012 and 10 November 2012	14 October 2011 and 10 November 2012
88	Para 5.26	9 (h)	9 (1)(h)
88	Para 5.27	9 (i)	9 (1) (i)
88	Para 5.28	9 (i)	9 (1) (i)
88-89	Para 5.29	9 (i)	9 (1) (i)
93	Para 5.40	9 (i)	9 (1) (i)
95	Para 5.47	9 (g)	9 (1) (g)
95	Para 5.47	9 (i) (i) – (iv)	9 (1) (i) (i) – (iv)
137	Para 5.172	9 (h) (i)-(iv)	9 (1) (h) (i)-(iv)
153	Para 5.213	9 (j) and 9 (j) (iv)	9(1) (j) and 9 (1) (j) (iv)
156	Para 5.216	9 (j)	9 (1) (j)
Appendix C: Abbreviations and Glossary		LA2012	LA2011

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1. INTRODUCTION

Background

- 1.1 On 26 January 2012 the chair of the former Infrastructure Planning Commission, Sir Michael Pitt, appointed me as the Single Commissioner Examining Authority (ExA) to examine the application¹.
- 1.2 This document sets out in accordance with s83(1) of the Planning Act 2008 as amended by the Localism Act 2011 (PA2008) the ExA's report of findings and conclusions and the recommendation as to the decision to be made on the application.
- 1.3 A number of acronyms and abbreviations are used in this report. The meanings of these terms are explained in Appendix C.
- 1.4 The proposed development for which consent is required under s31 of PA2008 is for an extension to an off-shore generating station, the existing Kentish Flats Offshore Wind Farm, which increases the total installed capacity of the extended wind farm to over 100 megawatts (MW). The extension comprises of between 10 and 17 additional turbines each likely to generate up to a maximum output of between 3-4MW. The proposal is within English territorial waters and comprises a nationally significant infrastructure project (NSIP) as defined by s14 and s15 of PA2008.
- 1.5 The application is Environmental Impact Assessment (EIA) development as defined by the Infrastructure Planning (Environmental Impact Assessment) Regulations 2009. It was accompanied by an environmental statement (ES) which in the view of the ExA met the definition given in Regulation 2(1) of these Regulations. In reaching the recommendation, the environmental information as defined in Regulation 2(1) (including the ES and any other information on the environmental effects of

¹ The Infrastructure Planning Commission was abolished on 1 April 2012. The Infrastructure Planning (Transitional Provisions) Direction 2012 makes provision for anything done by the Commission in relation to an application or proposed application prior to 1 April 2012, to be treated as if it had been done by the Secretary of State, where the Commission had previously been notified under section 46 of the Planning Act 2008 for that proposal.

the development) has been taken into consideration in accordance with Regulation 3(2) of these Regulations.

Procedure followed

- 1.6 The accepted application was advertised by the applicant and twenty Relevant Representations were received (REP1 to REP20).
- 1.7 A preliminary meeting was held on 22 February 2012 at which the applicant and all interested parties were able to make representations about how the application should be examined. My procedural decisions under Rule 8 of the Infrastructure Planning (Examination Procedure) Rules 2010 (the Rules) and an outline of the main procedural events during the examination process are summarised at Appendix A.
- 1.8 An off-shore site inspection was carried out in the company of interested parties on 29 May 2012.
- 1.9 As set out in the timetable for the examination (PD13), and as a result of requests made, the following hearings were held at the Marine Hotel, 33a Marine Parade, Tankerton, Whitstable:
 - Issue specific hearing on the specific issue of the draft Development Consent Order (DCO) including requirements, related Local Impact Report (LIR) matters and Deemed Marine Licence (DML) on 30 May 2012
 - Issue specific hearing on the specific issue of the biological environment, ecology and fishing on 30 May 2012
 - Issue specific hearing on the specific issue of Habitats Regulations aspects and information to support the appropriate assessment on 31 May 2012
 - Issue specific hearing on the specific issue of radar effects and damage to property around cable landfall and transition pit on 31 May 2012.
- 1.10 LIRs were received from Canterbury City Council (CCC) and Kent County Council (KCC).

- 1.11 One round of written questions and a number of requests for further information or written comment under Rule 17 of the Rules were issued, together with an updated timetable (PD13, PD14, PD29, PD30, PD31, PD32).

Reasons for the Examination Approach Adopted

- 1.12 The PA2008 provides that the national infrastructure project examination process is intended to be delivered principally through a written procedure. Hearings are only held where the ExA considers it necessary or where an interested party has specifically requested it (for example an Open Floor Hearing). At the outset of the process it was apparent that there was considerable dispute between the applicant and the nature conservation parties regarding habitats-related data and methodology and how to interpret the results of data analyses in relation to the statutory tests which must be met before the Order could be granted. There were also areas of considerable uncertainty regarding the effects upon the biological environment, commercial fishing, radar effects and damage around the landfall point.
- 1.13 In order to clarify the areas of agreement and dispute Statements of Common Ground (SoCG) were sought at an early stage of the proceedings. Provision was made in the initial examination timetable for two blocks of hearings, on the understanding that some of the hearings might be cancelled if good progress was made with clarifying the issues through the SoCGs and through written questions and responses. In the event several SoCGs were concluded and a number of rounds of questions posed (both written questions and questions under Rule 17 of the Examination Rules. It subsequently proved possible to cancel the second block of hearings in the light of the written information received from the relevant parties, which narrowed the range of issues between the parties and focussed the discussion onto a number of specific areas of disagreement.

Other consents

- 1.14 In addition to the development consent required under PA2008 (the subject of this application), the proposal is subject to the need for the following consents and permits:
- River Works Licence required under the Port of London Act 1968
 - Safety Zones in accordance with the Energy Act 2004
 - European Protected Species Licence
 - Planning Permission for onshore grid connection works required by Section 57 of the Town and Country Planning Act 1990
 - Street Works/Highways licence for onshore grid connection works required under the New Roads and Street Works Act 1991
- 1.15 At the time the examination was completed on 20 August 2012, the consents above were not yet in place. It is understood that planning permission for the landward cable connection works has subsequently been granted by CCC.

Unilateral Undertaking

- 1.16 During the course of the examination, the applicant, Vattenfall Wind Power Ltd provided a Unilateral Undertaking in favour of CCC under s106 Agreement under the Town and Country Planning Act 1990 (Rep 87).
- 1.17 The unilateral undertaking commits the applicant to provision of a financial contribution, being the higher of (a) one hundred thousand pounds sterling and (b) two thousand pounds sterling per megawatt of installed capacity. The contribution commitment is in favour of CCC, who would use this 'community fund' to support provision of, or to assist in:

'Provision of:

- i) *Education*

- ii) *Sport*
- iii) *Leisure facilities and activities*
- iv) *Charitable and/or community enterprises*
- v) *Public events; and/or*
- vi) *Promotion of sustainability and other related matters that are considered to bring benefit to the local area.'*

Funding support to any project would be subject to the agreement of both the Council and the KFE developer.

- 1.18 The undertaking further commits the applicant to provision of notice boards providing information relating to the wind farm and renewable energy for installation by the Council at Hampton Pier and at the Herne Bay seafront.
- 1.19 The undertaking is subject to a number of restrictions and conditions.

2. THE APPLICATION

Structure of the Report

- 2.1 Chapter 2 sets out the main features of the proposed application. Chapter 3 summarises the policy and guidance context applicable to it. Chapter 4 considers the principal issue regarding the proposals' compliance with the Habitats Directive and Regulations. In chapters 5 and 6, findings and conclusions in respect of each of the other principal issues are set out. Chapter 7 sets out my overall conclusions and recommendation.
- 2.2 The main 'events' occurring during the examination and the main procedural decisions I have taken are listed in Appendix A. Appendix B contains a list of all those who attended hearings. Appendix C provides a list of all the abbreviations used in this report.
- 2.3 Appendix D lists the documents submitted by the applicant and others in connection with the examination, with the references used subsequently in this report. For the avoidance of any doubt, all representations properly made have been duly considered and taken into account before deciding upon my recommendation. The Report on the Implications for European Sites as consulted on by the ExA on 28 June 2012 is attached at Appendix E. The post-examination draft DCO is at Appendix F.

Proposed Development Location

- 2.4 The Kentish Flats Extension (KFE) project is proposed to be located on the southern side of the Outer Thames Estuary (OTE) off the North Kent coast, approximately 8.6 kilometres (km) north of Herne Bay and 9.5km north of Whitstable (APP4). The Essex coastline lies over 20km to the north of the proposed KFE site, including Southend to the north west. A number of other existing or proposed wind farms are located or proposed to be located within the OTE. Apart from the existing Kentish Flats wind farm the closest of these is the London Array Wind Farm (LA), of which Phase 1

(LA1) is currently under construction, some 25km to the north east of the proposed KFE site.

- 2.5 A s36 Electricity Act Grampian condition application for London Array Phase 2 (LA2) is expected to be submitted to the Secretary of State, although no indication of the expected date of submission is available currently. The locations of these wind farms and wind farm proposals in relation to the KFE site are shown on page 112 of APP53.

Why is the KFE project an NSIP?

- 2.6 As the existing Kentish Flats wind farm comprises 30 turbines with an installed capacity of up to 90MW the total proposed combined capacity taking into account the proposed KFE project exceeds 100MW. Therefore the proposed KFE project DCO application originally fell to be determined by the former Infrastructure Planning Commission under the thresholds and procedure relevant to NSIPs set out in the PA2008. Following the amendment to the PA2008 introduced under the LA2012 the application will now be determined by the Secretary of State for Energy and Climate Change. The legal status of the proposed wind farm extension as an NSIP is not in dispute between the parties and, having regard to the points made above, I am satisfied that it meets the relevant NSIP criteria set out in s14 and s15 of the PA2008.

Description of Proposal

- 2.7 The application is for a wind farm extension including between 10 and 17 additional turbines with a maximum installed capacity of 51 MW. The turbine layout would extend over an area of approximately 7.8 km² located to the west and south of the existing Kentish Flats Offshore Wind Farm (see APP4). The extension turbines would be sited in an average water depth of 3-5m Chart Datum. The maximum wind turbine rotor diameter would be 120m and maximum wind turbine hub height 85m with a maximum turbine tip

height of 145m above mean sea level (MSL) and minimum clearance above mean high water level (MHW) of 22m.

- 2.8 The nacelle and rotor for each turbine would be mounted on a cylindrical steel tower. The turbine structures would be constructed on monopole foundations of 6m diameter and would be connected by inter-array cables whose technical specification was not determined at the time of the application. Two export cables of up to 33kV buried under the sea bed would carry generated power c2km to a cable transition pit located in a beachside car park adjoining Hampton Pier (between Whitstable and Herne Bay in North Kent) and thence to the onshore grid connection at Red House Farm, Herne Bay.
- 2.9 The post-examination final amended draft DCO is attached as Appendix F. The submitted draft DCO includes a draft DML, subject to a number of mitigation conditions.
- 2.10 The proposed project is classified as Schedule 2 EIA development² under the provisions of EC Directive 85/337/EEC as amended by 97/11/EC and 2003/35/EC (henceforward described in this report as the EIA Directive). An ES has therefore been included with the application documents.

Changes

- 2.11 Setting aside the provision of additional information in response to questions or points raised by other interested parties, the only changes to the application advanced by the applicant during the examination period have been changes made to the draft DCO documentation in response to points that I have raised or that otherwise have been raised by the parties. They have, for example, included changes to the text of the draft Order and the embedded DML, to the way in which details of geographical reference points for the location of turbines are presented and corrections to the referencing of the coordinates for the KFE area and Offshore Limit

² Infrastructure Planning (Environmental Impact Assessment) Regulations 2009 No 2263

of Deviation. None of the changes are so great as to alter the substance of the proposal to the extent that the application falls outside the parameters of the environmental impact assessment or consultation undertaken in the pre-application stage and submitted within the application documents. The changes and development of the DCO/DML over the period of the examination are considered in more detail in chapter 5 (Principal Issue 10) below.

- 2.12 In the light of a different 'red line' boundary to its planning application for landward works including the area around the cable transition pit, it appeared that the applicant had not provided a satisfactory explanation for the wider extent of the proposed Order limits around that area as set out in the Order Limits Plan. My letter of 28 June 2012 (PD31) therefore indicated that I was minded to reduce the order limits around the cable transition pit area to reflect the red line boundary shown on the planning application plans. The applicant was invited to submit amended plans accordingly and responded positively to this invitation by reducing the Order limits and producing the revised plans (REP87 Appendix 8) now referred to within the appended post-examination draft of the DCO.

Designated and Protected Sites

- 2.13 The applicant's Habitats Regulations Assessment Report (HRA) and HRA addendum (APP17, APP18, REP73 Appendix 8) have not identified any significant post-mitigation impacts on any European or Ramsar sites other than the effects upon the population abundance and distribution of the red throated diver (RTD) in the Outer Thames Estuary Special Protection Area for wild birds (OTE SPA). Natural England (NE) has confirmed this assessment. This assessment is agreed with the nature conservation parties. I agree with the applicant and the nature conservation parties that there may be a significant effect upon the RTD population of the OTE SPA as a result of the proposed development and am therefore satisfied that the competent authority (CA) will be required to undertake an 'appropriate assessment'. This matter is discussed in detail in

chapter 4 (paragraph 4.3 onwards) below, where the question of effect on the integrity of the OTE SPA is also considered.

- 2.14 The habitats aspects will be the subject of an appropriate assessment to be completed by the Secretary of State in his role as CA. Separate statutory decisions are required in relation to these aspects from the decision regarding whether to grant the DCO application, although the outcome of the former decisions is relevant to the latter. The relevant legal tests that must be satisfied before the Order can be granted are specific to the statutory decisions required. The procedural aspects are explained at the beginning of chapter 4 below.

Compliance with National Policy Statements and appropriate marine policy document

- 2.15 National Policy Statement EN-1 addresses the need for renewable energy and indicates that there is a proven national need such that examining authorities are not required to consider need for renewable energy generation capacity in relation to individual projects. The proposed wind farm extension could provide low carbon renewable electricity generation capacity sufficient to provide electricity for up to 35,000 homes. In all other respects apart from consideration of the effects upon habitat discussed below - and subject to the mitigation requirements and conditions included within the post-examination draft DCO – the application, as amended and updated to take account of points raised during the examination, meets the requirements of National Policy Statements EN-1 and EN-3 and relevant provisions of the Government's Marine Policy Statement.

A summary of the findings of fact arising from the examination is set out in my Report on the Implications for European Sites (RIES) which is presented in Appendix E.

- 2.16 No significant impacts on historic sites were identified (APP34, APP36 & APP44).

3 PLANNING POLICY AND GUIDANCE CONTEXT

Relevant Policies and Guidance

- 3.1 The examination was held according to s104 of the PA2008 as a relevant National Policy Statement had effect at the time of the examination.

National Policy Statements

- 3.2 The NPSs relevant to this application are:

- ***EN-1 Overarching Energy***
- ***EN-3 Renewable Energy Infrastructure***

- 3.3 This recommendation is therefore made under s83(1)(b) for the Secretary of State to determine under section 104 of the PA 2008. In this instance the Secretary of State must have regard to:

- any National Policy Statement which has effect in relation to development of the description to which the application relates;
- any LIR;
- any matters prescribed in relation to development of the description to which the application relates; and
- any other matters which the Secretary of State thinks are both important and relevant to the Secretary of State's decision.

Other National Planning Policy and Guidance Documents

- 3.4 The ***Marine Policy Statement*** provides the broad marine policy framework for the UK within which Marine Management Plans and applications for Marine Licences will be respectively developed and determined by the Marine Management Organisation (MMO) under the Marine and Coastal Access Act 2009. Amongst other dimensions of marine policy, the document makes reference to the promotion and regulation of offshore renewable energy infrastructure.
- 3.5 ***ODPM Circular 06/2005*** and ***DEFRA Circular 01/2005 Biodiversity and Geological Conservation – Statutory***

Obligations and their Impact within the Planning System

provides administrative guidance on the application of the law relating to planning and nature conservation as it applies to England.

3.6 ***ODPM Circular 02/99 - Environmental Impact Assessment -***

sets out the Government's policy regarding environmental assessment, including discussion of the process to be followed in the assessment of the environmental effects of proposed plans and projects. While this circular applies to the Town and Country planning regime rather than to the National Infrastructure planning regime the principles are similar. In the absence of any further guidance following publication of the new Town and Country Planning (Environmental Impact Assessment) Regulations 2011 its provisions can be read alongside relevant European Commission Europa EIA Guidance.

3.7 The ***National Planning Policy Framework*** sets out the Government's planning policies for England and how these are expected to be applied. It is relevant to landward aspects of the proposed project.

3.8 ***Europa Guidance*** - Relevant Europa guidance produced by the European Commission includes:

- guidance regarding the assessment of projects affecting European Sites: *Implementation of Directive 2001/42 on the Assessment of the Effects of Certain Plans and Programmes on the Environment – 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;
- [*Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC*](#)
- [*Wind energy developments and Natura 2000*](#)

3.9 ***Local Authority Policies*** - The relevant local plan is the Canterbury District Local Plan. It indicates general support for

renewable energy. The most relevant policy is C38 although it was not intended to be applied to offshore proposals. This policy states that planning permission will be granted for developments which utilise renewable energy resources including combined heat and power generation, subject to their not being in conflict with other policies in the Plan.

3.10 Although the Regional Spatial Strategy for the South East, the South East Plan, is set to be abolished by the Localism Act, until it is revoked by order of the Secretary of State it remains a material consideration. Relevant policies are CC1 Sustainable Development; CC2 Climate Change; CC3 Resource Use; NRM11 Development design for energy efficiency and renewable energy; NRM13 Regional renewable energy targets; NRM15 Location of renewable energy development; and NRM16 Renewable energy development criteria.

3.11 Other relevant local policy documents as highlighted by KCC's LIR are:

- CCC's Environment Policy (2009) – this also provides support for renewable energy;
- LCC's Community Strategy "Vision for Kent 2012-2022" – has a short term priority of "increasing the proportion of energy generated from renewable sources at least in line with regional and national targets".
- KCC's Regeneration Framework "Bold Steps" (approved December 2010) - supports the economic opportunities presented by renewable energy generation alongside other low carbon technologies.
- Swale Borough Local Plan 2008 (adopted) - encourages the use of renewable energy sources. States that Wind farms should generally be guided away from areas of nature conservation and landscape quality.... *unless demonstrated that there is no significant harm.*

4 **PRINCIPAL ISSUE 1 - HABITATS DIRECTIVE AND REGULATIONS: PROTECTION OF SPECIES AND HABITATS**

The applicant's Habitats Regulations Assessment Report (APP17) acknowledges that the KFE project, when considered in combination with other built, under-construction and planned wind farm projects, is likely to have a significant effect upon the population of the RTD. Can it be demonstrated beyond reasonable doubt that the 'in-combination' effects of the project are not so significant as to adversely affect the integrity of the Outer Thames Special Protection Area?

Preamble

- 4.1 Taking into account all the evidence brought forward during the examination and the relevant legal and policy compliance requirements, the Principal Issues identified in this report are those that are considered important to the assessment of the proposed DCO application. Apart from these issues, other points raised during the examination have also been taken into account. These other matters did not alter my judgment regarding the principal issues that should be considered. Nor did they alter my opinion as to the conclusions and recommendation regarding the DCO application.
- 4.2 Having regard to the submitted written and oral representations, the written evidence, the Principal Issues, information considered during the examination hearings and observations made during site visits, my findings and conclusions regarding the DCO application are related to the ten Principal Issues outlined in this chapter and chapter 5. A detailed set of conclusions is set out in relation to each issue. Overall conclusions are brought together and included at the end of the report in chapter 7, which also includes my recommendation to the Secretary of State.

Context

- 4.3 The Conservation of Habitats and Species Regulations 2010 (habitats regulations) establish strict controls on the circumstances in which consent can be granted for development in areas which are within or in the vicinity of 'European sites' and other specified categories of sites which are of conservation importance.
- 4.4 The KFE project is within one such European site, the OTE SPA and in the vicinity of a number of other sites protected under the habitats regulations.
- 4.5 The Secretary of State (SoS) is a CA for the purposes of the habitats regulations, and will only be able to grant consent for the KFE project if, having assessed the effects that the project will have on those sites, he considers that it passes the relevant tests in the habitats regulations. Assessments under the habitats regulations are iterative. The KFE application documents included a separate Habitat Regulations Assessment (HRA) report (which has been supplemented with an addendum during the examination (APP17, APP18, REP73 Appendix 8)).
- 4.6 The applicant's ES also includes information regarding the effects described in more detail within the HRA report. The ES and habitats assessments must also consider whether the project concerned is likely to lead to loss or deterioration of protected habitat, including habitat located in designated areas of nature conservation included within the Natura 2000 network, also known as 'European sites'.
- 4.7 The information in the applicant's HRA report and ES was considered and tested during the examination, by my written questions, by way of representations and responses from interested parties, and discussion at an issue-specific hearing. The applicant also sought to agree SoCGs with relevant interested parties.
- 4.8 After the issue-specific hearing, consultation with all interested parties was undertaken regarding a summary of what I considered

to be the agreed position in relation to the habitats considerations as well as the principal differences between the parties on habitats matters (the 'Report on the Implications for European Sites' or RIES).

- 4.9 The RIES is attached as Appendix E. It draws upon the information included in the application documents, including the applicant's ES and HRA report and also takes account of additional information submitted during the examination, including the SoCGs, the written and oral submissions and the applicant's HRA report addendum. It compiles, documents and signposts information received during the examination of Vattenfall's DCO application for the KFE project.
- 4.10 The RIES and the responses to it will inform the Secretary of State's conclusions in respect of the effects of the project on the sites protected under the habitats regulations.
- 4.11 For consultation purposes, the RIES was published on the PINS National Infrastructure pages of the Planning Portal website and circulated to interested parties on 28 June 2012 (PD31), providing 21 days for responses. NE are the relevant statutory nature conservation body for the purposes of regulation 61(3) of the habitats regulations and were included in this consultation and responded to it.
- 4.12 Responses to the content of the RIES were received from the following interested parties:
- The applicant (REP87 and REP89);
 - NE (REP86); and
 - Kent Wildlife Trust (KWT) (REP88).
- 4.13 This process is evolving and is likely to be developed and amended for other examinations of future DCO applications in the light of experience.
- 4.14 The consultation responses have been taken into account in preparing this report.

4.15 The habitats regulations were amended during the course of the examination³ to confirm the transposition into UK law of elements of the European Wild Birds Directive. Article 2 of the Directive requires Member States to take requisite steps to maintain wild bird populations at a level which corresponds in particular to ecological, scientific and cultural requirements, while taking account of economic and recreational requirements, or to adapt the population of these species to that level. Articles 3 and 4(4) (second sentence) of the Directive are designed to ensure that Member States preserve, maintain or re-establish a sufficient diversity and area of habitats for wild birds and to ensure that outside those areas which are specifically designated as important wild bird habitats, efforts are taken to avoid pollution or deterioration of habitats⁴.

4.16 I sought comments from all interested parties on the implications (if any) of these habitats regulations amendments in relation to the evidence already submitted to the examination. Relevant comments were received from the following:

- The applicant (REP90);
- NE (REP97);
- The Royal Society for the Protection of Birds (RSPB) (REP96);
and
- London Array Ltd (LAL) (REP92).

4.17 The findings of fact summarised in the RIES were accepted by all consulted parties with one important exception. NE highlighted an error in an explanatory footnote to Matrix 10 whereby the density increase resulting from the in-combination assessment of relevant projects including KFE is substantially understated. The implications of the NE view of the correct figure are discussed later in this report.

³ Conservation of Habitats and Species (Amendment) Regulations 2012 (SI 2012 No 1927)

⁴ Explanatory Memorandum to the Conservation of Habitats and Species (Amendment) Regulations 2012, SI No 1927

The Assessment Process

Identification of areas potentially affected by the project

- 4.18 The first step in the assessment process was to identify the relevant sites that could be potentially affected and are subject to the protection given by the habitats regulations. These were agreed between the applicant and NE during the pre-application stage and subsequently included in the applicant's HRA report.
- 4.19 In summary the sites considered, and their conservation features, are as follows:

Outer Thames Estuary SPA:

- Marine habitat/sea inlet
- Red throated diver

Thanet Coast and Sandwich Bay SPA/Ramsar:

- Shingle shores, shallow coastal waters, intertidal mud and sandflats, Chalk shores:
- Little tern (breeding), golden plover (wintering)
- Turnstone (wintering)

Foulness SPA/Ramsar:

- Shell, sand and gravel shores, intertidal mud and sandflats, saltmarsh:
- Brent goose, wigeon, little grebe, hen harrier, avocet, oystercatcher, grey plover, golden plover, ringed plover, lapwing, knot, dunlin, bar-tailed godwit, blacktailed godwit, redshank, curlew, little tern, wintering waterbird assemblage.
- Shelduck
- Common tern
- Sandwich tern

The Swale SPA/Ramsar:

- Sand and shingle shores, tidal flats, saltmarsh
- Avocet

- Cormorant
- Mediterranean gull
- ‘Other ornithological interests – see HRA Table 5’
- Brent goose (qualifying)
- Dunlin (qualifying)

Medway Estuary and Marshes SPA/Ramsar:

- Shingle beaches, Estuaries, Mud and sandflats, Lagoons, Saltmarsh
- Berwick’s (Tundra) swan, brent goose, teal, wideon, pintail, shoverler, little grebe, avocet, oystercatcher, grey plover, ringed plover, knot, dunlin, black-tailed godwit, redshank, greenshank, curlew, whimbrel, turnstone, little tern, lapwing
- Great crested grebe
- Shelduck
- Common tern

Thames Estuary and Marshes SPA/Ramsar:

- Saltmarsh, Mudflats, Shingle
- White-fronted goose, gadwall, pintail, shoveler, hen harrier, grey plover, ringed plover, avocet, lapwing, knot, dunlin, black-tailed godwit, redshank, whimbrel wintering waterbird assemblage
- Shelduck

Thanet Coast SAC:

- Reefs, submerged or partially submerged sea caves

Margate and Longsands cSAC:

- Sandbanks slightly covered by seawater at all times.

Outline of the process

4.20 Regulation 61(2) of the habitats regulations provides that:

“(1) A competent authority, before deciding to undertake, or give any consent, permission or other authorisation for, a plan or project which—

(a) is likely to have a significant effect on a European site or a European offshore marine site (either alone or in combination with other plans or projects), and

(b) is not directly connected with or necessary to the management of that site,

must make an appropriate assessment of the implications for that site in view of that site's conservation objectives."

The Secretary of State is a CA for this purpose.

- 4.21 Paragraph 2.5 of the SoCG between the applicant and NE (REP110) identifies eight steps in the assessment process.
- 4.22 The KFE project is clearly neither connected nor necessary for the management of the potentially affected areas (step 1 in the process referred to above). Step 2 ("screening") involves consideration as to whether the project is likely to have a significant effect on the area (either alone or in combination with other plans or projects).
- 4.23 Steps 3 and 4 ("integrity test") require "appropriate assessment" of the implications in view of the area's conservation objectives, and whether the integrity of the European site will be adversely affected.
- 4.24 Under regulation 61(5) of the habitats regulations, in the light of the appropriate assessment, the CA may then only agree to the plan or project after having ascertained that it will not adversely affect the integrity of the relevant area, or it is acceptable under the terms of Regulation 62 (Imperative Reasons of Public Interest - IROPI) to agree to it.
- 4.25 The applicant does not consider there to be a need for the provisions of Regulation 62 to apply to the KFE project. The applicant has not provided any information in relation to this and accordingly those issues have not been the subject of examination.
- 4.26 In relation to significance of effects and the likelihood of an adverse impact upon integrity, Article 6(3) of the Habitats Directive,

together with Regulations 49, 53, 61 of the habitats regulations⁵ apply, as does the guidance set out in paragraphs 13-24 of ODPM Circular 06/2005⁶ and the relevant Europa Guidance identified in paragraph 3.8.

HRA Screening the KFE project

- 4.27 A list of sites for inclusion within the HRA assessment was presented within the ES and had been subject to consultation with NE (APP28 para 8.3.1). The list was accepted by NE and other relevant consultees. No concerns have been expressed by consultees regarding the technical assessment approach taken by the applicant regarding the consideration of potential impacts on the relevant Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites (collectively referred to in this report as European sites). In the case of the Ramsar sites, the relevant sites share their boundaries and key bird species with their corresponding SPAs and have accordingly been assessed using an integrated approach.
- 4.28 The habitats regulations require, as a first step in assessing a proposal, screening for likely significant effects. The KFE project is not connected with, nor necessary to, the management for nature conservation of any European sites. The applicant's HRA report (APP17) assessed the effects of the KFE project on European sites within its vicinity, in isolation and in combination with other projects.
- 4.29 A No Significant Effects Report (NSER) (APP17, Appendix 1) was produced by the applicant in relation to all of the European sites included in their assessment, with the exception of the OTE SPA. Agreement of the NSER was reached between the applicant and NE and the RSPB, subject to implementation and inclusion within the DCO of mitigation with respect to the turnstone population which is

⁵ Council Directive 92/43/EEC of 21 May 1992 on the Conservation of Natural Habitats and of Wild Fauna and Flora; Conservation of Habitats and Species Regulations 2010 as amended;

⁶ Circular 06/05: Biodiversity and Geological Conservation fauna and flora;

a qualifying interest of Thanet Coast and Sandwich Bay SPA (APP17 para 5.3.12, APP42). The mitigation comprises a restriction to the timing of the landfall construction works, which will be halted for two hours either side of high tide.

- 4.30 The SoCGs between the applicant and KWT, the applicant and NE, and the applicant and RSPB, all confirm that NE, RSPB and KWT are satisfied that this proposed mitigation of potential impacts upon the turnstone is appropriate. The mitigation is contained within condition 8 of the DML in the post-examination draft DCO (Appendix F).
- 4.31 All parties agreed that significant effects upon the RTD (the citation species for the OTE SPA) were likely, both for the KFE site alone and in combination with other relevant existing, under-construction and planned wind farm projects. The effects of the KFE project should therefore be examined in more detail to identify their impact on the integrity of the SPA.
- 4.32 While progress in narrowing the issues in dispute was made during the examination through the agreement of the SoCGs, disagreements remain outstanding over how the facts should be interpreted and applied to the relevant tests applicable under the habitats regulations.
- 4.33 In particular, there is disagreement in relation to the interpretation of the cumulative effects of the proposed KFE project upon RTD when considered in-combination with the effects of other existing, under-construction, consented or planned wind farm projects.
- 4.34 The habitat regulations issues raised in connection with the RTD and its habitat(s) within the OTE SPA are central to this case. They are detailed and considered further below.

OTE Site Background

- 4.35 In recent years the UK Government has been required under the EC Habitats and Wild Birds Directives to identify habitats and species

for protection. The work undertaken has then formed the basis for the classification of 'European sites' under the Directives. The basis for the classification is set out in a 'Standard Data Form' (SDF) in a format established by the European Commission.

- 4.36 The boundaries of the OTE SPA are shown in the classification of the SPA. The SDF⁷ provides further details of the site, including ecological information, general site character and characteristics, the key qualifying feature that confirms the quality and importance of the site (38% of the RTD population in Great Britain based on the mean survey population count over the period 1989-2006/07) and details of vulnerability of the protected species to risks including disturbance from wind farm construction and operation. The boundaries and other details were identified after assessment of survey information gathered by the Joint Nature Conservation Committee (JNCC) and others. Having regard to the summary information set out in the SDF, the SPA was classified by the Government in August 2010 and subsequently notified to the European Commission's Environment Directorate for inclusion in the Natura 2000 Network of European sites.
- 4.37 It is in this wider context that the OTE SPA for wild birds has been classified and included within the Natura 2000 network of European sites. The SDF for the OTE SPA confirms that it has been classified specifically in relation to its importance for the RTD in terms of its population abundance and distribution.
- 4.38 As noted above, where significant effects on a European site are likely to arise from a proposed project, Regulation 61 of the habitats regulations requires an 'appropriate assessment' to be undertaken by the CA. This is to assess *'the implications for that site in view of that site's conservation objectives'*.

⁷ Natura 2000 Standard Data Form for Special Protection Areas (SPA) - Thames Estuary and Marshes (site code UK9012021), produced by JNCC and dated 28/02/11:
<http://jncc.defra.gov.uk/pdf/SPA/UK9012021.pdf>

- 4.39 Neither the habitats regulations nor the European directives which they transpose provide any definitions of ‘appropriate assessment’ or ‘conservation objectives’. EC guidance indicates that the SDF should form the basis of the conservation objectives⁸.
- 4.40 At the time of classification of the OTE SPA, NE and JNCC had a duty under the relevant habitats regulations to advise other relevant authorities and/or competent authorities as to the conservation objectives for the potential OTE SPA as a European marine site. Accordingly, the site’s draft conservation objectives are set out in a JNCC/NCC document entitled: *‘Offshore Potential Special Protection Area: Outer Thames Estuary. Draft Conservation Objectives and Advice on Operations’* issued in September 2009.
- 4.41 The OTE SPA site was subsequently classified in August 2010 in the light of the SDF, supported by the objectives set out in the document. NE has confirmed that any updates to the conservation objectives since designation have been minor (REP58).
- 4.42 The copy that has been provided by NE in response to a Rule 17 question remains version 2 of the draft dated 9th September 2009. Table 3.1 of that document sets out a *‘Summary of the operations/pressures that may cause deterioration or disturbance of red throated divers and their supporting habitat and prey species in the Outer Thames SPA at current levels of use’*. The list of operations which may cause deterioration and disturbance includes *‘Non-physical disturbance’* including noise and visual disturbance. Section 3.7.3 of the document explains the risks of non-physical disturbance to RTD in more detail, confirming that:
- 4.43 RTDs are highly sensitive to non-physical disturbance by noise and visual presence during the winter.
- Feeding can be disturbed by movements of objects including wind turbine rotors and increases in noise disturbance, displacing birds from their feeding grounds.

⁸ “Managing Natura 2000 Sites – The Provisions of Article 6 of the Habitats Directive” – paragraph 4.5.3

- Disturbance can cause birds to cease feeding or fly away and in response they could a) increase their energy requirements at their present (disturbed) feeding sites, or b) move to an alternative less favoured feeding or roosting site.
- Such a response affects energy budgets and food intake rates and possible survival.
- Over-wintering birds, which are frequently subject to harsh weather conditions and must lay down fat reserves in order to migrate to breeding grounds, are particularly susceptible to adverse effects resulting from disturbance. Sensitivity can be considered high.

4.44 At the time the document was prepared, calculation of the areas of the wind farm footprints relative to the area of the proposed SPA showed that, excluding KFE and proposed second phase of London Array, 3.5% of the pSPA area could be made unavailable through displacement. If the entire consented LA2 development is included this increased to 282.5 km² or 7.2% of the pSPA area.

4.45 The document also states that *'As discussed in section 3.7.1, red-throated diver may habituate to wind turbines over time and therefore any habitat loss due to disturbance is not guaranteed.'* This point has subsequently been contradicted by examination submissions from both the applicant and NE, who have confirmed that there is no reliable evidence of habituation.

4.46 The document points out that RTDs in the OTE pSPA may also be exposed to a range of disturbance and displacement effects from shipping and boat movements associated with marine aggregate dredging and fishing activities. Overall the vulnerability of the RTD Annex 1 species within the OTE pSPA to non-physical disturbance from sources including wind farms was considered to be high.

4.47 In that context, the conservation objectives for the RTD are:

"Subject to natural change, maintain in favourable condition the internationally important populations of the regularly occurring Birds Directive Annex 1 species: red-throated diver (Gavia stellata) and its supporting habitats and prey species. Relevant habitats include shallow coastal waters and areas in the vicinity of

sub-tidal sandbanks. The number of red-throated diver using these habitats is given in table 2.1."

- 4.48 Table 2.1 in the objectives document identifies the wintering RTD population as 6,486 individuals, based on survey data collected between October-March 1988/89 and 2002-2007.
- 4.49 Table 2.2 indicates *'attributes to be used in defining favourable condition for the Outer Thames pSPA'*. A note to the table indicates that favourable condition tables will be drafted in detail on classification of the SPA and its adoption as a European marine site, but it should be noted that no such detail has been submitted to the examination, either by NE or by any other party including the applicant. Therefore the assessment must be made in the light of the targets and comments set out in Table 2.2. The target in relation to the attribute of RTD population size is:

"Maintain population on the site subject to natural fluctuations. There should be no permanent decline, only non-significant fluctuation around the mean to account for natural change: where the limits of natural fluctuations are not known (as is currently the case), maintain the population above 50% of that at designation; loss of 50% or more unacceptable".

- 4.50 The comment alongside this target is helpful to its interpretation:

'The mean value was established using data collected between the months of October to March in 1988/89 and 2002-2007. The difficulty in monitoring and accurately assessing numbers of this species makes understanding natural population dynamics very difficult, therefore the objective of the 50% threshold is required. A simple threshold system works by comparing population sizes at different times and deriving the change (expressed as a proportion of the initial population). If this change represents an absolute loss of 25%, or more, of a breeding population or 50%, or more of a non-breeding population then the feature will be in unfavourable condition. These threshold are limits of natural change due to changes in distribution related to natural changes in food availability, population changes due to wintering mortality, etc.'

- 4.51 NE emphasises that the threshold relates to 'natural change' and has confirmed that the 50% threshold is not intended to allow for a 50% fall in population due to anthropogenic impacts such as wind farm development and operation (REP58). This point is confirmed

by the wording of the explanatory note to the population target quoted above.

- 4.52 Table 2.2 of the conservation objectives also sets out targets in relation to other attributes, namely habitat extent and prey species, as follows:

Habitat extent target:

“Maintain the area of sandbanks in the site subject to natural change: No reduction in extent of sublittoral, shallow (less than 20m) sandbank habitat.”

Explanatory comment:

“Changes in extent will need to take account of the dynamic nature of the sandbank, but a trend of reduction in extent may indicate long-term changes in the physical conditions influencing the feature, whether it be natural processes or anthropogenically driven.”

Prey species target:

“Maintain the abundance and distribution of red-throated diver prey species subject to natural fluctuations.”

Explanatory comment:

“If the red-throated diver population declines, we would need to explore the reasons behind this change and attempt to associate it with the range of possible factors acting on the species and its habitats.”

- 4.53 In the context of the conservation objectives set out above, ‘favourable condition’ is defined in the ‘Draft Conservation Objectives and Advice on Operations’ which underpinned the SPA’s classification as 50% of the citation population of 6,466 (mean value of variable population surveyed over a period of years from 1989 to 2006/07).
- 4.54 The SDF, the conservation objectives document and other evidence provided by the applicant (APP17, APP18, REP73 Appendix 8) and by NE (REP18, 34, 58, 79, 86, 97), RSPB and KWT (REP 5, 15, 40, 41, 56, 59, 76, 77, 83, 88, 96) confirm that the RTD uses the OTE as an over-wintering ground – both as a seasonal residence and as

a stop-over on longer migrations from and to its summer base in the north of Scotland and the Arctic, and areas of Europe further south.

- 4.55 This evidence also suggests that the sheltered shallow waters of the OTE provide a particularly important habitat for the RTD. Its important ecological function as an over-wintering habitat is presumed to derive from the availability of suitable prey species (sand eels, herring and sprat) and the relatively protected estuarine environment. The shallow sand-banks and brackish tidal estuarine waters provide access to the prey with limited requirement for the expenditure of energy, thus providing suitable habitat(s) to underpin survival of the over-wintering RTD population (PD24-26).

Assessment of the Effects Likely to Result from the Proposed Project – The Integrity Test

Baseline conditions

- 4.56 The citation population of RTD derived from the series of surveys carried out up to the date of SPA classification in August 2010 is 6,466. A report prepared for LAL by APEM entitled *'Red-Throated Divers and Offshore Wind Farms in the Outer Thames: Historic Data Review'* (June 2011) (REP 24) and submitted to the KFE examination by LAL Ltd draws on JNCC time series survey data.
- 4.57 The survey information available illustrates very wide temporal fluctuations in surveyed RTD population, not only from winter season to winter season but from month to month during each over-wintering season. It also illustrates distributional changes as other wind farms are constructed and possibly for other reasons. To illustrate the temporal and spatial variability of the RTD population figures, the peak population recorded for the SPA within the data sets used as the basis for calculating the mean identified above was 10,884. A survey of 10% of the SPA area in 2011 (the proposed site of the LA2 project) (REP22-24) recorded a concentration of 8,194 birds on one day's observation.

- 4.58 It is also noted from the discussion in Section 4 of the APEM historic data review that the annual peak surveyed population of RTD appears to have fallen progressively over the six years of survey records then recovered for a year:

“Over the period 2002-03 – 2009-10, red-throated diver numbers declined but then returned to a level comparable with the earliest survey year. This may constitute natural variation in numbers over time, in response to factors including proximate weather conditions, background mortality and productivity, localised habitat availability and profitability, and so on. Alternatively, the effect of construction of Kentish Flats may have led to wider avoidance of London Array – the trend declined in the winter Kentish Flats was under construction. Conversely, diver numbers were relatively large in Kentish Flats at this time, at least by boat survey estimates, and apparent avoidance may have been an effect of a relatively stable population moving between areas of the Outer Thames.”

- 4.59 Section 4 of the APEM report also confirms that the survey evidence demonstrates an effect from wind farm construction:

“Both boat and visual aerial survey data show clear changes in distribution over time for certain areas. Kentish Flats wind farm is the best example, being the longest in operation. Boat surveys, divided into four distinct periods, indicate a decline in density in the wind farm area following construction, with an increase in the control zone. Mean weighted centroids of distribution support the significance of change registered by Percival and distance analysis GLMs; there is a clear shift in distribution away from the wind farm area towards the control zone post-construction. Patterns of aerial survey data support this, but do not cover the same extent of time. Avoidance of wind farms has been suggested elsewhere post-construction (discussed in Drewitt & Langston 2006); further distribution data will inform whether this is a temporary or longer lasting phenomenon.”

- 4.60 The text also suggests a possible reason for the distribution observed:

“The distributional shift is partly at odds with abundance data, which suggest little change in numbers within the wind farm area plus buffer once construction is complete. One possible explanation is that birds within the wind farm area become more clumped following wind farm construction; that is, numbers are statistically similar to pre-construction levels, but are distributed across a different area; from the distribution maps, it would seem that there is localised displacement to the buffer zone, meaning there is a distributional shift over time but without evidence of a

significant decline in diver density when considering the wind farm and buffer together. Although turbine construction appears to have resulted in some avoidance of the wind farm area, widespread displacement leading to significant decreases in the diver population at the local level does not seem to have occurred."

- 4.61 During the examination – although no parties submitted comments regarding the APEM studies submitted by LAL - both the applicant and NE confirmed that the APEM Historic Data Review study undertaken for LAL drew upon the same data sets as used in the applicant's ES and were broadly in line with conclusions drawn in that document regarding RTD abundance and distribution. The LAL study area included the existing Kentish Flats wind farm site but did not identify the KFE proposal now under consideration, which is therefore absent from the APEM analyses. Nevertheless it is noteworthy that the Historic Data Review report and the APEM report on the 2010-11 Ornithological Survey of the London Array Study Area (approximately 26% of the OTE SPA) appear to confirm a number of key points outlined in the applicant's ES and in evidence given at the relevant examination hearing by the applicant's scientific advisors, NE and Cefas.
- 4.62 At this stage it appears that there is insufficient reliable time series data with which to test APEM's interpretation of 2010-11 survey findings put forward in its report of a localised change in density as a result of disturbance and displacement by wind farm construction and operation based upon little or no change in overall population numbers when measured across the wider area. Apart from the digital aerial survey completed in 2010-11 for LAL the time series data available showed a decline in RTD numbers over the JNCC survey period 2002-2007.
- 4.63 The formal SPA classification process had regard to the results of surveys carried out by the JNCC and others over a period of years. The survey effort has continued following the date of classification in August 2010 and the resulting data sequence has provided some of the key evidence informing findings of fact set out in the

applicant's habitats assessment reports, in the responses of the various parties interested in ornithological conservation (including NE, RSPB and KWT) and in the RIES.

- 4.64 During the later stages of the survey work undertaken, offshore wind farm development commenced in the OTE and its environs, including the consenting and construction of the existing Kentish Flats wind farm and the Thanet, Gunfleet Sands, Greater Gabbard, and LA 1 and 2 wind farms (the latter thus far not fully consented and has therefore not commenced construction). Further proposals are under development and consideration, including the proposed KFE project (now the subject of this report), Galloper and the detailed proposals for LA 2. Surveys carried out in connection with these developments are providing additional information that complements the data available from the JNCC. To date it appears that the different sources of survey information have supplied data that have proved relatively consistent in terms of the overall picture of RTD population abundance and distribution provided (REP27, REP41, REP101, AS1, AS6).
- 4.65 A number of points of factual evidence were adduced in written and oral submissions by the applicant, NE, MMO (and its advisors from Cefas) regarding habitat structure and function – and the 'coherence' of the SPA in terms of the density of RTD across this part of the OTE that gave rise to its classification and the definition of the SPA boundaries to support the SDF that provided the basis for classification. They draw upon the features of the SPA outlined in the SDF as well as the scientific knowledge of the expert witnesses. Key points included:
- The estuarine environment is based upon sand banks, silts and gravels supporting a range of small fish that act as prey species for the RTD (APP17, APP18, REP73 Appendix 8, PD24-26, REP79).
 - The waters of the estuary are chemically variable due to the dynamic mixing of brackish river flows, seawater tidal flows

and currents circulating around the estuary, across sand banks and through channels.

- The interactions between the nature of the underlying sea bed and the dynamic flows of water produce variable conditions that influence the habitats for prey species and thereby the habitat and feeding opportunities for the RTD.
- Populations of prey species may be subject to considerable fluctuations across the much larger areas in the North Sea for reasons that are not fully understood but which may relate to a variety of factors including weather conditions and turbidity, relative sea temperature and salinity, hydrodynamic wave, tidal and current conditions, availability of food supplies and so on.
- The Thames estuary's sandbanks and shallow waters provide important breeding and nursery grounds for some fish species, including species that are important to the RTD's preferred diet.
- The ratio of expended energy to food availability is likely to be important to the survival rate of over-wintering RTD. To that end habitats associated with the shallow estuarine sandbanks are of particular importance, as reflected in the OTE SPA conservation objectives.
- The RTD species has acute vision, is highly nervous, is considered particularly prone to visual disturbance and may readily be disturbed by boat and aircraft movements and wind turbine movement at least up to two miles away and possibly up to four miles distant. The functional suitability of RTD over-wintering habitat therefore depends not only upon the availability of appropriate prey species on or around sand banks and shallow water at depths up to 20 metres maximum (higher RTD densities have typically been observed in much shallower waters over sandbanks as noted in the APEM 2010-11 survey report) but also upon the absence of sources of visual and aural disturbance within a radius of between 2-4 miles.

- The level of RTD disturbance caused by wind farms decreases with increasing distance from the wind farm concerned. Typically, surveyed RTD displacement is extremely high within wind farm sites, where very high levels of displacement (over 90%) were noted in the submitted ES and habitats assessment information. This is despite the presence of otherwise apparently suitable sandbank habitat. Disturbance and displacement was noted by NE and by the ES and habitats report and addendum information as decreasing progressively out to between 2-4 miles, where densities would tend to return to the levels typical of relatively undisturbed areas within the SPA.

Identification of Significant Effects upon Qualifying Features of the SPA

- 4.66 As informed by the European directives and guidance on project assessment and on assessment of wind farm projects, consideration of the significance of disturbance and displacement upon a protected species requires consideration of effects upon the ecological structure and function - and the resulting coherence - of the SPA habitat(s) that form the basis for classification and that are referred to in the site's nature conservation objectives. Once any effect on a protected species in a Natura 2000 network site has been identified as possibly significant then the next step is to consider the implications for the integrity of that site.
- 4.67 In the light of the statutory provisions in relation to habitats, including the relevant habitats regulations, together with the policy, guidance and advice referred to earlier in this report, consideration has been given to any effects upon the population and distribution of the RTD as one of the Wild Birds Directive Annex I protected species and any implications for the integrity of the OTE SPA. Further consideration has then been given to whether any of the likely effects of the proposed KFE project identified in the assessment are likely to compromise the structure, function and resulting integrity of the SPA or whether there are grounds for

reasonable scientific doubt that the proposed project will not have an adverse effect on the integrity of the SPA. This process is consistent with that confirmed by the *Waddenzee* judgement by the European Court of Justice (ECJ Case C-127-02).

4.68 The applicant's in-combination assessment of the effects of disturbance and displacement upon the RTD population abundance and distribution was submitted in its ES and HRA report and updated with the HRA addendum (APP17&18, APP29, APP49, REP73) following the hearings.

4.69 The following projects have been included in the in-combination assessment carried out by the applicant:

- The existing Kentish Flats wind farm;
- Kentish Flats Extension (KFE);
- London Array Phases 1 and 2 (LA1 and LA2),
- Thanet,
- Gunfleet Sands Phases I and II,
- Greater Gabbard and
- Galloper.

4.70 Thanet, Greater Gabbard and Galloper lie outside the SPA but may interact with it to a degree in terms of RTD disturbance and displacement effects. However, it is noted that during the examination NE has placed the emphasis on the cumulative effects of the wind farms lying within the SPA boundaries. In line with the position adopted by NE, the in-combination assessment of effects considered in this report therefore focuses on wind farm projects located or to be located within the boundaries of the SPA.

4.71 The key points are summarised in the RIES report's matrices and commentary. Matrix 1 on pages 5-6 of the RIES sets out the key findings of fact drawn from the application documents and examination submissions in relation to the likely effects of the proposed KFE project on the OTE SPA. These include the following:

- No direct habitat loss is anticipated from the development of the proposed wind farm extension. It is common ground between the applicant, NE, RSPB and KWT that, assuming the worst case scenario of total loss of habitat from the effect of constructing turbine foundations and of associated seabed scour, the direct impact to habitats supporting the RTD would be negligible.
- The applicant's HRA report concludes that no significant impacts upon water quality or physical processes within the SPA resulting from cable landfall works are considered likely (applicant's HRA report para 5.2.9, ES sections 6 and 7). Although some concerns were raised by individual fishermen and the Kent and Essex Inshore Fishing and Conservation Authority (KEIFCA), no clear evidence has been presented to demonstrate the likelihood of significant adverse effects upon water quality during the examination and this conclusion appears to be broadly accepted by NE and other conservation bodies (REP105 (SOCG with KWT), REP110 (SOCG with NE), REP108 (SOCG with RSPB)). It is also noted that the Environment Agency (EA), which has statutory responsibility for the designated Shellfish Waters (i.e. the Whitstable Oyster Grounds) and designated bathing waters at Whitstable and Herne Bay, has raised no objection to the development proposals. In any event the EA is able to apply separate powers under the Water Resources Act 1991, by the revised [Bathing Water Directive \(2006/7/EC\)](#) as transposed by the [Bathing Water Regulations 2008](#) and by the EC Shellfish Directive as transposed by the UK Surface Waters (Shellfish) (Classification) Regulations 1997 and The Surface Waters (Shellfish) Directions 1997 to control emissions that would adversely affect the relevant defined water quality standards.
- Non-physical disturbance has been identified as a potential impact on habitats but is not discussed further in the applicant's HRA report. However, that report does indicate that no representations were presented with concerns in that

regard. NE has confirmed that it has no concerns regarding direct habitat loss (REP79, response 10).

- In-combination impacts on supporting habitats (i.e. habitats outside the SPA that may help to support the RTD population abundance and distribution within it) were screened out of the assessment in the applicant's HRA report. The basis for this is that as works will be temporary and localised, and that significant distances are involved between KFE and other projects within the area, no pathway exists for combined effects with other projects.
- RTDs were recorded within the 'wind turbine envelope' (the application area plus a 200m buffer) and it was therefore felt that there might be a risk of collision (APP17 para 5.3.1-2, Table 5). The applicant and the nature conservation consultees agree that this aspect should be subject to appropriate assessment. There was, however, a high level of consensus between the parties, after consideration of the relationship between the characteristics of RTD behaviour and the content of the proposal, together with the results of the collision modelling exercise appended to the ES, that the potential level of risk is unlikely to create effects that could lead to high mortality rates. This collision risk is predicted by the applicant to be of negligible magnitude (APP29, APP17 para 5.3.8) but is recommended to be taken forward for further assessment because of uncertainty. The collision assessment set out in the applicant's ES and HRA reports was accepted by the parties.
- Only Thanet Coast and Sandwich Bay SPA has been considered by the applicant in relation to the impacts of landfall works, where a precautionary 1km zone of influence has been applied. However, the landfall point is within 1km of the OTE SPA. In their response to my Rule 17 question in relation to this matter (REP 81), the applicant states that it has considered that the mitigation proposed for the turnstone to be applied to the landfall works (see Matrix 2, justification 'i') will also mitigate any effects of these works on RTDs. The applicant pointed out

that, given that RTDs are only in the area in the winter and that they do not use the intertidal area, impacts upon them are unlikely. It was also explained that specific mitigation had not been devised in the light of these points and that no concerns have been raised by any party in that regard (REP81).

4.72 After due consideration of the ES and HRA information and having regard to the high level of agreement between the relevant parties including NE and RSPB in relation to collision risk it appears that the methodology used in the collision modelling and calculations is robust and that the conclusions reached are reasonable.

4.73 In the later stages of the examination NE clarified its position and focussed upon loss of habitat use rather than loss of habitat *per se*. The primary concern expressed related to the effects of disturbance and displacement upon population abundance and distribution. Subsequently the SoCG between the applicant and NE included the following text:

“(a) In relation to Kentish Flats Extension alone it is agreed that there are unlikely to be significant effects upon the Outer Thames Estuary SPA.... This is due to the scale of the development and the resultant number of birds which are potentially displaced.

(b) It is agreed that implementation of the Kentish Flats Extension Project (when considered in isolation or in combination with existing, under construction or planned projects of relevance) would not through direct loss or change of habitat area compromise the sustainability of the habitat or complex of habitats identified within the defined SPA boundaries in the SPA citation.’
(my emphasis)

‘(c) However, Natural England is of the opinion that this cannot be concluded when considering the citation levels of the population of red-throated diver identified within the defined SPA boundaries. It is agreed that the only likely significant effect upon the coherence of the ecological structure and function of the Outer Thames Estuary SPA across its whole area is the cumulative displacement impact on red throated diver that could arise from the Kentish Flats Extension in combination with other existing, consented and proposed wind farms that may also influence the birds within the SPA.

(d) A likely significant effect on the site cannot be excluded. Therefore, on that basis, an appropriate assessment of the implications for the site in view of its current conservation objectives will be required by the competent authority."

"Disturbance can lead to displacement and exclusion, and hence loss of habitat use. The risk may be relevant for birds, bats and marine mammals. The species may be displaced from areas within and surrounding wind farms due to visual, noise and vibration impacts. Disturbance may arise from increased human activity during construction work and maintenance visits, and/or as a result of opening up access to the site for others through the construction of new access roads etc....The scale and degree of disturbance determines the significance of the impact, as does the availability and quality of other suitable habitats nearby that can accommodate the displaced animals."

- 4.74 The SoCG between the applicant and NE indicates that the relevant test to be applied is the significance test and, having regard to the content of the EC Habitats and Wild Birds Directives and habitats regulations that transpose the directives for application in England, the submitted habitats evidence, the points outlined above and all the circumstances of the case, that point is accepted.

Methodology

- 4.75 The conclusions set out below reflect technical judgment that relies upon the appropriateness of the 2km buffer density model and upon the reasonable accuracy and relevance of the survey data used as the basis for the HRA assessment. In this connection it should be noted that the applicant and all nature conservation parties to the examination have agreed that the applicant's final methodology and related data and assumptions provide a technically sound basis for the HRA.
- 4.76 LAL did not raise any concerns or objection to the applicant's methodology and the content of the assessment when given the opportunity to do so. While the company did note that it has differences of opinion with NE over the model to be used in the calculation of the displacement effects of the LA2 project it did not explain its respective differences of position to that of NE. Neither

did LAL provide any justification for its challenge to NE's position regarding the choice of model to be used.

4.77 In considering the assessment, the various characteristics of the data bases, variations and characteristics of particular survey methodologies and the limitations of the scientific evidence available need to be taken into account. Assessment of disturbance effects upon population abundance and distribution needs to consider the interplay of the habitat function effects with those of other factors. In this regard it appears difficult to draw very precise scientific conclusions for the following reasons:

- due to the paucity and variability of evidence, scientific precision is not available and conclusions must therefore be drawn from higher level analyses that include reliance on considered assumptions based upon the best available information (which is acknowledged as imperfect) rather than fully comprehensive, detailed and definitive scientific information; (APP17, APP18, REP73 Appendix 8, PD24-26, REP79)
- there remain significant gaps in scientific knowledge, both of the general environmental and habitats effects of off-shore wind farms and of the ecology and behaviour of RTDs and how offshore wind farms may affect them.

4.78 Nevertheless ecologists and the wind farm industry have recognised and considered the data imperfections and constraints. A methodology has been developed for the assessment of disturbance effects upon the population abundance and distribution of birds - the density distribution methodology - that appears to be accepted as the best reasoned technical basis for planning evidence available currently. Prior to submission of the KFE DCO application, the applicant agreed with NE the general habitats assessment approach and methodology to be adopted, albeit that some points of detailed methodology were refined during the examination period in response to comments made (PD24-26). The final methodology has been agreed with NE and the other nature conservation parties in

the SoCGs (REP105 (SOCG with KWT), REP110 (SOCG with NE), REP108 (SOCG with RSPB).

- 4.79 While the citation population estimate for the RTD used as the basis for designation of the OTE SPA is 6,466, the applicant has used a population figure of 6,250 from which to calculate interaction values. The 'interaction value' represents diver displacement expressed as a proportion of the overall SPA population of RTD.
- 4.80 The JNCC survey figures from which the population estimate is compiled relate to 'statistically smoothed' mean diver populations for kilometre grid squares. The applicant has used the adjusted figure of 6,250 to allow for the statistical consequences of partial kilometre squares included within the SPA area boundaries under consideration in the assessment. Having regard to this point, and to ensure consistency to enable comparison of 'like with like' as far as is practicable in the circumstances, the interaction value figures used elsewhere in this report all relate to the 6,250 population base adopted by the applicant's assessment unless otherwise noted.
- 4.81 The likely effects of the KFE project upon population abundance and distribution are largely agreed, although prior to submission and during the examination some disagreement has been evident regarding specific points, including:
- the appropriate model to use as a basis for the assessment;
 - the appropriate baseline to use for the assessment, and
 - whether the effects of the Kentish Flats and LA2 wind farms should be taken into account.
- 4.82 The applicant considered and discussed three possible models for calculating 'interaction rates' (an accepted statistical method for calculating likely levels of disturbance and displacement of bird species based on survey data). The three models assessed included:

- Model 1 – 1km Buffer Model: This is the model applied in the appropriate assessment undertaken for the LA consenting process, which applies theoretical assumptions regarding RTD displacement from wind farms and a 1km buffer around the wind farm site. The assumptions involved are 100% RTD displacement and mortality within the windfarm and 50% displacement from the 1km buffer area surrounding the wind farm zone. It was agreed by the applicant and the nature conservation parties that this model has weaknesses because it is not based on relevant survey information and the assumptions are therefore not supported by scientific observation evidence.
- Model 2 – 2km Buffer Model: This is the model originally preferred by the applicant. It assumes specific RTD densities within the wind farm zone, a surrounding 1km buffer and a further outer buffer extending between 1km and 2km in a second outer ring around the 1km buffer zone. The assumed densities are calculated from observed mean densities drawn from the available JNCC survey data.
- Model 3 – 2km Buffer Density Model: This is the model preferred by NE and other nature conservation bodies and which was adopted by the applicant after pre-application consultation. It assumes specified densities of RTD within the wind farm zone, the 1km buffer zone and the 2km buffer zone and also takes account of displacement beyond the 2km zone out as far as 3km from the wind farm itself. The structure of the model has regard to the latest JNCC survey data available for the OTE SPA.

4.83 I have considered the written and oral evidence submitted regarding the strengths and weaknesses of these models and the nature of the evidence on which they are based (as summarised above). This has included assessment of the oral evidence provided

by NE and the applicant's scientific expert witness at the hearings as summarised above. On this basis I agree that Model 3 appears to be the most appropriate choice of model due to its scope, foundation on JNCC survey evidence and systematic methodology.

- 4.84 For these reasons Model 3 is likely to be the most robust of the three models in predicting the disturbance and displacement effects of the projects included in the habitats assessment. It is noted that the choice of model makes only a marginal difference to the statistical results of the assessment of the KFE effects but this choice makes a much larger difference when the in-combination assessment is considered, especially in relation to the assessed scale of effects of the LA project.
- 4.85 In relation to the choice of baseline, NE's position was that the assessment should adopt a 'pre-disturbance' baseline (i.e. a count of the estimated in-combination effects starting from a date before the commencement of the existing Kentish Flats wind farm which was built 2005-2007). It also argued that LA2 should be taken into account as a planned scheme as it has received consent under s36 of the Electricity Act 1989 (as amended). In contrast the applicant argues that the baseline should reflect the position at the date of classification of the OTE SPA (August 2010) (REP81). Adopting the latter approach would require the disturbance and displacement effects of the existing Kentish Flats wind farm to be excluded from the in-combination assessment in whole or part. These effects are fairly minor at a quoted interaction rate of 1.2% (72 birds) per annum (APP17).
- 4.86 The applicant also argues that the effects of the LA2 project should not be taken into account in the CA's appropriate assessment because:
- a) the ES for the LA scheme did not identify the scale of the Phase 2 project in terms of the number, size and layout of the turbines but indicated that the effect was likely to be

significant. The appropriate assessment of that project concluded that based on the information then available it was not possible to ascertain that development of LA2 to its maximum assessed extent ('the EIA layout') would not give rise to an adverse effect on the integrity of the SPA (REP70, REP73, REP81, PD 24-26);

- b) given that the ES was unable to specify the number, size and layout of turbines proposed for LA2, no reasonably accurate assessment could be made of the LA2 project within the KFE in-combination assessment. Accordingly the range of possibilities acknowledged in the LA ES was so wide that any assessment would need to be based on a worst case scenario that was so improbable as to be unrealistic; the project is not yet fully consented and the likelihood of consent being granted for the 'worst case' in the light of the published LA ES information is negligible. Therefore only a dramatically reduced project could realistically be consented, if any further turbines are consented at all in Phase 2.

4.87 In relation to these disputed points regarding what effects should be counted within the habitats assessment, it is concluded that NE has not provided sufficient well-justified reasons for the selection of a 'pre-disturbance' baseline. Setting aside the point that the Thames Estuary has been subject to a range of anthropogenic disturbance from other sources for centuries, it is noted that the relevant Europa guidance⁹ advises that the assessment should focus upon the content of the conservation objectives for the relevant European site and nothing else.

4.88 In this context the NE position in seeking an 'undisturbed' baseline appears to conflict with relevant Europa guidance and also does not seem to allow for the following points.

⁹ *Assessment of plans and projects significantly affecting Natura 2000 sites: Methodological guidance on the provisions of Articles 6(3) and (4) of the Habitats Directive 92/43/EEC.*

- The RTD population survey data taken into account in the population figure included in the Natura 2000 Standard Data Form is the basis upon which the SPA was classified and the evidence shows that an allowance was made for the grid squares concerned that appears to have over-estimated the effects of displacement in relation to the existing Kentish Flats wind farm (PD24-26).
- The same population figure is used for the assessment as the citation population set out in the SPA objectives. Following Europa guidance would require that this figure (and by implication the environmental context for it) should be taken into account as the basis for the assessment rather than anything else. As the citation population included in the objectives has already (more than) accounted for the existing Kentish Flats wind farm project, adoption of a pre-Kentish Flats baseline would not provide a logical start-point for the assessment. In coming to this view I have considered carefully NE's argument that the aerial survey method used in the later surveys to establish the relevant population figure may have ignored the specifics of the KFE site and also that the statistical technique applied in analysing and presenting the survey results may have 'smoothed' data across the relevant grid squares. Essentially the approach adopted by NE in this case does not seem consistent with the relevant Europa guidance on project assessment, nor with planning practice in other plan- and policy-making contexts. NE has advanced insufficient grounds to support an argument for an exception to established planning practice. If the selection of baseline has regard to the date of the latest survey used to establish the mean population used as the basis for estimating the classification population then there should be no potential for confusion as to the clarity of the statistical base for the calculation. In the light of this point it would seem inappropriate to select either an arbitrary date that 'counts Kentish Flats in' (as NE appears to be seeking) or the

date of SPA classification that would necessarily require some other wind farms then under construction as well as the by then completed Kentish Flats wind farm to be excluded (as the applicant is suggesting).

- In relation to this point the LA appropriate assessment prepared by the Secretary of State for Energy and Climate Change established a relevant precedent as it excluded the existing Kentish Flats wind farm from the in-combination assessment baseline on the basis that the relevant JNCC survey figures used as the basis for the assessment would have taken it into account (REP70).

4.89 In relation to the debate as to whether the interaction value figures for LA2 should be taken into account, a number of points need to be considered. In relation to Environmental Impact Assessment the higher courts have indicated¹⁰ that where there is insufficient information to come to a view regarding the detail of a particular project and there is a range of possibilities then the 'maximum potential adverse effects' or 'worst case' scenario should be taken into account. This approach is recommended by paragraph 4.2.8 of National Policy Statement EN-1, paragraph 2.6.43 of NPS EN-3 and Planning Inspectorate Advice Note 9 '*Rochdale Envelope*'.

4.90 Although the applicant's argument that the LA2 scheme is not fully consented is accurate it is clear that LA2 has secured an important initial consent. This is the case even if at this stage the scale, detailed content and layout of the scheme are not approved and the scheme cannot proceed without discharge of a Grampian condition which involves a further decision by the Secretary of State.

4.91 In response to my written question in April (PD14), LAL confirmed that it still intends to make a LA2 Grampian condition discharge application. Further confirmation of this intent was submitted in response to my written request for an update in August (REP92).

¹⁰ E.g. R v Rochdale MBC Ex Parte Tew (1999)

Although the application timetable has clearly been delayed (to a currently unspecified date) from the original stated timescale of May 2012, there is no indication that the company's intention to make the Grampian application has altered.

- 4.92 Notwithstanding that point the corollary is that there is no certainty that an application will actually be submitted until the Secretary of State receives it. Even if an application is eventually submitted, the likely scale, extent and effects of the Phase 2 scheme are unclear at this stage. The background to the in-combination assessment is therefore fraught with uncertainty until the outcome of the LA2 proposal is confirmed – either by LAL submitting an application for it or by confirming that it has withdrawn from that scheme.
- 4.93 It follows from the explanation of the current position given above, and from the legal decisions referred to, that LA2 must be regarded as a 'planned' project and included within the cumulative assessment. It is noted that although disputing the need to include LA2 towards the end of the examination, the applicant has in fact included LA2 in the in-combination assessment within its HRA report addendum and the in-combination assessment that forms part of its SoCGs with NE, the RSPB and KWT.
- 4.94 It is also accepted that the LA appropriate assessment does indicate that there is uncertainty as to whether the full extent of the assessed second phase of the LA project may give rise to an adverse effect on integrity. During the examination of the KFE DCO application, neither the applicant nor I have had the benefit of access to any information, assessment or conclusions arising from the results of monitoring the effects of LA1. No detailed application has been made in relation to the suspensive 'Grampian' condition regarding LA2 and no timescale for submission has been confirmed. If such an application is made by LAL before the KFE application is determined, the assessment of any additional habitats and/or environmental information would be a matter for consideration by the Secretary of State as CA. In the absence of an application by

LAL, that is not a matter regarding which it has proved possible for me to take a view, either during the examination of the KFE application or in the preparation of this report and recommendation.

- 4.95 Any 'Grampian' condition discharge application would need to be the subject of an updated ES and HRA report that would have regard to monitoring information including the surveyed effects of the constructed LA1 project.
- 4.96 The applicant's suggestion that the effects of LA2 should be discounted from the in-combination assessment on the grounds of uncertainty as to the scale and content of the proposal raises an important question that will need to be considered by the Secretary of State in making his appropriate assessment of the KFE project proposal. In the event that more scientifically robust or more recent habitats information regarding projects in and/or affecting the OTE SPA becomes available to the Secretary of State in advance of his decision regarding the KFE application then that may have implications for the KFE in-combination assessment and in turn for the Secretary of State's appropriate assessment of the KFE project.
- 4.97 On the basis of the information currently available and submissions made to the KFE examination, in my judgement the 'in-combination' assessment calculation for this application should:
- a) apply 'Model 3' as the best statistical approach currently available as the basis for the assessment (of the three possible assessment models identified during the examination);
 - b) exclude the effects of the existing Kentish Flats wind farm as they are taken into account in the relevant JNCC survey data used as the basis for the assessment. (NB – It should be noted that the draft RIES issued for consultation includes an assessment of the effects of the existing Kentish Flats scheme, as it was prepared before the completion of the above analysis);

- c) take into account the scale of the in-isolation impact as well as the cumulative impact in applying the relevant statutory tests and interpreting the implications.

The question of whether the full assessed extent of the EIA layout of the LA project should be taken into account in the cumulative assessment is an important matter for the Secretary of State's appropriate assessment and one where it is possible that further information may be made available to him before the decision of this application is made.

Disturbance, Displacement and Loss of Habitat Use

- 4.98 Submitted evidence confirmed the main source of man-made visual and aural disturbance identified for the 'in-combination' assessment as construction, operation, maintenance and decommissioning of off-shore wind farms. Other activities such as disturbance from commercial shipping traffic, dredging, fishing and recreational boating were also referred to by some parties but these effects were considered by both the applicant and the nature conservation parties as both transient and insignificant by comparison with the effects of wind farms. This point is reflected in the focus of the applicant's ES and HRA work solely upon the effects of the proposed KFE project and of other relevant existing, under-construction and planned wind farms.
- 4.99 The main structure, calculations and analysis within the assessment have been agreed with the statutory nature conservation body (NE) and other interested parties (RSPB/KWT) subject to certain reservations described above, notwithstanding that the interpretation and conclusions to be drawn from the evidence by the parties are disputed.
- 4.100 The agreed HRA evidence anticipates significant in-combination adverse disturbance effects upon over-wintering RTD population levels and upon the distribution of RTD within the SPA if both LA1 and LA2 are constructed in addition to other existing and planned wind farms included in the cumulative assessment.

4.101 Having regard to the evidence submitted and summarised above and in the RIES, the likely in-combination effects associated with the wind farm projects listed in the agreed cumulative assessment include:

- almost complete loss of habitat use and ecological function within the perimeter of the relevant wind farms and significant deterioration of same within the buffer areas around these wind farms, up to a distance of between 0.5km and 2km or more, associated with
- a degree of disturbance and displacement effects upon the protected RTD's population abundance and distribution across the whole of the SPA and possibly outside it, although likely to result in the highest increase in density in the most valuable areas of habitat within and close to the SPA.

4.102 The likely adverse effects of increased density on competition for readily available prey species (food supply) are set out in the conservation objectives document to which the integrity assessment is required to be related. Depending on the degree of displacement, density increase and pressure on prey species resources, there may be potential not only for displacement of RTD within the SPA but for wider displacement from the SPA to relatively undisturbed areas of habitat in the Greater Thames Estuary outside the SPA or to areas of sheltered shallow water including sandbanks elsewhere along the coastline of the UK or Europe.

4.103 In written submissions and in evidence given at the relevant hearing both NE and the applicant agreed that no mitigation of the effects of disturbance and displacement is likely to be feasible/practicable in relation to the KFE project because, in the case of such a small project, reduction in the scale or number of turbines would be likely to undermine its financial viability and no other form of mitigation is likely to be practicable.

4.104 It is common ground between the applicant and the nature conservation parties that the contribution of the KFE proposal to the in-combination RTD population disturbance/displacement calculation is very small by comparison with the estimated effects of LA1 and LA2 (the first under construction at the time of writing and the second planned but not yet fully consented) (REP105 (SOCG with KWT), REP110 (SOCG with NE), REP108 (SOCG with RSPB)). However, there is disagreement over whether the in-combination RTD population effects of disturbance and displacement from the relevant wind farm sites and buffer areas around them would result in a level of population density and distribution changes likely to lead to adverse effects upon the integrity of the SPA as a whole (REP73, 79, 81-83).

4.105 More specifically, the main differences between the parties regarding this particular point are:

- a) what the resulting additional densities outside the wind farms within the buffer zones and also outside the 2km buffer zones are likely to be following development of the projects listed in the assessment; and
- b) whether there is sufficient suitable habitat capacity of equivalent value to that from which the RTD are or would be displaced in order to accommodate the birds without undue additional stress and mortality as a result of the increased density and pressure upon their prey species food resource.
- c) As a result of (a) and (b), whether there are grounds for reasonable scientific doubt regarding the absence of a likely adverse effect upon the integrity of the SPA.
- d) Whether the effects of KFE are so small as to make a negligible contribution to the cumulative assessment.

4.106 During the issue-specific hearing regarding habitats regulations aspects it was accepted by the parties that the visual characteristics of man-made features sited in the estuary's SPA environment – including dynamic visual characteristics such as revolving wind

turbine blades – may be significant to loss of habitat use. The question arises whether such loss is likely to be of such scale as to have significant adverse effects upon the maintenance of ecological function and the coherence of the SPA's qualifying feature – the population abundance and distribution of RTD, when measured against the citation population level.

4.107 Having regard to the applicant's ES and evidence submitted by NE, the applicant and RSPB during the examination, it is primarily the dynamic visual and aural effects of wind farms - and to much lesser extent other forms of disturbance e.g. from the movement of maintenance vessels, wind farm maintenance activities and the presence, movements and activities of commercial, fishing and recreational vessels - that appear likely to contribute to loss or deterioration of habitat use, indirectly affecting ecological function rather than natural habitat loss. Both the applicant and NE have confirmed the close relationship between disturbance and the use and ecological function of the habitat (REP79). This point is confirmed by Europa guidance on wind energy projects, project assessment and conservation management. Any assessment of the effects upon the protected birds needs to take account of whether the habitat itself is able to be used by the birds given their particular behavioural characteristics and the disturbance effects arising from relevant wind farms.

4.108 It was suggested at the habitat regulations hearing by the applicant's ecologist that the precise meaning of the concepts of habitat structure and function have not always been clearly defined in ecological practice. However, in relation to this application, evidence put forward by NE and Cefas as well as by the applicant itself (PD 24-46) suggests that the 'structure' of the habitat could include relatively fixed or slow-changing natural and man-made elements of habitat including substrate (sand/mud/shingle) and the form of the sea bed (sand banks and channels) which may be affected by historic and modern human activities such as industrial

pollution and dredging. It could also include more dynamic estuarine elements such as water quality, relative salinity, tidal strengths and vectors, wind direction, weather patterns/severity, wave directions/patterns/heights and water depths. The food chain was also confirmed by NE and Cefas as an important and constantly changing structural factor, particularly in relation to prey species such as herring, sand eels and sprat that interact with the habitat elements described above.

4.109 The '*ecological function*' of the habitat appears to refer to the relationship between the natural elements described above and the protected species. In this case the principal ecological function of the SPA is the role of the area as an important over-wintering site for resident or migratory RTD is identified in the SDF and in the conservation objectives that formed the basis for classification.

4.110 As outlined above, the RTD seems to be highly sensitive to visual and aural disturbance. The JNCC survey data provides evidence that the RTD may at various times be distributed across the whole of the SPA. At other times the population may become highly concentrated in its spatial distribution. For example, the LAL APEM 2010/11 digital aerial survey report includes observed clusters of RTD totalling 9,823 in six LA zones surveyed over a period of 3 days. The zones represented only 26% of the OTE SPA area. APEM's review of historical survey data for the OTE area and the 2010/11 APEM survey results for the smaller LA study area (representing 26% of the SPA as mentioned above) both point to clustering of birds around shallow sandbanks.

4.111 NE also provided evidence at the hearings and in response to written questions (PD24-26, REP79) that the SPA was classified on the basis of its coherence in that it accommodated the highest surveyed densities of RTD. Notwithstanding that point, NE suggested (REP86) that variations in observed density of RTDs are likely to be influenced both by these variations in habitat quality and suitability and by other factors, including access to appropriate

types and amounts of prey species food sources (REP79, 86). No evidence was submitted to the contrary. Expert oral evidence provided by both NE and the applicant at the relevant habitats hearing confirmed that the birds avoid the busy shipping lane which runs through the SPA (Prince's Channel).

4.112 A range of evidence submitted indicated that, although the JNCC surveys show that divers have often been distributed across most areas of the SPA, all areas within the SPA are unlikely to be of equal habitat value. Relatively undisturbed shallow sandbanks are likely to be of greater value, notwithstanding that other factors such as weather conditions and prey species habitat and behaviour associated with particular tidal vectors and currents may also play a role in influencing RTD distribution. In such areas the prey species can be located and caught with the expenditure of less energy. It is noted that the ease with which food can be secured is therefore likely to be an important factor in the survival of individual RTDs and thereby an important factor underpinning maintenance of the SPA's RTD population. NE, APEM's survey reports for LAL and the applicant's witness all agreed that the RTD tend to concentrate on and around the shallow sandbanks and to avoid the shipping channels and deeper water over 20m depth.

4.113 Although prior to submission of the application there was discussion regarding the preferred model to represent the data and there has been disagreement over the densities at which displacement is likely to take place into areas surrounding wind farms, the general pattern of redistribution described in the applicant's ES was accepted by all the nature conservation parties.

4.114 It was also accepted by all the relevant parties that the effect of disturbance on the use of the habitat by the RTD relates to the 'fixed' but visually dynamic source of the wind turbines and both the appearance of and noise from their rotating blades. Other disturbance factors such as the movement of construction and

maintenance vessels may disturb the birds but these appear to be of less significance than the effects from the turbines themselves.

4.115 In the light of these points I find that the ecological function of the SPA (i.e. the use of the area as a whole, especially of the crucial shallow water and sandbanks, as over-wintering habitat) is likely to be influenced by visual and aural disturbance from a variety of sources, of which the principal one is and will be wind farms.

4.116 No evidence of habituation by disturbed and displaced RTD was submitted, either by the applicant or by any other party.

Information included within the ES suggested that no habituation is likely (APP17, APP51). NE made the point at the hearing (PD24-26) that neither JNCC RTD population survey data nor international RTD survey evidence support a hypothesis of habituation. On the basis of the evidence presented it is therefore concluded that the effects of visual and aural disturbance will probably last for the operational life of any wind farm/wind farms brought into operation in the OTE.

4.117 Having regard to the points described above, it would appear likely that over the medium to long term and as a general principle, the higher the proportion of shallow water sand banks taken up by wind farm development the higher the risk to the integrity of the OTE SPA in terms of:

- the population abundance and distribution of the RTD; and therefore
- the ecological function of the OTE SPA as an over-wintering site for RTD.

4.118 Despite that general observation, none of the evidence submitted by the parties has indicated that a simple linear relationship exists between wind farm development within the OTE on the one hand and RTD population abundance and distribution on the other. This point is supported by the evidence of high variability in monthly and annual numbers of RTD surveyed by JNCC (APP29). The key points

of the evidence provided by the applicant, LAL, NE, Cefas and RSPB indicate that the relationship is likely to be far more complex.

4.119 It is therefore concluded, from all the relevant evidence submitted, that the SPA's baseline population carrying capacity for RTD may be affected by:

- the extent of sandbanks and shallow water habitats attractive to these birds;
- their availability and suitability for use by RTD (given the bird's particular preferences for undisturbed sandbanks and shallow water offshore areas);
- a wide range of interacting factors such as the weather, tidal and current conditions together with availability of and access to prey species food supplies around the sandbanks and in the shallower water (which could be affected by fishing and dredging); and
- the location and effects of site-based anthropogenic sources of disturbance such as wind farm construction and operation.

4.120 The disturbance effects of wind farm development clearly affect the potential use of the SPA habitat by the protected RTD species. The practical availability of the suitable SPA habitat to the protected species could be therefore affected adversely regardless of whether or not that habitat is actually used by RTD.

4.121 The nature conservation parties including NE all expressed concern that loss of availability of suitable (relatively undisturbed shallow water and sandbanks) habitat is likely to impact in turn upon the RTD's population abundance and distribution. All relevant parties accepted that the effect of loss of habitat use through establishment of long-term sources of visual and aural disturbance may generate variations in RTD population and distribution but is only one of a number of factors influencing the quantum and distribution of that population. NE's witness at the habitats hearing confirmed that wider natural fluctuations in population and impacts

of other factors operating within the RTD's natural geographical range (including short term factors such as weather and prey species food supply and longer term factors such as loss of breeding habitat in the northern latitudes) may interact with the localised impacts of wind farm disturbance and displacement to influence the outcome in terms of RTD numbers and distribution within and outside the OTE SPA.

4.122 Evidence of an observed pattern of large annual and monthly fluctuations in the OTE over-wintering population set out in the applicant's ES and HRA information and in the reports submitted by LAL supports the conclusion that the population appears to be affected by a mix of multiple diverse impacts. The submissions made by the applicant, NE, Cefas and RSPB suggest that the specific mix of impacts and the balance between them may vary or fluctuate over time, producing large variations in the migrating or static over-wintering population of RTD present in the OTE SPA on any particular survey date.

4.123 Although it is merely one of a number of factors at work in determining population numbers and distribution, it appears from the JNCC survey density evidence submitted in the applicant's HRA report and ES that the relative importance of loss and deterioration of habitat use can, at least to some extent, be gauged from the time-series RTD survey evidence and related maps (APP17, APP29, Section 9). The population numbers and distribution of RTD provide an indicator of the degree of disturbance effects of wind farms on the usage of the species habitat.

4.124 The mapped JNCC survey data demonstrates clearly that almost-complete loss of habitat use is both significant and consistent within those parts of the SPA occupied by operational wind farms. Lower levels of loss of habitat use are also evident in the buffer zones around wind farms. The availability of alternative suitable habitat and the level and density of displacement are therefore likely to be important to determining whether the effects of disturbance by

wind farms have the potential to erode the ecological function of the SPA as a whole as suitable over-wintering habitat for the RTD.

- 4.125 It is noted that the annual peak reported population of RTD set out in the APEM historical data review (REP24) reduced year-on-year for the period from 2003-2009 with an upturn in the particularly severe winter of 2009-10. The reasons for the apparent reduction were not the subject of specific submissions from any party, although the APEM survey report suggested that the population 'spike' in 2009-10 is likely to be linked to the effects of adverse weather conditions upon migration levels. This lack of explanation is unsurprising given the acknowledged uncertainties surrounding the scientific data available regarding both the habitats and the protected species that it hosts.
- 4.126 It may well be impracticable at the current level of scientific knowledge to attribute precise cause and effect for peak population decline, nor for the 'spike' in 2009-10. However, it should be noted that the high level of surveyed population for 2009-10 may not be sustained and could prove to be an exception to an apparent trend of decline in the peak over-wintering RTD population in the OTE SPA. In the event that decline was to be extended without intervention, then the conservation objective of maintaining the population at favourable status could be compromised within a few years.
- 4.127 Arguments over the potential for redistribution of displaced RTD within the SPA need to be considered against such background risks. It is understood that NE is preparing a risk assessment for each of the classified SPAs in England, including the OTE SPA, and that the latter is likely to be available later this year. If made available in time, that document may be relevant to the Secretary of State's appropriate assessment for this application.

Assessment of KFE's Implications for the Integrity of the OTE SPA Site

4.128 The key habitats evidence that must be considered and assessed in applying the integrity test in relation to these objectives is set out in the RIES, subject to an important correction raised by NE, as discussed below.

4.129 EC guidance '*Wind energy developments and Natura 2000*' sets out at paragraph 5.3.3 guidance regarding the test to be applied in assessing whether there are no adverse effects on site integrity.

Relevant parts of the guidance include:

"...the focus of the assessment should be on objectively demonstrating with supporting evidence that there will be no adverse effects on the integrity of the Natura 2000 site in the light of its conservation objectives. Thus the competent authority has to be sure that there is no reasonable scientific doubt. If adverse effects cannot be ruled out or if there is too much scientific doubt, then adverse effects have to be assumed.

It is clear from the purpose of the Directive that the 'integrity of the site' relates directly to the site's conservation objectives. Determining whether the integrity of the site is affected means determining whether the plan or project will adversely affect:

- the coherence of the site's ecological structure and function, across its entire area, or*
- the habitats, complex of habitats and/or*
- populations of species for which the site is designated."*

4.130 The EC guidance also quotes the definition of 'integrity' set out in ODPM Circular PPG 9¹¹:

'the coherence of the site's ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or populations of species for which the site is classified.'

The text box within paragraph 5.3.3 goes further to explain that the meaning of 'integrity':

"can be considered as a quality or condition of being whole or complete. In a dynamic ecological context, it can also be

¹¹ This Circular was, of course, cancelled subsequent to the publication of the Europa guidance

considered as having the sense of resilience and ability to evolve in ways that are favourable to conservation."

"Two possible conclusions can be drawn from an integrity assessment:

- *there is no adverse effect and the project or plan can be approved as it stand.*
- *there will be adverse effect or adverse effects cannot be ruled out.*

The latter does not necessarily mean that the plan or project is automatically refused. The competent authority could ask the developer to redesign or relocate the wind farm or introduce mitigation measures that would avoid or eliminate the predicted adverse effects. This would normally imply a second evaluation round in the appropriate assessment to ensure that the mitigation measures/safeguards are indeed sufficient."

4.131 There is no indication in the relevant application documents including the ES, HRA information or the various submissions made during the examination from NE and other nature conservation parties that either the extent of sublittoral shallow sandbank habitat or the prey species would be likely to experience significant adverse effects as a result of the KFE project or cumulative effects from relevant wind farm construction in or near the OTE SPA. As set out in the RIES, a key focus of the assessment is therefore upon the effects upon RTD population abundance and distribution.

4.132 The very limited scale of wind farm effects during this period suggests that the trend of RTD population decline seen in the surveys carried out between 2002 and 2008-09 is not related to wind farm development and operation. During the examination no evidence was submitted to suggest a clear causal effect between the development of wind farms in the RTD's OTE wintering ground (or indeed elsewhere) and the decline in surveyed peak RTD population numbers within the SPA between 2002 and 2000-09.

4.133 The observation that relatively few wind turbines were installed during that period, together with the existence of the recovery population 'spike' at the end of the surveyed period both suggest that the reasons for the observed decline lie elsewhere. However,

the fact that the peak surveyed RTD population numbers in the OTE demonstrated progressive decline over a number of years until the 'population spike' in the particularly severe winter of 2009-10 underlines the need for application of the precautionary principle.

- 4.134 It also suggests, even if the reasons for decline lie elsewhere, that care will need to be taken to avoid exacerbating decline through direct or indirect adverse effects on population or on relevant habitat.
- 4.135 On the other hand, even when assessed on the basis of a range of precautionary 'worst case' assumptions, NE, the applicant and the RSPB all agree that the direct loss or deterioration of habitat use and function likely to result from the KFE project when considered in isolation is likely to be very small. This is due primarily to the small size and extent of the proposed wind farm extension.
- 4.136 In the light of all the evidence and the submissions of the interested parties, including the SOCGs, it appears that in isolation the proposed project is not therefore likely to affect the coherence or ecological function of the SPA habitat as a whole, nor the integrity of the SPA. However, the probable extent and location of the habitat usage and functional loss and deterioration that could be attributable to all the relevant wind farms when assessed in combination requires careful consideration and assessment.
- 4.137 The RIES includes a timeline table at page 32 to illustrate the timing of the developments considered in the cumulative assessment and their estimated effects on the RTD population in relation to the timing of the classification of the OTE SPA. This timeline illustrates that, at the time the RIES was published (28 June 2012, PD31), the in-combination interaction rate associated with the assessed fully consented wind farm projects was calculated as 11.6%, representing 722 birds displaced per annum. It should be noted that these in-combination figures drawn from the applicant's HRA addendum report (REP73) include the effect of the

original Kentish Flats wind farm (1.2%, equivalent to 72 birds) and exclude LA2 where a further consent is required before the final scale and extent of the project can be confirmed and development can proceed.

- 4.138 No other wind farms apart from Kentish Flats were under construction or completed and operational up to the latest survey used as the basis for establishing the citation population used for the purposes of SPA classification (2006-07).
- 4.139 Apart from the calculated effects of LA1 and LA2 the other smaller wind farms taken into account in the applicant's in-combination assessment also appear from the evidence submitted to be insignificant in their assessed likely effect, whether considered in isolation or in combination (but excluding LA1 and LA2).
- 4.140 Judging the level or degree of 'significance' is where expert scientific judgement can be helpful. As indicated earlier in this chapter it is common ground between the scientific experts acting for NE and the other nature conservation bodies and those advising the applicant that there is likely to be a significant effect upon population abundance and distribution if the effects of both LA1 and the full potential extent of LA2 are taken into account in the in-combination assessment and that an adverse effect on integrity cannot be ruled out in these circumstances based on the information currently available.
- 4.141 The total in-combination effect attributable solely to wind farm projects that were constructed or under construction but not online and operational¹² at the time of SPA classification (August 2010) was 3.6%, equivalent to 219 birds.
- 4.142 An overall picture of the in-isolation and in-combination disturbance and displacement effects of the relevant wind farms assessed in the cumulative assessment can be summarised numerically in terms of

¹² Gunfleet Sands I and II, Thanet and London Array Phase I

the interaction rates applicable, as follows (projects listed in order of completion or intended completion and based on total SPA of 6,250 used in the applicant's cumulative assessment):

<i>Project Assessed</i>	<i>% Interaction (Est. no. divers displaced)</i>	<i>Combined %</i>
<u>Kentish Flats (90MW)</u>	1.2 (72)	1.2 (72)
<u>Gunfleet Sands I & II (173MW)</u>	1.0 (61)	2.2 (133)
Greater Gabbard (500MW)	1.2 (73)	3.4 (206)
Thanet (300MW)	0.2 (13)	3.6 (219)
<u>London Array 1 (630MW)</u>	9.2 (576)	12.8 (795)
<u>Kentish Flats Extension (51MW max) estimated</u>	0.5 (33)	13.3 (828)
Galloper (up to 50.4 MW max) estimated	0.7 (46)	14.0 (874)
<u>London Array II (MW unknown) estimated</u>	13.5 (843)	27.5 (1,717)

(Projects underlined are located within the SPA boundaries. Other projects listed may interact with the SPA in terms of displacement)

4.143 Over and above the cumulative effects figures for wind farms located within the SPA boundaries highlighted above, it is noted from this information and from the cumulative assessment at table 2 of the SoCG between the applicant and NE that the Greater Gabbard (existing) and Galloper (proposed) wind farms outside the SPA boundaries within the Greater Thames Estuary and East Anglia coastal area would increase the effect on the RTDs overwintering in the estuary and its environs by a further 1.9% (119 birds).

However, NE has advised that the in-combination assessment needs to be focussed on the effects of wind farms within the SPA.

4.144 When assessed on the basis of the information submitted to the examination, the KFE project in isolation – and in combination with all the other relevant wind farm projects – does not generate significant effects likely to affect integrity with the exception of the full extent of the LA project.

4.145 The detailed rationale and justification for NE's position in relation to the effects of London Array Phase 1 in relation to the integrity of

the OTE SPA was not the primary focus of the examination. Nevertheless, in my view NE should not have insisted on the inclusion of the Kentish Flats wind farm in the KFE in-combination assessment which includes LA1. This position is inconsistent with the assessment assumption regarding Kentish Flats previously applied by the Secretary of State in approving the London Array project, where that project was excluded from the baseline for the reasons discussed elsewhere in this report. In my view, insufficient and inadequate justification was provided by NE for taking a different approach in relation to the Kentish Flats Extension application.

4.146 Evidence provided at the habitat hearing by the applicant's consultant, Dr Steve Percival (which was not challenged by NE) indicated that, as a result of the use of JNCC pre-construction data for kilometre grid squares including and in the vicinity of the Kentish Flats wind farm, the population numbers, densities and resulting interaction values (displacement) for the Kentish Flats/KFE area have been over-estimated in the cumulative assessment figures for both Kentish Flats and KFE. If, as I have concluded they should, the existing Kentish Flats WF's effects are discounted, the in-combination disturbance and displacement effect would reduce by 1.2%. The resulting adjusted in-combination effect for the other constructed projects located within the SPA - Gunfleet Sands I & II and London Array Phase 1 - is 10.2% (equivalent to 623 RTD). Addition of the KFE project would add up to 0.5% (33 RTD) to this displacement calculation (see table included at para 4.142 above), producing a figure of 10.7% excluding Kentish Flats and LA2 and 24.2% if LA2 is included.

4.147 The position related to the London Array wind farm that generates the majority of the likely effects upon RTD identified in the cumulative assessment can be recapped and summarised as follows.

4.148 Consent¹³ for London Array was given by the DTI in December 2006, subject to, among others, the following condition:

"4(d)(i) No development under this consent beyond Phase 1 may take place without the prior written approval of the Secretary of State, following consultation with Natural England;

(d)(ii) The determination of a request by the Company to construct further phases of the development beyond Phase 1 shall be made on the basis of the approach described in the ornithological review process for London Array dated 9 November 2005 Annex Y annexed hereto".

4.149 An appropriate assessment was undertaken prior to the decision to grant consent. The decision letter records that:

"3.5 Having considered the Appropriate Assessment, NE informed the Secretary of State that the initial phase of up to 175 turbines was unlikely to have a significant effect on a potential European Site and that subject to use of conditions and suitable bird monitoring it was satisfied that development of any subsequent phases could be controlled in such a way so as not to have adverse impacts on the pSPA....."

4.150 A major element of the in-combination effects calculation relates to Phase 1 of London Array (LA1). The assessment of LA1 included in the KFE application is based on RTD population estimates which rely on JNCC survey data for the SPA gathered only up to 2007.

4.151 LA1 is fully consented, and has been brought into operation on a phased basis. Phase 1 is drawing close to completion. LA1 monitoring work has been undertaken and interpretation of the monitoring results was under active discussion between LAL and the relevant nature conservation organisations on the LA Ornithological Monitoring Group (including NE) during the examination, but those

¹³ Under s36 of the Electricity Act 1989

discussions had not been concluded. The LA1 monitoring information was not, therefore, made available to the examination.

4.152 At the habitats hearing (PD24-26) NE's advice was sought regarding the in-combination assessment and its view as to how the relevant legal test in relation to integrity should be applied and interpreted. A hypothetical scenario was presented where a small project within a SPA was assessed as having no significant effect when considered in isolation and a large project was assessed as having a commensurately large adverse in-isolation effect which was likely to prove significant and, when assessed in combination, likely to create uncertainty regarding the absence of an adverse effect on integrity. The question arose, in considering the appropriate approach in the light of the European Court of Justice's *Waddenzee* ruling, in that exemplar scenario would NE advise that the small 'no-significant-effects' project should be rejected on the basis that the net in-combination effect including the large project would be adverse or would create uncertainty as to the absence of an adverse effect on the SPA?

4.153 NE did not answer that hypothetical question directly but pointed out that in the case of the KFE application under examination there was a very small effect and it was required to be taken into account alongside the larger effects of other projects in the in-combination assessment. It was for the CA as decision-maker to undertake the appropriate assessment including consideration of the possibility of any adverse impact on the integrity of the SPA and to come to a decision in the light of the material evidence, including this report and recommendation.

4.154 The applicant argued that the estimated disturbance and displacement effect of KFE estimated on precautionary assumptions would be so small as to be negligible. It is accepted that NE's stance appears consistent with Europa and Government guidance but the question arises whether these two positions are mutually

exclusive or compatible and whether NE's position is a proportionate response to the proposal.

- 4.155 Exclusion of LA2 from the in-combination assessment as suggested by the applicant would arithmetically reduce the overall scale of the likely effects on the integrity of the SPA arising from disturbance (i.e. the effects upon population abundance and distribution) from 24.2% to 10.7%.
- 4.156 I now turn to consider the density and mortality assumptions. There was a broad level of agreement amongst the relevant nature conservation parties and the applicant that not all parts of the SPA are of equal habitat quality. Yet the interaction values that provide a measure of the disturbance and displacement effects of each project are calculated on the basis of assuming an equalised redistribution of displaced divers in terms of the mean diver density across the SPA area as a whole, irrespective of variations in habitat quality and suitability within the SPA. For this and other technical reasons the method does not provide accurate population and displacement density figures for small parts of the SPA area.
- 4.157 The statistical method adopted does not, therefore, provide a reliable indication of the densities likely to occur in areas of suitable alternative habitat to which the RTD may be displaced by wind farm disturbance, nor whether such densities would be likely to be sustainable over a period of days, weeks or months.
- 4.158 It must be borne in mind that the population of the OTE SPA is likely to be made up of over-wintering birds and birds stopping off on journeys south to other European over-wintering locations, including waters close to Belgium and Holland and on journeys north to breeding grounds in Northern Scotland and other northern latitudes. Some birds will be sustained and fattened through the winter months in preparation for the spring migration northward while others may choose to travel on elsewhere. There will necessarily be variable demands on the prey species food resource

on or close to the sandbanks and shallow water and – as oral evidence from the Cefas witness at the habitats hearing confirmed - those resources may themselves vary according to a range of factors.

4.159 The question that arises from consideration of the assessment is whether (as NE suggests in one of its later submissions (REP86)) the effects of RTD density increases as a result of disturbance and displacement from the vicinity of relevant assessed wind farms to other relatively undisturbed and suitable parts of the SPA's RTD habitat are likely to reach a point where significant in-combination adverse effects on the population abundance and distribution of the birds are likely to arise that could affect the integrity of the SPA.

4.160 In this context 'significant' means effects that are so adverse that they would create additional stress on the birds arising from competition for the prey species food resource leading to possible increased mortality that could in turn adversely affect the population level across the SPA as a whole, when considered against the citation population and the conservation objective target of maintaining that population subject to natural change.

4.161 The SoCG agreed between the applicant and NE sets out (at table 1, p16) a calculation of diver displacement from the existing Kentish Flats wind farm and from the Kentish Flats wind farm and KFE in combination. On the basis of the density calculations provided in its submissions the applicant has argued (PD24-26) that in the light of:

- the scale of the RTD population affected by disturbance, and
- the extent of the alternative areas of habitat available within the OTE SPA (over and above the areas affected and likely to be affected by wind farm disturbance),

the increases in density arising from disturbance and displacement attributable to KFE in isolation would be insignificant

to the RTD's population abundance and distribution across the SPA as a whole and across its natural range.

- 4.162 This view appears to be supported by the 'Discussion' section in APEM's report on the 2010-11 survey digital aerial survey of the LA study area undertaken for LAL, which suggests that the distribution of divers observed appeared to be consistent with localised displacement around the operational wind farm whilst maintaining the population numbers across the overall surveyed area.
- 4.163 However, NE takes a very different view regarding this point. In its response to the consultation on the RIES, while agreeing with the remainder of the content of that Report, it highlights an error in the density calculation for displaced birds included in a footnote and explores its implications, as follows:

Matrix 10

Natural England wishes to bring to the ExA's attention that part of the statement in footnote f. to Matrix 10 appears incorrect. It is stated that the displacement of 11.9% of the SPA population i.e. 742 birds has been calculated to result in a predicted increase in density of 0.03 divers km². This appears incorrect. If 742 birds were spread over the entire SPA area, quoted as being 3,781 km², this would result in a density of 0.196 birds per km² (742/3,781). That then, must be the minimum increase in density arising from displacement of that number of birds. The figure of 0.03 divers km² arises solely from the additional displacement of 33 birds predicted to occur from 57km² due to the extension site alone, as can be seen from the calculations in section 4.1 of the HRA Addendum. On the basis of the figures regarding SPA area and the areas of all windfarms and associated 2km buffers provided in the HRA Report Addendum it can be calculated that the cumulative displacement of 742 birds into the area remaining outside the various windfarms and 2km buffers i.e. 3,276km² would increase the average density from a baseline value of 1.71 divers km² (6466 birds spread over 3781 km²) to 1.97 divers km² birds spread over 3276km²) i.e. a 15% increase in density. Note that this is very likely to be an underestimate of the percentage increase in density in the remaining areas because the diver density in the vicinity of London Array is the greatest within the entire SPA. Accordingly, the average density in the areas outside that area, and into which birds will be displaced, will initially be lower than the overall average figure of 1.71 derived above and so the percentage increase in density will be that much greater.

Furthermore, this figure does not take into account displacement of birds from the London Array Phase 2 area which holds some of the highest densities of divers within the SPA. Without information on the area covered by each of the windfarms, each of the various buffer zones around them and the density of birds in each of those zones separately, it is not possible to work out the average density in the areas outside those areas potentially impacted and hence the precise predicted percentage increase in density."

- 4.164 The extent to which there are important gaps in scientific knowledge and the nature of the uncertainty resulting has been illustrated by the contrast between:
- a) the high level of agreement reached during the examination regarding the available scientific information and analysis regarding the nature and extent of likely effects upon habitats and protected species, and
 - b) outstanding disagreement regarding how this limited information should be interpreted and applied in reaching conclusions regarding the degree of certainty or uncertainty regarding an adverse effect on integrity and in making the relevant decision regarding this application.
- 4.165 I agree with the applicant's submission (REP27 paras 17.18-17.20) that NE has not demonstrated beyond reasonable doubt that the displacement and density increases likely to occur as a result of cumulative disturbance effects arising from wind farms in the SPA would necessarily lead to displacement of RTDs to less favourable habitat and increased mortality or forced migration of birds outside the SPA. But it has not sought to do so. In order to satisfy the 'integrity' test the onus falls upon the applicant to demonstrate that there are no reasonable scientific grounds for doubt as to the absence of an adverse effect upon integrity rather than upon NE to prove its argument beyond reasonable doubt.
- 4.166 In its oral submissions at the habitats hearing and in its written response to the RIES NE has predicted that, on the basis of the agreed cumulative assessment, the increased density likely to be experienced across the remainder of the SPA is likely to be 15% or

above. No other scientific information has been submitted by any party that would challenge that assessment. The contribution of KFE to this increase in RTD density across the SPA is assessed as an actual increase in diver density per km² from 1.94 to 1.97 (0.03) which against JNCC mean data (1.71) is the equivalent of a 1.7% increase in density across the SPA as a whole.

4.167 Because the habitat across the SPA is not uniform and varies in quality, there appears to be scope for the in-combination increase in density in the more favoured areas of the SPA habitat to grow to a higher level than 15%. While there appears to be limited relevant research evidence available in relation to RTD displacement stress and mortality, NE was able to refer to research evidence supporting mortality levels of 30-60% in oystercatchers placed under stress elsewhere (PD24-26). No relevant evidence was submitted to the contrary and the applicant appeared to accept that this evidence was likely to provide a more realistic mortality assumption than the rate of 100% included in the applicant's assessment, which NE has acknowledged as over-precautionary.

4.168 At the issue-specific hearing into habitats aspects Dr Richard Caldw for NE suggested that if the pattern of enhanced mortality typical of disturbed oystercatcher was replicated for RTD, then a 30-60% increase in background mortality could be anticipated. An increase in mortality from a typical annual RTD mortality rate of 16% to 25% would represent a mortality increase of 30%. NE argued that this level of increase would be unsustainable for such a long-lived species, although it is noted that no demographic statistical evidence – for example a population viability analysis - was submitted to support this suggestion.

4.169 An assumption of 30% mortality would be substantially less precautionary than the 100% mortality for disturbed and displaced birds assumed in the applicant's ES and HRA calculations. However, Dr Caldw pointed out that even at this lower rate NE would still be concerned that it would not be possible to be certain that there

would not be an adverse impact upon SPA integrity from the in-combination effects of disturbance, consequential displacement and resultant increased density.

4.170 In this context it is noted that:

- the number of birds calculated as disturbed and displaced annually by the KFE project in isolation is 33, resulting in an in-isolation density increase across the SPA of 1.7%;
- at 30%-60% mortality the number of birds dying each year as a result of displacement can be calculated as between 9.9 and 19.8 (rounded to 10-20);
- the applicant has pointed out that the statistical assumptions inserted into the JNCC survey data for the Kentish Flats area of which the KFE site forms part and on which the in-isolation assessment is based would tend to over-estimate the effect of both the Kentish Flats wind farm and the KFE project when considered in isolation, although by what margin is not clear.

4.171 In the light of this point the NE precautionary position seems cautious. Whilst it is accepted that the interaction value figures for the LA project may be raising concern in relation to nature conservation considerations it appears that the applicant is justified in describing the in-isolation effect of KFE as 'negligible'.

4.172 On the other hand, if NE is correct, then a net cumulative increase in mean RTD density across the SPA of 15% or over arising from the full extent of all the existing, under-construction and planned wind farms in the OTE SPA would appear to raise uncertainty as to the absence of an adverse impact on integrity.

4.173 From the evidence submitted, it would appear likely that the cumulative increase in density as a result of displacement would not be evenly spread across the SPA as a whole. There could tend to be higher densities and clustering on or close to the principal areas of

supporting habitat – the sandbanks, channel edges and shallow water that provide the main areas for accessible prey species. This point is supported by the discussion section of the APEM 2010-11 Digital Aerial Survey of the LA study zone for LAL, which included the Kentish Flats wind farm and surrounding area.

4.174 The applicant submitted that any disturbance and displacement effects have to be seen against the background of very large natural variations in population. It was also suggested that these variations indicate that the ecological carrying capacity of the OTE SPA may be able to cope with the in-combination functional loss/deterioration of habitat attributable to built and under-construction wind farms and possibly to some of the smaller planned wind farms (REP73, 81, PD24-26). However, the evidence set out in the applicant's written and oral submissions regarding in-combination effects does not appear to have challenged the detail of the case put forward by NE regarding increases in RTD density arising from displacement by the full extent of the existing, under-construction and planned wind farms located or proposed to be located within the SPA boundaries.

4.175 When considered in this context, the 'proportionality principle' espoused in both UK and European law might be taken to suggest that the scale of any disturbance effects upon both population abundance and distribution and ecological habitat function should be considered in the context of the surveyed large natural variations. However, NE's advice (REP86) that any effects arising from disturbance and displacement should be seen as separate and additional to natural fluctuations in population attributable to other factors was not disputed. NE's view is confirmed by the detailed wording of the conservation objectives and the commentary upon the population target set out in Table 2.2 of the Conservation Objectives document. Accordingly it is concluded that the positions of both the applicant and NE in this regard can be accepted: they are not mutually exclusive. There are large natural fluctuations in

the RTD population and the additional displacement effect attributable to the KFE project in isolation is very small or 'negligible'.

4.176 The natural fluctuations of population may have a number of causes and it was accepted by the relevant parties that they are not well understood. Many factors such as weather, breeding success, available food supplies and so on may all play a role but their relative significance and how they operate are unknown. There remains, therefore, scientific uncertainty regarding the ecological context and conditions that give rise to the large natural seasonal fluctuations in the population of RTD visiting and/or staying in the OTE SPA during the winter months.

4.177 The question of whether NE's position in relation to the KFE project is a proportionate response in all the circumstances of this application - in particular those outlined in paragraphs 4.161-4.164 above - is, however, a relevant and important point.

4.178 Applying the information outlined above to the various elements of the integrity test, and bearing in mind that it is common ground between the parties that no direct loss or deterioration of SPA habitat is likely to arise, the principal questions here are:

- 1) whether there are grounds for reasonable scientific doubt that the project (when assessed in isolation or cumulatively):
 - a) will not adversely affect the coherence of the OTE SPA's ecological structure and function, across its entire area, OR
 - b) will not adversely affect the population of RTD for which the site is classified; AND
- 2) given the dynamic ecological context of this particular SPA, whether in the light of the predicted cumulative disturbance effects the SPA's ecological system and especially its RTD

population is likely to be resilient and able to evolve in ways that are favourable to conservation.

Conclusions regarding Principal Issue 1 and the 'Integrity' Test

4.179 The following conclusions are drawn in the light of all the relevant evidence, including the information and assessment reviewed in this chapter:

- i) Having regard to the NSER, which has been agreed between the applicant and NE, the only European site in respect of which the Secretary of State will need to carry out an appropriate assessment is the OTE SPA.
- ii) I concur with the SoCGs between the applicant and the nature conservation bodies that there is no likely direct habitat loss or deterioration affecting the ecological structure of the habitat across its whole area.
- iii) In relation to the applicant's argument (set out at paragraph 5.19 of the SoCG with NE) *'that although the in-combination effect has to be considered, it is also important to consider the contribution that the Kentish Flats Extension makes to the overall in-combination effect'*, it is accepted that the majority of the in-combination effects arise from the LA project, that the KFE's contribution to the in-combination assessment is very small and that the mortality likely to result from displacement may reasonably be described as 'negligible'.
- iv) Due to the limited scale and careful siting of the proposed wind farm extension it is agreed that the disturbance and displacement effects of the KFE project when considered in isolation do not provide grounds for concluding that its development would be likely to lead to an adverse effect upon SPA integrity.
- v) Having scrutinised the position in depth, in relation to the cumulative assessment of disturbance and displacement effects set out in the applicant's HRA addendum and ES and

the in-combination effects position summarised above, I agree with NE's advice that an adverse in-combination effect on the integrity of the SPA as a result of the Kentish Flats Extension, particularly when the effect of the full extent of LA 1 and 2 are taken into account, cannot be discounted.

The potential in-combination effects of the full extent of the assessed wind farms upon increases in RTD density as a result of displacement appear uncertain given the current level of scientific knowledge regarding RTD displacement behaviours, feeding densities and any resulting stress and mortality.

NE's advice indicates that increases in density across the SPA could have potential to affect adversely the population abundance and distribution of the RTD for which the SPA is classified.

- vi) It is further accepted that the detailed submissions provided in support of NE's argument demonstrate that there are reasonable scientific grounds for that organisation's doubt as to the absence of an adverse cumulative effect upon SPA integrity arising from RTD disturbance and displacement associated with the full extent of existing, under-construction and planned wind farms within the SPA despite the acknowledged issues with some of the population survey data available. However, the great majority of the assessed in-combination effects that give rise to concern relate to the potential impact of the LA project. Phase 1 of the project is well defined and was nearing completion at the time of the examination. Phase 2 is not well defined and is subject to a further decision by the Secretary of State. The extent and scale of that project may therefore be different to the maximum extent evaluated in the LA ES and appropriate assessment documents.
- vii) While NE has argued that there are reasonable scientific grounds for concluding that it cannot be discounted that no adverse impact upon the integrity of the OTE SPA will arise from the effect of LA1 taken together with other projects, NE

should not have taken the existing Kentish Flats wind farm into account in establishing the baseline for that calculation. The results from monitoring of LA1 were not made available to the examination and seem likely to overtake the estimated figures for LA1 included in the KFE cumulative assessment when made public. Omission of the 1.2% effect attributable to the existing Kentish Flats wind farm would of course reduce the cumulative effect including LA1 that NE considers to raise grounds for reasonable scientific doubt. For the reason given above NE's position in relation to LA1 does not seem robust in the absence of the monitoring results for that phase.

- viii) The scale and extent of LA2 is unknown at this stage and there is therefore a considerable degree of uncertainty about the likely contribution of that project to any in-combination effects. It is noted that the potential maximum and minimum effects can be assessed but there is a large potential difference in the total of in-combination effects resulting, which could potentially affect the outcome of the 'integrity' test. The in-combination effects of LA1 have been overestimated in the KFE assessment as a result of the inclusion of Kentish Flats wind farm within the baseline and the Secretary of State has control over any effects arising from Phase 2. These points should be considered in determining the KFE application and are addressed further in my overall conclusions.
- ix) No mitigation of the effects of disturbance and displacement of RTD is likely to be feasible/practicable in relation to the KFE project due to its small scale and related viability implications were the number of turbines to be reduced.

4.180 Neither the applicant nor any other interested party have suggested that the provisions of Regulation 62 of the habitats regulations (Considerations of Overriding Public Interest) apply to the KFE project, and accordingly the issues raised have not been the subject of examination.

5 OTHER PRINCIPAL ISSUES: FINDINGS AND CONCLUSIONS

Preamble

- 5.1. Apart from the habitats aspects addressed in chapter 4 above, a number of other Principal Issues were identified. The assessment and analysis of these issues is set out in the following chapter, including findings and conclusions in relation to each issue.

Principal Issue 2 - Biological Environment and Ecology

Can it be demonstrated that none of the potential and likely effects of the project upon the biological environment and ecology are so significant and adverse as to warrant rejection of the application?

Effects on the Biological Environment and Ecology

- 5.2. In addition to species and habitats considered in the RIES, the applicant's ES considers the potential for significant environmental effects upon marine species including marine mammals (pinnipeds and cetaceans), fish and shellfish. Accordingly these matters have been considered during the examination. Specific legislation applies to the protection of seals, cetaceans and certain types of fish and shellfish. The relevant species and legal provisions are set out below, together with my findings and conclusions.

Marine Mammals

- 5.3. In its written submissions (REP34) NE suggested that the OTE is not an important area for marine mammals. In its submissions (REP40) KWT argued that area has a significant population of seals and referred to additional current research being undertaken by the London Zoological Society (LZS). The applicant pointed out that the survey sample size for the work undertaken by the LZS is not such as to provide statistically significant results (REP81). This point has not been contested by KWT.

- 5.4. The primary concern raised by KWT seems to be the potential impact upon marine mammals of the piling and construction activity that would be necessary to deliver the proposed development (REP34). The mammals of concern include seals, which are very sensitive to acoustic disturbance. In the worst case scenario it was suggested that there is potential for serious injury to seals or even fatalities from very high levels of marine acoustic energy transmission effects during the construction phase of the proposed type of project. The potential for this type of biological damage was not contested by NE, although the numerical significance of the OTE seal population remained a matter of some disagreement and uncertainty.
- 5.5. In the light of the differences between NE and KWT over evidence regarding the significance of the seal population in the OTE, and the fact that scientific studies are continuing, I have reached no firm conclusions regarding that population's significance. However, it appears that a Marine Mammal Mitigation Protocol (MMMP) would provide mitigation for the impacts over which KWT raised concern. More specifically, I am satisfied on the basis of the written assurances from the applicant and from NE and the responses given by NE to my first Rule 17 questions (REP58) that the proposed MMMP condition included within the DML text included within the final draft DCO can provide adequate safeguards for marine mammals, in particular by way of 'soft start' procedures during construction.
- 5.6. KWT did seek additional mitigation by way of compensatory habitat management measures in marine conservation areas close to the proposed KFE site, namely the Swale Estuary which is the nearest area to the proposed site where seal foraging and breeding takes place. Neither the applicant nor NE supported such provision. In my judgement KWT did not produce convincing evidence to demonstrate that such compensatory mitigation would be required to offset any lasting effects upon seals or seal populations in the area from construction, operation or decommissioning of the wind farm.

Neither did KWT demonstrate that such compensatory provision was required by reference to specific European or UK legislation, policy or guidance.

- 5.7. Other than the inclusion of provision for a MMMP I therefore conclude that no other mitigation of the proposed works would be necessary in relation to safeguarding marine mammals should the Secretary of State decide to grant the Order.

Elasmobranchs including Thornback Ray

- 5.8. KWT raised concern that thornback rays, a species identified in the UK Biodiversity Action Plan, may be affected adversely by electromagnetic fields (EMF) generated by the proposed inter-array and export cables associated with the KFE project. It is noted that the likelihood of EMF effects was disputed neither by the applicant nor by NE. However, no definitive evidence was provided by any party to indicate whether the net effects of the proposed project upon elasmobranchs over time and at the population level are likely to be positive or negative. This appeared from the evidence submitted by the applicant and KWT (APP32, REP56) to be another aspect in which scientific knowledge is incomplete.
- 5.9. Mitigation advanced by the applicant (REP73 para 2.21) includes the provision of a condition in the DML which will require MMO approval of the specification of AC inter-array and transmission cables, of the technical performance of these cables and of the specification for minimum cable burial depth (DML condition 9). Provided due consideration is given to this point by MMO when assessing the details of the DML submission there would appear to be no justified requirement for the inclusion of additional mitigation provision within the DCO in relation to likely or possible effects of the proposed KFE project upon elasmobranchs.

Fish Species

- 5.10. Other than the thornback ray, the fish species that has been the principal focus of concern regarding the potential impacts of the proposed development has been the herring. The only evidence submitted regarding the likely effects of the proposed project upon herring was related to the likely adverse effects of noise and vibration on the identified herring spawning grounds that lie around 0.5 NM to the south of the proposed site for the KFE project, where the applicant has identified a potential significant effect in its ES and this assessment has been agreed by KEIFCA and other parties including the MMO/Cefas.
- 5.11. There is agreement between the relevant parties including fishermen's representatives (REP104 SOCG with Whitstable Fishermen's Association (WFA)) regarding the need to avoid in-season construction impacts upon the herring spawning grounds, including those close to the wind farm, through application of a DML condition restricting piling in the spawning season between 14th February and 31st May each year.
- 5.12. Having reviewed the position and had regard to the written and oral submissions, this point is addressed adequately under the proposed DML condition 7 included within the post-examination draft DCO text. Consideration of the detailed information required to satisfy this condition would be a matter for the MMO to determine in consultation with relevant stakeholders should the Secretary of State decide to grant the Order.

Shellfish Species

- 5.13. Designated Shellfish Waters, of which the Whitstable oyster grounds are one, are protected under the EC Shellfish Waters Directive (2006/113/EEC). The Shellfish Waters Directive sets environmental standards for the quality of the waters where shellfish live in order to promote healthy shellfish growth. The quality of commercially harvested shellfish intended for human consumption must comply

with the EU Food Hygiene Regulations (853/2004 /854), which took effect on 1 January 2006.

- 5.14. The Food Standards Agency is responsible for implementing the new regulations, which are enacted by The Food Hygiene (England) Regulations 2006. The regulations set microbiological standards for the flesh quality of shellfish (as listed above) from designated production areas, which are classified as either A, B or C. These standards are set to ensure that shellfish are placed on the market fit for human consumption.
- 5.15. The EA has powers to regulate and enforce emissions standards in relation to Shellfish Waters under the EC Shellfish Waters Directive (2006/113/EEC) and the Surface Waters (Shellfish) Directions 1997.
- 5.16. KEIFCA submitted that the Kentish Flats oyster grounds are one of only two 'Class A' Shellfish Waters designated in England by the Food Standards Agency as fit for human consumption fresh from the sea. A check on the Food Standards Agency's website illustrates that there are a large number of shellfish grounds in English Waters but all except Kentish Flats and a ground off Portland are classified as 'B' or 'C'. The Whitstable Oyster also carries EU Protected Geographical Indication status, which assists with its marketing as a regional food.
- 5.17. In relation to water quality effects posing potential risks to shellfish water quality, production and classification, it is noted that no concern regarding the KFE project on water quality grounds was raised by either the MMO nor the EA, nor by CCC as the relevant food hygiene monitoring authority. The EA is the permitting authority for emissions to Shellfish Waters. No parties directly disputed the findings of the applicant's ES, that there were likely to be no significant water quality effects on the Kentish Flats oyster grounds, of which the great majority lie close to but outside the area proposed for the KFE project, some 0.5 NM to the south and west (see map at p17 in CCC LIR (REP98)).

- 5.18. It is also noted from the evidence provided by CCC's LIR (REP98,pp16ff) that oysters provide a relatively small part of overall catch value landed in North Kent ports, although the Whitstable oyster enjoys a high public profile and is symbolic of the area's links with the traditional fishing industry (the LIR recognises that this may be helpful to tourism and promotion, especially for Whitstable as a town and for its residual fishing industry).
- 5.19. The evidence for potential effects of EMF associated with the proposed KFE project upon shellfish within the protected Whitstable Oyster Grounds and elsewhere in the vicinity were disputed during the examination between the applicant on the one hand and, on the other, KEIFCA and a number of individual fishermen.
- 5.20. It was suggested by individual fishermen (REP1, REP20) that star fish infestation had caused considerable damage to oysters and other shellfish within the site of the original Kentish Flats wind farm. The star fish were thought to have been attracted in large numbers by EMFs and it was suggested that they have attacked and eaten oysters and other shellfish resident in that area. There was therefore concern that the star fish infestation could be replicated as an effect of the KFE project. It was suggested that the wind farm extension in combination with the original Kentish Flats wind farm including the respective cable corridors of these projects (and the LA export cable corridor which also transects the oyster grounds from east to west) would affect approximately 10% of the area of the defined Class A Shellfish Water oyster grounds (see Figure 13.8 of the ES for a map showing the relevant areas of the wind farm and extension and the oyster grounds).
- 5.21. In its analysis of potential shellfish impacts, the ES concludes at paragraph 12.5.31 that:

"Direct impacts associated with construction activities and subsequent habitat loss is anticipated to have an impact upon sessile or low mobility species such as oysters and other shellfish. The largest impact may be upon the oyster beds south of the Kentish Flats Extension during the cabling works (which are

anticipated to have a 5m corridor of disturbance). However, given the scale of the works in relation to the overall project footprint, the magnitude of the impact will be negligible. Given the ubiquity of shellfish species and their broadcast spawning strategies, their sensitivity is considered to be low. Therefore the significance of this impact will be negligible. Any impact must also be seen in the context of an active fishery which regularly disturbs the seabed."

- 5.22. The ES conclusions were not challenged by NE or MMO, nor directly by KEIFCA or individual fishermen. The interested parties concerned with commercial fishing, including KEIFCA, expressed worries mainly regarding the longer term effects of EMF and resultant star fish infestation upon oysters and other shellfish rather than in relation to short term water quality effects (e.g. from suspended sediments disturbed by construction) or the short term effects of construction noise and vibration upon shellfish.
- 5.23. It is noted that CCC has a monitoring function with respect to water quality monitoring on the oyster grounds that is likely to be of assistance in ensuring that water quality is safeguarded from adverse effects and separate powers are available under the relevant Environmental and Food Hygiene regulations to control any emissions that would contaminate shellfish. The applicant undertook to discuss with CCC the potential for provision of an additional monitoring point to supplement an existing monitoring point that would be disrupted by the cable corridor works.
- 5.24. Specific provision is made in the DCO for submission to and approval by MMO of the details of cable specification and installation works. The depth of burial and the type of cable to be laid has potential for mitigation of EMF effects upon shellfish as well as elasmobranchs. Based on the evidence provided by NE and supplemented by the applicant at the relevant hearing, the choice of AC cable rather than DC may be an important decision in that regard. However, the detailed specification of the cabling works is reserved for consideration by the MMO if and when detailed proposals are brought forward by the applicant with a view to discharging the relevant DML conditions.

Conclusions regarding Principal Issue 2

- 5.25. In relation to the findings outlined above regarding the examination of Principal Issue 2 a number of conclusions are set out below
- 5.26. In relation to marine mammals and in the light of the points set out above, it is accepted that a DML condition requiring agreement and implementation of a Marine Mammal Protocol should be applied to the relevant construction works (see proposed DML condition 9(h) in the post-examination draft DCO included at Appendix F), bearing in mind that any decommissioning works would be addressed under a separate Marine Licence application at the appropriate time. However, for the reasons outlined it is also concluded that there is no need for inclusion in the draft Order of a compensatory provision in relation to seal habitat management in the Swale Estuary area as sought by KWT.
- 5.27. As regards the potential effects of EMF upon elasmobranchs I am satisfied that DML condition 9(i) of the DML included within the post-examination draft DCO text could adequately address any mitigation required, since evidence submitted by the applicant and NE demonstrated that EMF effects could be mitigated through the technical specification of the relevant cable infrastructure and by securing adequate minimum cable burial depth.
- 5.28. Resolution of the mitigation details would fall to the MMO if and when the developer submits details of the relevant proposed cable works to that organisation in pursuit of the discharge of DML condition 9(i) in the event that the Order is granted by the Secretary of State. It is understood that NE would be consulted by MMO in respect of the information submitted to satisfy that condition.
- 5.29. In the light of the evidence outlined above in relation to effects upon shellfish, it is concluded that, while there may be some adverse effects on the oyster and other species as a result of any development of the proposed KFE project, the effects upon the biological environment and ecology of shellfish in the area appear

likely to be localised and restricted to the vicinity of the wind farm extension and the export cable corridor. Any EMF effects arising should also be mitigated through application of the same DML condition considered in relation to potential effects on thornback rays. Accordingly the potential risk of adverse effects upon shellfish is addressed adequately in DML condition 9(i) set out in the draft DCO text. As in the case of potential EMF effects upon thornback rays, consideration of the detailed information required to satisfy this condition would be a matter for the MMO to determine in consultation with relevant stakeholders should the Secretary of State decide to grant the Order.

- 5.30. Overall in relation to Principal Issue 2 it is therefore concluded that none of the potential and likely effects of the project upon the biological environment and ecology are so significant and adverse as to warrant rejection of the application.

Principal Issue 3 - Commercial Fisheries and Fishing

Would any harm to commercial fisheries arising from the proposed development be so great as to warrant refusal of the Development Consent Order application?

- 5.31. The significance of any effects upon the biological environment and ecology of fish and shellfish is considered under Principal Issue 2 above.

Effects on commercial fishing

- 5.32. As regards adverse effects upon commercial fishing, relevant evidence was provided by the applicant's ES and through written submissions during the examination, oral evidence provided by Cefas at the hearings (acting in its role as scientific advisor to MMO), written and oral submissions by the Kent & Essex Inshore Fisheries and Conservation Authority and written submissions by individual fishermen and the Fisheries Liaison Officer working between the applicant and the local fishermen, including the WFA. The fishermen and WFA subsequently reached agreement with the applicant, as explained below.
- 5.33. In broad terms, there was consensus that the OTE provides reasonably productive inshore fishing grounds for a range of commercial estuarine and marine species, including cockles, horse mackerel, cod, skate and plaice, mussels, scallops, oysters, edible crabs and whelks (APP33, para 13.4.1). Evidence was also provided by KWT (REP15) and KEIFCA (REP55) that the area is important for thornback ray and that an important herring spawning ground lies close by, some 0.5km to the SE of the proposed extension site.
- 5.34. The main likely effects upon commercial fishing of the proposed KFE project identified by the parties can be summarised along similar lines to those set out in the three separate SoCGs that the applicant concluded with KCC, CCC and the WFA:

- restricted access to or loss of traditional fishing grounds, for example including:
 - loss of access to the northern end of the recognised oyster grounds and possible loss of some parts of the oyster beds due to the application of exclusion safety zones during construction and other periods
- adverse impacts on commercially exploited species, for example:
 - effects on water quality during construction and any maintenance and decommissioning activities and recognised oyster, whelk and bass grounds
 - effects arising from cables/EMF including star fish infestation
 - potential effects on herring spawning grounds
- safety issues for fishing vessels - for example:
 - hazards to fishing vessels and their equipment (and thereby to fishermen) arising from obstructions introduced on the sea bed by cable protection works or cables exposed by scour presenting safety risks to navigation and to fishing operations
- increased steaming times to fishing grounds;
- the presence of seabed objects and obstructions (presenting); and
- interference to fishing activities, for example:
 - due to construction, maintenance and safety/security measures undertaken during the wind farm extension's delivery and operation.

5.35. The submitted draft DCO included within the application (see Appendix F) made some provisions for mitigation of adverse impacts upon commercial fishing, including the relevant DML conditions relating to the technical specification and burial of the relevant inter-array and export cables, ensuring that construction activity is programmed to avoid the herring spawning season and provision for water quality monitoring during the construction phase. These general provisions have been retained in the post-examination draft DCO included at Appendix F.

- 5.36. The applicant's ES and CCC's LIR both identify potential 'moderate adverse' (and therefore significant) effects on the local fishing industry, although it was anticipated that these effects would be limited in scale and localised to a number of vessels operating principally out of the small North Kent ports¹⁴. Having reiterated the conclusion of the ES in respect of the scale of impact on commercial fishing page 18 of CCC's LIR states: "On this basis the council takes the view that at certain times specific commercial fishing activities are likely to be adversely impacted by the proposals. It is also accepted that, as the applicant states, significant effects need not be unacceptable if they are reversible via mitigation measures." The issues were the subject of a number of written questions to the applicant during the period of the examination and a SoCG was sought between the applicant and fishermen's representatives. A SoCG was also concluded between Vattenfall and the two relevant local authorities and submitted to the examination (REP102).
- 5.37. With respect to these effects and to the points agreed between the parties, it is accepted that the ES assessment of the likely effects of the proposal upon commercial fishing is appropriate in scope and methodology. The high level of agreement between relevant parties regarding the findings of the assessment, as reflected in the contents of the relevant SoCGs concluded between the applicant and CCC and between the applicant and fishermen's representatives, is also noted.
- 5.38. The LIR submitted by CCC recognises that there may be adverse local impacts upon commercial fishing in the North Kent ports. The authorities urged the applicant to continue discussions with local fishermen and their representatives with the objective of securing mutually satisfactory agreements. It appears that the common ground discussions between the applicant and the fishermen bore

¹⁴ Paragraph 3.3 of the Statement of Common Ground dated 10 May 2012 concluded between Vattenfall and the Whitstable Fishermen's Association (REP104) indicates that: '*The WFA has stated that commercial fishing in the proposed Extension area is rarely, if at all, undertaken by fishermen other than members of the WFA*'. The SoCG also confirms that the Association has 14 members, who between them operate 13 boats, of which 12 harbour at Whitstable and 1 moors in the Swale.

fruit in that agreements were subsequently concluded with the individual fishermen/companies whose operations would be most affected by the proposed development. The SoCG with the WFA makes it clear that the agreement includes provision for funding that would enable the fishermen to diversify into forms of fishing different to those that would be affected. As a result of these agreements all the parties with interests in commercial fishing have withdrawn their objections to the proposed project.

- 5.39. The terms of these individual commercial agreements are confidential. Nevertheless I am satisfied that the approach adopted is broadly in line with the principles of the FLOWW protocol¹⁵ that provides a framework for discussions between the fishing and offshore renewable energy industries. On this basis, the agreements appear to provide mitigation satisfactory to the commercial fishing interests most likely to be affected by the proposed development.

Conclusions regarding Principal Issue 3

- 5.40. In the light of evidence provided by the parties during the examination (REP1, REP20, PD22, PD23) it appears possible that adverse effects upon cockles, whelks and oysters could arise from starfish infestation generated by EMF associated with the KFE project if it was to be developed, but evidence regarding this point was inconclusive. Neither the applicant, NE nor MMO/Cefas provided confirmation or technical evidence regarding any adverse effects of this type arising from wind farm construction and comments from other sources such as KEIFCA and individual fishermen were not supported by technical evidence. However, I conclude that, if the EMF effects are in fact a substantive issue, then the inclusion of DML condition 9(i) shown in the post-examination draft DCO into the final Order should address that point adequately in the event that the Secretary of State decides to grant development consent.

¹⁵ Fishing Liaison with Offshore Wind and Wet Renewables Group (FLOWW) - The FLOWW protocol refers to the agreement concluded between DECC, representatives of the fishing industry and representatives of the offshore renewable energy industry regarding mitigation of and compensation for loss or disturbance of fishing activities as a result of offshore wind farm developments.

- 5.41. The lack of any concern on the part of the EA, which is responsible for bathing water quality and shellfish water quality at the classified oyster grounds, appeared to support the applicant's view that any disturbance to water quality associated with construction and maintenance is likely to be short-lived and unlikely to have significant effects upon commercial fishing.
- 5.42. While the effects associated with noise and vibration may have some localised effects (and wider effects if construction of the KFE project were to run in parallel with the LA project), I am satisfied, on the basis of the relevant evidence submitted in the ES which has not been challenged, that these effects are unlikely to extend beyond 'moderate adverse' in their significance. I am also satisfied from the information before me that the effects will apply primarily to local fishermen and commercial fishing operations operating from the North Kent ports.
- 5.43. Exclusion of fishing vessels from safety zones during and after construction may have a limited effect during construction (when fishing vessels may be excluded from larger areas) and around significant maintenance or decommissioning works but this would be negligible during normal operation.
- 5.44. The proposed wind farm extension might also extend the area within which certain types of fishing may be precluded or severely restricted by the existence of inter-array and export cables. For example, the use of drifting gears might well be precluded or restricted as there would be a risk of loss or damage to gear and associated health and safety hazards. However, this might not apply to all types of fishing. For example, evidence provided by the applicant suggested that other types of fishing may continue within the wind farm in calmer weather, such as trawling and static gear fishing (APP49, para 29.4.32). This point was not contested by the fishermen or KEIFCA.

- 5.45. The applicant's ES (APP33 paras 13.5.8-13.5.15, APP49 para 29.4.34) and CCC's LIR acknowledge that localised moderate adverse impacts upon the high sensitivity local commercial fishing interests could arise if the proposed KFE project were to be developed – especially where this proposal is considered in combination with other developments and where the impact of the construction of KFE occurred simultaneously with the impact of LA's construction activity. However, the commercial agreements reached between the applicant and individual fishermen appear to provide for mitigation satisfactory to those fishermen who have felt sufficiently strongly regarding this issue to register relevant representations with the examination, since they have withdrawn their objections following conclusion of their respective agreements with the applicant.
- 5.46. There is evidence that exposed cables and cable protection works including rock dumps can present risks to vessels and gear including fishing nets. Exposed concrete mattresses and foundations associated with wind farms may also present similar risks. This finding is supported by submissions from Trinity House (TH) (Rep 68) KEIFCA (Rep 55), Port of London Authority (PLA) (Reps 80 & 85) and the Royal Yachting Association (RYA) (Rep 66) and has been accepted by the applicant in its comments at the relevant hearings on commercial fishing and navigation issues (PD22, 23).
- 5.47. After careful consideration of these points it is concluded that, providing that the design of cable protection works is carefully controlled and charted water depth is maintained with minimum obstruction as far as is practicable, the risks may be mitigated to a large extent, if not eliminated completely. These concerns are addressed by the inclusion of conditions 9(g) and 9(i)(i) – (iv) in the DML element of the revised draft DCO set out at Appendix F.
- 5.48. In the light of the above points I conclude that the combination of the conditions provided within the draft DML and the agreements reached between the fishermen interested parties and the applicant,

when taken in combination, should provide adequate mitigation to address or offset the 'moderate adverse' impacts upon commercial fishing likely to arise from development of the project.

- 5.49. On balance, therefore, while it is accepted that there could be a significant localised adverse impact upon fishing interests in the North Kent ports (especially Whitstable), it is concluded that this adverse impact would not be so great as to justify the refusal of the application, subject to the mitigation measures included in the DML and having regard to the agreements reached between the applicant and the fishermen whose commercial operations appear the most likely to be affected.

Principal Issue 4 - Radar, Navigation and Search and Rescue Operations

The site of the proposed development is on or close to the flight path for Manston and Southend Airports and adjoins the main shipping channel into the Port of London, including important anchorage and holding areas in the Thames Estuary. Is the proposed development likely to create any significant adverse effects on radar, navigation and search and rescue operations and, if so, does the proposed Development Consent Order provide for adequate mitigation?

Effects on Navigation

- 5.50. Marine Guidance Note 371 (M+F) Offshore Renewable Energy Installations (OREIs) – guidance on UK Navigational Practice, Safety and Emergency Response Issues is a relevant Government guidance document and was followed in the applicant's ES navigation effects assessment. MGN 371 highlights issues that shall be taken into consideration when assessing the impact on navigational safety and emergency response (Search & Rescue (SAR) and Counter Pollution). It includes guidance on site position and design, impacts

on navigation, mitigation measures and SAR. The applicant's ES seeks to take navigation issues into account at volume 2, section 15. No objections or adverse comments were raised regarding the content of this part of the ES.

- 5.51. Immediately prior to the hearings, the RYA (which was not registered as an interested party) submitted a letter including a late request to participate in the examination together with a statement of concerns regarding the potential risks to navigation associated with cable protection works, especially at points where export and inter-array cables cross. Particular concerns were expressed regarding the location where the proposed KFE export cables are proposed to cross the recently-laid LA export cables. Reference was made to navigation safety concerns generated by 'rock dump' cable protection works carried out by LAL and apparently approved by MMO as a variation to works details agreed under the relevant Marine Licence for the LA export cabling works without further consultation with the Marine and Coastguard Agency (MCA) or TH.
- 5.52. I agreed to the RYA's request to participate and a representative of the RYA attended the final examination hearing on 31 May 2012 to make oral submissions regarding its concerns. It was indicated that, as a result of the recent experience with MMO's handling of the procedure for assessment and authorisation of revised LA export cable protection works details submitted by LAL, the RYA's confidence in MMO's procedures has been affected.
- 5.53. In view of the importance of navigational safety issues to its membership, the RYA sought a provision in the DCO requiring the MMO to consult directly with the Association on Marine Licence matters connected with the KFE project, rather than placing reliance upon the adequacy of consultation with the relevant statutory bodies charged with responsibilities for marine safety and navigation, including the MCA and TH. RYA suggested that MCA/TH had not been consulted by MMO when a variation to the LA cable works was agreed to permit a large rock protective dump at the point where the

LA export cables cross the export cables leading to shore from the existing Kentish Flats wind farm. The consequence of that dump was to reduce navigable depth to 1m or less in an area close to the inshore channel frequently used by small recreational and fishing vessels. It is understood that both TH and MMO have confirmed that this situation did arise and that it has been the subject of subsequent discussions to avoid similar situations arising in the future.

- 5.54. At the relevant hearing (not attended by the MMO) the applicant indicated that it was willing to consult RYA - and other relevant non-statutory parties with interests in navigation such as fishermen's organisations - on a voluntary basis prior to submitting works details to MMO for assessment and DML condition discharge approval.
- 5.55. The post-examination draft DCO includes safety management requirements at Requirement 8 (see Appendix F), including provision for submission and approval by the Secretary of State of a plan for an active safety management system and an emergency response and cooperation plan in accordance with MCA recommendations and for their implementation before development is commenced.

Effects on Search and Rescue (SAR)

- 5.56. The principal deep water shipping channel leading up the OTE into the Port of London lies immediately to the north of the Kentish Flats wind farm and the proposed extension site. The Kentish Flats wind farm lies to the north of the southern leg of the proposed KFE site and the western leg of the L shaped KFE site would present a limited northern face to the shipping channel. Important anchorage and holding areas are also located along an E-W transit close to the northern boundary of both the KFE and Kentish Flats wind farm sites. Large vessels may anchor and lay up in these areas awaiting favourable tidal conditions, pilot attendance or for other reasons.
- 5.57. From visual inspection on my boat-based site visit and also from shore-based observations during the unaccompanied site visits it

was apparent that the channel is heavily used and that there is a large amount of traffic by vessels of all sizes proceeding up-channel to the port facilities in Kent (e.g. Sheerness and the Medway ports), Essex (e.g. Tilbury and the London Gateway) and London itself. Many of the vessels are bulk carriers, tankers or container vessels of one sort or another, reflecting the great economic importance of international trade with this part of the UK.

- 5.58. While the OTE is reasonably well protected from southerly and westerly gales it is much more exposed to northerly and easterly heavy weather. It also presents large vessels with navigation challenges due to the shallow water depths, constantly shifting sandbanks, the relevant tidal vectors and complex estuarine currents.
- 5.59. In relation to search and rescue effects the MCA and RNLI raised no objections to the KFE proposal in their written submissions although it was acknowledged that wind turbines present serious constraints and potential hazards to helicopter-based SAR operations. As a result, the development of wind farms in the OTE was acknowledged to present potential for future cumulative adverse effects on effective SAR. However, it was felt that the current level of effects from relevant wind farms in this part of the OTE (including KF and KFE) was not such as to give rise to concerns sufficient to justify refusal (RNLI – REP25, MCA – REP36 & REP48). Neither MCA nor RNLI has sought any further mitigation beyond preparation of an Emergency Response and Co-operation Plan (ERCoP) as provided for in requirement 8 of the revised draft DCO set out at Appendix F.

Effects on Radar

- 5.60. In relation to effects upon marine radar the applicant relied upon radar trials undertaken at the existing Kentish Flats wind farm in 2006, the results of which are explained in the ES section 15. Although some potential effects were identified, these were assessed as minor adverse. During pre-application consultation the PLA (whose administrative boundaries include part of the KFE project)

indicated that the authority would not expect any significant additional impact from the extension on marine radar effects. PLA also confirmed that the extension would not affect the existing mitigation radar already installed at Kentish Flats wind farm, since the area was already 'blanked'. Some effects upon shipping radars were reported but none were so adverse as to be significant.

- 5.61. During the examination no concerns were raised by relevant statutory, interested and 'other' parties such as the MCA and RYA regarding the likelihood of the proposed project giving rise to adverse effects upon marine radar.
- 5.62. As for the likely effects of the proposed KFE project on aviation radars, consultation with statutory aviation bodies and other aviation interests was undertaken by the applicant during the preparation of the relevant assessment within the ES. The principal aviation radar matters arising from the pre-application discussions and examination information relate to effects upon the radar systems and operation of Manston and Southend Airports.
- 5.63. While Manston and Southend Airports are not located within the Civil Aviation Authority's (CAA) 15km radius for physical safeguarding it is common ground between the applicant and the current operators of Manston Airport, Infratil Ltd, that the proposed KFE project, if developed and brought into operation, would extend the area of active wind turbines into the 30km radius safeguarding zone for the main approach flight path to Manston Airport. Although the safeguarding position is similar for Southend Airport (see below), the KFE site is not aligned with or close to the main approach or take-off flight paths.
- 5.64. SoCGs concluded between Vattenfall and Manston's operators (Infratil) and Vattenfall and Southend's operators (Stobart) were submitted to the examination. These SoCGs indicate agreement between the relevant parties that wind turbines can adversely affect aviation in three ways:

- by physically obstructing aircraft
- by impacts to radar, navigation and communications equipment through an increased level of radar “clutter”
- by track seduction causing erroneous radar returns as aircraft transit the turbines area.

Manston Airport

- 5.65. The SoCG, the applicant’s ES and written submission by solicitors acting for Infratil explain that Manston Airport has one runway oriented approximately east–west. The site proposed for the KFE project lies between the bearings 2950 and 3090 and is therefore relatively close to aircraft which approach from the east at 2810. Manston Airport provides a Lower Airspace Radar Service (LARS) to all aircraft operating outside controlled airspace within 25 NM of the aerodrome. Information within the SoCG confirms that the area is used heavily by light aircraft routing to and from the continent.
- 5.66. Manston Airport’s operators argue that this situation would not be acceptable (in terms of operational and safety implications) for oversight of radar controlled flights so close to final approach, during the critical phase of flight for aircraft landing at Manston Airport (REP100). It is indicated that KFE would therefore impact upon final approach and upon the air traffic controller’s ability to position aircraft onto final approach.
- 5.67. The SoCG also makes it clear that Manston lies within Class G airspace and is heavily reliant upon a radar service for customers utilising the airport, particularly passenger operators. Where an area of “unknown” radar returns is created then controllers must avoid the area by 5 NM. Current operations are not affected by the Kentish Flats wind farm but following installation of a new radar system and a related period of flight training operations they will be affected by that wind farm and by any subsequent extension.
- 5.68. It is agreed between the parties that the Kentish Flats Extension will not physically obstruct aircraft flying to or from Manston Airport. It is

also agreed that there is no potential for the proposed turbines to infringe the aerodrome's Obstacle Limitation Surface (OLS) or impact on flight routings to and from the aerodrome. However, the SoCG confirms that the effects of existing turbines at Kentish Flats have been flight checked for Manston's new Thales Radar, which is expected to become operational this year. Manston's operators found that the wind turbines cause considerable track seduction to primary radar contacts, causing aircraft returns to be lost from the radar display.

- 5.69. Evidence was submitted in the SoCG - and both by Vattenfall's aviation consultant, Osprey Consulting Services Ltd, and by solicitors representing Manston's operators at the relevant hearing – that the KFE project would extend the area subject to "track seduction" and would bring the wind turbines closer to the final approach for Runway 10 at the airport. Currently, the southern edge of the Kentish Flats wind farm lies 5 NM from the final approach track. If implemented, the proposed KFE project would not provide 5 NM separation from the final approach track. The additional aviation impacts that would be caused by the KFE project are such that Manston's operator considers that its ability to operate the airport safely would be compromised if KFE proceeded without mitigation. It also considers that mitigation of the anticipated radar impact is a necessary prerequisite to the KFE project proceeding.
- 5.70. However, the Manston operator is prepared to agree that a DCO can be granted subject to an appropriate suspensive 'Grampian' requirement to prevent the construction and operation of the wind turbines until appropriate mitigation measures are in place.
- 5.71. The SoCG and oral evidence provided at the relevant hearing by Osprey Consulting and Manston's solicitors confirmed that Manston's Primary Surveillance Radar (PSR) was replaced earlier this year. It was elevated relative to the previous installation, resulting in increased visibility of the operating Kentish Flats wind farm, which increases the impact of the existing turbines upon the PSR. The

radar is not believed to have any current capability to deal with the impacts of wind turbines. However, the manufacturer (Thales) is developing a software filter that could possibly address this issue. Infratil, the owners of Manston Airport, have cooperated with Thales and allowed informal trials of the filter to be conducted. However, at this stage the filter is not considered ready for deployment.

- 5.72. Section 5 of the SoCG agreed between the applicant and Infratil addresses the potential impacts of the proposed KFE project upon the airport's radar system operation. During the construction phase the only potential impacts from the proposed KFE project would be from physical obstruction and no adverse effects upon the radar are likely as the wind turbine blades would not be turning. It would of course be necessary for suitable lighting and relevant aviation notification to ensure safe routing is maintained around tall vessels and cranes and assembled wind turbines.
- 5.73. During the operational phase of KFE it was agreed between the parties that the rotating turbines would cause the following effects:
- a) an increased level of radar clutter at Manston Airport; and
 - b) an increased area which is subject to "track seduction".
- 5.74. It was agreed that the effects of the proposed KFE project upon Manston' radar would reduce progressively to zero as decommissioning was carried out and turbines were stopped and removed. In relation to potential impacts upon Manston airport the assessment undertaken concludes that, depending upon the outcome of trials of the newly installed radar system, the existing Kentish Flats wind farm and the proposed extension *'could impact upon the provision of air traffic services at Manston through the impact of radar clutter and track seduction upon the ability of Air Traffic Controllers to safely process and route the flow of flights'*.
- 5.75. It was further agreed that all of the potentially significant impacts of KFE both alone and in combination with other projects have been identified in relation to Manston Airport. The SoCG acknowledges

potential for cumulative impacts from other offshore wind farm developments upon the operation of Manston's radar equipment and the provision of air traffic services at the aerodrome, but no other potentially significant cumulative effects were identified, other than from Kentish Flats and the proposed KFE project. The SoCG also makes it clear that the requirement for and extent of any mitigation is dependent upon the results of trials of the new PSR.

- 5.76. The SoCG confirms that Vattenfall and Infratil are actively working together to explore potential mitigation options. Manston Airport is the Air Navigation Service Provider (ANSP) and is responsible for air traffic control and aviation safety functions at the airport, together with the airport's efficient operation. The SoCG also suggests that:

"It is therefore essential that any mitigation measures are agreed by Manston Airport as they must implement any mitigation and they would be responsible for the operation of any mitigation which is implemented." (REP100, paragraph 6.1)

- 5.77. The SoCG also explains that three options for technical mitigation have been evaluated:

Option 1 – Transponder Mandatory Zone (TMZ) – changing the airspace category to require aircraft to carry and use serviceable transponders to enable the controlling authority to have a high level of confidence that the airspace is one in which all aircraft are being detected. It is then possible to 'turn off' or 'blank' the PSR in the vicinity of the wind farms thus eliminating the radar returns from the wind turbines. This solution has been adopted for the Thanet and LA wind farms and at the time of the examination was under consultation for the Greater Wash wind farms. However, while it recognised that a TMZ would enhance flight safety in the vicinity of the wind farm, the proposed extension's proximity to the North Kent coast makes it accessible to light aircraft owners who are considered likely to object to being mandated to carry a transponder. Manston Airport approached the CAA Inspectorate regarding the possibility of a TMZ being established. The relevant CAA Inspector considered that a TMZ was not appropriate at this

location due to its easy access by non-transponding aircraft, combined with the classification of the surrounding (uncontrolled) airspace.

Option 2 – Resolution Infill – Location of an additional radar sensor within or adjacent to the wind farm that is capable of resolving real aircraft returns from those generated by wind turbines and of rejecting turbine returns as clutter. Clutter-free coverage volume can then be used to replace the affected area on the radar display or to enhance the display by suppressing the wind turbine returns. The SoCG suggests that the range of technologies involved appear more acceptable to aviation stakeholders as they are wind farm specific solutions and there is no loss of low level radar cover. At the time of the examination UK trials were scheduled for two specific infill technical solutions.

Option 3 – Thales PSR filter – The SoCG explains that the new PSR installed recently at Manston Airport is a proven existing radar system installed at a number of UK airports. The manufacturer, Thales, is developing a specific wind farm filter for the STAR 2000 radar as installed at Manston, which the company claims will remove up to 80% of turbine generated clutter, allowing the radar to behave as expected in the face of the remaining clutter. At the time of the examination the new radar had been installed with the filter but it was assessed not to be ready for operational deployment and was undergoing further development.

5.78. Paragraph 6.5 of the SoCG indicates that:

“Vattenfall accepts that the different potential mitigations will have varying impacts on the operation of Manston Airport. As such, it is appropriate that Manston Airport agree the proposed mitigation.”

The conclusion to the SOCG then points out at paragraph 7.1 that:

“In defining the appropriate form of technical mitigation it will be necessary to understand:

- (a) *the results of early trials for the new PSR at Manston Airport;*
- (b) *how Manston is currently managing the radar impact of KFWF (Kentish Flats Wind Farm) on the new operational PSR; and*
- (c) *the extent and complexity of the impact caused by KFE (the proposed Kentish Flats Extension project) in combination with the impact from KFWF."*

- 5.79. It was agreed that the answers to these points were unlikely to be available during the examination of the KFE application, and that, in order to ensure that any impacts from KFE on the radar at Manston are mitigated, a suspensive 'Grampian' requirement should be included in the draft DCO. However, the parties were unable to agree the terms of that requirement and therefore two proposals were set out in section 7 of the SoCG.
- 5.80. The issue between Manston's operators Infratil and the applicant relates to whether the suspensive requirement for aviation mitigation should provide expressly for the agreement of Manston Airport to the mitigation scheme to address the impact of the turbines on Manston's radar. As can be seen below from the different wordings proposed by the parties, the key difference relates to which bodies should 'sign off' and authorise the specific mitigation solution proposed in response to the mitigation requirement. Specifically, the question is whether Manston Airport should 'sign off' the discharge of any mitigation solution in addition to the Secretary of State and the CAA.
- 5.81. In this regard the CAA response dated 29 March 2012 to my written questions (REP29) points out that the CAA's role in the planning process is to provide advice relating to the interpretation of aviation policy and guidelines and not to assume safeguarding responsibility for aviation activities. The CAA confirms that it is the responsibility of the aviation site operators and Air Navigation Service Providers (ANSPs) including Manston and Southend Airports, NATS and the MoD to safeguard their own operations and agree any mitigation required. However, the applicant has pointed out (App37, App73, REP73 p.8f, REP81 paras 17.1ff) that in licensing the aviation site

operator the CAA must be satisfied with its arrangements for air navigation safety including airport air navigation radars.

5.82. In the light of these points, both the applicant and the airport operator therefore put forward different wording for the 'Grampian' mitigation requirement.

5.83. Infratil/Manston's proposed wording, as set out in the SoCG and in its written submissions:

"No turbines shall be erected as part of the authorised development unless and until both:

- 1) An Aviation Mitigation Scheme has been agreed in writing by the Air Navigation Service Provider for Manston Airport and approved by the Secretary of State and the Civil Aviation Authority; and*
- 2) The Air Navigation Service Provider for Manston Airport has confirmed in writing to the Secretary of State that the Aviation Mitigation Scheme has been implemented and is operational."*

"Aviation Mitigation Scheme" means a scheme setting out the technical solution or operational measures required to mitigate the impact of the proposed turbines on air traffic control operations at Manston Airport and on radar interference or clutter on the Manston Airport radar.

"Air Navigation Service provider" means the body Certified and Designated by the Civil Aviation Authority for the provision of Air Traffic Services under the Single European Sky Service Provision at Manston Airport."

5.84. Vattenfall's proposed wording:

"a) No turbines shall be operated as part of the authorised development until:

- i) a technical solution or operational mitigation to any impact of the proposed turbines on air traffic control operations at Manston Airport resulting from the increased radar interference or clutter on Manston Airport's radar has been submitted to and approved in writing by the Secretary of State and the Civil Aviation Authority; and*
- ii) the Air Navigation Service Provider for Manston Airport has confirmed in writing to the Secretary of State that the technical solution or operational mitigation referred to in paragraph (i) of this requirement has been implemented and is operational.*

b) The technical solution or operational mitigation referred to in paragraph (a)(i) of this requirement shall be prepared in consultation with Manston Airport.

c) For the purposes of this requirement, the reference to "turbines" does not include the installation of turbine foundations and transition pieces."

- 5.85. After the hearings, in the ExA draft DCO issued for consultation, I offered an alternative wording to the parties in dispute, based on a condition imposed by the Secretary of State his decision on the Westernmost Rough offshore wind farm application considered under s36 of the Electricity Act.
- 5.86. Vattenfall considered the proposed wording to be potentially unlawful, but put forward a variant of this approach for consideration if I wished to proceed on this basis (REP87, paragraph 7, and comments to article 10 in Appendix 4 to that document). Infratil has maintained its position that it seeks a specific decision-making role in determining and signing off the technical solution that it will be expected to operate.
- 5.87. Vattenfall has also drawn attention to the fact that, at the time of the examination, Manston Airport was up for sale and being marketed to potential purchasers. It was suggested that while there was at that time a positive working relationship between the applicant and Infratil there was no guarantee of a similar relationship being established between any purchaser and Vattenfall. The applicant asked for this point to be taken into account in the decision regarding the wording of any suspensive requirement.

Southend Airport

- 5.88. In addition to potential effects upon radar serving Manston Airport there may also be potential for adverse radar effects upon Southend Airport. However, although the applicant has confirmed in its Statement of Community Consultation that Southend Airport's operator Stobart was consulted in the pre-application process (APP10, para 7.6.30) the Airport did not make a relevant

representation and did not, therefore, become an interested party to the examination. An ExA letter was therefore sent to Stobart/Southend Airport seeking to clarify the position regarding the potential for adverse radar effects. No response was received but a SoCG was sought between the Applicant and Southend Airport which was eventually received in signed form after the hearings.

- 5.89. Southend Airport is located 25-34 km to the north west of the proposed KFE site. It is not located within the CAA's 15 km radius for physical safeguarding but is within a 30 km radius for radar safeguarding. The regulatory context is therefore similar to that affecting Manston Airport (REP111).
- 5.90. The background described in paragraph 2.6 of the SoCG between Vattenfall and Southend Airport indicates that Southend Airport has advised the following impacts from the existing Kentish Flats wind farm on their air traffic control (ATC) operations:

"(a) In relation to the existing primary radar in use at Southend, aircraft have sometimes been noted to disappear unexpectedly from radar while passing the wind farm area, with an associated reduction of PSR performance due to increased clutter levels caused by the presence of the KFWF rotors.

(b) The area around KFWF is often used for handover of traffic between the Air Traffic Control (ATC) units at Manston and Southend for aircraft routing between Essex and Kent. A line established between the two airports for this purpose passes immediately adjacent to the KFWF area. Due to constraints of airspace around Southend (vertical constraints as well as significant Danger Areas and Gas Venting sites and large numbers of General Aviation aircraft flying in the nearby areas) it is not always possible to avoid and safely route around the area where radar is affected by KFWF."

- 5.91. The SoCG makes it clear that Southend Airport considers that by extending KFWF this would extend the area that is subject to the constraints described above, although KFE would not bring wind turbines any closer to Southend Airport and would not result in a significant increase in the area where radar is affected.

- 5.92. Southend Airport provides a Lower Airspace Radar Service (LARS) to all aircraft operating outside controlled airspace within 25 NM of the aerodrome. The SoCG also indicates that Southend is commissioning a new PSR/Mode S radar, which is to be sited higher than the existing PSR to improve low-level coverage. The impact of the existing KFWF on the new PSR will be assessed once it becomes operational. Early indications are that the new primary radar element is also affected by the presence of KFWF in the handover area, with “targets sometimes being lost and occasionally tracks “seduced” to present an incorrect position”. It was agreed between the parties that Southend have considered all of these impacts in the commissioning of their new radar, as required to satisfy their operational safety case.
- 5.93. While the new Southend PSR does not have capability to deal with the radar impacts of wind turbines, the manufacturer (Selex) is developing a software filter that could possibly address the issue but, similar to the position at Manston, the filter was not considered ready for deployment at the time of the examination.
- 5.94. The SoCG between Vattenfall and Southend Airport is broadly similar in content to that concluded with Manston, as described above. The only identified potential impacts from the KFE project during the construction phase would be from physical obstruction and no adverse effects on the radar are therefore considered by the parties to be likely as turbine blades would not be rotating. During the operational phase the SoCG suggests that potential radar effects would be similar to those reported for Manston, i.e. radar clutter and “track seduction”. In addition, potential cumulative effects identified in the SoCG included the impact from other offshore wind farm developments upon Southend’s radar equipment and the provision of Air Traffic Services at Southend Airport.
- 5.95. As for Manston’s assessment, the radar effects of KFE on Southend Airport would decrease incrementally as turbines were decommissioned until the decommissioning process was completed,

at which point the source of effects would have been removed, resulting in no impact upon aviation and radar interests.

- 5.96. After consideration of mitigation being evaluated for Manston Airport, the SoCG indicates that the following technical mitigation options would also be available to mitigate impacts from KFE upon Southend Airport's operations and radar:

Option 1 – Coordination of airspace with Manston Airport –

involving patch radar coverage from Manston being overlaid on the Southend display and a written handover protocol agreed between the two airports. Alternatively a system such as that identified in Option 2 could be introduced directly at Southend which could benefit Manston. In this instance Southend Airport could assume responsibility for airspace over the KFE and KFWF area.

Option 2 – Radar based mitigation – Selex, manufacturers of the new Southend PSR being commissioned during the examination period, had previously claimed a capability to mitigate the effects of wind turbines but this had not been evaluated with respect to performance against local wind farms. The SoCG indicated that it is possible that this may offer a local solution to the potential impacts upon Southend Airport's radar and operations. Should Selex not be able to provide mitigation, then it was suggested that it might be possible to share any radar mitigation developed for Manston with Southend, in the form of a shared radar feed, should an additional radar be required, or by overlaying the Manston radar picture onto the Southend display should the Manston Thales radar prove to be 'wind farm capable'.

Option 3 – Transponder Mandatory Zone – This option is similar to that explored for Manston Airport and discussed above. The considered opinion of the CAA inspector who assessed the suggestion by Manston was that a TMZ would not be appropriate at the KFE location for the reasons explained above.

- 5.97. In defining the need and suitability of any form of technical mitigation the SoCG indicates that it will be necessary to understand:
- a) *“the results of early trials of the new PSR at Southend Airport;*
 - b) *how Southend is currently managing the radar impact of KFWF on the new operational PSR; and*
 - c) *the extent and complexity of the potential impact that could be caused by the proposed KFE project in combination with the impact of the existing KFWF.”*
- 5.98. The parties agreed in the SoCG that the answers to these points were unlikely to be available during the KFE application examination period.
- 5.99. Oral evidence provided at the radar effects hearing by Vattenfall’s aviation consultants (Osprey Consulting Services Ltd) suggested that the radar impacts upon Southend Airport may not be as significant as those for Manston Airport because the proposed KFE site is not close to the approach path for Southend, while it is relatively close to Manston’s approach path.
- 5.100. No proposals regarding the wording of any mitigation requirement have been put forward by Southend Airport’s operators or by the applicant and there is no reference to such wording in the SoCG between the applicant and Southend Airport’s operators.

Manston and Southend Airports – Issues to be resolved

- 5.101. In the light of the points agreed between the applicant and both Manston and Southend Airports and also taking into account the information outlined above, the specific planning issues for resolution in relation to aviation radar effects appear to be:
- a) the wording of any mitigation of the agreed likely adverse radar effects upon Manston (specifically whether the DCO should require that Manston’s operators must formally agree and sign off any mitigation solution proposed by the developers of the KFE project) as a consequence of the potential risks to radar and air traffic

control operations at Manston Airport that could present hazards to air navigation and safe and efficient operation of that airport; and

b) whether and how any radar effects mitigation requirement should apply in the case of Southend Airport, where there appears to be potential for similar technical effects but where it has been suggested that the position of the aerodrome relative to the KFE site presents relatively less risk than would apply in the case of Manston.

- 5.102. It appeared from the Issue Specific Hearing regarding radar effects etc on 31 May 2012 (PD27) that while there was a high level of consensus regarding the nature of the potential problems, there was disagreement over the precise nature of the likely technical solution. It is evident that Manston Airport's operators are concerned regarding the risk of having an inappropriate and inadequate technical solution forced upon them when effective radar cover is crucial to the airport's operation. In the light of its concerns Manston Airport's operators have requested that they be given a formal role alongside the Secretary of State and the CAA in consenting any technical mitigation solution details put forward by the developer in discharge of any 'Grampian' requirement imposed. This request is opposed by the applicant for the reasons set out below.
- 5.103. The applicant is concerned regarding the risk of 'gold plating' of the technical solution, regarding the expense that might be involved and also holds the view that giving responsibility to Manston's operators for formal decision-making regarding the technical radar effects mitigation solution would be inappropriate due to the potential for conflict of interest (PD27, REP73 and 81).
- 5.104. There was also disagreement over whether the Grampian mitigation requirement should apply a constraint on the construction of the KFE project or on its operation. While it was agreed between the parties that the primary source of interference would arise from movement

of the wind turbine blades once the project was brought into operation it was argued by Manston airport operators' solicitors that it would be inappropriate to allow the construction of the project if it could then not be brought into operation as a result of failure to identify a satisfactory technical solution to the radar effects mitigation issue. The applicant argued that any constraint should only apply to the operation of the project rather than to its construction and that if the developer chose to construct the project in the absence of any agreed technical solution (i.e. before discharge of any Grampian requirement) then that was a commercial risk and a matter for the judgement of the developer/operator concerned.

- 5.105. No comments were offered by Southend Airport, so there is an absence of detailed response from that operator regarding both the provisions and the wording for any radar effects mitigation requirement that might be applied.

Conclusions regarding Principal Issue 4

Conclusions in Relation to Navigation Effects

- 5.106. During the examination it was noted that, apart from the concerns raised in representations submitted by the RYA, KEIFCA, the fishermen's representatives and TH also considered that recent experience with the LA cable protection works suggests that serious potential navigation hazards could arise from inappropriate cable protection works.
- 5.107. It does appear that navigational hazards to vessels and to commercial fishing activities arising from cable protection works were identified in the case quoted and that there may be some grounds for concern regarding the procedure adopted in the particular case concerned, although it should be noted that no submissions were made by MMO on this point.
- 5.108. However, it is not appropriate that the DCO (which is a statutory instrument) should require statutory consultation with non-statutory bodies such as the RYA in the circumstances of this case when

relevant and very clear statutory responsibilities are placed upon the MCA, TH and MMO. It is the responsibility of those bodies to ensure that navigation hazards are properly addressed, operating within the scope of their respective statutory remits. In that context it is understood that in the light of experience and representations MMO has confirmed its protocols to provide for consultation of those statutory bodies in relation to Marine Licence variation applications in future circumstances of this type.

- 5.109. Subject to the inclusion of the mitigation provisions identified in DML conditions 9(1)(i)(iii) and (iv) of the post-examination draft DCO agreed between Vattenfall and the PLA (REP89), I am satisfied that the potential risks to navigation can be addressed adequately and that they therefore present no grounds for refusal of the application.

Conclusions in Relation to SAR Effects

- 5.110. In relation to the likely SAR effects of the KFE proposal, on the basis of the evidence submitted and outlined above, the key stakeholders identify no major concerns regarding the KFE proposal in relation to its potential effects upon search and rescue operations. Accordingly, there is no reason, either in terms of the 'in isolation' or 'in-combination' effects upon search and rescue operations likely to arise from construction, operation and decommissioning of the KFE project, to conclude that the likely SAR effects of the proposal would be so serious as to justify refusal of the Order application.

Conclusions in Relation to Radar and Air Navigation Effects

- 5.111. In relation to radar and air navigation safety effects of the proposed development it is clear (and agreed between the relevant parties) that a significant risk to the safe and efficient operation of Manston Airport and to air navigation safety in the wider area may be brought about if the development were to be constructed and brought into operation in the absence of adequate mitigation of the impacts upon the radar system used to control local air traffic on the approach to Manston. It follows that if the Order were to be granted its wording

should include a requirement providing for adequate mitigation of potential radar effects.

- 5.112. It is common ground between the relevant parties that technical mitigation of radar impacts is likely to be needed and that – in view of the rapid pace of technical development in this field - the best way to secure the relevant mitigation is through the application of a ‘Grampian’ form of radar effects mitigation requirement. I see no reason to disagree with that position.
- 5.113. It is not practicable at this point, in advance of in-situ testing, to confirm the most appropriate technical solution to the agreed risks to radar operation but it is common ground between the applicant and Manston Airport’s operators that a technical solution is likely to be forthcoming in the near future. A number of options have been evaluated. Therefore in my judgement inclusion of a suspensive requirement into the DCO is a reasonable mitigation approach if the development were to be granted consent by the Secretary of State.
- 5.114. The primary issue that would fall to be determined, therefore, is not whether such a requirement should be included in any DCO granted but rather what wording should be included in any such requirement.
- 5.115. In the light of the various points outlined above, a balance needs to be struck between the understandable concerns of both parties. After consultation with the parties, a Grampian requirement (Requirement 10) is therefore included in the proposed draft DCO wording set out in Appendix F, based on that applied in the Secretary of State’s Westernmost Rough wind farm decision but modified in the light of consultation comments from the parties. The ‘compromise’ wording proposed by the applicant and that I now put forward in an amended form (as included in the post-examination draft DCO) for the Secretary of State’s consideration is as follows:

Vattenfall wording:

(1) No wind turbine generator forming part of the development shall begin to be constructed until the Secretary of State, having

consulted with the Civil Aviation Authority and the Air Navigation Services Provider, is satisfied that mitigation to address the impact of the authorised development on air traffic control services for Manston airport will be implemented and maintained for so long as is necessary and that arrangements have been put in place to ensure that such mitigation is implemented before the development gives rise to any adverse impact on air traffic services for civil aviation at Manston airport.

(2) For the purposes of this requirement;

(a) "wind turbine generator" does not include the installation of turbine foundations and transition pieces;

(b) "Defence Infrastructure Organisation Safeguarding" means the operating arm of the Ministry of Defence responsible for the built and rural estate and any successor body to its functions; and

(c) "Air Navigation Service Provider" means any organisation certified for the provision of air traffic control services to civil aviation at Manston airport.

ExA draft wording:

No wind turbine generator forming part of the development shall begin to be constructed until the Secretary of State, having consulted with the Civil Aviation Authority and all relevant Air Navigation Services Providers, is satisfied that civil aviation impact mitigation will be implemented and maintained for the life of the development and that arrangements have been put in place to ensure that such mitigation is implemented before the development gives rise to any adverse impact on air traffic services for civil aviation.

For the purposes of this requirement;

"wind turbine generator" does not include the installation of turbine foundations and transition pieces;

and

"Air Navigation Service Provider" means any person or body who is from time to time certified and designated by the Civil Aviation Authority for the provision of air traffic services to civil aviation under the Single European Sky initiative in an area which includes the authorised development.

- 5.116. The latter requirement provides for formal consultation of the operators of both Manston and Southend Airports (in addition to the other relevant air navigation service provider bodies) by the Secretary of State prior to any discharge of the Grampian requirement regarding radar effects mitigation. It would also preclude construction of the proposed wind farm unless consent was

forthcoming from the Secretary of State, in order to avoid the development of an inoperable structure with the potential to raise issues in terms of decommissioning that would not arise if mitigation is resolved at the pre-construction stage. This approach has regard to all the points made during the examination, including the discussion of this issue with the parties at the hearing and also has regard to the national need for provision of additional renewable energy generating capacity.

- 5.117. Notwithstanding the points made by solicitors representing Infratil and by the CAA regarding the statutory responsibilities of the airport operator, in view of the clear financial and commercial interests of the relevant airport operator it would appear inappropriate (and contrary to the Nolan principles of governance) to give it a formal consenting role in determination of the Grampian requirement due to the risk of conflict of interest.
- 5.118. Subject to inclusion of the radar effects mitigation requirement (Requirement 10 in the post-examination draft Order) I am satisfied, on the basis of all the information now before me, that any residual adverse radar effects of the proposal are not likely to be of such significance as to justify refusal of the Order application.

Principal Issue 5 - Socio-Economic Effects

a) What are the likely socio-economic effects that could arise from the Kentish Flats Wind Farm Extension and are any of them likely to be significant? If so, are they likely to be positive or negative? In particular, what scales and types of socio-economic impact are anticipated, including any implications for local fishermen and tourism?

b) What mitigation can be applied to any significant adverse effects and does the submitted draft

Development Consent Order make adequate provision for it?

- 5.119. The likely socio-economic effects of the proposed development are explained in the applicant's ES and are also addressed in the local authorities' LIRs (REP98 and REP99). The principal adverse effect of significance identified in these documents is the effect on the operations and incomes of local commercial fishermen as a result of restricted access to or loss of traditional fishing grounds during construction and decommissioning phases. These effects would be temporary and localised – described as 'moderate adverse' in the ES and LIRs. The ES suggests that these effects can be mitigated by standard liaison and notification procedures being in place.
- 5.120. Fishermen's representatives registered as interested parties, individual fishermen making representations and the Kent and Essex Inshore Fishing and Conservation Authority (KEIFCA) have all made comments regarding the effects upon fishermen's incomes likely to arise from the KFE project when considered in isolation or in combination with other existing or planned offshore wind farm projects. The general thrust of these comments is to anticipate an adverse effect upon the incomes of local commercial fishing operations and individual fishermen.
- 5.121. This point relates closely to the review of potential effects upon commercial fishing considered above in relation to Principal Issue 3 - Commercial Fishing. As discussed in that section of the report, a SoCG has been concluded between the applicant and fishermen's representatives and private commercial agreements have also been reached between the applicant and individual fishermen. These agreements have led to withdrawal of objections by fishermen. In general terms this process follows the FLOWW protocol and precedents set by London Gateway Port development and LA Phase 1 agreements.

- 5.122. The consultation process did not identify significant adverse effects upon tourism and none were raised during the examination. The documents referred to above also address the likely effects on tourism but conclude that they are unlikely to be significant (APP48 paras 28.6.4-28.6.11). The documents observe that any tourism effects are likely to be closely related to visual effects, together with any noise, vibration or disruption created by works affecting tourists and tourism venues in the main summer tourism season. In this context it is noted that the application has not attracted substantive objections from operators of tourism facilities in the coastal settlements from which the proposed development would be visible.
- 5.123. The LIRs prepared by the local authorities suggest that there may be some minor positive in-combination socio-economic effects arising from wind farm development in the OTE and adjoining areas (REP98 &99).

Conclusions regarding Principal Issue 5

- 5.124. It is noted that no further submissions of concern were made by KEIFCA after agreements were reached with individual fishing interests. Given the absence of any likely significant effects upon tourism and also given the relevant SoCG and the mitigation agreements reached with fishermen's representatives and individual fishermen, there are no grounds to suggest that any adverse socio-economic effects would be of such severity as to justify refusal of the application.
- 5.125. On the other hand, some elements of the LIR assessment of potential economic benefits of offshore wind farm development and its related supply chain to North Kent communities seem speculative: they may prove to be over-optimistic. In this regard it is noted that the applicant's ES assesses the potential economic benefits of the project considered in isolation to the local, regional and national economy to be of negligible significance. However, it also confirms that, when assessed in combination with other offshore wind farms proposed for the Thames Estuary, KFE would make a

contribution towards meeting the national targets established by the Government's Renewable Energy Strategy (APP48, para 28.10.7). The Renewable Energy Strategy forms an important element of the Government's policy to develop a mix of energy generation capacity to underpin security of supply and the economy¹⁶. On the basis of the information and evidence submitted to the examination this analysis seems realistic and appropriate.

Principal Issue 6 - Noise and Vibration

Could any potential noise and vibration impacts relating to the proposed development give rise to concern during the construction, operational or decommissioning phases? If so, does the Development Consent Order ensure that adequate mitigation would be put in place or are any amendments needed?

Noise and Vibration Effects

5.126. The applicant's ES reviews the potential noise and vibration effects of the proposed KFE project at Volume 2, Section 26. The ES seeks to follow the approach required by the Overarching National Policy Statement for Energy (EN-1) (July 2011) and also the NPS for Renewable Energy Infrastructure (EN-3). It assesses construction noise impacts using the methodology provided in British Standard (BS) 5228 'Code of Practice for Noise and Vibration Control on Construction and Open Sites' Parts 1 and 2 (BSI, 2009). The wind turbine noise assessment was carried out according to the recommendations of ETSU-R-97, The Assessment and Rating of Noise from Wind Farms, as the appropriate methodology by which noise from wind farms should be assessed.

5.127. Due to the location of the site some 7.7 km offshore the ES noise and vibration assessment related to the construction phase was

¹⁶ As set out in the Overarching National Policy Statement for Energy (EN-1), Parts 2 and 3.

focussed on noise and vibration impacts due to piling work. For the operational phase, by reason of distance, it was considered that: "at distances of 7 km, the noise levels from operational wind farms are neither audible nor measurable at on-shore receptors and therefore the potential for adverse impacts is minimal" (APP46, para 26.3.9). It is noted that this comment appears to refer to adverse effects on human receptors rather than upon wildlife receptors.

- 5.128. Paragraph 26.7.1 of the ES confirms that the noise and vibration sources associated with the offshore construction works will be foundation installation and the vessel activities and equipment used for the wind turbine assembly. As the works are a minimum of 7.7 km from onshore receptors it is only the noise levels generated by the piling activities that may have potential effects onshore. A typical driven hammer pile will have a noise level of 89dB LAeq at 10m distance. Using a distance correction assuming atmospheric absorption of 1dB/km, noise levels onshore due to the piling operations would be of the order of 23dB LAeq averaged over the duration of the piling works, with instantaneous maximum noise levels of 30-35dB LAm_{ax} occurring for each hammer blow, using BS 5228-1:2009.
- 5.129. On this basis it was suggested that the assessed level of potential noise would be readily masked by onshore noise sources, especially during the daytime. *'If piling operations take place at night they may be audible in certain meteorological circumstances but the likelihood of this is very low'*. In the light of these points the ES assessment concludes that the impact due to offshore construction activities including piling operations will be of negligible significance. I note that this conclusion has not been challenged by the local authorities in their LIRs and no evidence has been submitted that would suggest potential for any intrusive or disruptive onshore noise and vibration impact from offshore construction including piling.
- 5.130. In relation to onshore cable-laying (which must be considered in combination with the cable laying operations connecting at the cable

transition pit adjoining Hampton Pier) the ES suggests that it will take approximately three months to complete 2km of cabling from the landfall site to the substation at Red House Farm. A scheme of mitigation is proposed in the ES to support the planning application. Given implementation of these mitigation measures as part of construction best practice and a Prior Consent application (as defined in S61 of the Control of Pollution Act 1974), a temporary minor adverse effect residual impact is predicted from the cable installation works. It is noted that CCC has recently granted planning permission for this work, having considered the applicant's submitted ES including the noise and vibration assessment.

- 5.131. In relation to construction-related traffic noise and vibration it was assumed that an additional 44 vehicle movements per day would be added to the network. This includes movements by staff cars as well as HGVs and low-loaders and includes the movements needed to facilitate the landward cable laying operations consented by the local planning authority. The ES assessment indicates negligible noise and vibration impacts from this source. No evidence has been submitted that challenges the ES assessment.
- 5.132. In relation to potential noise and vibration impacts during operation of the proposed KFE project, noise calculations were undertaken as part of the ES assessment in order to indicate the noise level arising from the operational wind turbines. Comparisons were made to an LA90,10min noise limit of 35dB up to wind speeds of 10 metres/second at 10m height, as proposed in ETSU-97-R. A sound power level of 109.4dB LWA at a wind speed 9 m/s operating in mode 0 (Windtest, 2005) was used for all wind turbine calculations.
- 5.133. The noise levels generated by the Kentish Flats wind turbines were calculated and then repeated to include the turbines associated with the Kentish Flats Extension. Paragraph 26.8.2 of the ES states that:

'The calculations are a conservative estimate of the predicted noise levels, as the noise levels for the wind turbines have been used for the conditions under which the highest noise emissions are

produced; in mode '0' and at wind speeds of 9m/s.' The results of the calculations indicate that:

- noise levels may reach a maximum of 30.5dB LAeq at the onshore residential property located nearest to the proposed wind farm extension;
- when the maximum noise levels generated by Kentish Flats WF are compared to the maximum noise levels generated by KFE, there is an increase of 2.6 dB(A). A change of 3 dB(A) is the minimum perceptible under normal conditions;
- this level of noise would be beneath the limit of 35 dB LA90, 10min as suggested in ETSU-97-R and would be unlikely to cause any significant adverse effects at noise sensitive properties onshore or to cause sleep disturbance;
- noise due to the operation of the wind turbines is therefore anticipated to have a negligible impact on residential properties onshore.

5.134. Although in practice the major portion of the onshore noise and vibration assessment fell to the local planning authority in relation to the planning application for landward cable installation works between Hampton Pier Car Park to the Red House Farm Substation, the export cable laying and transition pit construction works fall to be included in the proposed DCO application and were therefore assessed as part of this examination. This particular element of the proposed construction work extends to shore along the export cable corridor, terminating in the cable transition pit proposed for location within the public car park immediately to the east of Hampton Pier. In relation to the proposals for consideration under the PA2008 process, there is therefore a potential for noise and vibration effects to arise from these proposed works. Any in-combination effects including noise and vibration from the landward works covered by the planning permission also need to be considered.

5.135. Section 26 of the applicant's ES acknowledges that noise generated by construction-related traffic has potential to give rise to adverse effects, depending upon the change in traffic volume and the proximity of receptors to the road network. The approach taken to

the calculation of baseline and predicted noise levels due to the traffic volumes followed guidance from Calculation of Road Noise (CRTN)¹⁷. Vibration levels due to HGVs and other construction traffic were assessed qualitatively for receptors along the construction route.

5.136. It is noted that the applicant proposes a Code of Construction to be agreed with CCC as local planning authority for the landward works at and around the landfall point and along the land-side cable corridor (outwith the proposed DCO Area). Requirement 14 of the draft DCO requires the applicant to apply the Code of Construction to all landward works above Mean Low Water, including those to be consented under the PA2008 regime (REP73). This would appear to be an appropriate and sensible mitigation approach.

5.137. The noise impacts of the operational phase are considered to be associated with the noise from the wind turbines. Paragraph 26.4.5 of the ES indicates that:

“This will consist of aerodynamic noise from the turbine blades and the mechanical noise from the gearbox of the wind turbines. Recent advances in wind turbine technology have significantly reduced the mechanical noise generated by the gearbox and drive shafts and the potential noise source is not expected to be significant in new installations. Aerodynamic noise generated by the rotation of the wind turbine blades is not expected to be a potential source for significant noise impacts.”

5.138. On the accompanied boat-based site visit the vessel was taken right up to the base of a rotating wind turbine in the existing Kentish Flats wind farm. In wind conditions of Beaufort Force 2-3 it was difficult to hear the turbine blades or gearbox even though the turbine was revolving immediately above the vessel on which those present were standing.

5.139. The potential assessed effects of operational noise were considered in the ES to be largely negligible due to the large separation distance

¹⁷ Department of Transport (1988)

to on-shore receptors. Observation from the site visit supports that assessment.

5.140. Noise from any decommissioning operations was assessed as unlikely to be audible onshore and no impact was predicted from any off-shore decommissioning works included in the Order¹⁸.

5.141. Apart from the effects on human landward side activities, the main potential effects of noise and vibration have also been considered, in particular in relation to marine mammals. This assessment also has implications for fish and shellfish. The Overarching National Policy Statement for Energy (EN-1) sets out at section 5.3 page 63 Government policy in relation to generic biodiversity impacts. Section 2.6.92 of the National Policy Statement for Renewable Energy Infrastructure (EN-3) contains specific requirements for assessment of impacts on marine mammals. These include:

- Predicted noise levels in relation to mortality;
- Permanent threshold shift (PTS) and temporary threshold shift (TTS);
- Soft-start noise levels according to proposed hammer and pile design; and
- Operational noise.

5.142. In addition section 2.6.93 states that:

“The applicant should discuss any proposed piling activities with the relevant body. Where assessment of noise from offshore piling may reach noise levels likely to lead to an offence....the applicant should look at possible alternatives or appropriate mitigation before applying for a licence.”

5.143. Before finalising and submitting the ES and application the applicant undertook consultations with relevant bodies, including NE, KCC, CCC and KWT. A number of issues were raised by these bodies and they have informed the applicant’s assessment. The information used to inform the assessment of impacts was largely drawn on

¹⁸ The issue of whether decommissioning should be included within the Order is considered at paragraphs 5.238 onwards.

knowledge gained from developing the Kentish Flats project and from industry-wide studies and monitoring work carried out at other wind farms. The applicant felt this to be a proportionate approach given the limited scale of the project and the limited importance of the area for marine mammals. The approach was discussed with NE. A precautionary 'worst case scenario impacts' approach was adopted, in particular to regarding the assumption of the maximum number of monopiles provided for in the application.

- 5.144. The ES points out that cetacean populations occurring in UK waters are generally wide-ranging. Also certain aspects of habitats associated with key biological functions such as feeding, reproduction and the rearing of young are not well understood. In the light of these points the cetacean study area was necessarily broad. The study area for pinnipeds was easier to define given the association with areas used as haul-out sites.
- 5.145. A number of international obligations and pieces of UK legislation may need to be considered in relation to marine mammals. All cetaceans (whales, dolphins, porpoises) are protected under the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas (ASCOBANS). The Convention on Migratory Species 1979 (CMS or Bonn Convention) aims to conserve terrestrial, marine and avian migratory species throughout their range. Small cetaceans of the North Sea are included within the Convention. The Convention on the Conservation of European Wildlife and Natural Habitats (the Bern Convention) was adopted in 1979. All cetaceans and both the grey seal and common seal (aka harbour seal) are protected by the Bern Convention and it is implemented within the UK through the Wildlife and Countryside Act.
- 5.146. In relation to UK wildlife legislation the Countryside and Rights of Way Act 2001 protects cetaceans by making it an offence to *"deliberately or recklessly damage or **disturb**¹⁹ any cetacean in English or Welsh protected waters"*. The UK Habitats Regulations

¹⁹ My emphasis

transpose the EC Habitats Directive for inshore waters of England and Wales. With regard to KFE, the potential for an offence arises under the Habitats Regulations which prohibit the deliberate capture, injury, killing or disturbance of any European Protected Species.

5.147. The ES reviews available cetacean survey and observation data from recognised sources (SCANS survey and Seawatch Foundation records) as well as site-specific data on marine mammals gathered during boat-based ornithological surveys undertaken at the Kentish Flats wind farm site, which recorded incidental sightings of marine mammals around the wind farm area. The regional records illustrate that in the waters off eastern England and the coast of Kent, harbour porpoise is the most common cetacean but, together with the bottlenose dolphin, has now become a rare sight in these areas. Harbour porpoise was the only cetacean recorded at the Kentish Flats wind farm during the ornithological surveys carried out in the period 2002-10. Numbers observed were low – only 14 were observed throughout all the surveys. Aerial surveys conducted between 2004-2006 confirmed that harbour porpoise numbers are low when compared to waters further offshore.

5.148. Section 11 of the ES provides evidence that of the two species of pinnipeds in UK waters, harbour (or common) seal are more likely to inhabit waters surrounding the Kentish Flats Extension (paragraphs 11.4.26-11.4.35). Sightings of seals have been more frequent than those for cetaceans. A number of locations in the Thames Estuary are noted as being of some importance for the harbour seal. Significant groups occur 17km and 21km from the proposed KFE site on sandbanks off the Essex coast. Smaller groups are also widely distributed within the Estuary including groups on sandbanks off Herne Bay and Margate in Kent as well as other locations off the Essex coast. The results of a study conducted by the Kent Mammal Group quoted in the ES indicated that over 230 harbour seal and over 70 were widely distributed across the whole Greater Thames Estuary and Goodwin Sands survey area including groups of harbour

seal on sandbanks, of which some were within 10km of the proposed KFE site. The ES indicates that the closest known haul-out site is only 1.8km away from the KFE site, although the most significant group of seals in the Thames Estuary is thought to be located some 16km away from the KFE site at Foulness and Buxey.

5.149. Section 11.5 of the ES (APP31) considers the impacts of disturbance through noise and vibration in the construction phase upon marine mammals:

"It is widely accepted that impact piling operations are the most significant source of noise that has the potential to impact upon marine life. Less significant sources of noise are also associated with other activities such as vessel movement, ground preparation and cable laying."

5.150. Underwater noise is measured using the decibel scale – a logarithmic measure based on the square of the sound pressure measured relative to a reference pressure of one micropascal. As no new noise modelling has been carried out for KFE the ES assessment set out in Section 11 draws upon modelling and measurement of underwater noise at the Greater Gabbard Offshore wind farm. Whilst it is not held up as directly comparable with KFE, the results are used to provide a context against which reasonable precautionary comparison are drawn.

5.151. Section 11, Page 25, Paragraph 11.5.14 of Volume 2 of the applicant's ES assessment of potential impacts upon marine mammals confirms that the effects of noise on mammals fall into four categories identified by Nedwell et al., 2007 (APP31):

- Lethal injury – death or severe injury leading to death in marine mammals and fish from exposure to impulsive (short duration) sound waves at very high levels, e.g. explosive blasts underwater. Criteria for injury and death are generally based on both the peak pressure and impulse of the sound. Physical injury – physical damage to organs, such as the lungs, intestines, ears and other soft tissues surrounding gas containing structures of the body.

- Traumatic auditory injury – temporary or permanent loss in hearing sensitivity related to the level of underwater sound, duration, duty cycle and hearing bandwidth of the animal.
- Behavioural – at a greater distance the underwater sound may not directly injure animals but has the potential to cause behavioural disturbance such as avoidance of the area or masking of sounds that may have significant effects where the manmade source is in the vicinity of breeding grounds, migratory routes or feeding areas.
- Physical injury – physical damage to organs, such as lungs, intestines, ears and soft tissues surrounding gas containing structures of the body.

5.152. Lethal injuries are only possible if the animal is a very short distance from the source of the piling noise. Auditory impacts of pile driving, created by repeated high level exposure to sound, have the potential to cause hearing impairments in marine mammals which can take the form of temporary loss in hearing sensitivity, or a permanent loss of hearing sensitivity (referred to as Temporary Threshold Shift (TTS) or Permanent Threshold Shift (PTS) respectively. Paragraph 11.5.17 of the ES (APP31) confirms that in the case of pile driving this may occur where marine mammals are exposed to the noise generated by repeated pile strikes. Paragraph 11.5.18 of the ES goes on to quote the Offshore Energy SEA, which concluded that pile driving sources are generally unlikely to have a significant effect on marine mammal populations due to the fact that the spatial scales over which either observable or biologically meaningful effects are likely to result do not generally support significant groups of animals.

5.153. For the purposes of the ES marine mammal impacts assessment, the species considered to be the most sensitive to the effects of underwater noise, and hence a worst case scenario, are the harbour/common seal and the harbour porpoise. The ES quotes a number of studies including a complex modelling exercise undertaken for the Greater Gabbard offshore wind farm project. The ES highlights the study's suggestions that (assuming piling of a 6.5m diameter monopole) for a cetacean, as long as they are further than

10m from the noise source, auditory injury can be avoided. In comparison, in order to avoid auditory injury pinnipeds would need to be outwith 4km as they started to flee, although they can avoid underwater noise by coming to the surface and it is unlikely that they would remain entirely submerged for the effect period as modelled. It was also pointed out that the prediction at Greater Gabbard relates to a project being installed in relatively deep water, whereas the KFE project is proposed for relatively shallow water depths likely to attenuate and thereby result in a significantly reduced range.

- 5.154. Further information in the ES includes modelling of pile driving noise undertaken for the adjoining Kentish Flats wind farm, based upon 4.3m diameter monopiles in comparison with the 6.0m monopiles now proposed for the KFE site. The peak to peak perceived Source Level likely to occur for harbour porpoise based on measurements taken at Kentish Flats was 201dBht(Phocoena phocoena)@1m. The range at which a behavioural response would be seen at 90dBht was predicted to be 2.5km for harbour porpoise, and 2.2km for harbour/common seal.
- 5.155. Since the worst case for KFE is a 6.0m monopole a number of other studies are made available to supplement the data from Kentish Flats WF. This includes a model prepared for the developers of the London Array, Greater Gabbard and Thanet Offshore wind farm projects that took the monitored noise from Kentish Flats and predicted the noise that would be associated with the installation of a 6.5m monopole at a similar shallow water site (APP31, para 11.5.23). This study provides the results shown in Table 11.8 of Volume 2 of the ES included at Section 11, Page 27.
- 5.156. Given the low number of marine mammals recorded in the Kentish Flats Extension study area, the poor propagation of noise in very shallow water and the evidence from other projects of effects being relatively short lived, the ES considers the overall magnitude of potential impacts on marine mammals to be low. Table 11.8

indicates the range at which the pile driving noise level degrades away from source down to the level of background sea noise as 10km for harbour porpoise and 20km for harbour/common seal. However, the ES regards the sensitivity of the marine mammals around the KFE site as high, given the protection status associated with all cetaceans and seals and their sensitivity to noise. The ES accepts that, while the modelling undertaken may have overestimated the potential impacts for marine mammals during piling of monopiles, there is potential for noise related impacts upon these mammals during construction activities. Having regard to the low magnitude of potential impacts upon species of high sensitivity the significance of noise and vibration impacts from piling activities during construction is assessed as moderate adverse.

- 5.157. Impacts from boat traffic and operational noise during construction are regarded as likely to create a lower level of disturbance than pile driving. The ES also draws attention to background conditions, including the proximity of a busy shipping lane north of the KFE site. It suggests that the noise will be continuous and sustained during active construction and that the magnitude of this impact will be low. The significance of noise and vibration impacts from other construction activity is assessed as moderate adverse.
- 5.158. Potential impacts during the operational phase of the KFE project were assessed against the results of studies undertaken at Kentish Flats wind farm in May 2007 to determine underwater noise and vibration levels from rotation of blades during operation of the wind farm. The studies concluded that operational noise recorded at Kentish Flats was very low, declining with distance from the wind turbines. Underwater noise from the adjacent shipping tended to dominate turbine derived noise. The ES therefore concluded that, while there is potential for noise to be created through operations and maintenance vessels which will visit the site throughout its operational life, the number of vessel movements will not be significant against the background of heavy shipping passing north

of the wind farm area. Despite larger turbines being proposed for the KFE project it is not anticipated that noise during operation will significantly increase over that experienced for the Kentish Flats WF. However, given the very high sensitivity of marine mammals the overall significance of this impact was considered minor adverse.

5.159. It is noted that no other potential impacts upon marine mammals, including collision risk, barrier effect, EMF and impacts upon prey species and impacts of decommissioning were regarded as more than minor adverse. However, the cumulative impacts of construction including piling, when considered with those of other wind farms, were assessed as moderate adverse.

5.160. KWT raised concerns regarding the potential impacts upon harbour (common) seals, grey seals and harbour porpoises, indicating that over 200 harbour seals have been recorded within the OTE. Although acknowledging that this is not significant on a national scale research by KWT suggested in its written representations and responses to my first written questions that:

- the North Kent harbour seal population may associate with and provide important links between populations that are of international importance
- recent research (REP40) at the Scroby Sands offshore wind farm had showed that harbour seals are prone to disturbance both during construction and within the operational phase of the wind farm, with marked decreases in numbers and breeding success;
- tagged individuals within North Kent have been found to forage extensively within the extension site and the surrounding area.

5.161. KWT does not feel that the proposed mitigation will alleviate these impacts and has recommended further mitigation and compensation measures to mitigate construction impact and inform provision of alternative foraging habitat within the nearby Swale Marine Conservation Zone (MCZ). It also points out that although the harbour seal population is not significant in European terms and the OTE does not qualify for designation as a SAC for this species both harbour seals and grey seals are listed under Appendix III of the

Bern Convention and Annex II of the EU Habitats Directive, which requires *“appropriate measures be carried out to ensure their protection”*.

- 5.162. In the light of the legal protection afforded to harbour seals, it was argued that consideration should be given to the cumulative impacts of the development proposed with appropriate mitigation and compensation measures agreed.
- 5.163. KWT’s submission relies upon the Scroby study to support its conclusions that the mitigation provided on wind farms presently is inadequate to protect harbour seals from the impacts of piling and operational noise. The study concludes that the differences in species mix (the balance between the populations of harbour seals and grey seals before and after construction) are likely to be due to impacts on the distribution of harbour seals at sea. Behavioural response to piling has been recorded up to 20km away from wind farms, with piling noise thought to be heard by seals up to 80km away. The difference in reaction between the harbour and grey seals is likely to relate to their foraging behaviour. Whereas the larger grey seal can undertake extended foraging trips of up to 2100km from their main haul-out site, harbour seals have much shorter ranges of 45km and so would be less able to escape the wind farm disturbance. Harbour seal are also much more reliant on fish such as herring, which are sensitive to pile driving, and therefore likely to be disturbed by piling.
- 5.164. It was highlighted that the study recommends that more effective means of mitigating noise (e.g. bubble-curtains) should be used to mitigate impact. KWT contends that mitigation reflecting the Scroby study’s recommendations should be included within the construction design, with monitoring for a five year period to assess the success of these methods and that this research could then be used to inform future wind farm construction within Round 3.

- 5.165. KWT acknowledges that the impacts of the noise caused by operation are more difficult, if not impossible, to mitigate and therefore seeks that appropriate compensation is required by the DCO provisions. It suggests that it is likely that the MCZs may provide the mechanisms to achieve this by providing richer foraging within the protected zones to compensate for any foraging habitat lost as a result of the development. The nearest proposed MCZ to the Kentish Flats extension is the Swale MCZ. At present data is being collected in many of the recommended MCZs, to provide further evidence of the presence and extent of features they contain prior to designation. KWT believes that multibeam sonar and backscatter data, supported by ground-truthing surveys by divers should be undertaken in MCZs, to provide a good baseline to inform condition assessments and appropriate management of the site. It is further suggested that a financial contribution should be made to these surveys by the KFWF developer, in order to help enhance the Swale MCZ's foraging potential for the North Kent seal population and biodiversity in general.
- 5.166. In relation to the effects of noise and vibration on fish species, KWT points out that there is a regionally important population of thornback rays in the Thames Estuary area including the KFE site. KWT suggests that ideally piling should be limited to times when thornback ray adults are in deeper water August – February but acknowledges that this will leave limited time for piling considering the restrictions required due to the need to mitigate potential impacts upon RTD and herring.
- 5.167. In its written representations and responses to my first written questions, the response of NE to Question A14 was that:

“The area for the KFE is not one identified as important for marine mammals. As such NE are of the view that the necessary mitigation can be put in place through a suitable Marine Mammal Mitigation Protocol as to be placed within the draft Marine Licence. This is a standard practice for offshore wind farm developments. NE do not feel that there are likely to be significant effects on

marine mammals and are content that the data provided by the applicant in their ES supports this sufficiently."

5.168. In response to Question A18, NE adds:

"NE do feel that suitable mitigation can be put in place in regards to impacts from construction, in particular piling constraints and a marine mammal mitigation protocol.', and in responding to Question A 16 states: 'We would refer the commissioner to the ES report and the relevant sections (6 -12) where potential impacts have been considered along with mitigation measures. NE was involved in lengthy consultation with the applicant and other stakeholders and was happy with the content of the ES in regards to the mitigation of any adverse impacts (except for RTD, where discussions are ongoing). As a condition of the draft Marine Licence, a comprehensive monitoring programme will be developed in consultation to validate the conclusions of the ES, as is normal."

5.169. In response to Questions G1 and G2, which sought to clarify the likelihood of an European Protected Species Licence being granted, NE responded:

(G2) "It is Natural England's view (as stated in the Environmental Statement Section 11, para 11.2.4) that an EPS Licence will be required. As the MMO is the licensing authority, this decision will be made by the MMO in light of the mitigation secured by the DCO and the marine mammal mitigation protocol secured by the deemed marine licence. It is agreed that there is no requirement to develop a licence prior to determination of the DCO application. As a result progress to date is limited to the acceptance by all parties that a licence may be required and will be worked up at the appropriate juncture (with the MMO in conjunction with Natural England). Given the low importance of the area for harbour porpoise, the small scale of the development (and resulting impact) and commitment to soft-start piling and the acceptance industry best practice as part of the Marine Mammal Mitigation Protocol (MMMP), there is no likely reason that a licence would not be granted."

(G1) "We do not feel there is any reason why an EPS Licence cannot be authorised for the applicant. We believe an EPS will only be required for Harbour Porpoise. As set out in our response to QA. 14 a MMMP will be in place which, based on discussions with the applicant, will be based on that implemented for the original Kentish Flats development."

5.170. From the written submissions, it is noted that NE's main concern in connection with protection of marine mammals from the potential

impacts of KFE appeared to be for harbour porpoise, rather than for harbour/common seals.

- 5.171. Finally, in relation to my first request for further information and comments on Written Representations (submitted for 11th May) NE commented on the KWT concerns in response to my written Rule 17 Question 22, (response i)):

“NE has considered the points put forward by Kent Wildlife Trust and feel that the mitigation provisions within the draft DCO are adequate. A Marine Mammal Mitigation Protocol will be put in place, identifying a marine mammal monitoring zone and appointing recognised Marine Mammal Observers. Prior to commencement of any piling, proposals for detection of marine mammals will be undertaken, along with a reporting methodology. These will all adhere to the JNCC Marine Mammal Mitigation Guidelines, June 2010.”

- 5.172. The key mitigation measures resulting from the assessment of noise and vibration effects and effects upon marine mammals in the applicant's ES that have been included in the submitted draft DCO are the draft DML condition relating to the adoption of the MMMP (condition 9 (h) (i) – (v) – see Appendix F) and the DML condition restricting piling activity in the herring spawning season (14 February to 31 May). It is noted that, apart from mitigation of the effects of piling noise upon spawning herring, the latter would also mitigate in whole or part the effects of piling noise on potential receptors other than herring during these months, including effects on marine mammals and upon other fish spawning during this period and on shellfish.

- 5.173. The content of the ES, of the NE written responses and of the draft DML embedded within the DCO appears to address the principal concerns raised by KWT regarding the potential for impacts on marine mammals from construction activities and in particular from piling. No evidence appears to have been submitted to support KWT's contention that the mitigation proposed is inadequate. The 'soft start' MMMP and monitoring arrangements proposed in the DCO

are clearly acceptable to NE and in accord with recognised guidelines.

Conclusions in relation to Principal Issue 6

- 5.174. The applicant has accepted in its ES that moderate adverse (and therefore significant) potential effects upon marine mammals (especially harbour porpoise and harbour/common seals) could arise from the impacts of noise and vibration during construction, especially from piling and other construction activities. Mitigation has been proposed in the form of a DML condition requiring a MMMP, as is now standard practice for wind farm construction.
- 5.175. It is noted that the studies of the effects of noise and vibration on marine mammals quoted by the applicant in its ES are somewhat divergent in their findings to the findings of the Scroby study quoted by the KWT, and the weight of evidence appears to support the applicant's case. It is also noted that NE has considered the points put forward by KWT and has confirmed that it is content with the mitigation approach put forward by the applicant. The advice provided by NE in this regard was not subsequently challenged in substance, including the comments regarding the significance of the marine mammal populations in the area and in relation to the likelihood of the grant of a European Protected Species Licence in relation to any disturbance of harbour porpoise. Although KWT's comments regarding recent research into the North Kent seal populations by the London Zoological Society were followed up during the examination this led to no further evidence of statistical significance.
- 5.176. After due regard to all the evidence before me, including the fact the proposed KFE site would involve development in very shallow water where an attenuated noise range could reasonably be expected, I find that there is no clear evidence that the likely residual noise and vibration effects of the proposed development after the application of the mitigation measures provided for in DML conditions 9 and 13

would be of such scale as to create significant issues for marine mammals or indeed for humans. Having regard to the information submitted, including the applicant's ES and HRA information and information provided by other parties of which the main points are summarised above, it is concluded that - subject to the inclusion of the DML mitigation conditions numbers 9 and 13 - there are insufficient grounds in relation to adverse noise and vibration effects to justify refusal of the application on that basis.

5.177. Having regard to the evidence provided by NE it is also concluded - subject to proper and timely implementation of the mitigation required by the conditions included in the proposed DML included in the post-examination draft DCO at Appendix F - that there is no likely prospect of a breach of the legal provisions for the protection of marine mammals quoted by the Trust in its submissions. These provisions included the ASCOBANS agreement, the Convention on Migratory Species (Bonn Convention), the Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention) the UK Wildlife and Countryside Act 1980, the Countryside and Rights of Way Act 2001 and the habitats regulations.

Principal Issue 7 - Visual Effects

a) Are the potential visual effects of the proposed Kentish Flats Extension on the seascapes and landscape of the area significant when considered in isolation or in combination with the effects of other built, under-construction or planned developments? If so are any of the effects identified so significant and adverse as to justify refusal of the application?

b) What mitigation of any significant effects would be practicable and does the Development Consent Order provide adequately for it?

5.178. The applicant has supplied within its ES what English Heritage (EH) in its SoCG with the applicant and the local authorities have accepted in their LIRs is a thorough and comprehensive analysis of the visual effects of the proposed development, both in terms of effects in relation to the landscape and shorelines of Kent and Essex and upon the seascape of the OTE. The analysis is related to and supported by digital mapping in the form of GIS maps of the Zone of Visual Influence of the KFE project and those other wind farm projects with which it would interact visually. It also presents 'photographic' images including comparison of the as-existing landscapes and seascapes with images illustrating the situation after construction of the KFE project. The analysis takes into account the effects of various viewpoints and landform/elevation where appropriate.

5.179. The ES has been the subject of consultation with stakeholders and the public, including the relevant local authorities, EH and the MMO. The main visual effects are identified by the ES visual assessment as effects on landscape, seascape and visual amenity from:

- a) operation of vessels and cranes at sea;
- b) installation of wind turbines and foundations by jack-up barges;

- c) transportation of wind turbine components to site by barge and movement of other supply vessels;
- d) pre-assembly and storage of wind turbine components to nearby port (if selected);
- e) lighting of construction vessels and construction working areas at night; and
- f) laying of additional cables from the wind farm extension to the landfall at Hampton Pier. The construction activities associated with the landfall and onshore transition pit at Hampton Pier will have a very limited visual influence, extending only as far as the beach in the immediate vicinity of the landfall and the pier where the onshore transition pit is located.

5.180. The ES indicates that the following potential impacts were identified during the operational phase of the development:

Effects on landscape, seascape and visual amenity from:

- operation of the wind turbines (physical presence and movement of blades);
- lighting of the wind farm at night;
- operation of maintenance vessels; and
- offshore maintenance and repairs involving barges and/or cranes.

It is not anticipated that the activities associated with the decommissioning phase will be greater than the construction phase and therefore no significant impacts on the landscape, seascape and visual amenity of the study area are anticipated.

5.181. In addition, the following potential cumulative impacts were identified:

- the addition of the proposed wind turbines to the baseline will add slightly to the extent of possible areas from which a wind farm may be seen;
- impacts on the settlements of Whitstable, Herne Bay and Leysdown-on-Sea from the interaction of the Kentish Flats Extension with the existing wind farm; and

- impacts on a short stretch of the Saxon Shore Way and NCR1 as they pass through the North Kent Shoreline Regional Seascape Area.

5.182. Of the potential impacts, the ES considers that the potentially significant impacts are:

- (i) impacts on parts of the North Kent Shoreline and The Isle of Sheppey Regional Seascape Character Areas and locally in corresponding parts of the Greater Thames Estuary and North Kent Plain National Landscape Character Areas;
- (ii) impact on visual amenity at Leysdown-on-Sea, Whitstable and Herne Bay;
- (iii) locally significant impacts on the visual amenity along sections of the Saxon Shore Way and NCR1; and
- (iv) cumulative impacts on the settlements of Leysdown-on-Sea, Whitstable and Herne Bay from the interaction of the extension with the existing wind farm. These impacts are limited to those sectors of the settlement which have direct visibility to the extension.

5.183. The main points made by the parties concerned with visual impacts during the examination included submissions by EH and by the relevant local authorities, as explained below.

5.184. The mapping of Zones of Theoretical Visibility, supported by discussions with statutory consultees, desk studies and field work, appears to be comprehensive and accurate (REP98 (CCC) and REP99 (KCC)). EH is content that the appropriate methodologies and procedures for assessing visual impacts of the scheme have been adopted and that the outcome of the assessments is reasonable. EH agrees that both the scope of the assessment and the methodology used in the assessment are appropriate and acceptable.

5.185. EH also agrees that in preparing the visual impact assessment the applicant has followed the guidance set out in National Policy Statements EN-1 and EN-3, including careful attention to the siting and design of the proposed project. 'The Landscape, Seascape and Visual Impact Assessment (SKM Enviros) that forms part of the supporting documentation to the application identifies a number of locations at which there may be significant effects arising from the

project including at important heritage sites, such as Reculver. However, it also concludes that these additional effects would be seen in the context of the existing Kentish Flats Array which itself has visual impact. It concludes that, overall, the magnitude of change would, at the most intrusive, be “moderate”. We would concur with this and suggest that the potential visual effects are unlikely to detract from the appreciation of the setting of heritage assets.’

5.186. The EH response to written questions underlines that:

‘The overall footprint and shape of the site has taken into account the requirements of The Crown Estate and hard and soft constraints on development (including shipping lanes, fishing grounds and designated sites). The design and layout of the Kentish Flats Extension has been carefully developed to form a simple development that presents a clear relationship with the existing Kentish Flats Offshore Wind farm and as a coherent new feature within the seascape. It is agreed that in line with policy guidance the design of the Kentish Flats Extension has taken into account all relevant constraints and minimised harm to the landscape and seascape’.

5.187. Accordingly EH is satisfied that no significant adverse visual effects upon heritage receptors would be likely to arise from the implementation of the proposal (REP32). Relevant elements of the SoCG between the applicant and EH include:

“It is agreed that, apart from the impacts identified in paragraph (h) above, there are no potentially significant impacts of the proposed Extension.”

“Mitigation

- a) The impacts of the construction phase of the Extension will be temporary and affect a limited part of the application site, with the main activities taking place at distances of over 5km from the coast. The Outer Thames Estuary is also one of the busiest sea areas around the coast of the UK, and therefore there is constant movement of sea going vessels in this area. This reduces the potential visual impact of the construction vessels.*
- b) As construction activities offshore will be continuous, there will be lighting as agreed with Trinity house at the places where work is being carried out to enable work to continue*

outside of daylight hours. The lighting will be focused on specific and limited areas, and will not be diffuse. Whilst this lighting may be visible from the shore, it is not anticipated that it could give rise to a significant visual impact, which is largely as a result of its temporary nature.

- c) The onshore construction activities associated with the landfall and onshore transition put will be visible from only a short distance around the works. During construction, best practice construction methods will be employed to ensure the construction site is maintained in as tidy a state as possible.*
- d) In considering the identified visual effects it is relevant that the Kentish Flats Extension will be seen in the context of the existing wind farm, an active sea area, with constant movement of vessels and other fixed structures visible on the sea surface in proximity to the turbines. These factors will combine to reduce the visual impact of the Extension.*
- e) The final design scheme has regard to the local capacity to accommodate further wind turbine development and is a scale of development that can be accommodated in this location."*

"1.5 Conclusion

- a) It is accepted that the proposed Kentish Flats Extension will have limited significant visual effects on the seascapes and landscape of the area as set out at paragraph 11.2(f) above.*
- b) It is agreed that none of the identified effects are so significant and adverse as to justify refusal of the application."*

5.188. In relation to wider effects upon landscape character and visual amenity the local authorities accept that associated work to identify potential receptors appears to be correct (REP98 (CCC) and REP99 (KCC)). Main visual receptors would be certain North Kent seafronts, including both the coastal towns and the coastal paths stretching from Whitstable through Herne Bay and the settlement of Reculver to Reculver Towers, which would experience a significant cumulative visual effect due to the interaction with the existing Kentish Flats wind farm. Local communities are generally accustomed to the presence of the wind farm extension. However, the further visual impact associated with the extension would reduce the openness of the seascape (CCC).

- 5.189. There will be a noticeable difference to the current position because the extension is closer to the shore than the current wind farm and the new turbines would be up to 30m taller than the existing turbines (KCC, CCC). Other viewpoints inland would glimpse distant views, but visual impact would diminish with distance (KCC, CCC).
- 5.190. Construction impacts, including temporary structures and activity consisting of construction plant, increased vessel movement and night time lighting may heighten the effects for the short term construction period, but these effects would be temporary and transient. (KCC, CCC).
- 5.191. The visual impacts of the additional wind turbines would be seen in the context not only of the existing wind farm but of the wider area, which includes one of the busiest shipping channels in the UK and where other fixed structures already exist. Local receptors are accustomed to these existing additional elements. The visual impacts and perception associated with the site are subjective and the design of the turbines could also make a strong and positive statement. KCC agrees with the ES that the additional turbines in combination with the existing wind farms would not have a significant detrimental visual impact.
- 5.192. In general CCC agrees with the findings of the ES related to potential visual impact but does, however, consider that the additional turbines will have a significant detrimental effect when viewed from the coastal towns and coastal paths stretching from Whitstable to Reculver Towers.
- 5.193. No cumulative visual impact is predicted for any Area of Outstanding Natural Beauty, designated landscape or registered park and garden.
- 5.194. In order to consider the visual effects in more detail I made a number of site visits to a series of locations identified by the parties to the examination at my invitation. I also made a boat-based site visit to the proposed KFE development site and to the adjoining Kentish Flats wind farm to which the project would provide an

extension. All landward visits were unaccompanied by the parties, whilst on the seaward boat-based visit I was accompanied by representatives of the applicant, NE, TH, and the Fishermen's Liaison Officer.

- 5.195. Heritage asset locations inspected on the visits included the Red Sands Fort (viewed from the nearby Kentish Flats wind farm), Southend Pier (Grade II Listed) and the Reculver Priory and Roman Fort (Scheduled Ancient Monument). Locations important for tourism and other main vantage points included Whitstable seafront, Hampton Pier, Herne Bay seafront, Margate harbour and seafront (by the Turner Arts Centre), Borstal Hill above Whitstable, vantage point locations along the North Downs Way and in the Kent Downs AONB, Warden/Leysdown-on-Sea, Sheerness seafront, Southend-on-Sea Pier and Shoeburyness seafront.
- 5.196. Red Sands Fort lies 3.20km to the north of the KFE site. Reculver is 8.75km to the south east. Whitstable Tankerton is located 8.74 km to the south and Southend Pier is 22.4km to the west (APP34).
- 5.197. Unaccompanied site visits included inspections of the Reculver Priory and Roman Fort historic monument area, of the Saxon Shore Way and of the Victorian seafronts and pier at Whitstable, Margate and Southend. The accompanied boat-based site visit to the proposed site for the KFE provided a clear impression of the extent and scale of the existing and proposed wind farm structures at Kentish Flats, the area to be covered by the extension and the relationship with the principal areas of coastline in North Kent and South Essex that will be impacted by any visual effects. It also allowed consideration of the visual relationship between the proposed wind farm extension and the Red Sands Fort and the main channels used by commercial freight, fishing and recreational vessels.
- 5.198. The boat-based site visit also allowed consideration of the relationship of the proposed site and existing Kentish Flats wind farm

to relevant marine navigation marks and lighting maintained by TH and provided for the existing wind farm.

- 5.199. The site visits confirmed that overall the applicant's ES analysis provides a thoroughly prepared and reasonably accurate assessment of the visual impacts.
- 5.200. The turbine towers and blades are to be finished in Submarine Grey paint, an 'off-white' colour that will be visible from a distance but is broadly acceptable when seen against the backdrop of the seascape and landscapes of the Kent and Essex coastline.

Conclusions in relation to Principal Issue 7

- 5.201. Paragraph 5.9.8 of EN-1 specifies the factors which will need to be considered in the decision-making process when judging the impact of a project on landscape and seascape. It states that projects need to be designed carefully, taking account of the potential impact on the landscape and seascape. The aim should be to minimise harm, having regard to constraints. In accordance with paragraph 5.9.15 of EN-1, the decision-maker should judge whether any adverse impact on the landscape and seascape would be so damaging that it is not offset by the benefits (including the need for new renewables capacity) of the project. In doing so, it should be considered whether any adverse impact is temporary or capable of being reversed in a timescale that is considered reasonable (paragraph 5.9.16). With reference to visual impact, the guidance states that the decision-maker will have to judge whether the visual effects on sensitive receptors outweigh the benefits of the project (paragraph 5.9.18). It acknowledges that coastal areas are particularly vulnerable to visual intrusion.
- 5.202. In the light of the information set out in the ES and the submissions from EH, the LPAs and others I agree with the responses of these stakeholders that the main on-shore visual effects of the proposed development would be upon parts of the North Kent shoreline. In my view this would impact upon the section of coastline between

Warden/Leysdown and Reculver Towers. The greatest level of effects would be upon Warden/Leysdown, Whitstable seafront, Hampton Pier and Herne Bay, where I agree with the assessment of the ES that the cumulative visual effects (especially with the Kentish Flats wind farm) are likely to be locally significant (APP34). Elsewhere the visual effects are likely to decline progressively with distance.

- 5.203. In particular, while there is likely to be inter-visibility in reasonable weather conditions between all these locations, any visual effect on the setting of these heritage assets will be seen against the wider backdrop of the OTE. Experience of the site visits suggests that the masking effects of sea mist and humidity may often also play a part in reducing the impacts. In all cases the main effects are likely to arise from the appearance of the turbine tower and nacelle together with the appearance and movement of the turbine blades. These would be normally viewed from a distance and against the background of a seascape including the Kent and Essex shorelines, the Red Sands Fort and the busy adjoining shipping channel, including large vessels moving in and out of the Port of London or anchored in holding areas nearby.
- 5.204. Although the precise details of turbine height, position and layout are not specified within the application, as noted by EH the extension layout is constrained by a number of factors including the layout of the existing wind farm to which it would be an extension, together with the position of the main shipping channel and the oyster grounds.
- 5.205. On the basis of my assessment, including consideration of site visit observations and all the relevant evidence available to me, it is concluded that the design process has been undertaken carefully. I find that the proposal is as well located as it could be in these circumstances and that the overall scale and content of the physical development proposed is relatively modest. Having regard to the combined mitigating effects of distance, the proposed turbine layout and the wider context against which the wind farm extension would

be viewed, I concur with the views of EH as set out in written submissions and the views of the LPAs as set out in the SoCG with the applicant and in the LIRs in relation to assessment of the potential visual impacts.

5.206. Based on the submitted evidence and the observations made on the various site visits I conclude that, whilst it is likely that there would be adverse visual effects upon some heritage assets, only those upon Whitstable and Herne Bay Seafronts and Red Sands Fort would be 'significant', and those effects would be of relatively limited local significance. Having regard to:

- a) the evidence submitted during the examination by the applicant, EH and by the local authorities in their LIRs, and
- b) my observations from the site visits,

and for the reasons outlined above, none of these visual effects, including effects upon designated or undesignated heritage assets, would be so detrimental as to warrant refusal of the application.

Principal Issue 8 - Marine Archaeology

a) Could the Kentish Flats Extension proposals lead to significant adverse effects upon Marine Archaeology?

b) If so, does the proposed Development Consent Order wording provide satisfactory safeguards and/or provision for mitigation against such effects?

Marine Archaeology Effects

5.207. As part of its ES the applicant has provided an assessment of the likely effects of the proposed KFE development upon archaeology, including marine archaeology, when the project is considered in isolation or in combination with other projects. It is noted that EH has indicated that it is broadly supportive of the approach taken in the ES to the assessment of likely impacts upon heritage - and on marine archaeology in particular.

5.208. The ES outlines the significance of the North Kent area and wind farm extension location in historical terms. The range of features of archaeological interest that the applicant and EH agree may be located in the area of the wind farm extension site and export cable corridor, includes:

- paleolithic landform/morphology ;
- both fossilised animal and human remains and human artefacts from periods when sea levels were lower;
- sunken vessels of various historic eras;
- more modern military artefacts, including aircraft and ordnance from World Wars 1 and 2 and other periods.

5.209. Both the applicant and EH agree that there could be potential for significant adverse effects upon both identified and unidentified archaeological remains located on or under the sea bed within and adjoining the site of the proposed wind farm extension and cable corridor. This potential could arise principally from the effects of

construction works and any decommissioning work permitted under the Order. In addition damage could be caused by vessel anchors and the legs of jack-up vessels used in maintenance during the operational phase of the wind farm's life.

5.210. Potential impacts identified in the signed position statement submitted by EH (REP42, Appendix 11) include:

Construction Phase:

- damage, disturbance, destruction or destabilisation of submerged prehistoric archaeology, shipwrecks and crashed aircraft;
- the destruction of relationships between structures, features, deposits and artefacts and their wider surroundings;
- indirect impacts from increased erosion to submerged prehistoric archaeology, shipwrecks and crashed aircraft;
- compression or direct damage to archaeological features within the footprint of the foundations as a result of pile driving and disruption to any archaeology under or immediately adjacent to each unit;
- compression or direct damage to any surface or shallow archaeological sites as a result of placement of scour protection;
- direct damage to any sites within the depth of burial of the cables as a result of ploughing or jetting;
- any sites on or close to the surface will be impacted by the legs of any jack-up barges or by anchoring by support craft; and
- impacts upon hitherto unknown wrecks and/or terrestrial sites within the Study Areas and upon discrete items of ship-borne debris on or within the surface sediments.

Operational Phase:

- damage, disturbance, destruction and destabilisation of submerged prehistoric archaeology, shipwrecks and crashed aircraft from:
 - (a) anchors of vessels deployed during periodic overhauls and scheduled and unscheduled maintenance; and

(b) seabed contact of the legs of jack-up crane vessels in the event of turbine component replacement;

- indirect impacts from increased erosion to submerged prehistoric archaeology, shipwrecks and crashed aircraft uncovered as a result of changes in scour or sedimentation; and
- indirect impacts from increased protection afforded to submerged prehistoric archaeology, shipwrecks and crashed aircraft buried as a result of changes in scour or sedimentation.

Decommissioning Phase:

- damage, disturbance or destruction of submerged prehistoric archaeology, shipwrecks and crashed aircraft.

Cumulative Impacts:

- impact on archaeological material including known archaeological sites and geophysical anomalies of potential anthropogenic origin;
- changes to sedimentation;
- impact of construction upon any submerged prehistoric deposits, where present in the greater Thames Estuary; and
- impact upon setting and perception of the historic environment.

5.211. It was agreed between the applicant and EH that all potential impacts had been identified and that during both construction and operational phases direct construction and operational impacts resulting in damage to or destruction of archaeological receptors would result in a major adverse impact. Indirect impacts would be either negligible or minor adverse. Potential cumulative impacts in the absence of mitigation would be the same as those assessed in relation to construction impacts.

5.212. Cumulative impacts when KFE is assessed with other proposed and operational offshore wind farms and with other development and activities were considered to be negligible. It was further agreed that: "the only potentially significant impacts are direct impacts to

archaeological receptors during the construction, operation and decommissioning of the proposed Extension.”

5.213. In order to mitigate the agreed risks of adverse effects to archaeological remains associated with the proposed development, following discussions with EH and relevant local authority officers the applicant has included the following provisions within the DCO:

- DML condition for Archaeological Written Scheme of Investigation. This proposed DML condition 9(j) would require submission of a full written scheme of archaeological investigation the applicant to detail *inter alia* how it is proposed that archaeological monitoring would be carried out during the period of the wind farm extension’s construction, how any archaeological assets or features would be recorded and safeguarded and what resources would be made available by the developer to ensure that the archaeological mitigation was delivered satisfactorily.
- DML condition 9 (j) also requires the Written Scheme to include details of the responsibilities of the undertaker, archaeological consultant and contractor. This condition would help to ensure that an appropriate expert would be appointed to supervise the wind farm extension works and to ensure proper records of any finds are kept.
- DML condition 9 (j)(iv) provides for Archaeological Exclusion Zones as mitigation where necessary. Proposed condition 9 requires that if the ongoing monitoring of construction works identifies features of archaeological interest an exclusion zone may be designated around the feature location and that consequential micro-siting adjustments may be made to ensure that works avoid damaging the feature identified.

5.214. A number of questions were asked of the applicant and EH during the examination regarding the proposed arrangements and safeguards for historical assets and marine archaeology (PD13, PD14, PD21). These led to some clarification of the position and of the function and wording of the DML conditions. (REP6, REP32 and REP60 App.6)

Conclusions in relation to Principal Issue 8

5.215. The methodology and analyses provided with the application have proved robust and satisfactory to EH and the local authorities.

5.216. The proposed mitigation of potential adverse effects upon marine archaeology now provided within the DML at condition 9 (j) has been agreed by EH and addresses the main points raised regarding potential archaeological effects in the local authority LIRs. It has not been the subject of third party challenges or objections. Changes made during the examination in relation to my questions have provided clarification where required.

5.217. Having regard to these points and to the information set out above, the provisions of the post-examination draft DCO appear to provide adequate safeguards for marine archaeology and, subject to that mitigation, there are no archaeological grounds for refusal of the application.

Principal Issue 9 - Damage around Landfall Point

- a) Is there potential for any significant damage close to the landfall point and cable transition pit?*
- b) If so, is there adequate justification for the approach adopted in the application, including the scope and content of the proposals set out in the wording and plans forming parts of the Development Consent Order?*
- c) Is any relevant mitigation incorporated within the proposed Order and is this sufficient?*

5.218. The location of the landfall point for the export cable is immediately to the east of Hampton Pier, where the beach above the Mean Low Water line runs up to a car park owned by CCC. The car park is adjoined on its east side by the Hampton Pier Yacht Club, which stores dinghies, tenders and other equipment in an area close to its clubhouse. In turn a number of other community buildings and beach huts are located close to the Yacht Club. A sandy slope south of the yacht club runs up to join an adopted beachfront highway extending along the coastline at this point. This road provides access to a range of residential and commercial development in addition to the Hampton Pier car park, the Yacht Club and the other facilities.

5.219. The Order limits originally proposed by the applicant included an extensive area of land on either side of Hampton Pier, including the whole of the car park and the Yacht Club and its storage area together with other land. As described in paragraph 1.14 above, amongst other consents the applicant sought planning permission from CCC as the LPA for landward works that fall outside the terms of the DCO application (i.e. the related landward infrastructure development in terms of the cable connection from the transition pit to the sub-station).

- 5.220. Representations were received from Hampton Pier Yacht Club, which is a tenant of CCC which owns the beachfront and car park area. The Yacht Club expressed concerns that the scope of the DCO area was too broadly defined, that the extent of the area was not fully justified by the applicant and that it had concerns that the Yacht Club's building and/or its boats and other equipment stored adjoining the car park might be damaged during the works operations involved with construction and cable installation (REP7).
- 5.221. In response the applicant argued that the area defined needed to be broadly defined as the final cable landfall and transition pit had yet to be determined. Negotiations were in hand with land owners CCC but a final agreement had not been reached. It was intended:
- that a construction code of practice would be agreed with CCC
 - that there would be consultation with the Yacht Club and other interests in relation to the planning application to the City Council for the landward cable connection works from the proposed transition pit in the car park to the Red House Farm substation, and
 - that works would be managed carefully to avoid any damage to the Yacht Club premises, boats or equipment.
- 5.222. When the applicant submitted the planning application for the landward works to CCC it became clear that the works as envisaged did not occupy the whole of the landward Order area. It was therefore apparent that the full extent of the Order area had not been adequately justified and that it was not necessary to include the whole of the area as originally defined within the proposed Order.
- 5.223. An unaccompanied site visit was undertaken and I inspected the position of the Yacht Club premises and stored boats and equipment relative to indicative site of transition pit and cable connection (also confirmed in the planning application to CCC). The club premises were in close proximity but to one side of the car park site and there was no apparent need for the Order Area to include the yacht club premises and storage area. In response to my Rule 17 questions on

this point wherein a revised Order Area boundary was suggested, the applicant submitted a revised plan and Order Area boundary (REP87 Appendix 8). This reduced area sits within the scope of the original area and has therefore been fully addressed within the ES and stakeholder and public consultation undertaken at the pre-application stage.

- 5.224. It is noted that a Code of Construction Practice (CoCP) is to be agreed with CCC as LPA in relation to works above Mean Low Water, including the cable corridor and the transition pit within the DCO area as well as works outside the DCO Order limits that are subject to planning permission under the 1990 Act. Requirement 14 of the draft DCO requires a CoCP for the area covered by the DCO above MLW. Paragraph 4.3(e) of the SoCG with CC (REP 102) confirms that it is intended that the scope of the CoCP should also cover the transition pit construction works.

Conclusions in relation to Principal Issue 9

- 5.225. In the light of the submissions by the Yacht Club and the applicant, together with observations made during the unaccompanied site visit, it was concluded that the spatial extent of the submitted DCO limits in the area around the landfall point as shown on the Site Location and Order Limits Plan of the application documents (APP4) was not adequately justified by the applicant. Furthermore, the inspection of the site suggested that there could be potential for damage to arise from construction-related activities associated with the proposed development were consent to be granted including the extent of the Order area as submitted.
- 5.226. The applicant has subsequently provided an amended Order Limits Plan showing a reduced Order area around the landfall point (REP87 Appendix 8). The revised Order area now proposed by the applicant accords with the 'red line' application boundary shown in the planning application for landward works submitted to CCC. In the event that the Secretary of State decides to grant the Order it is

recommended that the amended Order area limits be adopted as the basis for the Order.

- 5.227. Subject to that important mitigating amendment, there is no other justification for refusal of the application on grounds of potential for damage to property around the landfall area.

Principal Issue 10 - The Development Consent Order and Other Consents

- a) Is the wording of the proposed Development Consent Order satisfactory in relation to other consents sought by the applicant?*
- b) Are there any gaps in consents coverage to which the applicant's attention should be drawn? Should any additional consents be sought by the applicant and included within the Development Consent Order?*
- c) Does the wording of the proposed Development Consent Order create any undesirable overlaps that could or would create confusion regarding implementation or enforcement?*
- d) Should the unilateral undertaking be given any weight?*

Post-Examination Draft Order

- 5.228. The draft DCO has evolved during the course of the examination. The applicant has produced three revisions to the application draft DCO, the last of which (REP87, Appendix 2) was produced in response to a draft DCO issued by the ExA for consultation after the hearings. The post-examination draft DCO at Appendix F to this report takes into account all the information provided during the examination including consultation responses and is my

recommended form of DCO should the Secretary of State decide to grant development consent.

Context: Order Relationship to Other Consents Required

- 5.229. The proposed DCO includes a DML. The MMO will be responsible for consideration of applications regarding approval of matters of detail as set out in the DML conditions and for monitoring and enforcement of compliance with those conditions.
- 5.230. The applicant's Planning Statement (APP86, paragraph 1.5) lists other parallel consents that are required outwith the scope of the DCO.
- 5.231. Other consequential consents would be related to detailed submissions needed to satisfy relevant DCO requirements or DML conditions.
- 5.232. During the examination, responses were sought from the interested parties to written questions regarding the matters set out in a) – c) above. No major concerns were raised by the parties.
- 5.233. As explained above, the applicant has made a separate planning application for related landward works outside the scope of the DCO, in order to provide the underground cable linkage from the landfall transition pit to Red House Farm sub-station where the project connects to the electricity grid.
- 5.234. A Protected Species Licence²⁰ from the MMO will be required in connection with the foundation piling works.
- 5.235. The EA has not indicated any requirement for additional consents.
- 5.236. There are no indications from any of the relevant consenting authorities that consent may be withheld for any element or process requiring consent and related to the proposals under examination.

²⁰ Under the Conservation of Habitats and Species Regulations 2010

Decommissioning

- 5.237. The points that I have raised in writing and at the hearings with the applicant include the justification for the inclusion of decommissioning provisions within the DCO and the need for greater clarification of the consenting framework for decommissioning.
- 5.238. The DCO is intended by the applicant to provide express development consent for maintenance. The application draft DCO included an extended meaning for the word 'maintain' including a number of words including decommission and refurbish. The ExA's draft DCO issued for consultation omitted some of these words from the definition, including refurbish and decommission, as it was not clear that the named activities, particularly decommissioning, were addressed sufficiently within the scope of the ES.
- 5.239. Justification for inclusion of those words was also required in the light of the inclusion of a proviso²¹ to the DML that it did not authorise decommissioning for which a separate Marine Licence may be required (REP87. appendix 6, paragraph 7.3.10). The MMO has indicated that decommissioning of the wind farm extension as a whole may require a separate Marine Licence Consent from the MMO.
- 5.240. The applicant has agreed to the amended definition of 'maintain' in the ExA draft DCO, subject to the reinstatement of the words 'refurbish' and 'decommission'.
- 5.241. The applicant argues that power to 'refurbish' is needed because it is *"essential that Vattenfall has the power to effectively construct and maintain the turbines for the lifetime for the development including if necessary replacing any defective parts or whole machines"*. It acknowledges that decommissioning is not typically considered as maintenance, but argues that it should be included in the definition

²¹ Included by the applicant at the request of the MMO

to avoid any doubt that there are powers to decommission at the end of the lifetime of the project.

- 5.242. If the application were to be granted consent by the Secretary of State there would be a need to ensure that the DCO provides for effective and appropriate decommissioning of the wind farm extension at the end of its life in order to ensure that unnecessary costs will not fall upon the public purse. There is, however, a lack of clarity regarding the practical and legal relationships between the scope and wording of the proposed DCO/DML (based upon the environmental information submitted with the KFE application under examination) and the separate Marine Licence that may be required for the detailed works of decommissioning the extension at the end of its operational life, likely to be at least 25 years hence.
- 5.243. The practicalities of environmental assessment also need to be borne in mind. As the decommissioning process is probably over 25 years distant it has only been possible for the applicant to include in the ES supporting this DCO application a broad outline of the anticipated decommissioning process, based on a 'worst case scenario'. Its relevance to what may be the eventual decommissioning process must be uncertain at this early stage, leading to questions regarding the value of including decommissioning into the DCO except in so far as to require that a programme of decommissioning shall be submitted to and approved by the Secretary of State prior to commencement of the authorised development (see Requirement 16 of the post-examination draft DCO at appendix F).
- 5.244. Acceptance of the applicant's position could raise the question of whether the proposed DCO wording would then provide adequate safeguards in respect of:
- a) appropriate limits to the scope of maintenance operations,
 - b) adequate provision for the detailed assessment of, and control over, the decommissioning process and related works, and

- c) scope to provide at the appropriate time for mitigation of any significant effects arising from decommissioning.

5.245. In the light of these points the post-examination draft DCO does not include decommission in the definition of 'maintain'. Requirement 16 of the post-examination draft provides for the submission of a written decommissioning programme for the approval of the Secretary of State before the development commences.

5.246. After due consideration of the applicant's argument regarding the inclusion of 'refurbish', the points made are accepted.

Other matters

5.247. Article 10 of the post-examination draft DCO reflects my conclusions in relation to Principal Issue 4 in respect of radar matters.

5.248. DML condition 5(7) requires the submission for approval by the MMO of an audit sheet covering all aspects of construction activities below mean high water level. Condition 5(8) then precludes commencement of licensed activities until the MMO has approved the audit sheet.

5.249. DML Condition 5(9) of the applicant's drafts, however, merely required any changes to the audit sheet to be notified to the MMO. The ExA's draft DCO required such changes to be approved by the MMO. The applicant has resisted this amendment, saying that the MMO considered the original provision to be sufficient and that a requirement for approval would add unnecessary administration and delays.

5.250. I accept the MMO's position, which has supported that taken by the applicant. DML condition 5(9) of the post-examination draft DCO therefore merely requires notification of any changes.

5.251. As noted above in relation to navigation under Principal Issue 4, the RYA expressed concerns about potential risks to navigation associated with cable protection works. The wording of DML

conditions 9(1)(i)(iii) and 9(1)(i)(iv) in the post-examination draft DCO, agreed between the applicant and the PLA, in my view now adequately addresses this issue.

Unilateral Undertaking

5.252. The applicant has submitted a unilateral undertaking made under s106 of the Town and Country Planning Act 1990 (APP87, Appendix 5), Heads of Terms for which were submitted with the application. The applicant has asked for this undertaking to be taken into account (APP86 para 9.158 and REP27 paras 10.7 and 10.8), referring me to paragraph 5.12.8 of National Policy Statement EN-1 'Overarching National Policy Statement for Energy'²².

5.253. For an undertaking under s106 to bind land – and hence successors in title to it – the person giving the undertaking must have an interest in the land. At the date of the undertaking (10 July 2012), the applicant had no interest in land. As the recitals to the undertaking explain:

"(E) The Developer requires a lease of rights over the Onshore Land from the Council (the "Developer's Interest"). The Developer has agreed with the Council that the undertaking will take effect on the granting of the Developer's Interest and will bind that interest"

5.254. No details of what rights were to be leased were given. As at the close of the examination, I am not aware that such a lease of rights has been granted. Insofar as a lease were subsequently granted, the interest bound by the undertaking could be no more than the rights granted by the lease.

5.255. A relevant footnote in EN-1 relating to development consent obligations is included at footnote 73:

'73 Where the words "planning obligations" are used in this NPS they refer to "development consent obligations" under section 106 of the Town & Country Planning Act 1990 as amended by section 174 of the Planning Act 2008.'

²² Paragraph 9.159 of the applicant's Planning Statement (application document 7.1) mistakenly refers to National Policy Statement EN-3.

- 5.256. The submitted undertaking confirms that the obligations relating to the provision of notice boards and the community fund contribution are development consent obligations.
- 5.257. It is noted that CCC (REP50), in its response to my Rule 17 question states that the unilateral undertaking is not needed to make the development acceptable in planning terms. This point was not disputed by the applicant in its response to Q17-9, as follows:

'10.4 In light of the above points, Vattenfall's view is that there need not be any closer or direct relationship with the potential impacts identified in the Local Impact Reports. This is supported by CCC's response to Q.J.11 (April 2012) which recognises the undertaking is not considered necessary to overcome planning objections but that it is seen as being beneficial to the wider community and is welcomed as such.'

10.5 As explained in Vattenfall's response to Q.J.10 (page 111 of Vattenfall's First Response) NPS EN-1 sets out that the decision maker should consider any relevant positive provisions the developer is proposing to mitigate impacts. As further explained in that response, it is for the decision maker to determine whether the development consent obligations are matters which are relevant and important to its decision.'

Conclusions relating to Principal Issue 10

- 5.258. In the light of the information set out above I have concluded that the post-examination draft DCO makes adequate provision for mitigation of effects identified in the applicant's ES and HRA (including the addendum to the initial HRA report), with the exception of in-combination effects upon the RTD - albeit that it should be remembered that the substantial majority of the identified in-combination effects arise from the two phases of the LA project rather than from the KFE project or any other scheme.
- 5.259. Should the Secretary of State decide to grant development consent for the KFE project, the wording of the post-examination draft DCO included at Appendix F is recommended as the basis for granting the Order. The proposed changes to the submitted draft DCO now included within the post-examination draft DCO all fall within the scope of the submitted ES and the pre-application consultation

- 5.260. In relation to the submitted unilateral undertaking, while the approach taken to the undertaking may not render it legally flawed, its terms might not be straightforward to enforce. Both the relevant local planning authority and the developer accept that the agreement is not necessary to make the development acceptable in planning terms – and furthermore the developer has indicated that the provisions of the undertaking offered are unrelated to either impacts identified in the ES or any of the local impacts identified in the local authority LIRs.
- 5.261. Although paragraph 5.12.8 of EN-1 indicates that the benefits of a proposal may be taken into account in assessing the overall balance between the positive and negative implications of a NSIP, any undertaking given must meet the relevant tests set out in relevant Government policy. These are set out in paragraph 4.1.8 of National Policy Statement EN-1, which states:
- 'The IPC may take into account any development consent obligations (as defined in s120 of the Planning Act 2008) that an applicant agrees with local authorities. These must be relevant to planning, necessary to make the proposed development acceptable in planning terms, directly related to the proposed development, fairly and reasonably related in scale and kind to the proposed development, and reasonable in all other respects.'*
- 5.262. It follows that the policy tests set out above must be complied with if the undertaking is to be capable of attracting weight in the overall assessment.
- 5.263. In the light of the content of the undertaking, and having regard to the statements made by the applicant and by the CCC, it is clear that the undertaking does not meet the tests set out in EN-1. Expenditure on appropriate community projects may convey benefits to the area, if delivered, but even if the undertaking becomes operative it is not put forward as being necessary to make the proposed development acceptable in planning terms, nor is there any direct relationship either in scale or kind to the proposed development. I therefore give it negligible weight in my assessment of the KFE project.

6 THE CASES FOR AND AGAINST DEVELOPMENT

6.1 This section selects and summarises what in my judgement, after consideration of all the information and evidence, including oral submissions at the examination hearings, are the key points arising from the examination that contribute to the cases for and against the proposed KFE development. Other points have been raised but the following section selects those that I consider to be central to the decisions to be taken by the Secretary of State both as CA for the purposes of the habitats regulations and as DCO decision-maker.

The Case against the Development

6.2 During the KFE examination it was observed that no parties made a clear, strongly worded argument that the application for development consent should be refused by the Secretary of State. However, a number of parties submitted representations and evidence related to the legal tests in the EC Habitats Directive and UK habitats regulations. The arguments presented would appear, if justified, to lead towards the refusal of the application due the provisions of the legal framework governing the decision. These arguments include submissions by NE, the RSPB and KWT.

6.3 Other parties raised concerns regarding impacts upon commercial fishing, aviation radars and navigation and the potential for damage to property around the landfall point but none of these other arguments lead necessarily towards refusal of the application.

6.4 The key points of the case against development include:

- Broad acceptance from the statutory parties, the local authorities and the nature conservation bodies that the application is for a relatively small project with effects that are likely to be proportionate when the KFE project is considered in isolation. No significant post-mitigation effects on protected species and sites were considered likely to arise from the project apart from disturbance and displacement of RTD.
- For reasons given in evidence, mitigation was considered important in relation to a number of factors related to effects upon the marine

biological environment, marine navigation, air navigation, radar, commercial fishing, socio-economic effects upon relevant fishing enterprises and fishermen and marine archaeology effects. However, none of these effects was argued to be so great as to justify refusal of the application once mitigation is taken into account.

- The potential effects of the KFE project upon RTD population abundance and distribution when considered in isolation are deemed 'significant' but very limited, even on a 'worst case' basis. The assessment calculates a disturbance/displacement 'interaction' effect generating additional RDT density across the SPA of only 0.5%. Notwithstanding this point, nature conservation bodies - including NE as the relevant statutory stakeholder - raised serious concerns regarding the in-combination disturbance and displacement effects of the project when considered in combination with other relevant existing and planned wind farm projects. NE argued that the habitats assessment baseline for the consideration of effects on RTD should include the Kentish Flats wind farm and both LA Phase 1 and LA Phase 2, in addition to Gunfleet Sands I and II. All these projects are listed in the in-combination assessment agreed between the applicant and the relevant nature conservation parties, which illustrates a large cumulative disturbance/displacement effect. If only the three constructed wind farms within the SPA (Kentish Flats, Gunfleet Sands I & II and LA Phase 1) are taken into account in the in-combination assessment this effect amounts to 11.3%, equivalent to 709 divers out of the citation population of 6,466. If constructed and operated the KFE project would add a further 0.5% effect, equivalent to 33 birds, bringing the in-combination effect up to 11.9% (742 birds). The addition of LA Phase 2 adds a further 13.5%, equivalent to 843 divers, giving an in-combination displacement effect from the existing, under construction and planned wind farms within the SPA boundaries of 25.4% or 1,585 divers.
- Both NE and LAL argue that the full potential extent of LA Phase 2 must be taken into account in the cumulative assessment.
- Exclusion of the Kentish Flats wind farm (1.2% disturbance/displacement effect or 72 birds) from the assessment makes only a little difference to the overall conclusion that the in-combination effects of the full extent of the relevant wind farms provide reasonable scientific grounds for doubt as to the absence of an adverse effect on the integrity of the OTE SPA.
- The great majority of the assessed in-combination effect arises from LA Phases 1 and 2 (see above the calculation set out at paragraphs 4.117ff of this report and Matrix 10 of the RIES) - a point accepted by LAL, the applicant and the nature conservation parties.

- In relation to the LA project's potential effects, irrespective of the potential effects of the proposed LA Phase 2 NE advises that the re-assessed potential effects of LA 1 in combination with Kentish Flats and Gunfleet Sands I and II (applying Model 3) are such as to raise reasonable scientific doubt as to the lack of an adverse effect on the integrity of the SPA. This conclusion updates the findings of the habitats assessment supporting the LA s36 application consented by the Secretary of State in 2006, which was based on a different, theoretical, model rather than Model 3 now advanced by Vattenfall's HRA assessment and addendum, which is based upon the JNCC's survey data. Neither the applicant nor LAL have challenged NE's argument on this point. The applicant relies on the Secretary of State's previous approval of the LA Phase 1 project.
- NE, RSPB and KWT argue that the increase in diver density within the SPA as a result of their displacement from the areas occupied by wind farms and the surrounding buffer areas out to at least 2Km (and probably over 3Km) could create pressures upon the remaining areas of suitable habitat within the SPA boundaries, leading to additional stress and mortality for birds across the SPA as a whole. NE estimates that the increase in density would be at least 15% and suggests that it is likely for various reasons to exceed that figure by some margin. This is a key reason given for scientific doubt as the absence of an adverse effect upon the integrity of the SPA.
- At the habitats hearing NE's expert scientific witness confirmed that expected RTD annual mortality from natural causes is around 16%. He speculated (on the basis of mortality studies for oystercatchers) that, over and above the expected rate of mortality, if the offshore wind farm projects assessed in the combination assessment were to be constructed and brought into operation, additional RTD mortality resulting from disturbance, displacement and increased density in the SPA feeding grounds could amount to between 30%-60% of the displaced number of birds rather than the precautionary 100% assumed in the applicants' calculations. It was suggested that 30%-60% was a more realistic mortality rate and that 100% might be an over-precautionary assumption.
- On the basis of the estimated figures provided by NE, if it is reasonable to 'read across' from studies for another species and if the resulting speculative estimate is broadly accurate, then on the basis of the interaction values based on the JNCC survey data included in the assessment for the proposed KFE project alone this could mean a mortality of up to 9.9 -19.8 (rounded up to 10-20) birds per annum. However, because it was established during the hearings that the JNCC figures rely on 'undisturbed' data gathered prior to construction of the Kentish Flats wind farm rather than post-construction monitoring data, these 'in-isolation' figures for KFE are likely to be over-precautionary. In any event it would appear that the level of RTD mortality resulting from the

development of the KFE project in isolation is likely to be very low indeed or negligible.

- Estimation of the cumulative impact for the existing, under-construction and planned wind farms within the OTE SPA is problematic. Based on the 'worst case' in-combination interaction value of 25.4% or 1585 birds (including the effects of Kentish Flats and the KFE project) a mortality range of 30%-60% could mean additional 'worst case' annual mortality of between 476-951 of the citation population of 6,466. The red-throated diver is a long-lived bird with a relatively slow rate of breeding. For this reason the population would be unlikely to be maintained in a favourable condition if that rate of displacement-related mortality was sustained over a period of years.
- On the other hand, if it is concluded that the existing Kentish Flats wind farm should be excluded from the assessment and it is also taken into account that the Secretary of State has control over the future scale and extent of the LA2 project (and thereby its likely interaction rate), these points would have a significant affect upon the assessment. Based on 30%-60% mortality of displaced birds, if the proposal for KFE is counted into the calculation, a more realistic estimate of the worst case RTD mortality if the existing Kentish Flats wind farm is excluded and the level of development at LA2 is minimal would lie in a range between 191-383 deaths per annum over and above the 16% (1000 birds) annual mortality from natural causes estimated by NE. This would represent an increase to the RTD mortality rate of between 19.1% and 38.3%.

6.5 Based upon these estimated mortality figures it would appear that there are reasonable scientific grounds for doubt regarding the absence of an adverse effect on the integrity of the OTE SPA when the results of an in-combination assessment of the full potential extent of the relevant wind farm projects is taken into account. Having regard to the habitats assessment figures agreed between the applicant and the nature conservation bodies, if the advice of NE is accepted regarding scope for reasonable scientific doubt as to the absence of an adverse effect on the integrity of the SPA it follows that the application should be rejected on habitats grounds if an assumption of full development of the maximum potential extent of the relevant planned wind farms is made in the in-combination assessment, as suggested by NE and LAL.

The Case for the Development

- 6.6 If developed, the KFE project would contribute towards meeting the national need for low carbon renewable energy identified in National Policy Statement EN-1 by providing energy equivalent to the needs of up to 35,000 households. The extension would supplement the electricity generation capacity of the existing Kentish Flats wind farm to the extent that, when considered together, the extended wind farm would meet the generation capacity threshold for a NSIP set out in s15 of the PA2008.
- 6.7 It is clear from the evidence submitted that potentially significant adverse effects apart from those upon the RTD and those on radar are likely to be localised and limited in scale or severity. In relation to these other types of impact, potential significant effects may all be mitigated through conditions attached to the DML or through requirements attached to the DCO.
- 6.8 All details reserved by DML conditions will require assessment and discharge by the MMO after consultation with relevant stakeholders.
- 6.9 There could be significant aviation radar effects upon Manston and Southend Airports but it is agreed between the parties that a technical solution is likely to become available in the near future. The post-examination draft Order makes provision for this through inclusion of a 'Grampian' suspensive requirement based on the condition applied by the Secretary of State for the Westernmost Rough offshore wind farm consent.
- 6.10 The ES and HRA report (read together with the HRA addendum) identify the relevant potential effects associated with the KFE proposal when considered in isolation or in combination. They demonstrate that the only significant effects that cannot be adequately mitigated relate to the potential in-combination effects of the project upon RTD when considered in combination with the full extent of other relevant existing, under-construction and

planned offshore wind farm projects located in the OTE SPA. There may be also be significant effects if relevant planned projects were brought forward at a smaller scale, but no evidence was submitted regarding that point and NE was consistent in its position that no impact threshold has been identified where a significant or adverse effect is likely to arise and conversely a level below which no such impact is likely to arise.

6.11 In relation to the question of whether there are grounds for reasonable scientific doubt regarding the absence of an adverse effect upon the integrity of the SPA the applicant's position appears to be that:

- The extent of volatility in natural change illustrated by the survey records for the annual and monthly population numbers for RTD, when compared to the very limited or negligible assessed disturbance effect of the KFE project upon RTD densities and displacement, indicates that when considered in isolation the project is likely to make relatively little or negligible impact upon RTD population and distribution.
- The Kentish Flats and LA2 schemes should not be taken into account in the in-combination assessment
- NE suggests that the in-combination assessment of displacement effects including the LA1 project (but not LA2), provides grounds for reasonable scientific doubt that no adverse impact on the integrity of the OTE SPA has arisen or may arise. However, the Secretary of State considered the likely effects of LA Phase 1 in isolation and in combination with other existing and planned projects and granted consent for that development. The applicant contends that the effects of LA Phase 1 (in isolation or in combination with other projects) should not, therefore be considered as providing grounds for doubt as to the effect on the integrity of the SPA.

6.12 Drawing upon these arguments, the applicant suggests that the residual effects arising from the KFE project, when considered in combination with the other smaller projects and excluding the effects of the Kentish Flats and LA Phase 2, should not be considered as providing grounds for reasonable scientific doubt as to an adverse effect on the integrity of the OTE SPA. Therefore, although the position in relation to the likely in-combination effects

upon RTD may trigger the threshold for 'significance', in the absence of any significant in-isolation effect (as agreed with the nature conservation bodies) and any demonstrable in-combination adverse effect upon integrity of the SPA when Kentish Flats and LA2 is excluded from the cumulative assessment, there are no habitats-related grounds upon which the application should be rejected.

- 6.13 In the light of the applicant's conclusions it has submitted no case for consideration under the IROPI procedure set out in Article 6(4) of the EC Habitats Directive.

7 OVERALL CONCLUSIONS & RECOMMENDATION

7.1 In this section I set out my overall conclusions in relation to the evidence submitted to the examination and present my recommendation to the Secretary of State.

7.2 Section 104 of the Planning Act 2008 (PA2008) applies because there are national policy statements in effect in relation to energy generation projects. The Secretary of State is required²³ to have regard to various matters in deciding the KFE application:

- Relevant national policy statements – policy statements EN-1 (Overarching Energy NPS) and EN-3 (Renewable Energy Infrastructure NPS)
- Appropriate marine policy documents – the Marine Policy Statement
- Any local impact reports (LIRs) submitted by relevant local authorities within the deadline imposed in a notice under section 60(2) PA 2008 – LIRs have been submitted by Kent County Council and Canterbury City Council
- Any matters prescribed in relation to energy generating development. The Infrastructure Planning (Decisions) Regulations 2010 contain prescribed matters relevant to this application, in relation to the deemed marine licence²⁴ and in relation to biological diversity²⁵.
- Any other matters which the Secretary of State thinks are both important and relevant to the decision.

²³ See section 104(2)

²⁴ Regulation 3A

²⁵ Regulation 7

- 7.3 The Secretary of State must decide the application in accordance with any relevant national policy statement except to the extent that certain exceptions apply²⁶.
- 7.4 Additionally, of course, the Secretary of State will be a 'competent authority' for the purposes of the habitats regulations²⁷. The Secretary of State will need to assess the implications of the proposed development on a number of European sites; the habitats regulations place constraints on the circumstances in which consent may be granted.

Overall Conclusions

- 7.5 ***Compliance with National Policy Statements and appropriate marine policy document*** - National Policy Statement EN-1 addresses the need for renewable energy and indicates that there is a proven national need such that examining authorities are not required to consider need for renewable energy generation capacity in relation to individual projects. The proposed wind farm extension could provide low carbon renewable electricity generation capacity sufficient to provide electricity for up to 35,000 households. In all other respects apart from consideration of the effects upon habitat discussed below - and subject to the mitigation requirements and conditions included within the post-examination draft DCO – it is clear that the application, as amended and updated to take account of points raised during the examination, meets the requirements of National Policy Statements EN-1 and EN-3 and relevant provisions of the Government's Marine Policy Statement.
- 7.6 ***Local impacts*** – s104(2)(b) of the Planning Act 2008 as amended provides that consideration must be given to any Local Impact Report submitted within the relevant deadline. The two LIRs submitted to the examination (by Canterbury CC and Kent CC) do not consider the habitats issues. Having regard to the content of

²⁶ Broadly, if to do so would breach UK international obligations, or another statutory duty of the Secretary of State, or would be unlawful under another statute, or where the adverse impacts outweigh the benefits, or any other prescribed exception applies

²⁷ The Conservation of Habitats and Species Regulations 2010

the two reports I consider that there are no local impacts identified by the local authorities that - subject to appropriate mitigation - would be so adverse as to justify refusal of the application. The local authorities' observations regarding the need for appropriate mitigation are fully considered in this report. The mitigation I consider to be required is identified in the post-examination draft DCO included at Appendix F.

7.7 *International obligations, statutory duties and other legal requirements* – s104(3) of the Planning Act 2008 requires that the Secretary of State must decide the application in accordance with any relevant national policy statement, except to the extent that one or more of the exceptions in s104 subsections (4)-(8) applies. I have already concluded that the KFE project complies with the relevant national policy statements.

7.8 It appears from the all information and evidence reviewed during the examination that, subject to the adoption of the mitigation provisions included in the post-examination draft Order, the only issue that could justify a departure from the NPSs relates to the assessment of the impact of the proposal on the integrity of the Outer Thames Estuary Special Protection Area (OTE SPA), to which the provisions of the EC Habitats and Wild Birds Directives and the UK habitats regulations apply. This was identified as a Principal Issue at an early stage in consideration of the application and is considered in my findings and conclusions at paragraphs 4.4 *et seq* above.

7.9 The principal remaining questions are therefore whether the grant of consent would:

- lead to the UK being in breach of any of its international obligations – such as the Habitats and Wild Birds Directives, or

- lead to a breach of any duty imposed on the Secretary of State by or under any enactment – such as the duties of the competent authority under the habitats regulations, or
- be unlawful, or
- result in the adverse impact of the proposed development outweighing its benefits, or
- be contrary to any condition prescribed for deciding the application otherwise than in accordance with EN-1 and EN-3.

7.10 The impact of the proposal on the SPA is thus relevant to several overlapping exceptions to the Secretary of State's general duty to decide the application in accordance with the NPSs. For convenience I will consider these exceptions under the general umbrella of whether the adverse impacts of the proposed project would outweigh its benefits (s104(7)).

Benefits of the KFE project

7.11 The benefits of the KFE project are clear. As indicated above the proposed wind farm extension could provide low carbon renewable electricity generation capacity sufficient to provide electricity for up to 35,000 households. It is not disputed between the parties that this renewable energy project would contribute towards meeting the national need for renewable energy identified in National Policy Statement EN-1.

Impacts of the KFE project – in isolation

7.12 The wording of s104(7) of the PA2008 refers solely to the assessment of '*adverse impact of the proposed development*' (my emphasis). Unlike the EC Habitats Directive and the habitats regulations, s104(7) does not require an in-combination assessment that takes into account the effects of other projects in addition to the effects of the project itself. It is common ground between the applicant and the nature conservation bodies, including NE, that the KFE project's disturbance and displacement effects upon red throated diver are very small when considered in

isolation. Other potentially significant adverse effects may be mitigated adequately through the provisions included in the post-examination draft Order.

- 7.13 Having regard to these points, when the KFE project is considered in isolation, its economic and social benefits in terms of the contribution to renewable energy generation would outweigh the very small (negligible) adverse disturbance and displacement effects upon red throated diver and any other residual adverse effects that have the potential to arise from the project following appropriate mitigation.
- 7.14 Notwithstanding that conclusion, the provisions of other parts of s104 require compliance with the provisions of international obligations and national statutes. This would include the environmental impact assessment, habitats and wild birds directives and the regulations that transpose their provisions into UK law that require regard to be had to the results of cumulative assessment.

Impacts of the KFE project – in combination with other existing, under-construction and planned projects

- 7.15 The habitats regulations have been updated by SI 2012 No. 1927 *The Conservation of Habitats and Species (Amendment) Regulations 2012*, which add a new regulation 9A to clarify and confirm provisions in relation to statutory duties.
- 7.16 In the light of the provisions under the recently amended habitats regulations, the decision-making process undertaken by the Secretary of State will need to have regard, *inter alia*, to the preservation, maintenance and re-establishment of a sufficient diversity and area of habitat for wild birds within and outside the OTE SPA including by means of the upkeep, management and creation of such habitat, having taken into account:
- economic and recreational requirements, and

- the need to avoid pollution or deterioration of the wild bird habitat.

- 7.17 Additionally, there is no dispute that the Secretary of State will have to carry out an appropriate assessment under the habitats regulations before coming to a decision on this application.
- 7.18 The cumulative (in-combination) requirements of the EU Habitats and Wild Birds directives are clear and well-defined. As confirmed by the *Waddenzee* judgement by the European Court of Justice²⁸ they allow little scope for flexibility, although in my view they do not remove the obligation upon decision-makers to have regard to the principle of proportionality in making their decisions.
- 7.19 The relevant projects for the purposes of the cumulative assessment have been agreed between the applicant and NE²⁹
- 7.20 The RIES (see Appendix E) and the responses received to consultation upon it are intended to inform the Secretary of State's appropriate assessment. They represent the latest information available to me on this issue as at the close of the examination. For reasons that I come to later in these conclusions, I anticipate that they will not, however, represent the latest information available to the Secretary of State at the time he comes to make his appropriate assessment.

Assessment of cumulative impacts on the information available at the close of the examination

- 7.21 For the purposes of the assessment of cumulative impacts under the habitats regulations, I consider that it is necessary to consider development at the maximum scale and extent of the relevant existing, under-construction and planned wind farm projects on a precautionary basis.

²⁸ C-127/02

²⁹ See SoCG (REP106) Table 2

- 7.22 On the information presented to the examination, I accept that the level of likely in-combination disturbance and displacement effects upon red throated diver within the SPA is likely to be such that the absence of an adverse effect upon the integrity of the Outer Thames Estuary SPA cannot be excluded on reasonable scientific grounds.
- 7.23 The great majority of these assessed effects arise from LA1 (currently under construction and nearing completion) and the proposed LA2 (planned but not, as at the close of my examination, the subject of detailed design and submission to the Secretary of State).
- 7.24 All relevant parties have agreed that Model 3 (2km buffer density model) is the appropriate model for the purposes of assessing displacement effects in this case (see paras 4.82 *et seq* above). NE advises (Tim Hall, REP58) that using this model, a calculation based solely on the effects of LA1 and the other existing WFs and excluding any effects from LA2 provides grounds for reasonable scientific doubt that there will be no adverse effect upon the integrity of the OTE SPA.
- 7.25 However, I have concluded that the existing Kentish Flats wind farm should have been excluded from the in-combination assessment (see para 4.97). If the Secretary of State agrees with that conclusion then the figure for the in-combination effect would reduce by 1.2% from 11.9% (the figure if Kentish Flats, LA1, Gunfleet Sands I and II and KFE are included) to 10.7% (see table at para 4.142 and discussion of habitats issue in chapter 4, specifically para 4.146).

The uncertainties introduced by LA2

- 7.26 LA2 is consented, but subject to a condition that no further phases should take place without the prior approval of the Secretary of State. That approval would be dependent upon results from

monitoring of the surveyed effects of Phase 1. The scale of Phase 2 is not yet defined.

- 7.27 The appropriate assessment for the London Array application carried out in 2006 (REP70) indicated that, if developed to its maximum assessed extent³⁰, there would be an in-isolation displacement effect estimated in the LA appropriate assessment as 12.6%³¹ and an in-combination effect of relevant projects within the SPA of 24.2% (including Gunfleet Sands I and II, LA 1, LA2 and KFE but excluding Kentish Flats)³².
- 7.28 On the basis of the agreed model – Model 3 - the applicant and NE agree that the extent of LA2 implied by the 'EIA Layout' assessed in the LA ES would generate an estimated 13.5% disturbance and displacement effect³³. When considered in combination with other relevant existing, under-construction and planned wind farm projects LA2 could therefore have the potential to provide grounds for doubt as the absence of an adverse effect on the integrity of the SPA when considered in combination with other relevant projects.
- 7.29 On the other hand if the scale of development proposed for LA2 were to be substantially less than the maximum extent that would make a large difference to the result of the in-combination assessment and would reduce the assessed impacts proportionately.
- 7.30 Because the LA2 project is likely to require a further update to the London Array ES and HRA reports, a further appropriate assessment by the CA and a further set of habitats test decisions, the Secretary of State may have the opportunity to take account of the circumstances at the time of determination of the LA2 'Grampian' application. He will also have the benefit of more up to date digital aerial survey information and recent monitoring information for LA1 rather than estimates for the SPA based on

³⁰ "the EIA layout"

³¹ See page 31

³² See table at para 4.142

³³ See SoCG (REP 106) table 3

survey data gathered up to 2007 only (currently the best available to the KFE examination).

- 7.31 LAL indicated that an application to the Secretary of State seeking consent for the details of Phase 2 was anticipated in the near future but the application was not submitted to the timescale originally indicated to the examination and no revised date for submission was provided. On the evidence available to the examination, it is therefore uncertain whether the full extent of the LA2 project considered in the KFE cumulative assessment would be proposed.
- 7.32 The proposal could turn out to be substantially different in scale and extent to the 'worst case effects' scenario previously reviewed in the London Array ES and appropriate assessment to an extent that could potentially affect the outcome of an 'integrity test'.
- 7.33 In any event the LA2 application would need to be assessed on the basis of an appropriate model supported by the latest survey and monitoring evidence.
- 7.34 The assessment of in-isolation and cumulative effects of the assessed wind farm projects upon the RTD's population abundance and distribution in the OTE SPA indicates that the KFE project, would generate an interaction value (displacement effect) of only 0.5% when considered in isolation but that the in-combination assessment interaction value totals 10.7%, excluding the existing Kentish Flats and LA2 but including KFE, LA1 and Gunfleet Sands I and II (see table at para 4.142 above).
- 7.35 On page 30 of the LA appropriate assessment report prepared in 2006, the Secretary of State considered that LA1 would give rise to an in-combination displacement effect of around 3.4% (this was calculated on the basis of what is described by Vattenfall in this application as Model 1). Given the terms of the LA consent it is clear that this level of displacement was considered acceptable subject to various mitigation conditions. However, on page 31 the appropriate assessment report further considered that in the light

of a total long term cumulative effect of 12.6% it was not possible to ascertain that there would not be an adverse effect on the integrity of the OTE SPA site.

- 7.36 Assuming that no more up-to-date information about LA2 is available, it will be for the Secretary of State's appropriate assessment of the KFE project to decide:
- a) disregarding the issue of LA2, whether the 10.7% cumulative level referred to above is an appropriate basis for assessment of the impact (i.e. including Kentish Flats in the baseline and excluding it from the calculation of in-combination effects);
 - b) whether there is further information that might reduce the very high level of uncertainty identified in relation to the scale of LA2 and how it should be included in the appropriate assessment;
 - c) whether the assessed level of in-combination effect provides reasonable scientific grounds for uncertainty or doubt as to the absence of an adverse effect on the integrity of the OTE SPA.
- 7.37 In relation to c) above the Secretary of State may wish to consider how the very small or negligible contribution that would be made by KFE alone to increased density across the SPA as a whole should be taken into account, as sought by the applicant.
- 7.38 The LA appropriate assessment indicated on the basis of information then available that it was not possible to ascertain that development of the full extent (EIA layout) of LA2 would not lead to an adverse effect on the integrity of the SPA. The information and evidence submitted to the KFE examination confirms the conclusions of that assessment, although because a substantial part of the data used in the KFE assessment is the same as that used for the LA assessment, consistency of results is not surprising.

- 7.39 If the full extent of LA2 is taken into account in the in-combination assessment then the resulting very high level of assessed in-combination disturbance and displacement effects would point to refusal on the grounds that an adverse impact on integrity of the SPA could not be ruled out.
- 7.40 However, the particular circumstances of the KFE application raise an important issue, in that the Secretary of State has previously concluded in the LA appropriate assessment that it was not possible to ascertain that the full extent of LA2 (based on 'the EIA layout') would not create an adverse effect on integrity.
- 7.41 Vattenfall has argued, therefore, that the full extent of LA2 should not be included in the KFE in-combination assessment as that would be an unrealistic assumption and that the eventual LA2 proposal is therefore likely to be much reduced in scale from that implied by the full EIA layout. Nevertheless, the LA2 project has received a consent and that must be taken into account.
- 7.42 LAL confirmed its intention to make an application for LA2 and that it was working on the application. However, no application had been made by the close of the examination.
- 7.43 If the Secretary of State's (CA's) appropriate assessment of the KFE project ultimately concludes that the in-combination effects provide reasonable scientific grounds for uncertainty or doubt as to the absence of an adverse effect on the integrity of the OTE SPA, then approval of the application in the absence of consideration of alternatives and an IROPI justification would be unlawful and would lead to the UK being in breach of its international obligations in relation to protection of designated European Sites.
- 7.44 Approval in such circumstances would also represent a breach of the duties placed upon the Secretary of State as competent authority.

- 7.45 On the other hand if the appropriate assessment decides that the in-combination effects provide no reasonable scientific grounds for uncertainty or doubt as to the absence of an adverse effect on the SPA then the application may be approved.
- 7.46 In my view, only the habitats concerns arising from the cumulative assessment could provide potential grounds for refusal of the KFE project DCO application. Given the relatively small scale of the proposed extension and since the benefits of the proposed development would outweigh the negligible adverse impacts when the proposal is considered in isolation, I have given careful consideration to the recommendations to be made on the basis of these findings and conclusions.
- 7.47 The principle of proportionality must apply to any quasi-judicial decision. In this context it was noted that at the habitats hearing the NE witness Dr Richard Caldow confirmed that development of the KFE project would not alter materially the position in relation to the potential for an adverse impact upon the integrity of the OTE SPA that would apply due in the main to effects arising from the LA project. The very large 'planned' component of LA, namely LA2, will fall within the control of the Secretary of State as and when the application to discharge the suspensive condition is submitted. At the time of writing, whether an application for LA2 is to be made and its scale are both uncertain. An assumption of the maximum extent of the project clearly has significant effect on the outcome of the integrity test.
- 7.48 In these circumstances it appears likely that the LA2 proposal will be reduced in scale from the maximum extent considered as raising uncertainty as to the absence of an adverse effect on integrity in the LA appropriate assessment.
- 7.49 Accordingly there is a risk that taking the full extent of LA2 into account in the KFE cumulative assessment could create potential for unfairness. This could arise in the event that the KFE application

was to be refused by the Secretary of State on account of that in-combination assessment, but subsequently either the LA2 application was for some reason not submitted (despite LAL's expressed intentions) or the application includes a much smaller proposal that does not lead to uncertainty regarding the absence of an adverse impact upon integrity.

- 7.50 Setting aside the uncertainties arising from the potential cumulative impact of existing, under construction and planned projects in the SPA, the balance of benefits of the KFE project considered in isolation is in favour of the project's approval.

Recommendation

- 7.51 This report has considered these matters to the extent practicable in the light of the information and evidence submitted during the examination of this DCO application.
- 7.52 Based on the evidence available to me at the examination, an adverse effect on the integrity of the OTE SPA could not be ruled out on reasonable scientific grounds. This is largely due to the impact not of the KFE project itself, which has a minimal impact, but of LA2, which I consider must be taken into account as a planned project for the purposes of in-combination assessment under the habitats regulations. No application for LA2 had been submitted by the close of the examination and so the in-combination assessment necessarily included a 'worst case' scenario for the scale, extent and impact of LA2.
- 7.53 This scenario seems unlikely based on the evidence submitted. It also seems very unlikely that LAL will make an application for LA2 unless they believe that the project would not give rise to uncertainty regarding the absence of an adverse impact on the integrity of the SPA. However, while I am not in a position to make assumptions regarding the outcome of the appropriate assessments regarding KFE and LA2 to be carried out by the Secretary of State before making his decisions, I am able to take into account the

potential risk of unfairness in drafting my recommendation regarding the KFE DCO application.

- 7.54 The Secretary of State's assessment will be carried out on the basis of the information available to him at the time. In this case there is a likelihood that the information available to him will be greater in extent than the information available to my examination of this application, particularly in relation to the proposed scale and extent of the LA2. The application for it was said to be imminent.
- 7.55 I would expect that application to provide more information not only about the proposed scale and extent of the project, but also additional information derived from more recent monitoring of the impacts of wind farm development in the OTE SPA than was available to me during the course of the examination.
- 7.56 On the other hand, in the event that the Secretary of State's appropriate assessment concludes that there are reasonable scientific grounds for concluding that an adverse impact on the integrity of the Outer Thames Estuary Special Protection Area from relevant projects cannot be ruled out, then he will, of course, need to take that conclusion into account in deciding this DCO application.
- 7.57 The following recommendation to the Secretary of State takes these points into account and indicates my view based upon all the information and evidence before me at the close of the examination.
- 7.58 **Subject to the outcome of his appropriate assessment, it is recommended that the Secretary of State grants the application for development consent for the KFE project. The Order is recommended to be made on the basis of the provisions set out in the draft Order at Appendix F to this report.**

APPENDIX A – THE EXAMINATION

The table below lists the main ‘events’ occurring during the examination and the main procedural decisions taken by the ExA.

Date	Examination Event
22 February 2012	Preliminary Meeting
5 March 2012	Notification by ExA of procedural decision including confirmation of the examination timetable and first written questions under Rule 8 of the Infrastructure Planning (Examination Procedure) Rules 2010
14 March 2012	Deadline for receipt by the ExA of: <ul style="list-style-type: none"> • Data related to the monitoring of the LA offshore wind farm.
1 April 2012	Functions of the IPC are transferred to The Planning Inspectorate (National Infrastructure Directorate) as a result of the amendments to the PA2008 made by the Localism Act 2011.
5 April 2012	Deadline for receipt by the Examining Authority of: <ul style="list-style-type: none"> • Responses to the ExA’s Written Questions • Responses to the submitted draft DCO and the Schedule of DCO corrections and amendments issued by the ExA. • Applicant’s revised draft DCO. • Written Representations (including summaries of any Written Representations of more than 1550 words) • LIR from relevant local authorities • SoCGs regarding: <ul style="list-style-type: none"> - Biological Environment and Ecology, (including data contained in applicant’s HRA report). - Fish and Fishing - Radar, navigation and search and rescue - Other SoCG’s to be submitted by the applicant • Any analysis of information emerging from

- the monitoring of LA
- Notification of wish to be heard at an Open-floor Hearing by Interested Parties
 - Notification by Interested Parties of wish to make oral representations at any issue specific hearings
- 18 April 2012 Deadline for receipt by the ExA of:
- Supplementary SoCG regarding interpretation, analysis and assessment of additional information emerging from the monitoring of LA
- 24 April 2012 Notification by ExA of:
- Hearings under Rule 13
 - ExA's requests for further information and Written Comments under Rule 17
- 27 April 2012 Notification of arrangements for offshore site inspection on 29 May 2012 under Rule 16
- 11 May 2012 Deadline for receipt by the ExA of any written comments regarding:
- Responses to the ExA's written questions
 - Relevant Representations
 - Written representations
 - SoCGs
 - LIRs
 - Any additional information emerging from the monitoring of LA
 - The applicant's revised draft DCO and any other contributions regarding the schedule of corrections issued by the ExA
- 19 May 2012 Deadline for Interested Parties to notify the ExA of:
- Which hearing session(s) they wish to attend
 - If they wish to speak at the hearing.
- And provide:

- Written summaries of the matters they wish to raise
- 29 May 2012 ExA's offshore site inspection in the company of interested parties
- 30 May 2012 (am) Hearing regarding DCO requirements, related LIR matters and DML
- 30 May 2012 (pm) Hearing regarding biological environment, ecology and fishing
- 31 May 2012 (am) Hearing regarding Habitats Regulations aspects and information to support the appropriate assessment
- 31 May 2012 (pm) Hearing regarding identified specific issues including visual effects, radar effects, marine archaeology, and damage to property around cable landfall and transition pit
- 1 June 2012 Notification of revision to Examination Timetable under Rule 8 (3)
- 6 June 2012 ExA's requests for further information and comments under Rule 17
- 7 June 2012 Deadline for receipt by the ExA of:
- Written summaries of any case put at any preceding hearing
 - Applicant's final draft DCO
- 8 June 2012 Deadline for CCC to comment on the applicant's proposed Unilateral Undertaking
- 13 June 2012 Deadline for:
- Written summaries of any case put at the hearings on 30 and 31 May 2012
 - Applicant's final draft DCO
- 19 June 2012 Deadline for receipt by the ExA of:
- Comments on CCC's submission due by 8 June 2012
 - Responses to ExA's questions under Rule 17 issued by letter on 6 June 2012

28 June 2012	Notification of: <ul style="list-style-type: none">• ExA's Draft DCO and Report on the Implications for European Sites issued for comment• Requests for further information under Rule 17• Revised timetable
16 July 2012	Deadline for receipt by the ExA of: <ul style="list-style-type: none">• Any written comments on the draft appropriate assessment
23 July 2012	Deadline for receipt by the ExA of: <ul style="list-style-type: none">• Any written comments on the ExA's draft DCO• Any written comments on the Report on the Implications for European Sites• Responses to questions issued under Rule 17 by the letter of 28 June 2012
7 August 2012	Request for further information under Rule 17
14 August 2012	Deadline for responses to the letter of 7 August
20 August 2012	Examination closes at 15:00

APPENDIX B – LIST OF THOSE WHO ATTENDED HEARINGS

Issue Specific Hearing regarding the DCO, requirements, related Local Impact Report matters and Deemed Marine Licence

30 May 2012-11-01

NAME	ORGANISATION
Glyn Roberts	Examining Authority
Simone Wilding	Planning Inspectorate
Goran Loman	Vattenfall
Melanie Rogers	Vattenfall
Liz Dunn	Burges Salmon on behalf of Vattenfall
Sophie Summers	Burges Salmon on behalf of Vattenfall
Paolo Pizzolla	Royal Haskoning on behalf of Vattenfall
Tim Hall	Natural England
Alan Gibson	MMO
Peter Jones	MMO
Christopher Pater	English Heritage
Louise Cox	CEFAS
Daniel Bastreri	CEFAS

Issue Specific Hearing regarding the Biological Environment, Ecology and Fishing

30 May 2012-11-01

NAME	ORGANISATION
Glyn Roberts	Examining Authority
Simone Wilding	Planning Inspectorate
Robert Hanson	Planning Inspectorate
Goran Loman	Vattenfall
Melanie Rogers	Vattenfall
Kathy Wood	Vattenfall

Jesper Larsen	Vattenfall
Liz Dunn	Burges Salmon on behalf of Vattenfall
Sophie Summers	Burges Salmon on behalf of Vattenfall
Paolo Pizzolla	Royal Haskoning on behalf of Vattenfall
Stephen Appleby	Brown Bay Marine on behalf of Vattenfall
Steven Percival	Ecology Consulting on behalf of Vattenfall
Alan Gibson	MMO
Peter Jones	MMO
Louise Cox	CEFAS
Daniel Bastreri	CEFAS
Lindsay Ollpsdell	LAL (London Array Ltd)
Andy Kennedy	KEIFCA

Issue Specific Hearing regarding Habitats Regulations aspects and information to support the appropriate assessment

31 May 2012-11-01

NAME	ORGANISATION
Glyn Roberts	Examining Authority
Simone Wilding	Planning Inspectorate
Robert Hanson	Planning Inspectorate
Gail Boyle	Planning Inspectorate
Goran Loman	Vattenfall
Melanie Rogers	Vattenfall
Kathy Wood	Vattenfall
Jesper Larsen	Vattenfall
Ben Gowers	Vattenfall
Liz Dunn	Burges Salmon on behalf of Vattenfall
Sophie Summers	Burges Salmon on behalf of Vattenfall
Paolo Pizzolla	Royal Haskoning on behalf of Vattenfall
Keith Henson	Royal Haskoning on behalf Vattenfall
John Arden	Osprey Consulting on behalf Vattenfall

Richard Caldow	Natural England
Richard Broadbend	Natural England
Alan Gibson	MMO
Mandy King	DECC
Daniel Bastreri	CEFAS
Marcus Cross	Scottish Power Renewables

Issue Specific Hearing regarding Radar Effects and Damage to Property around Cable Landfall and Transition Pit

31 May 2012-11-01

NAME	ORGANISATION
Glyn Roberts	Examining Authority
Simone Wilding	Planning Inspectorate
Robert Hanson	Planning Inspectorate
Goran Loman	Vattenfall
Melanie Rogers	Vattenfall
Liz Dunn	Burges Salmon on behalf of Vattenfall
Sophie Summers	Burges Salmon on behalf of Vattenfall
Mary Maitland	Pinsent Masons LLP - Advising Manston Airport
Steven Blane	Pinsent Masons LLP - Advising Manston Airport
Alana Murphy	Royal Yachting Association
Mark Kennett	Member of the Public

APPENDIX C – ABBREVIATIONS & GLOSSARY

'Grampian' condition	A condition on a planning application prohibiting development until a specific action has been taken.
APEM	APEM LTD
Applicant/Vattenfall	Vattenfall Wind Power Ltd
CA	Competent Authority
CCC	Canterbury City Council
Cefas	Centre for Environment, Fisheries and Aquaculture Science
cSAC	Candidate Special Area for Conservation
DCO	Development Consent Order
DML	Deemed Marine Licence (Schedule 2 to the draft DCO)
EA	Environment Agency
EC	European Commission
EEC	European Economic Community
EH	English Heritage
EMF	Electromagnetic Fields
ES	Environmental Statement
ExA	Examining Authority
Extension/KFE	Kentish Flats Extension
First Questions	ExA's written questions of 5 March 2012
ha	Hectare
HRA	Habitats Regulations Assessment
IPC	Infrastructure Planning Commission
JNCC	Joint Nature Conservation Committee
KCC	Kent County Council
KEIFCA	Kent and Essex Inshore Fisheries and Conservation Authority
KFWF/Kentish Flats/Existing Wind Farm	Kentish Flats Offshore Wind Farm
KWT	Kent Wildlife Trust
LA2012	Localism Act
LA	London Array Wind Farm
LA1	London Array Wind Farm phase 1
LA2	London Array Wind Farm phase 2
LAL	London Array Limited
LIR	Local Impact Report
Manston	Manston Airport, the trading name of Infratil Kent Airport Ltd

MCA	Marine and Coastguard Agency
MCZ	Marine Conservation Zone
MHW	Mean High Water level
MLW	Mean Low Water level
MMMP	Marine Mammal Mitigation Protocol
MMO	Marine Management Organisation
MOD	Ministry of Defence
MSL	Mean Sea Level
MW	Megawatts
NE	Natural England
NM	Nautical Miles
NSIP	Nationally Significant Infrastructure Project
ODPM	Office of Deputy Prime Minister
ORP	Ornithological Review Panel
OTE/OTE SPA	Outer Thames Estuary/Outer Thames Estuary Special Protection Area
PA/PA2008	Planning Act 2008 as amended
PD	Procedural Decision
PLA	Port of London Authority
pSPA	Potential Special Protection Area
PSR	Primary Surveillance Radar
Ramsar	The Ramsar Convention on Wetlands
RR/REP	Relevant Representation/Representation
RIES	Report on the Implications for European Sites
rMCZ	Recommended Marine Conservation Zone
RNLI	Royal National Lifeboat Institution
RSPB	Royal Society for the Protection of Birds
RTD	Red Throated Diver
RYA	Royal Yachting Association
SAC	Special Area for Conservation
SDF	Standard Data Form
Second Questions	ExA's written questions of 24 April 2012
SoCG/SCG	Statement of Common Ground
SPA	Special Protection Area
SSSI	Site of Special Scientific Interest
TH	Trinity House
TMZ	Transponder Mandatory Zone
WA	Wessex Archaeology
WFA	Whitstable Fishermen's Association
WSI	Written Scheme of Investigation

APPENDIX D – EXAMINATION DOCUMENTS LIST

APPENDIX D – EXAMINATION DOCUMENTS

Category and Title
Doc Ref.

Application Documents

APP1	1.1. Covering Letter
APP2	1.2. Application Form
APP3	1.3. Newspaper Notices
APP4	2.1. Site Location and Order Limits Plan
APP5	2.2. Indicative Site Layout Plan
APP6	2.3. Indicative transition pit details - plan view
APP7	2.4. Indicative transition pit details - section(s)
APP8	2.5. Indicative Cable Crossing Details
APP9	2.6. Crown Land Plan
APP10	3.1 Consultation Report
APP11	3.2.1 Consultation Report Appendices 1-12
APP12	3.2.2 Consultation Report Appendices 13-24
APP13	3.2.3 Consultation Report Appendices 25-36
APP14	3.2.4 Consultation Report Appendices 37-47
APP15	3.2.5 Consultation Report Appendix 48
APP16	3.3. Statement of Engagement
APP17	3.4. Habitats Regulations Assessment Report
APP18	3.5. Habitats Regulations Assessment Checklist
APP19	4.1. ES Volume 1 - Non-Technical Summary
APP20	4.2.0. ES Volume 2 - Contents Page
APP21	4.2.01. ES Volume 2 - Introduction
APP22	4.2.02. ES Volume 2 - Need for Project
APP23	4.2.03. ES Volume 2 - Legislative and Regulatory Context
APP24	4.2.04. ES Volume 2 - EIA Process
APP25	4.2.05. ES Volume 2 - Project Definition
APP26	4.2.06. ES Volume 2 - Geology and Physical Processes
APP27	4.2.07. ES Volume 2 - Water Quality
APP28	4.2.08. ES Volume 2 - Nature Conservation Designations
APP29	4.2.09. ES Volume 2 - Offshore Ornithology
APP30	4.2.10. ES Volume 2 - Benthic and Intertidal Ecology
APP31	4.2.11. ES Volume 2 - Marine Mammals
APP32	4.2.12. ES Volume 2 - Natural Fish and Shellfish Resource
APP33	4.2.13. ES Volume 2 - Commercial Fisheries
APP34	4.2.14. ES Volume 2 - Landscape Seascape and Visual Impact Assessment
APP35	4.2.15. ES Volume 2 - Shipping and Navigation
APP36	4.2.16. ES Volume 2 - Maritime Archaeology
APP37	4.2.17. ES Volume 2 - Aviation and Radar
APP38	4.2.18. ES Volume 2 - Ministry of Defence
APP39	4.2.19. ES Volume 2 - Unexploded Ordnance
APP40	4.2.20. ES Volume 2 - Other Human Activities

APP41	4.2.21. ES Volume 2 - Geology Groundwater and Land Quality
APP42	4.2.22. ES Volume 2 - Onshore Ornithology
APP43	4.2.23. ES Volume 2 - Terrestrial Habitats and Species
APP44	4.2.24. ES Volume 2 - Archaeology and Cultural Heritage
APP45	4.2.25. ES Volume 2 - Transport
APP46	4.2.26. ES Volume 2 - Noise and Vibration
APP47	4.2.27. ES Volume 2 - Air Quality
APP48	4.2.28. ES Volume 2 - Socio-economics
APP49	4.2.29. ES Volume 2 - Cumulative Impact Assessment
APP50	4.2.30. ES Volume 2 - Outline Environmental Management and Monitoring Plan
APP51	4.2.31. ES Volume 2 - Summary
APP52	4.2.32. ES Volume 2 - Glossary and Abbreviations
APP53	4.3.01. ES Volume 3 - Appendix 1.1.
APP54	4.3.02. ES Volume 3 - Appendices 6.1 to 6.2
APP55	4.3.03. ES Volume 3 - Appendices 9.1 to 9.2
APP56	4.3.04. ES Volume 3 - Appendix 10.1.
APP57	4.3.05. ES Volume 3 - Appendix 13.1
APP58	4.3.06a. ES Volume 3 - Appendices 14.1 to 14.5
APP59	4.3.06b. ES Volume 3 - Appendix 14.6 - Figures 14.1 - 14.6b
APP60	4.3.06c. ES Volume 3 - Appendix 14.6 - Figures 14.6c to 14.7c
APP61	4.3.06d. ES Volume 3 - Appendix 14.6 - Figures 14.7d to 14.9e
APP62	4.3.06e. ES Volume 3 - Appendix 14.6 - Figures 14.10a to 14.11d
APP63	4.3.06f. ES Volume 3 - Appendix 14.6.
APP64	4.3.06g. ES Volume 3 - Appendix 14.6.
APP65	4.3.06h. ES Volume 3 - Appendix 14.6.
APP66	4.3.06i. ES Volume 3 - Appendix 14.6.
APP67	4.3.06j. ES Volume 3 - Appendix 14.6.
APP68	4.3.06k. ES Volume 3 - Appendix 14.6.
APP69	4.3.06l. ES Volume 3 - Appendix 14.6.
APP70	4.3.06m. ES Volume 3 - Appendix 14.6.
APP71	4.3.07. ES Volume 3 - Appendix 15.1.
APP72	4.3.08. ES Volume 3 - Appendices 16.1 to 16.3
APP73	4.3.09. ES Volume 3 - Appendix 17.1
APP74	4.3.10. ES Volume 3 - Appendix 21.1.
APP75	4.3.11. ES Volume 3 - Appendix 23.1
APP76	4.3.12. ES Volume 3 - Appendix 25.1.
APP77	4.3.13. ES Volume 3 - Appendix 26.1.
APP78	5.1. Draft Development Consent Order
APP79	5.2. Explanatory Memorandum
APP80	5.3. Land Plan
APP81	5.4. Works Plan
APP82	5.5. Extinguishment of Rights of Navigation Plan
APP83	5.6 Heads of Terms
APP84	6.1. Grid Connection Statement and Cable Details
APP85	6.2 Safety Zone Statement
APP86	7.1. Planning Statement

APP87 [7.2. Project Design Statement](#)**Relevant Representations**

REP1	Roger Cooper
REP2	Medway Council
REP3	The Highways Agency
REP4	Christopher Attenborough - Fisheries Liaison Officer
REP5	The Royal Society for the Protection of Birds
REP6	English Heritage
REP7	Hampton Pier Yacht Club
REP8	Port of London Authority
REP9	Ashford Borough Council
REP10	Barry Mount
REP11	The Health Protection Agency
REP12	Manston Airport
REP13	London Array Limited
REP14	Alan Gibson on behalf of The Marine Management Organisation
REP15	Kent Wildlife Trust
REP16	Dover District Council
REP17	The Environment Agency
REP18	Natural England
REP19	SSE Pipelines Limited
REP20	Andrew Riches

Written Representations & Responses to ExA's First Written Questions etc submitted for deadline of 5 April 2012

REP21	Dave Burges on behalf of RSPB – RSPB letter agreeing to release of LAL data
REP22	Natalie Chan-Lok on behalf of London Array Ltd - LAL London Array Winter 2010-11 Ornithology Aerial Survey Report October 2011 Final v1
REP23	Natalie Chan-Lok on behalf of London Array Ltd - LAL London Array Aerial Survey Methods Report 2009-10
REP24	Natalie Chan-Lok on behalf of London Array Ltd - LAL Historic Data RTD review - LAL June 2011 Final v2
REP25	Hugh F J Fogarty on behalf of Royal National Lifeboat Institution - Written Representation from the Royal National Lifeboat Institution
REP26	David Naylor-Gray on behalf of Ministry of Defence - The Ministry of Defence's response to the Examining Authority's written questions
REP27	Liz Dunn on behalf of Vattenfall - Vattenfall's first response submitted on 23 March 2012 commenting on LAL data
REP28	Environment Agency - The Environment Agency's Written Representation and response to the Examining Authority's written questions
REP29	The Civil Aviation Authority - The Civil Aviation Authority's response to the Examining Authority's written questions
REP30	London Array Limited - London Array Limited's response to the Examining Authority's written questions

- REP31 [Hampton Pier Yacht Club](#) - Hampton Pier Yacht Club's response to the Examining Authority's written questions
- REP32 [English Heritage](#) - English Heritage's Written Representation and response to the Examining Authority's written questions
- REP33 [A.J. Riches](#) - A.J. Riches response to the Examining Authority's written questions
- REP34 [Natural England](#) - Natural England's response to the Examining Authority's written questions
- REP35 [Marine Management Organisation](#) - Marine Management Organisation's response to the Examining Authority's written questions
- REP36 [Maritime & Coastguard Agency](#) - Maritime & Coastguard Agency's response to the Examining Authority's written questions
- REP37 [Manston Airport](#) - Manston Airport's Written Representation
- REP38 [Kent County Council](#) - Kent County Council's response to the Examining Authority's written questions
- REP39 [Canterbury City Council](#) - Canterbury City Council's response to the Examining Authority's written questions
- REP40 [Kent Wildlife Trust](#) - Kent Wildlife Trust's Written Representation and response to the Examining Authority's written questions
- REP41 [The Royal Society for the Protection of Birds](#) - The Royal Society for the Protection of Birds's Written Representation and response to the Examining Authority's written questions
- REP42 [Vattenfall](#) - Vattenfall's Written Representation and response to the Examining Authority's written questions
- REP43 [Vattenfall Wind Power Limited](#) - Vattenfall email clarifying their 1st written response in relation to QD11
- REP44 [Highways Agency](#) - The Highways Agency's Written Representation
- REP45 [Trinity House](#) - Trinity House's (General Lighthouse Authority for England) response to ExA's Questions accepted for consideration by ExA on 30 April 2012

Responses to ExA's Requests for Further Information (1) and Comments on Written Representations etc submitted for deadline of 11 May 2012

- REP46 [Port of London Authority](#) - The Port of London Authority's response to question R17 - 17
- REP47 [London Array Limited](#) - London Array Limited's response to question R17-13
- REP48 [The Maritime & Coastguard Agency](#) - The Maritime and Coastguard Agency's response to question R17- 15
- REP49 [Civil Aviation Authority](#) - The Civil Aviation Authority's response to question R17 - 9
- REP50 [Canterbury City Council](#) - Canterbury City Council's response to question R17 - 9
- REP51 [Christopher Attenborough](#) - Comment from the fisheries liaison representative
- REP52 [Mr Andrew Riches](#) - Comment from Mr Andrew Riches regarding his

- previous submission
- REP53 [Mr Roger Cooper](#) - Comment from Mr Roger Cooper regarding his previous submission
- REP54 [Pinsent Masons LLP on behalf of Infratil Airports Europe Limited](#) - Infratil Airports (Europe) Limited's response to question R17-14
- REP55 [William Wright on behalf of Kent and Essex Inshore Fisheries and Conservation Authority](#) - The Kent and Essex Inshore Fisheries and Conservation Authority's response to R17 questions
- REP56 [Debbie Salmon on behalf of Kent Wildlife Trust](#)
- Kent Wildlife Trust's response to questions R17-22(k) and R17-27
- REP57 [Ross Hodson on behalf of the Marine Management Organisation](#)
- The Marine Management Organisation's response to questions R17-16 & R17-17
- REP58 [Tim Hall on behalf of Natural England](#) - Natural England's response to questions R17-20 to R17-27
- REP59 [Royal Society for the Protection of Birds](#)
- The RSPB's response to questions R17-27, R17-28 and R17-29
- REP60 [Burgess Salmon LLP on behalf of Vattenfall Wind Power Limited](#) - The Developer's comments and responses to R17 questions
- REP61 [David Naylor-Gray on behalf of Ministry of Defence](#) - The MoD's late response to the Examining Authority's second round of questions
- REP62 [Liz Shier on behalf of Kent County Council](#) - Kent County Council's Late response to Question R17 - 12, accepted for consideration by ExA on 29 May 2012

Submissions relating to hearings held on 30 and 31 May 2012

- REP63 [120518 EN010036 Vattenfall's confirmation of attendance](#) – The developer's confirmation of attendance at all hearings
- REP64 [120518 EN010036 Infratile Airports Radar Hearing letter](#)
– Infratil Airports confirmation of attendance at the Radar Issue Specific Hearing
- REP65 [120518 EN010036 English Heritage notification of attendance](#)
– English Heritage's confirmation of attendance at the first DCO Issue Specific Hearing
- REP66 [120518 EN010036 Royal Yachting Association](#) – The RYA's confirmation of attendance at the Radar Issue Specific Hearing
- REP67 [120523 EN010036 Kent Wildlife Trust](#) – Kent Wildlife Trust's confirmation that they will not be attending the examination in public
- REP68 [120525 EN010036 Trinity House](#) – Correspondence between Burgess Salmon and Trinity House regarding cable crossings
- REP69 [120528 EN010036 Burgess Salmon letter on behalf of Vattenfall](#)
– Letter regarding the Royal Yachting Association's attendance at the Radar Issue Specific Hearing
- REP70 [120530 EN010036 London Array WF appropriate assessment Oct 2006](#) – Submitted by Vattenfall and accepted by the ExA on 30 May 2012
- REP71 [120608 EN010036 Canterbury City Council document re s106](#)

– Canterbury City Council's submission regarding the proposed S106 unilateral undertaking

Responses to ExA's Requests for Further Information (2) etc submitted for deadline of 19 June 2012

- REP72 [Stuart Carruthers on behalf of The Royal Yachting Association](#) - The Royal Yachting Association's response to question ExA question R17 (2) - 16
- REP73 [Burgess Salmon LLP on behalf of Vattenfall Wind Power Limited](#) - Submitted on 13 June 2012 includes eg revised draft DCO, response to ExA HRA technical note, VF 3rd response revised draft UU provided to CCC etc
- REP74 [Andrew MacGregor on behalf of Hampton Pier Yacht Club](#) - Hampton Pier Yacht Club's response to ExA questions R17 (2) - 15 & 16
- REP75 [Steve Vanstone on behalf of Trinity House](#) - Trinity House's response to the ExA's question R17 (2) - 16
- REP76 [Debbie Salmon on behalf of Kent Wildlife Trust](#) - Kent Wildlife trust's Summary of case and their comments on the DCO
- REP77 [Debbie Salmon on behalf of Kent Wildlife Trust](#) - Kent Wildlife Trust's response to the ExA's R17(2) questions, submitted to meet the deadline of 19 June
- REP78 [Ross Hodson on behalf of The Marine Management Organisation](#) - The Marine Management Organisation's response to the ExA's second R17 questions, submitted for the deadline of 19 June
- REP79 [Tim Hall on behalf of Natural England](#) - Natural England's response to the ExA's second R17 questions, submitted to meet the deadline of 19 June
- REP80 [Port of London Authority](#) - Port of London Authority's response to the ExA's second R17 questions, submitted by the deadline of 19 June
- REP81 [Burgess Salmon LLP on behalf of Vattenfall Wind Power Limited](#) - The Developer's comments and responses to the ExA's second R17 questions, submitted to meet the deadline of 19 June
- REP82 [Burgess Salmon LLP on behalf of Vattenfall Wind Power Limited](#) - Submitted on 22 June 2012 commenting on NE's response to the ExA's R17(2) questions. Accepted by the ExA as a late submission
- REP83 [Dave Burgess on behalf of RSPB](#) – Submitted on 28 June 2012 in response to the ExA's R17(2) questions. Accepted by the ExA on 28 June 2012

Responses to ExA's Requests for Further Information (3) etc submitted for deadline of 23 July 2012

- REP84 [Richard Burton on behalf of Highways Agency](#) - Submission for deadline of 23 July 2012 (in response to R17[3])
- REP85 [Lucy Owen on behalf of Port of London Authority](#) - Submission for deadline of 23 July 2012 (in response to R17[3])
- REP86 [Tim Hall on behalf of Natural England](#) - Submission for deadline of 23 July 2012 (in response to R17[3])
- REP87 [Burgess Salmon LLP on behalf of Vattenfall Wind Power Limited](#) -

- REP88 [Debbie Salmon on behalf of Kent Wildlife Trust](#) - Late response to deadline of 23 July 2012 accepted by ExA on 24 July
- REP89 [Burgess Salmon LLP on behalf of Vattenfall Wind Power Limited](#) - Late submission of correspondence with PLA accepted by ExA on 25 July 2012

Responses to ExA's Requests for Further Information (4) etc submitted for deadline of 14 August 2012

- REP90 [Elizabeth Dunn on behalf of Vattenfall Wind Power Limited](#) - Submitted for deadline of 14 August 2012
- REP91 [Mary Smith on behalf of Medway Council](#) - Submitted for deadline of 14 August 2012
- REP92 [Matt Britton on behalf of London Array Limited](#) - Submitted for deadline of 14 August 2012
- REP93 [Nick Salter on behalf of Maritime and Coastguard Agency](#) - Submitted for deadline of 14 August 2012
- REP94 [Graham Penlington on behalf of Fulcrum Pipelines](#) - Late submission for the deadline of 14 August 2012 - accepted for consideration by ExA on 16 August 2012
- REP95 [Neal Henley on behalf of Civil Aviation Authority](#) - Late submission for the deadline of 14 August 2012 - accepted for consideration by ExA on 16 August 2012
- REP96 [Dave Burgess on behalf of The Royal Society for the Protection of Birds](#) - Late submission for the deadline of 14 August 2012 - accepted for consideration by ExA on 17 August 2012
- REP97 [Tim Hall on behalf of Natural England](#) - Late submission for the deadline of 14 August 2012 - accepted for consideration by ExA on 20 August 2012

Local Impact Report & Statements of Common Ground

- REP98 [Canterbury City Council](#) - Canterbury City Council's Local Impact Report
- REP99 [Kent County Council](#) - Kent County Council's Local Impact Report
- REP100 [Manston Airport](#) - Statement of Common Ground between Manston Airport and Vattenfall Wind Power Ltd
- REP101 [Vattenfall Wind Power Limited](#) - Vattenfall letter commenting on non-agreement of supplementary statement of common ground
- REP102 [Burgess Salmon LLP on behalf of Vattenfall Wind Power Limited](#) - Statement of Common Ground between Vattenfall, Kent County council and Canterbury City Council
- REP103 [Burgess Salmon LLP on behalf of Vattenfall Wind Power Limited](#) - Statement of Common Ground between Vattenfall and Southend Airport
- REP104 [Burgess Salmon LLP on behalf of Vattenfall Wind Power Limited](#) - Statement of Common Ground between Vattenfall and Whitstable Fishermen's Association
- REP105 [Burgess-Salmon on behalf of Vattenfall](#) - This is an agreement signed by Kent Wildlife Trust only. For the agreement signed by the RSPB, please see

- later document
- REP106 [Burgess Salmon LLP on behalf of Vattenfall Wind Power Limited](#) - Statement of Common Ground between Vattenfall and Natural England
- REP107 [Burgess Salmon on behalf of Vattenfall Wind Power Limited](#) - Overview document provided by Vattenfall on 28 May 2012 showing the SoCGs submitted/in progress of being signed
- REP108 [Burgess Salmon on behalf of Vattenfall Wind Power Limited](#) - This is an agreement signed by The Royal Society for the Protection of Birds
- REP109 [Burgess Salmon on behalf of Vattenfall Wind Power Limited](#) – This is an agreement amended by The Royal Society for the Protection of Birds, but not signed
- REP110 [Burgess Salmon LLP on behalf of Vattenfall Wind Power Limited](#) - Signed version of the Statement of Common Ground between Vattenfall and Natural England
- REP111 [Burgess Salmon LLP on behalf of Vattenfall Wind Power Limited](#) - Statement of Common Ground between Vattenfall and Southend Airport

Adequacy of Consultation Representations

- REP112 [120131 EN010036 Adequacy of Consultation Representations](#) - Representations on the adequacy of the developer's pre-application consultation from local authorities

Additional Submissions accepted by the Examining Authority

- AS1 [120220 EN010036 Letter by the Applicant to IPC re Statements of Common Ground](#) – copied to NE, RSPB, the Kent wildlife Trust, the MMO, and London Array Ltd
- AS2 [120214 EN010036 Letter by the Applicant to IPC re speaking at Preliminary Meeting](#)
- AS3 [120220 EN010036 Email by Dong Energy on behalf of London Array Ltd re speaking at Preliminary Meeting](#)
- AS4 [120224 EN010036 Letter from London Array Ltd copied to Vattenfall](#)
- AS5 [120224 EN010036 Email by applicant to IPC regarding Site visit.pdf](#)
- AS6 [120326 EN010036 Burgess Salmon RE London Array Bird Surveys.pdf](#)

Project Documents

- PD1 [101028 Kentish Flats Extension Scoping Report](#) - Scoping report submitted to IPC by the developer
- PD2 [101207 EN0100036 Kentish Flats scoping opinion Web Version](#) - Scoping Opinion issued by the IPC

- PD3 [110105 EN010036 434134 Kentish Flats Late Responses](#) - EIA scoping consultation responses which were received after the consultation deadline.
- PD4 [111014 EN010036 KFE Section 55 Acceptance Checklist](#)
- PD5 [111018 EN010036 886598 KFE Transboundary Screening Matrix.doc](#)
- PD6 [111102 EN010036 Accept Application letter](#)
- PD7 [Certificates of compliance with section 56 of the Planning Act 2008, and Regulation 13 of the Infrastructure Planning \(Environmental Impact Assessment\) Regulations 2009](#)
- PD8 [120110 EN010036 Rule6 with Annexes Email](#)
- PD9 [120127 EN010036 Non-stat parties invitation letter](#) - A letter inviting non statutory parties to the Preliminary meeting
- PD10 [120223 Kentish Flats Preliminary meeting recording part 1](#) - 1st part recording of Preliminary Meeting for the Kentish Flats Extension wind farm application that took place on 22 February 2012
- PD11 [120223 Kentish Flats Preliminary meeting recording part 2](#) - 2nd part recording of Preliminary Meeting for the Kentish Flats Extension wind farm application that took place on 22 February 2012
- PD12 [120302 EN010036 Note of KFE Preliminary Meeting.doc](#)
- PD13 [120305 EN010036 Final combined Rule 8 letter](#) - Includes procedural decisions made at and following the Preliminary Meeting
- PD14 [120424 EN010036 KFE rule 13 and 17 letter](#) - Examining authority's notice of hearings under rule 13 and requests for further information and written comments under rule 17 of the Infrastructure Planning (Examination Procedure) Rules 2010
- PD15 [120425 EN010036 Notice of Site Inspection Rule 16](#)
- PD16 [120501 Hearing notification KFE](#) – Notification of forthcoming hearings for the Kentish Flats Extension application
- PD17 [120525 EN010036 Hearing Session 1 Agenda and Schedule](#)
- PD18 [120525 EN010036 Hearing Session 2 Agenda](#)
- PD19 [120525 Hearing 3 Agenda and Schedule](#)
- PD20 [120525 EN010036 Hearing Session 4 Agenda](#)
- PD21 [120530 EN010036 Issue Specific Hearing on DCO etc – Audio Recording AM](#)
- PD22 [120530 EN010036 Issue Specific Hearing on Biological Environment etc – Audio recording PM Part 1](#)
- PD23 [120530 EN010036 Issue Specific Hearing on Biological Environment etc – Audio recording PM Part 2](#)
- PD24 [120531 EN010036 Issue Specific Hearing on Habitats Regulations – Audio Recording AM](#)
- PD25 [120531 EN010036 Issue Specific Hearing on Habitats Regulations – Audio Recording PM Part 1](#)
- PD26 [120531 EN010036 Issue Specific Hearing on Habitats Regulations - Audio Recording PM Part 2](#)

- PD27 [120531 EN010036 Issue Specific Hearing on Radar etc – Audio Recording PM](#)
- PD28 [120531 EN010036 OFH dbi-chk letter](#) – Potential cancellation of open floor hearing and change of start point of site visit
- PD29 [120601 EN010036 revised timetable.doc](#)
- PD30 [120607 EN010036 further R17 Qs Finalv3.doc](#)
- PD31 [120628 EN010036 R17](#)
- PD32 [120807 EN010036 R17\(4\) Qs.doc](#)
- PD33 [120820 EN010036 s99 close of examination letter](#) - Letter notifying interested parties of the Examining Authority's completion of the examination under section 99 of the Planning Act 2008

**APPENDIX E – REPORT ON THE IMPLICATIONS FOR
EUROPEAN SITES (RIES)**

REPORT on the IMPLICATIONS for EUROPEAN SITES Proposed Kentish Flats Offshore Wind Farm Extension

An Examining Authority report prepared with the
support of the Planning Inspectorate Secretariat

June 2012

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INTRODUCTION

The Secretary of State is a competent authority (CA) for the purposes 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 The Conservation of Habitats and Species Regulations 2010 (the Habitats Regulations) for applications submitted under the Planning Act regime (as amended).

This report compiles, documents and signposts information received during the examination of the DCO application by Vattenfall Wind Power Ltd for the proposed Kentish Flats Extension (KFE) project and will be issued for consultation, including consultation with Natural England for the purposes of Regulation 61(3) of the Habitats Regulations.

This report is an Examining Authority report which has been prepared with the support of the Planning Inspectorate Secretariat.

The report is in two parts:

The first part is a series of screening matrices for each of the European (Natura 2000) sites that might potentially be affected by the proposed Kentish Flats Extension (KFE) project. These matrices collate evidence on whether the project is likely to have significant effects on the key features of each European site. It acknowledges that the Applicant and Natural England have agreed that the only European site on which significant effects are likely is the Outer Thames Estuary Special Protection Area (SPA).

The second part is matrices on the integrity of the Outer Thames Estuary SPA, in the context of its conservation objectives. These matrices collate the information received within the submission documents and during the examination from Statements of Common Ground (SoCG), relevant representations, written representations, responses to questions raised by the Examining Authority, and examination responses and hearings.

1.0 SCREENING FOR LIKELY SIGNIFICANT EFFECTS

The KFE project is not connected with or necessary to the management for nature conservation of any of the European sites considered within the assessment. The project has been assessed by the Applicant as potentially having a significant effect on European sites within its vicinity, either alone or in combination with other projects. It has therefore been subject to a screening exercise by the Applicant for likely significant effects for the project in relation to all the sites potentially affected.

The list of sites for inclusion within the assessment was presented within the draft Environmental Statement (ES) (Kentish Flats Offshore Wind Farm Extension Environmental Statement, September 2011) and had been subject to consultation with Natural England (NE) (Vattenfall ES Section 8, paragraph 8.3.1). Consultation with NE and other relevant consultees throughout the pre-application discussions confirmed acceptance of this list. A detailed description of each of the European sites considered within the screening assessment and their qualifying features was provided within the Applicant's HRA Report Section 4 (Document 3.4, Habitats Regulations Assessment Report, October 2011). The boundaries and key bird species for the SPAs are the same as those of the relevant Ramsar site (if applicable), and in light of this the Applicant's report considered the potential impact of the project on both site designations together. No concerns have been expressed by the consultees regarding this approach.

A No Significant Effects Report (NSER) (Vattenfall HRA Report, Appendix 1) was produced by the Applicant in relation to all of the sites included within their assessment, with the exception of the Outer Thames Estuary SPA.

Agreement of the NSER was reached between the Applicant with NE and with the Royal Society for the Protection of Birds (RSPB), subject to implementation and inclusion within the DCO of mitigation with respect to the turnstone population which is a qualifying interest of Thanet Coast and Sandwich Bay SPA (Vattenfall HRA Report, paragraph 5.3.12, Vattenfall ES Section 22 Onshore Ornithology). This mitigation comprises a restriction to the timing of the landfall construction works, which will be halted during winter for two hours either side of high tide. The SoCGs (SoCG between Vattenfall and Kent Wildlife Trust (KWT) 16th May 2012, Vattenfall and NE 18th May 2012, and Vattenfall and the RSPB 28th May 2012) confirm that NE, the RSPB, and KWT are satisfied that this mitigation is appropriate. This mitigation has been incorporated into the consent and is contained within Requirement 8 of the Deemed Marine Licence which forms part of the draft DCO for the project.

Potential Impacts

Potential impacts upon the Natura 2000 sites identified above which were considered within the Applicant's Habitats Regulations Assessment report are provided in the table below. Impacts identified in the application information have been grouped below in the Screening Matrices (Section 2.0) where appropriate for ease of presentation. A heading for in-combination impacts (referred to as cumulative in the Applicant's information) has also been added to the screening matrices. The following wind-farm projects have been included in the in-combination assessment carried out by the Applicant: Kentish Flats, the extension, London Array Phase I and II, Thanet, Gunfleet Sands Phase I and II, Greater Gabbard and Galloper.

Impacts considered within the screening and effects on integrity matrices

Designation	Impacts in submission information	Presented in screening Matrices as*
SAC, cSAC	<ul style="list-style-type: none"> • Physical loss by removal or smothering • Physical damage by siltation, abrasion or selective extraction 	<ul style="list-style-type: none"> • Same (construction, operation, and decommissioning where applicable)
	<ul style="list-style-type: none"> • Toxic and non-toxic contamination 	<ul style="list-style-type: none"> • Toxic contamination from chemical compounds; Non-toxic contamination from nutrient enrichment (construction, operation, and decommissioning where applicable)
	<ul style="list-style-type: none"> • Disturbance. 	<ul style="list-style-type: none"> • Biological disturbance from spread of non-native species and /or selective extraction of species (construction, operation, and decommissioning where applicable)
SPA/Ramsar (supporting habitats)	<ul style="list-style-type: none"> • Physical loss of or damage • Toxic contamination and non-toxic contamination • Non-physical or biological disturbance 	<ul style="list-style-type: none"> • Loss/damage/ contamination/ Non physical or biological disturbance (construction, operation, and decommissioning where applicable)
SPA (ornithology)	<ul style="list-style-type: none"> • Disturbance and displacement of marine birds during the construction of the wind farm • Disturbance and displacement of shorebirds during the construction of the export cable(s) landfall • Disturbance and displacement of marine birds during the operation of the wind farm • Disturbance and displacement of marine birds during the decommissioning of the wind farm • Disturbance and displacement of shorebirds during the decommissioning of the grid connection landfall • Barrier effect of the wind farm on bird flight lines during operation 	<ul style="list-style-type: none"> • Disturbance and displacement of marine and shorebirds and barrier effects (construction, operation, and decommissioning where applicable)
	<ul style="list-style-type: none"> • Mortality through collision with the wind turbines during operation 	<ul style="list-style-type: none"> • Mortality from collision with wind turbines

* Some impacts have been grouped together in this report where appropriate.

The Applicant's assessment has qualified and where appropriate quantified the effects of the impacts above (the impacts in the submission information assuming they will occur and adopting the likely worst-case scenario). It has then identified whether or not the effects are significant.

A significant effect has been considered within the Applicant's Habitats Regulations Assessment (HRA) to be any effect that may be reasonably predicted to occur that may affect the conservation objectives of the features for which the site was designated, and that therefore could have an adverse affect on the integrity of the site (Vattenfall HRA Report paragraph 3.2.6). This follows EC guidance on habitats assessment (EC Guidance document: *'Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (2000)'* and EC Guidance document: *'Assessment of plans and projects significantly affecting Natura 2000 sites (2001)'*).

2.0 SCREENING MATRICES

The European Sites included within the Applicant's assessment and the likely significant effects on their qualifying features are detailed within the screening matrices below.

Under each table a set of justifications is provided which outline the evidence on which the decision of likely significant effect have been based. This evidence has come from the information submitted by the Applicant, the Statements of Common Ground, and from the outcomes of the examination process.

Matrix Key:

- ✓ = Likely significant effect
- ✗ = No likely significant effect

C= construction

O = operation

D = decommissioning

Matrix 1: Outer Thames Estuary SPA

Outer Thames Estuary SPA												
Distance to wind farm: 0km Distance to cable landfall: 0km												
European site features	Likely Effects of NSIP (phase of development)											
	<i>Loss/damage/contamination/Non physical or biological disturbance</i>			<i>Disturbance and displacement of marine and shorebirds and barrier effects (operation)</i>			<i>Mortality from collision with wind turbines</i>			<i>In-combination impacts</i>		
	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>
<i>Marine habitat/sea inlet</i>	x ^a	x ^a	x ^a							x ^b	x ^b	x ^b
<i>Red-throated diver (wintering)</i>				✓ ^{c,e}	✓ ^c	✓ ^{c,e}		✓ ^d		LSE alone	LSE alone	LSE alone

Justifications:

- a. Wind farm works will fall within the Outer Thames Estuary SPA. It has been considered within the submission information that the worst-case scenario for the extension (assuming total loss of habitat from foundations and scour) represents a small proportion of the entire SPA (0.91% of the area of the extension which itself represents 0.4% of the entire SPA). Given this, it has been agreed by the Applicant and NE, RSPB and KWT that the impact to supporting habitats would be negligible (Vattenfall HRA Report paragraph 8.2.17, Vattenfall ES Section 10, SoCG between Vattenfall and KWT 16th May 2012, Vattenfall and NE 18th May 2012, and Vattenfall and the RSPB 28th May 2012). Within the Applicant's HRA report no significant impacts upon water quality or physical processes within the SPA resulting from the cable landfall works are considered likely (Vattenfall HRA Report paragraph 5.2.9, Vattenfall ES Section 6 and 7). Non-physical disturbance has been identified as a potential impact on habitats but is not discussed any further within the Applicant's report. However, the Applicant's HRA report states that no representations have been presented with concerns in this regard. NE confirm

that they have no concerns regarding direct habitat loss in this regard (NE response to Rule 17(2) Questions 19th June 2012, response 10).

- b. In-combination impacts on supporting habitats have been screened out within the Applicant's HRA report. The basis for this is that as works will be temporary and localised, and that significant distances are involved between KFE and other projects within the area, this means that no pathway exists for combined effects with other projects.
- c. Red-throated diver were recorded within the 'disturbance zone' around the wind farm (2km around the perimeter of the wind farm). A peak count of 174 birds was recorded within 2km, and given that this represents up to 2.7% of the SPA citation population there is a risk of a likely significant effect (Vattenfall HRA Report paragraph 5.3.1-3, Table 5, paragraph 5.3.8).
- d. Red-throated diver were recorded within the 'wind turbine envelope' (the application area plus a 200m buffer) and might be at risk of collision (Vattenfall HRA Report paragraph 5.3.1-2, Table 5). This collision risk is predicted by the Applicant to be of negligible magnitude (Vattenfall ES Section 9 Offshore Ornithology, Vattenfall HRA Report paragraph 5.3.8) but is taken forward for further assessment because of uncertainty. The nature conservation consultees agree that this aspect should be subject to appropriate assessment (SoCG between Vattenfall and KWT 16th May 2012, Vattenfall and NE 18th May 2012, and Vattenfall and the RSPB 28th May 2012).
- e. Only Thanet Coast and Sandwich Bay SPA has been considered by the Applicant in relation to the landfall works, where a precautionary 1km zone of influence has been applied. However the landfall point is within 1km of the Outer Thames Estuary SPA. In their response to the EXA R17(2) question in relation to this matter, R17(2)-10, Vattenfall state that they have considered that the mitigation proposed for turnstone to be applied to the landfall works (see Matrix 2, justification 'i') will also mitigate any effects of these works on red-throated diver. They state that given that red-throated diver are only in the area in the winter and do not use the intertidal area impacts are unlikely, and that specific mitigation has not been devised in light of this and the fact that no concerns regarding impacts from the landfall works on red-throated diver have been expressed by any party (Vattenfall's 4th Response, Document Ex4, 19th June 2012).

Matrix 2: Thanet Coast and Sandwich Bay SPA/Ramsar

Thanet Coast and Sandwich Bay SPA/Ramsar												
Distance to wind farm: 8km Distance to cable landfall: 0km												
European site features	Likely Effects of NSIP (phase of development)											
	<i>Loss/damage/contamination/ Non physical or biological disturbance</i>			<i>Disturbance and displacement of marine and shorebirds and barrier effects (operation)</i>			<i>Mortality from collision with wind turbines</i>			<i>In-combination impacts</i>		
	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>
<i>Shingle shores, Shallow coastal waters, intertidal mud and sandflats, Chalk shores</i>	x ^{a,b,c,d}	x ^e	x ^e							x ^f	x ^f	x ^f
<i>Little tern (breeding), golden plover (wintering)</i>				x ^{g,h}	x ^{g,h}	x ^{g,h}	x ^{g,h}	x ^{g,h}	x ^{g,h}	x ^{h,j}	x ^{h,j}	x ^{h,j}
<i>Turnstone (wintering)</i>				x ^{g,i}	x ^{g,i}	x ^{g,i}	x ⁱ	x ⁱ	x ⁱ	x ^k	x ^k	x ^k

Justifications:

- a. Impacts associated with construction, operation, and decommissioning of the offshore elements will occur 8km from the designated site and are anticipated to be highly localised and small scale. No significant impacts to water quality and coastal processes are expected (Vattenfall HRA Report paragraph 5.2.8, Vattenfall ES Section 6 and Section 7).

- b. The cable landfall and transition pit are likely to be in proximity to the SPA eastern boundary. The precise location of the cable landfall and transition pit has not been decided at this stage but is limited by the DCO to the area delineated on the 'works plan' Draft DCO, Schedule 1, Part 3 (2). Construction activities (drilling and trenching) are to be carried out within the area delineated on the 'works plan', adjacent to the SPA. Monitoring during installation of cabling for Kentish Flats 1 (KF1) showed sediment generation to be below CEFAS threshold values (Vattenfall ES Section 6) and similar sediment generation is predicted for the extension works (Vattenfall HRA Report paragraph 5.2.12).
- c. Low baseline levels of contaminants have been recorded and it is not anticipated that significant remobilisation of contaminants will result during cable installation and associated works (Vattenfall HRA Report paragraph 5.2.13, Vattenfall ES Section 10).
- d. Disturbance to shore ecological communities during construction of the cable landfall are predicted. However, these will be confined to the immediate vicinity of the works, outside the SPA. The intertidal benthic community is considered to be have a low sensitivity to disturbance and a high adaptability to living in a dynamic environment. No significant impacts on SPA with respect to benthic habitats are considered likely (Vattenfall HRA Report 5.2.14, Vattenfall ES Section 10).
- e. Infrastructure will not be disturbed during operation of the wind farm unless there is a need for maintenance. Maintenance works are likely to be small scale and would be carried out according to best practice and with separate consultation with 'regulators'. Cables are proposed to be left in place on decommissioning with the only works being offshore and unlikely to affect the SPA supporting habitats given the distances involved (Vattenfall HRA Report paragraph 5.2.15, Vattenfall ES Section 10).
- f. Habitat effects will be localised and small scale construction effects will be temporary. KFE is a significant distance from other concurrent projects. Given this, it has not been considered that any pathway for in-combination impacts exist (Vattenfall HRA Report paragraph 5.2.16, Appendix 1 Table 3, Vattenfall ES, Section 6, paragraph 6.10, Section 10, paragraph 10.8).
- g. As for Matrix 1 justification e. Only Thanet Coast and Sandwich Bay SPA bird species have been considered in relation to landfall works despite the Outer Thames estuary being within the 1km zone of influence.
- h. These species were not recorded during the surveys as present within any of the potential impact zones considered (2km around wind farm for disturbance, 200m buffer around application area for collision risk, 1km from cable landfall. See Vattenfall HRA Report paragraph 5.3.2, Table 5). As a result they have been ruled out of further assessment by the Applicant. This has been agreed by NE, the RSPB, and KWT (SoCG between Vattenfall and KWT 16th May 2012, Vattenfall and NE 18th May 2012, and Vattenfall and the RSPB 28th May 2012) in that agreement has been reached that only effects on red-throated diver require further assessment).
- i. The Applicant's HRA report identifies a risk of disturbance to wintering turnstone during construction of the landfall. This species was recorded flying over the wind farm location within the collision risk area, but not at turbine height so no collision risk has been anticipated. (Vattenfall HRA Report, Vattenfall ES Section 22). Peak counts 12 individuals (high

tide) 53 individuals at 'other states of tide' within 100m of landfall (Vattenfall HRA Report Table 5). Judged at highest sensitivity at high tide given limited availability of roosts in the area. Mitigation measures have been put forward and secured in the Draft DCO (Draft DCO, Schedule 2 Part 2 (8)) to suspend construction activity 2 hours either side of high tide during winter (no months supplied). With mitigation (works between October and April restricted to avoid the period two hours either side of high tide) no LSE are anticipated. This mitigation has been agreed with NE, the RSPB, and KWT (HRA paragraph 5.3.12, SoCG). No impacts during operation or decommissioning are considered in Vattenfall's HRA Report and Section 22 of Vattenfall's ES concludes no impacts during these phases.

- j. The Applicant's states that these species were not recorded within the potential impact zones and therefore no pathway for in-combination impacts exists (Vattenfall HRA Report, Appendix 1, Table 3).
- k. No other major works are planned or will be ongoing within the same timescale and therefore no in-combination impacts predicted (Vattenfall ES Section 22).

Matrix 3: Foulness SPA/Ramsar

Foulness SPA/Ramsar												
Distance to wind farm: 9km Distance to cable landfall: 20km												
European site features	Likely Effects of NSIP (phase of development)											
	Loss/damage/ contamination/ Non physical or biological disturbance			Disturbance and displacement of marine and shorebirds and barrier effects (operation)			Mortality from collision with wind turbines			In-combination impacts		
	C	O	D	C	O	D	C	O	D	C	O	D
Shell, sand and gravel shores, intertidal mud and sandflats, saltmarsh	x ^{a,c}	x ^{a,c}	x ^{a,c}							x ^{b,c}	x ^{b,c}	x ^{b,c}
Brent goose, wigeon, little grebe, hen harrier, avocet, oystercatcher, grey plover, golden plover, ringed plover, lapwing, knot, dunlin, bar- tailed godwit, black-tailed godwit, redshank, curlew, little tern, wintering waterbird assemblage				x ^d	x ^d	x ^d	x ^d	x ^d	x ^d	x ^{d,h}	x ^{d,h}	x ^{d,h}
Shelduck				x ^e	x ^e	x ^e	x ^e	x ^e	x ^e	x ^h	x ^h	x ^h
Common tern				x ^f	x ^f	x ^f	x ^f	x ^f	x ^f	x ^h	x ^h	x ^h
Sandwich tern				x ^g	x ^g	x ^g	x ^g	x ^g	x ^g	x ^h	x ^h	x ^h

Justifications:

- a. Due to the distance from the proposals it is considered that no pathways exist for impacts on the supporting habitats and there no likely significant effects (draft DCO and Vattenfall HRA Report paragraphs 5.23 and 5.26, Figure 2).
- b. Habitat effects will be localised and small scale, construction effects will be temporary, and given the distance between KFE and other concurrent projects it has not been considered that any pathway for in-combination impacts exist (Vattenfall ES, Section 6, paragraph 6.10, Vattenfall HRA Report paragraph 5.2.4), Appendix 1 Table 4).
- c. NE has not raised any concern through representation regarding impacts upon the supporting habitats. (Vattenfall HRA Report, paragraph 5.25). NE response to ExA QA.6 (5/03/12) confirms that it does not consider there are any other matters or significance for HRA.
- d. These species were not recorded during the surveys as present within the impact zones (Vattenfall HRA Report Table 5) provided in paragraph 5.3.2. Brent goose, grey plover, golden plover, lapwing, knot, dunlin, and curlew were recorded flying over the collision risk zone but not at turbine height. As a result they have been ruled out of further assessment within the Applicant's HRA report. The submission information includes 'wintering bird assemblage' (Vattenfall HRA Report, Appendix 1 Table 4).
- e. A small number of shelduck were recorded within the collision risk zone (Vattenfall HRA Report Table 5) and given that these birds could be ecologically linked to this SPA population, the likelihood of significant effects was investigated by the Applicant. Risk modelling predicted a low 0.32 collisions per year (Vattenfall HRA Report paragraph 5.3.11, Vattenfall ES Section 9) which was considered unlikely to be significant. Shelduck were not recorded within the disturbance zone (Vattenfall HRA Report Table 5).
- f. Common tern were recorded in both the potential disturbance zone and the collision risk zone. A reduction in peak counts between 2005-2010 is provided in the reasoning within the Applicant's HRA report but not clearly linked to the conclusion of no likely significant effect. Reasoning is that the habitat within the potential impact zone is not of particular value and disturbance during construction would be expected to be negligible. Collision risk was also determined to be of 0.4 collisions per year (based on risk modelling as before?) and not likely to be significant. (Vattenfall HRA Report 5.3.15, Table 5, see Vattenfall ES Section 9 for peak count data).
- g. Sandwich tern were recorded in both the potential disturbance zone and the collision risk zone, in what were considered to be low locally important numbers by the Applicant. Records are noted as infrequent within the Applicant's ES and HRA report. Peak numbers of 17 within 500m, 1km, 2km were recorded and this result has led to the reasoning that even if all these birds were displaced, this would be an impact of negligible magnitude (Vattenfall HRA Report paragraph 5.3.14). Collision risk is determined to be of negligible magnitude (0.1 collisions per year) (Vattenfall HRA Report paragraph 5.3.14, Table 5, peak counts data within Vattenfall ES Section 9).

- h. Lack of significant impacts as a result of disturbance/displacement/collision from the project alone is provided as the reasoning that no pathways for in-combination impacts are considered to exist (HRA Appendix 1 Table 4, Vattenfall ES Section 22). This approach does not immediately accord with the aims of in-combination assessment, as provided within EC guidance (EC Guidance document: Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (2000) and EC Guidance document: Assessment of plans and projects significantly affecting Natura 2000 sites (2001)). The EC guidance requires the assessment to investigate whether or not the combined effects with other projects would increase/change the effects of the project alone. Section 9 of the Applicant's ES considers in-combination impacts on offshore ornithology interests. While NE and the other consultees recognise that the most significant in-combination effects are likely to be those on red-throated diver and the Outer Thames Estuary SPA, NE has provided advice to Vattenfall that in-combination effects on other species should also be considered (NE Written Representation 24th November 2010). Section 9 considers in-combination impacts on the species groups of auks and gulls only, not all of the individual species listed within the SPA designation in the matrix above (many of which are not included within these species groupings). In the case of large and small gulls, these species are not considered to be at risk of disturbance and for this reason the Applicant's ES reports that no significant in-combination effects with other projects are anticipated. For these species collision risk is considered to be very low and therefore it is stated that KFE will not significantly contribute to the in-combination effects on gulls with respect to this impact. In the case of auks the small numbers of birds within this group leads to the conclusion that KFE will not have a significant contribution to the in-combination effect. The wording of paragraph 9.11.14 of the Applicant's ES '*As a result, it is not considered that the Kentish Flats Extension would contribute to any cumulative effect on any auk species*' deviates from the aim of in-combination assessment (as provided in EC guidance), which is not to qualify the relative contribution of the project to the combined effect, but to establish if other projects combine with the project in such a way as to change the effects it would have alone. The representations made have not raised concerns regarding the in-combination assessment in relation to any bird species other than red-throated diver.

Matrix 4: The Swale SPA/Ramsar

The Swale SPA/Ramsar												
Distance to wind farm: 10km Distance to cable landfall: 5km												
European site features	Likely Effects of NSIP (phase of development)											
	<i>Loss/damage/contamination/Non physical or biological disturbance</i>			<i>Disturbance and displacement of marine and shorebirds and barrier effects (operation)</i>			<i>Mortality from collision with wind turbines</i>			<i>In-combination impacts</i>		
	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>
<i>Sand and shingle shores, tidal flats, saltmarsh</i>	x ^{a,c}	x ^{a,c}	x ^{a,c}							x ^{b,c}	x ^{b,c}	x ^{b,c}
<i>Avocet</i>				x ^f	x ^f	x ^f	x ^f	x ^f	x ^f	x ^f	x ^f	x ^f
<i>Cormorant</i>				x ^d	x ^d	x ^d	x ^d	x ^d	x ^d	x ^g	x ^g	x ^g
<i>Mediterranean gull</i>				x ^e	x ^e	x ^e	x ^e	x ^e	x ^e	x ^g	x ^g	x ^g
<i>'Other ornithological interests – see HRA Table 5' brent goose (qualifying) dunlin (q),</i>				x ^f	x ^f	x ^f	x ^f	x ^f	x ^f	x ^g	x ^g	x ^g

Justifications:

- Due to the distance from the proposals it is considered that no pathways exist for impacts on the supporting habitats (draft DCO and Vattenfall HRA Report paragraphs 5.23 and 5.26, Figure 3).

- b. Habitat effects will be localised and small scale, construction effects will be temporary, and KFE is a significant distance from other concurrent projects and therefore it has not been considered that any pathway for in-combination impacts exist (Vattenfall ES Section 6, sub-section 6.10, Vattenfall HRA Report paragraph 5.24, and Appendix 1 Table 5).
- c. No concerns have been expressed by NE with regard to impacts upon the supporting habitats. (Vattenfall HRA Report, paragraph 5.25, SoCG).
- d. Cormorant were recorded in both the potential disturbance zone and the collision risk zone, in high numbers with a peak count of 664 individuals within 2km of the proposed extension. Monitoring studies indicate that cormorant numbers increase within the operational phase of wind farms following short-term displacement during construction. Monitoring of collisions involving this species indicate a very high avoidance rate and this is thought to remain even in the case of increasing numbers and corresponding increasing numbers of flights through the wind farm. It is considered within the Applicant's HRA report and ES that displacement will be short-term during construction only (decommissioning has been assumed by the Applicant to have similar effects as construction) and of negligible magnitude given the increases in numbers that have taken place since KF1. It is also been assessed with a 98% avoidance rate (lower than 99.8% rate suggested by the SNH study referenced in the Applicant's HRA report) that collision risk will be negligible (Vattenfall HRA Report paragraph 5.3.8, Vattenfall ES Section 9 Offshore Ornithology).
- e. Mediterranean gull were recorded within the disturbance zone, in low numbers and infrequently. Peak count of 2 within 1km, 3 within 2km (0 within 500m) used to reason that even if all birds displaced, this would be an impact of negligible magnitude and therefore no likely significant effect (Vattenfall HRA Report paragraph 5.3.13, Table 5). Not recorded within the collision risk zone and has not been considered further with respect to this impact.
- f. Brent-goose, grey plover, golden plover, lapwing, knot, dunlin and curlew were recorded flying over the proposals area but not at turbine height and this has led to the Applicant screening out collision risk for these species (Vattenfall HRA Report paragraph 5.3.5). The SoCG have confirmed that collision risk with respect to these species is not a concern of the nature conservation consultees (SoCG between Vattenfall and KWT 16th May 2012, Vattenfall and NE 18th May 2012, and Vattenfall and the RSPB 28th May 2012). Avocet is not listed as a qualifying interest within Table 5 of the Applicant's HRA report but it is listed as a qualifying interest on the JNCC SPA Review (2001) for this SPA, both wintering and breeding populations. Impacts on this species were assessed within Section 9 of the Applicant's ES, and Avocet were not recorded within any of the potential impact zones meaning no likely effect was concluded in the ES. Similarly the other SPA species were not recorded and likely effects have been screened out by Vattenfall (Vattenfall HRA Report paragraph 5.3.6, Appendix 1 Table 5). A number of discrepancies have been identified during Examination between the species SPA listed within the Applicant's HRA report and JNCC information. Vattenfall have responded to queries highlighting these discrepancies (provided in ExA Technical Note) and have submitted justifications and amended information (Vattenfall Response to ExA HRA Technical Note, and Vattenfall

HRA Addendum). Some amendments were made in these appendices, however, Vattenfall have not amended the information within their HRA report for The Swale SPA to include Avocet (Vattenfall Response to ExA HRA Technical Note).

- g. Lack of significant impacts as a result of disturbance/displacement/collision is from the project alone is provided as the reasoning that no pathway for in-combination impacts exists (HRA Appendix 1 Table 5, Vattenfall ES Section 22). As for Matrix 3 justification 'h' above, this is not in accordance with EC guidance.

Matrix 5: Medway Estuary and Marshes SPA/Ramsar

Medway Estuary and Marshes SPA/Ramsar												
Distance to wind farm: 21km Distance to cable landfall: 22km												
European site features	Likely Effects of NSIP (phase of development)											
	Loss/damage/ contamination/ Non physical or biological disturbance			Disturbance and displacement of marine and shorebirds and barrier effects (operation)			Mortality from collision with wind turbines			In-combination impacts		
	C	O	D	C	O	D	C	O	D	C	O	D
Shingle beaches, Estuaries, Mud and sandflats, Lagoons, Saltmarsh	x ^a	x ^a	x ^a							x ^b	x ^b	x ^b
Bewick's (Tundra) swan, brent goose, teal, wigeon, pintail, shoveler, little grebe, avocet, oystercatcher, grey plover, ringed plover, knot, dunlin, black-tailed godwit, redshank, greenshank, curlew, whimbrel, turnstone, little tern, lapwing				x ^c	x ^c	x ^c	x ^c	x ^c	x ^c	x ^{c,h}	x ^{c,h}	x ^{c,h}
Great crested grebe				x ^g	x ^g	x ^g	x ^g	x ^g	x ^g	x ^h	x ^h	x ^h
Shelduck				x ^d	x ^d	x ^d	x ^d	x ^d	x ^d	x ^h	x ^h	x ^h
Cormorant				x ^e	x ^e	x ^e	x ^e	x ^e	x ^e	x ^h	x ^h	x ^h
Common tern				x ^f	x ^f	x ^f	x ^f	x ^f	x ^f	x ^h	x ^h	x ^h

Justifications:

- a. Due to the distance from the proposals it is considered that no pathways exist for impacts on the supporting habitats (draft DCO and Vattenfall HRA Report paragraphs 5.23 and 5.26, Figure 4).
- b. Habitat effects will be localised and small scale, construction effects will be temporary, and KFE is a significant distance from other concurrent projects and therefore it has not been considered that any pathway for in-combination impacts exist (Vattenfall ES, Section 6, paragraph 6.10, Vattenfall HRA Report paragraph 5.24).
- c. Brent-goose, grey plover, lapwing, knot, dunlin, curlew, whimbrel and turnstone were recorded flying over the proposals area but not at turbine height and this has led to screening out collision risk for these species by the Applicant. The remainder of the species were not recorded in any of the potential impact zones and have not been assessed further (Vattenfall HRA Report paragraph 5.3.5).
- d. *As for Matrix 3 (e) above.* A small number of shelduck were recorded within the collision risk zone (Vattenfall HRA Report Table 5. Risk modelling predicted a low 0.32 collisions per year (Vattenfall HRA Report paragraph 5.3.11, Vattenfall ES Section 9) which was considered unlikely to be significant. Shelduck were not recorded within the disturbance zone (Vattenfall HRA Report Table 5).
- e. *As for Matrix 4 (e) above.* Cormorant were recorded in both the potential disturbance zone and the collision risk zone, in high numbers. Monitoring studies indicate have led to conclusion that displacement will be short-term during construction only and of negligible magnitude given the increases in numbers that have taken place since KF1. Given high avoidance rates collision risk will be negligible. Decommissioning impacts are not specifically discussed in the main text, but are assumed to be similar to construction but lesser in magnitude within Appendix 1, the No Significant Effects Report (Vattenfall HRA Report Appendix 1 Table 6).
- f. *As for Matrix 3 (f) above.* Common tern were recorded in both the potential disturbance zone and the collision risk zone. A reduction in peak counts 2005-2010 leads to the conclusion of no likely significant effect. Reasoning is that the habitat within the potential impact zone is not of particular value and disturbance during construction would be expected to be negligible. Collision risk was also determined not likely to be significant (Vattenfall HRA Report paragraph 5.3.15 and Appendix 1 Table 6).
- g. Great crested grebe were recorded within the wind farm potential disturbance zone, in low 'locally important' numbers. Records were infrequent. Peak counts (5 within 500m, 7 within 1km, 17 within 2km) used to reason that even if all birds displaced, this would be an impact of negligible magnitude and therefore no likely significant effect (Vattenfall HRA Report paragraph 5.3.9, Table 5). Appears to apply to all phases of development. This species was not recorded within the collision risk zone and has not been considered further with respect to this impact.
- h. Lack of significant impacts as a result of disturbance/displacement/collision is provided as the reasoning that no pathway for in-combination impacts exists (HRA Appendix 1 Table 6, Vattenfall ES Section 22). As for Matrix 3 justification 'h' above, this is not in accordance with EC guidance.

Matrix 6: Thames Estuary and Marshes SPA/Ramsar

Thames Estuary and Marshes SPA/Ramsar												
Distance to wind farm: 20km Distance to cable landfall: 25km												
European site features	Likely Effects of NSIP (phase of development)											
	<i>Loss/damage/contamination/Non physical or biological disturbance</i>			<i>Disturbance and displacement of marine and shorebirds and barrier effects (operation)</i>			<i>Mortality from collision with wind turbines</i>			<i>In-combination impacts</i>		
	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>
<i>Saltmarsh, Mudflats, Shingle</i>	x^a	x^a	x^a							x^b	x^b	x^b
<i>White-fronted goose, gadwall, pintail, shoveler, hen harrier, grey plover, ringed plover, avocet, lapwing, knot, dunlin, black-tailed godwit, redshank, whimbrel, wintering waterbird assemblage</i>				x^c	x^c	x^c	x^c	x^c	x^c	x^e	x^e	x^e
<i>Shelduck</i>				x^d	x^d	x^d	x^d	x^d	x^d	x^e	x^e	x^e

Justifications:

- a. Due to the distance from the proposals it is considered that no pathways exist for impacts on the supporting habitats (draft DCO and Vattenfall HRA Report paragraphs 5.23 and 5.26, Figure 5).

- b. Habitat effects will be localised and small scale, construction effects will be temporary, and KFE is a significant distance from other concurrent projects and therefore it has not been considered that any pathway for in-combination impacts exists (Vattenfall ES, Section 6, paragraph 6.10, Vattenfall HRA Report paragraph 5.24).
- c. Grey plover, lapwing, knot, dunlin, and whimbrel were recorded flying over the proposals area but not at turbine height and this has led to screening out collision risk for these species. The remainder of the species were not recorded in any of the potential impact zones and have not been assessed further.
- d. *As for A3 (e) above.* A small number of shelduck were recorded within the collision risk zone (Vattenfall HRA Report Table 5. Risk modelling predicted a low 0.32 collisions per year (Vattenfall HRA Report paragraph 5.3.11, Vattenfall ES Section 9) which was considered unlikely to be significant. Shelduck were not recorded within the disturbance zone (Vattenfall HRA Report Table 5).
- e. Lack of significant impacts as a result of disturbance/displacement/collision is provided as the reasoning that no pathway for in-combination impacts exists (HRA Appendix 1 Table 7, Vattenfall ES Section 22). As for Matrix 3 justification 'h' above, this is not in accordance with EC guidance.

Matrix 7: Thanet Coast SAC

Thanet Coast SAC												
Distance to wind farm: 10km Distance to cable landfall: 10km												
European site features	Likely Effects of NSIP (phase of development)											
	<i>Physical loss by removal and/or smothering; Physical damage by abrasion, siltation, and/or selective extraction</i>			<i>Toxic contamination from chemical compounds; Non-toxic contamination from nutrient enrichment</i>			<i>Biological disturbance from spread of non-native species and /or selective extraction of species</i>			<i>In-combination impacts</i>		
	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>
<i>Reefs, submerged or partially submerged sea caves</i>	✗ ^a	✗ ^{a, d}	✗ ^b	✗ ^a	✗ ^a	✗ ^a	✗ ^{a, b}	✗ ^a	✗ ^a	✗ ^{c, e}	✗ ^{c, e}	✗ ^{c, e}

Justifications:

- The SAC is approximately 10km from the KFE offshore elements and onshore landfall, and it is not considered that there will be any direct impacts on its qualifying features from construction, operation, or decommissioning of the KFE (Vattenfall ES Section 8, paragraph 8.5.28). This has been supported at the scoping stage by NE (Vattenfall HRA Report paragraph 3.35, representation).
- Monitoring of the benthos post construction of the existing KF1 wind farm has not revealed a change in benthic faunal communities attributable to construction activities (Vattenfall ES Section 10: Benthic and Intertidal Ecology,

paragraph 10.5.4). Decommissioning has been considered to have similar impact to construction phase with respect to offshore designations (Vattenfall ES Section 8, paragraph 8.7.2).

- c. Given that impacts on physical processes, water quality and benthic ecology associated with construction, operation, and decommissioning are anticipated to be small scale no impacts on the habitat features of the SACs are predicted from the project alone. This is provided as the reasoning that pathways for in-combination effects on qualifying habitats are unlikely to exist (Vattenfall HRA Report paragraph 5.4.5, Vattenfall ES Section 8: paragraph 8.9.1, sub-heading 8.10). Section 6 and 10 of the Applicant's ES highlight that the distances between KFE and other projects remove the likelihood of cumulative/in-combination pathways. Together these points make the justification with respect to the EC guidance and requirements of the legislation.
- d. Routine maintenance involving jacked-up vessels will result in temporary localised disturbance to benthic habitats, and will not impact on the SAC given the distances involved (Vattenfall ES Section 8 paragraph 8.6.14).
- e. The conclusion of no likely significant effects on the SAC has been supported at the scoping stage by NE (Vattenfall HRA Report paragraph 3.3.5 and is supported by the RSPB in their written representation of the 29th July 2011).

Matrix 8: Margate and Longsands cSAC

Margate and Longsands cSAC												
Distance to wind farm: 10km Distance to cable landfall: 10km												
European site features	Likely Effects of NSIP (phase of development)											
	<i>Physical loss by removal and/or smothering; Physical damage by abrasion, siltation, and/or selective extraction</i>			<i>Toxic contamination from chemical compounds; Non-toxic contamination from nutrient enrichment</i>			<i>Biological disturbance from spread of non-native species and /or selective extraction of species</i>			<i>In-combination impacts</i>		
	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>	<i>C</i>	<i>O</i>	<i>D</i>
<i>Sandbanks slightly covered by seawater at all times</i>	x ^{a,b,h}	x ^{a,b,e,h}	x ^{a,b,h}	x ^{c,h}	x ^{c,h}	x ^{c,h}	x ^{d,h}	x ^{e,f,h}	x ^{d,h}	x ^{g,h}	x ^{g,h}	x ^{g,h}

Justifications:

- It has been assessed by the Applicant that impacts to physical processes (such as sediment transport) during construction will be local and minimal and that no impacts will result on the adjacent cSAC (Section 6 of the Applicant's ES, related to the SAC in Section 8 paragraph 8.5.25).
- There will be no direct habitat loss or sediment extraction/excavation within the SAC boundary (draft DCO and Vattenfall ES Section 8, Vattenfall HRA Report Figure 7).
- No source of contaminants has been identified within the area of the proposals and therefore no toxic contamination is predicted (Vattenfall ES Section 10 paragraph 10.5.11). Non-toxic contamination (e.g. from nutrient enrichment) is not addressed within the Applicant's HRA report. This is to some extent addressed within Section 7 of the

Applicant's ES addresses disturbance of sediment which has been considered as the only potential source of nutrient enrichment. This section of the ES draws on monitoring results from the construction of KF1 and concludes that no significant increases in suspended sediments will occur. The consultees have not expressed concerns with regard to this impact.

- d. Monitoring of the benthos post construction of KF1 wind farm has not revealed a change in benthic faunal communities attributable to construction activities (Vattenfall ES Section 10: Benthic and Intertidal Ecology, paragraph 10.5.4). Decommissioning has been considered to have similar impact to construction phase with respect to offshore designations (Vattenfall ES Section 8, paragraph 8.7.2).
- e. Operational activities will be largely limited to the water surface and therefore no impacts to benthic substrates or communities are predicted (Vattenfall ES Section 10 paragraph 10.6.1). If jacked – up vessels are required during operation evidence suggests benthic depressions caused by this plant infill quickly impacts are localised and transient in nature (these will be outside of but could be directly adjacent to the SAC) (Vattenfall ES Section 6 paragraphs 6.6.7 and 6.6.8, Section 8.6.14).
- f. Colonisation of foundations is anticipated resulting in a local increase in biodiversity (Vattenfall ES Section 10 paragraph 10.6.7-9. Evidence of encouragement of colonisation by non-native species has been limited to a long-establish non-native barnacle species overall impact of colonisation is considered negligible (Vattenfall ES Section 10 paragraph 10.6.10).
- g. Given that impacts on physical processes, water quality and benthic ecology associated with construction, operation, and decommissioning are anticipated to be small scale no impacts on the habitat features of the SACs are predicted from the project alone. This is provided as the reasoning that pathways for in-combination effects on qualifying habitats are unlikely to exist (Vattenfall HRA Report paragraph 5.4.5, Vattenfall ES Section 8: paragraph 8.9.1, sub-heading 8.10). Section 6 and 10 of the ES highlight that the distances between KFE and other projects remove the likelihood of cumulative/in-combination pathways. Together these points make the justification with respect to the EC guidance and requirements of the legislation.
- h. The conclusion of no likely significant effects on the cSAC has been 'agreed in principle' at the scoping stage by NE (Vattenfall HRA Report paragraph 3.35, representation). The SoCG have subsequently agreed that the only impact which should be subject to further assessment is the potential effects on the Outer Thames Estuary as a result of displacement of red-throated diver (SoCG between Vattenfall and KWT 16th May 2012, Vattenfall and NE 18th May 2012, and Vattenfall and the RSPB 28th May 2012).

On the basis of the evidence available the Applicant's report considered that the effect of the project on the following site **should be subject to appropriate assessment:**

Outer Thames Estuary SPA

This has been agreed by NE, the RSPB, and KWT as consultees (SoCG between Vattenfall and KWT 16th May 2012, Vattenfall and NE 18th May 2012, and Vattenfall and the RSPB 28th May 2012).

3.0 EFFECTS ON INTEGRITY

Introduction

The conservation objectives for the Outer Thames Estuary SPA are as follows:

Subject to natural change, maintain in favourable condition the internationally important populations of the regularly occurring Birds Directive Annex I species:

red-throated diver (Gavia stellata) and its supporting habitats and prey species

Relevant habitats include shallow coastal waters and areas in the vicinity of sub-tidal sandbanks.

Matrices 9 and 10 below and the accompanying 'justifications' notes provide a summary of the shadow Appropriate Assessment carried out by the Applicant (Vattenfall HRA Report - Vattenfall Wind Power Ltd (2001). Kentish Flats Offshore Wind Farm Extension Application for Development Consent Order, Habitats Regulations Assessment Report). The notes incorporate evidence gathered throughout the consultations undertaken and the examination process from Statements of Common Ground (SoCG), relevant representations, written representations, responses to questions raised by the Examining Authority, and examination responses and hearings.

Matrix Key

- ✓ = Adverse effect on integrity is likely
- ? = Adverse effect on integrity cannot be excluded
- ✗ = Adverse effect on integrity can be excluded

C = construction

O = operation

D = decommissioning

Matrix 9: Effects on Integrity: Project alone

European site:	Outer Thames Estuary SPA (alone)				
European site features	Effects of Project				
	<i>Disturbance effects (all phases)</i>	<i>Collision risk mortality (operation)</i>	<i>Effects on food supply (all phases)</i>	<i>Barrier effects (all phases)</i>	<i>Habitat loss (construction, decommissioning)</i>
<i>Wintering population of red-throated diver</i>	x^a	x^b	x^c	x^d	x^e

Justifications:

- a. Peak counts were used to calculate displacement, based on two models ('relative abundance' and 'density model') in the Applicant's HRA report. Based on these models, outputs for displacement under these models were calculated as 0.5% and 1.4% of the SPA population respectively (based on the citation population) and in paragraph 8.2.13 it is concluded that the displacement will be not significant. It is not clear from the Applicant's HRA report which model and which figure should be taken forward as the assessment result.
There was initial uncertainty and disagreement among the interested parties as to what baseline data to use in this calculation and which model should be applied. The signed SoCGs have subsequently reached an agreement on these issues. It has been agreed to use JNCC data as a baseline for the SPA population, and to apply the density model (referred to as the 3rd model in the SoCGs between Vattenfall and NE, Vattenfall and the RSPB and Vattenfall and KWT). This model applies the percentage reductions in density observed during post KF construction monitoring for each 'interaction zone' (i.e. 94% within wind farm, 83% 0-500m from wind farm, 77% 500m-1km away, and 59% 1-2km away). The output of this calculation has been agreed within the SoCG (SoCG between Vattenfall and KWT 16th May 2012, Vattenfall and NE 18th May 2012, and Vattenfall and the RSPB 28th May 2012) by all parties to be a displacement of 0.5% of the SPA population (in total across all interaction zones) predicted to arise from the Kentish Flats Extension. It has been agreed within the SoCG (as above) that this is unlikely to be significant enough to have an adverse impact on integrity of the SPA.
- b. Peak counts are presented in the Applicant's HRA report however mean counts (across winter) are used for the calculations of flight activity. Appendix 9.1 of the Applicant's ES shows the calculations in detail. Flight activity is calculated as a proportion of birds flying within wind farm area, and flying at turbine height, in line with SNH guidance. An avoidance rate of 98% has been applied to red-throated diver within the Applicant's HRA report and

- ES. Calculated increase in mortality from collision is 0.01% concluded by the Applicant as no impact on integrity. This has been agreed as a robust calculation by the consultees as reported in the SoCG (SoCG between Vattenfall and KWT 16th May 2012, Vattenfall and NE 18th May 2012, and Vattenfall and the RSPB 28th May 2012).
- c. Fish surveys and benthic monitoring have not indicated any changes to food supply which would result in an adverse effect on bird populations, including the SPA red-throated diver population. (Vattenfall HRA Report Appendix 2 paragraph 8.2.14, Vattenfall ES Section 10, Section 12).
 - d. This is based on an assumption by Vattenfall that even if birds need to divert their flight lines around the wind farm extension, the additional distance birds travel would be small. The wind farm is not expected to act as a significant barrier and therefore would be unlikely to result in significant adverse effects (arising from increased energy consumption during diversion, habitat degradation as feeding grounds become less attractive due a barrier being in place). (Vattenfall HRA Report, Appendix 2 paragraphs 8.2.15-16). NE have stated that the Outer Thames Estuary is not on a migratory route and they do not see barrier effects giving rise to any adverse effect on integrity of the site based on evidence from previous projects/assessments (NE response to Rule 17(2) Questions 19th June 2012, response 12).
 - e. The habitat loss from foundations and scour would be a very small proportion of the SPA habitat available and no impact on the integrity of the SPA population is predicted (Vattenfall HRA Report Appendix 2 paragraph 8.2.17). It is not clear from the Applicant's HRA report whether the cable route has been included within this particular part of Vattenfall's assessment; however, in Vattenfall's 4th Response (Document Ex4, 19th June 2012) they confirm that the assessment of effects included the cable route corridor. NE have confirmed (NE response to Rule 17(2) Questions 19th June 2012, response 10) that they consider effects associated with cable installation to have been addressed satisfactorily and they have no concerns related to habitat loss (other than effective habitat loss from displacement see Matrix 10).

Matrix 10: Effects on Integrity: In-Combination

European site:	Outer Thames Estuary SPA (in combination with other projects)				
European site features	In-combination Effects				
	<i>Disturbance effects</i>	<i>Collision risk mortality (operation)</i>	<i>Effects on food supply</i>	<i>Barrier effects</i>	<i>Habitat loss</i>
<i>Wintering population of red-throated diver</i>	? ^{f,i,j}	x ^g	x ^h	Not specifically assessed. ^h	x ^h

Justifications:

- f. Vattenfall ES Section 9, table 9.23 presents displacement results expressed as a proportion of the SPA population- 'interaction with the SPA' under the proportionate model and density model. Calculations have been made within the ES with respect to other wind farms within the SPA or for which the red-throated diver population could be ecologically linked: Kentish Flats, the extension, London Array Phase I and II, Thanet, Gunfleet Sands Phase I and II, Greater Gabbard and Galloper. It has been concluded by the Applicant that displacement will arise from three sites: KF1, Gunfleet Sands (I and II) and London Array (I). This is agreed within the SoCG (SoCG between Vattenfall and KWT 16th May 2012, Vattenfall and NE 18th May 2012, and Vattenfall and the RSPB 28th May 2012). Other types of works in the area have been ruled out as unlikely to contribute to in-combination displacement. As for the project alone assessment, there has been uncertainty and disagreement among the interested parties as to what baseline data to use in this calculation and which model should be applied. This has now been agreed within the SoCG (SoCG between Vattenfall and KWT 16th May 2012, Vattenfall and NE 18th May 2012, and Vattenfall and the RSPB 28th May 2012). The baseline data used for the assessment was the JNCC surveys, and the 3rd model (the density model) has been used as for the assessment of the effects of the project alone.

The **Timeline Table** below illustrates the changing baseline within the Outer Thames Estuary SPA over time as other wind farms have been constructed and a projection of future potential changes.

It has been agreed in the SoCG that under the worst-case scenario of displacement up to 2km from the wind farm the combined displacement from these schemes would be 11.4% of the SPA population, increasing to 11.9% if KFE were included. Including London Array II (noting the Grampian condition, and the uncertainty surrounding the exact layout of this project) this would increase to an estimated 24.9% displacement (worst-case).

The 11.9% displacement equates to 742 birds and has been calculated (SoCG between Vattenfall and KWT 16th May 2012, Vattenfall and NE 18th May 2012, and Vattenfall and the RSPB 28th May 2012) to result in a predicted increase in density of 0.03 divers per km². This assumes that displaced birds would be able to relocate to any undeveloped location within the SPA, and assumes that all areas of the SPA offer the same quality of habitat as that within the wind farms and their 2km buffer zones.

- g. Collision risk has been assessed within Section 9 of the Applicant's ES as not significant for all other schemes considered and the text states *'In conclusion the Kentish Flats extension would not make any significant contribution to any in-combination effect on the Outer Thames Estuary red-throated diver population, either through displacement or collision'* (paragraph 9.11.13). Again, the wording of the Applicant's information appears to deviate from the aim of in-combination assessment, which is not to qualify the relative contribution of the project to the combined effect but to establish if other projects combine with the project in such a way as to change its effects alone. However, in-combination collision risk is agreed within the SoCG to not be significant enough to adversely affect integrity of the SPA (SoCG between Vattenfall and KWT 16th May 2012, Vattenfall and NE 18th May 2012, and Vattenfall and the RSPB 28th May 2012).
- h. The only potential impacts taken forward by the Applicant for in-combination assessment were disturbance and collision risk. Other potential contributors were considered but ruled out; while food supply/foraging habitat loss is briefly discussed in the Applicant's HRA report barrier effects are not, however this is discussed within the Applicant's ES. (Vattenfall HRA Report Appendix 2, Vattenfall ES Section 9 paragraph 9.11.4). Direct habitat loss has not been considered likely to be subject to in-combination effects (see screening assessment). NE, the RSPB, and KWT agree within the signed SoCG that these impacts will not be significant enough to result in an adverse effect on integrity of the SPA (SoCG between Vattenfall and KWT 16th May 2012, Vattenfall and NE 18th May 2012, and Vattenfall and the RSPB 28th May 2012). This point is also echoed in NE's response to Rule 17(2) Questions on 19th June 2012, response 12.
- i. It is the position of NE that in light of a displacement of 11.9% of the SPA population of red-throated diver as a result of in-combination effects an adverse effect on integrity of the SPA cannot be excluded (SoCG between Vattenfall and NE 18th May 2012). Within their response to Rule 17(2) Questions on 19th June 2012 NE provide more information which provides context for this position. In R17(2)- 3 they refer to a figure of 12.6% displacement associated with London Array (Dti 2006, *'Appropriate Assessment with regard to London Array Wind Farm'*) which led to a conclusion by Dti that an adverse effect on integrity of Outer Thames Estuary could not be excluded. While the methodology

used to reach this figure differs from that used in Vattenfall's assessment for the Kentish Flats Extension, NE considers that both figures are based on the best known methodology at the time and given that the scientific community's understanding of displacement effects on bird populations has not changed significantly since 2006 it is reasonable to conclude that the similar figure of 11.9% displacement would also lead to the conclusion that an adverse effect on integrity cannot be excluded. They go on in R17(2) – 6 to place the 11.9% figure in the context of other past schemes in the area which have been consented on the basis of the likely risk to impacts on integrity. While acknowledging that no threshold percentage exists for what would constitute an unacceptable level of displacement, within the context of those schemes, NE state that 11.9% would mean a higher risk that integrity would be undermined. In this response to Rule 17(2) questions NE state that they consider that 11.9% is not as precautionary as the Applicant asserts (NE response to Rule 17(2) Questions on 19th June 2012, response 3).

- j. It is the position of the Applicant that this magnitude of displacement can be readily accommodated by the SPA, and is within the parameters of the natural fluctuations in the red-throated diver population (Vattenfall HRA Report Addendum). It is also the position of the Applicant that the 11.9% displacement is an overly precautionary figure (Vattenfall's 4th Response, Document Ex4, 19th June 2012). It is also acknowledged that a precautionary approach is best practice (EC Guidance document: *Assessment of plans and projects significantly affecting Natura 2000 sites (2001)*) when assessing the implications of a project for European Sites.

In-combination effects: Timeline Table

The table below sets out a time-line of the estimated displacement effects on red-throated diver for the other projects included in the in-combination assessment, drawing on published project programme information and the in-combination assessment agreed between the Applicant and the nature conservation bodies during the examination of the Kentish Flats Extension DCO application. The table highlights the various project timescales in relation to relevant decision and publication dates in order to provide further contextual background for the evidence presented in this report.

Past Timeline												% Interaction ² (No. divers displaced)	Combined % Interaction
04/ 2005	08/ 2005	09/ 2005	10/ 2006	03/ 2008	10/ 2008	12/ 2009	01/ 2010	04/ 2010	09/ 2010	10/ 2010	03/ 2011		
Construction of Kentish Flats (90MW)		Kentish Flats in operation										1.2 (72)	1.2 (72)
			London Array 1 AA published										
					Outer Thames Estuary designated as an SPA							1.2 (72)	1.2 (72)
					Construction of Gunfleet Sands (173MW)	Gunfleet Sands in operation						1.0 (61)	2.2 (133)
								Construction of Thanet (300MW)	Thanet in operation			0.2 (13)	2.4 (146)
											Construction LA 1 (630MW)		

Expected Timeline ¹								% Interaction ² (No. divers displaced)	Combined % Interaction
12/2012	01/2013	04/2013	10/2013	11/2013	02-04/2014	08-10/2016	11/2016 to 01/2017		
Outer Thames Estuary designated as an SPA									
Construction London Array Phase 1 (630MW)	London Array Phase 1 in operation							9.2 (576)	11.6 (722)
		Estimated construction of Kentish Flats Extension (51MW max)		Estimated KFE start operation				0.5 (33)	12.1 (755)
					Estimated construction of London Array Phase 2 (unknown MW) subject to Grampian condition		Estimated LA Phase 2 operational	13.5 (843)	25.6 (1,598)

¹ Timescales of individual projects sourced from published company and project-related websites.

² % Interaction with SPA (under 2km buffer density model) – figures sourced from the 'in-combination' assessment agreed in Statements of Common Ground SoCG between Vattenfall and KWT 16th May 2012, Vattenfall and NE 18th May 2012, and Vattenfall and the RSPB 28th May 2012.

REFERENCES

Burges Salmon (16/05/12): Statement of Common Ground between Vattenfall Wind Power Ltd and Kent Wildlife Trust In respect of an application for a Development Consent Order by Vattenfall Wind Power Ltd Application reference: EN010036.

Burges Salmon (18/05/12): Statement of Common Ground between Vattenfall Wind Power Ltd and Natural England In respect of an application for a Development Consent Order by Vattenfall Wind Power Ltd Application reference: EN010036.

Burges Salmon (28/05/12): Statement of Common Ground between Vattenfall Wind Power Ltd and the RSPB In respect of an application for a Development Consent Order by Vattenfall Wind Power Ltd Application reference: EN010036.

Burges Salmon (19/06/12): Kentish Flats Extension Fourth Response Document Ex4 Vattenfall Wind Power Ltd.

Burges Salmon (13/06/12): Kentish Flats Extension Third Response Summary of case put at hearings and updated DCO Document Ex3 Vattenfall Wind Power Ltd.

The Conservation of Habitats and Species Regulations, as amended, 2010.

Department of Trade and Industry 2006: Appropriate Assessment with regard to London Array Wind Farm.

EC Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

EC Directive 2009/147/EC on the Conservation of Wild Birds.

EC Guidance document: Managing Natura 2000 sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (2000).

EC Guidance document: Assessment of plans and projects significantly affecting Natura 2000 sites (2001).

Natural England Written Representation 24th November 2010.

Natural England 19th June 2012: Response to Rule 17 Questions.

The Planning Inspectorate (2012). Advice note ten: Habitat Regulations Assessment relevant to nationally significant infrastructure projects.

Vattenfall Wind Power Ltd (2001). Kentish Flats Offshore Wind Farm Extension Application for Development Consent Order, Habitats Regulations Assessment Report.

Vattenfall Wind Power Ltd (2011). Kentish Flats Offshore Wind Farm Extension, Environmental Statement.

Vattenfall Wind Power Ltd (2012). Habitats Regulations Assessment Report: Addendum

Vattenfall Wind Power Ltd (2012). Appendix 7: Response to ExA HRA Technical Note

Appendix F – Post Examination draft DCO

DRAFT

DRAFT STATUTORY INSTRUMENTS

201X No.

INFRASTRUCTURE PLANNING

The Kentish Flats Extension Order 201X

Made - - - - - [***] 201X
Coming into force - - [***] 201X

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1. Citation and commencement
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SCHEDULES

- SCHEDULE 1 — Authorised Project
 PART 1 — Authorised Development
 PART 2 — Ancillary Works
 PART 3 — Requirements
 SCHEDULE 2 — Deemed Licence under the Marine and Coastal Access Act 2009

An application has been made to the Infrastructure Planning Commission in accordance with the Infrastructure Planning (Applications: Prescribed Forms and Procedure) Regulations 2009^a for an Order granting development consent;

The application was examined by a single appointed person appointed by the Secretary of State pursuant to Chapter 4 of the Planning Act 2008^b (“2008 Act”);

The single appointed person, having considered the application with the documents that accompanied the application, and the representations made and not withdrawn, has made a report and recommendation to the Secretary of State;

The Secretary of State, having considered the report and recommendation of the single appointed person, has determined to make an Order giving effect to the proposals comprised in the application with modifications which in the opinion of the Secretary of State do not make any substantial change to the proposals;

Notice of the Secretary of State's determination was published [];

In exercise of the powers conferred by sections 114, 115, 120, and 149A of the 2008 Act the Secretary of State makes the following Order:

Citation and commencement

1. This Order may be cited as the Kentish Flats Extension Order and shall come into force on [] 201X.

Interpretation

- 2.—(1) Except for Schedule 2 which is subject to the definitions therein provided, in this Order—

“the 1990 Act” means the Town and Country Planning Act 1990^(c);

“the 2004 Act” means the Energy Act 2004^(d);

“the 2008 Act” means the Planning Act 2008^(e);

“the 2009 Act” means the Marine and Coastal Access Act 2009^(f);

“ancillary works” means the ancillary works described in Part 2 of Schedule 1 and any other works authorised by the Order and which are not development within the meaning of section 32 of the 2008 Act;

(a) SI 2264/2009

(b) 2008 c. 29

(c) 1990 c. 8. Section 206(1) was amended by section 192(8) of, and paragraphs 7 and 11 of Schedule 8 to, the Planning Act 2008 (c29) (date in force to be appointed see section 241(3), (4)(a), (c) of the 2008 Act). There are other amendments to the 1990 Act which are not relevant to this Order.

(d) 2004 c.20

(e) 2008 c.29

(f) 2009 c. 23

- “authorised development” means the development described in Part 1 of Schedule 1;
- "the authorised project" means the authorised development and the ancillary works authorised by this Order;
- "the centre point of a turbine" means the centre point bisecting the turbine tower, transition piece and foundation;
- "the environmental statement" means the document certified as the environmental statement by the Secretary of State for the purposes of the Order being application document reference number 4.1-4.3 dated October 2011;
- “the export cable area” means the area described as such whose co-ordinates are specified in Schedule 1 Part 1;
- “the land plan” means the plan No 5.3 (Drawing no. 9V9546/30/004 rev. 002) certified as the land plan by the Secretary of State for the purposes of this Order;
- "the licence conditions" means the conditions set out in Part 2 of Schedule 2 to this Order;
- “the limits of deviation” means the limits of deviation for the scheduled works comprised in the authorised development shown on the works plan;
- “local planning authority” means Canterbury City Council or any successor to its statutory functions;
- “maintain” includes maintain, inspect, repair, adjust, alter and refurbish and “maintenance” shall be construed accordingly;
- “the Maritime and Coastguard Agency" or "MCA” means the executive agency of the Department for Transport or any successor to its statutory functions;
- "mean high water level" or MHW means the level of mean high water spring tide;
- "mean low water level" or MLW means the level of mean low water spring tide;
- “the MMO” means the Marine Management Organisation or any successor to its statutory functions;
- "monopole foundation" means a metal pile, typically cylindrical, driven and/or drilled into the seabed and associated equipment;
- “the offshore development area” means the area described as such whose co-ordinates are specified in Part 1 of Schedule 1;
- “the Order limits” means the limits shown on the Order limits plan and works plan within which the authorised development may be carried out;
- “Order limits plan” means the plan No 2.1 (Drawing no. 9V9546/30/001 rev. 004) certified as the Order limits plan by the Secretary of State for the purposes of the Order;
- “PLA” means the Port of London Authority or any successor to its statutory functions;
- "the project design statement" means the document certified as the project design statement by the Secretary of State for the purposes of the Order being application document reference number 7.2 dated 10 October 2011;
- “requirements” means those matters set out in Part 3 of Schedule 1 to this Order;
- “scheduled works” means the works numbered 1a, 1b, 2a and 2b specified in Part 1 of Schedule 1 to this Order, or any part of them as the same may be varied pursuant to article 4 of this Order;
- "Secretary of State" means the Secretary of State responsible for determining an application for development consent for the authorised development;
- "Trinity House" means the Corporation of Trinity House of Deptford Strond or any successor to its statutory functions;
- “undertaker” means, subject to article 7(3) of this Order, Vattenfall Wind Power Ltd;
- "vessel" means every description of vessel, however propelled or moved, and includes a non-displacement craft, a personal watercraft, a seaplane on the surface of the water, a hydrofoil vessel, a hovercraft or any other amphibious vehicle and any other thing constructed or

adapted for movement through, in, on or over water and which is at the time in, on or over water;

"wind turbine generator" or "wind turbine" means a structure comprising any or all of a tower, transition piece, rotor, blades, nacelle and ancillary electrical and other equipment which may include lighting, j-tubes, transition piece, access and rest platforms, access ladders, boat access systems, corrosion protection systems, fenders and maintenance equipment, fixed to a foundation; and

"the works plan" means the plan No 5.4 (Drawing no. 9V9546/30/005 rev. 006) certified as the works plan by the Secretary of State for the purposes of this Order.

(2) References in this Order to rights over land include references to rights to do or to place and maintain anything in, on or under land or in the air-space above its surface.

(3) All distances, directions and lengths referred to in this Order are approximate and distances between points on a work comprised in the authorised development shall be taken to be measured along that work.

Development consent etc. granted by the Order

3.—(1) Subject to the provisions of this Order, the requirements and the provisions and conditions of the deemed Marine Licence at Schedule 2, the undertaker is granted—

- (a) development consent for the authorised development; and
- (b) consent for the ancillary works,

to be carried out within the Order limits.

(2) Subject to article 4 the authorised development shall be constructed in the lines or situations shown on the works plan.

Limits of deviation

4. Subject to requirements 4 and 5 in carrying out or maintaining the scheduled works the undertaker may deviate laterally from the lines or situations shown on the works plan to the extent of the limits of deviation.

Maintenance of authorised project

5. Subject to the other terms of this Order, including the requirements and the provisions and conditions of the deemed Marine Licence at Schedule 2, the undertaker may at any time maintain the authorised project, except to the extent that an Order or an agreement made under this Order, provides otherwise.

Operation of electricity generating station

6.—(1) The undertaker is hereby authorised to operate the electricity generating station comprised in the authorised development.

(2) This article does not relieve the undertaker of any requirement to obtain any permit or licence under any other legislation that may be required to authorise the operation of an electricity generating station.

Consent to transfer benefit of Order

7.—(1) Except as provided for in this article, section 156(1) of the 2008 Act applies to the grant of development consent by this Order.

(2) Subject to paragraph (5), the undertaker may -

- (a) transfer to another person (the "transferee") any or all of the benefit of the provisions of this Order and such related statutory rights as may be agreed between the undertaker and the transferee; or

- (b) grant to another person (the “lessee”) for a period agreed between the undertaker and the lessee any or all of the benefit of the provisions of this Order and such related statutory rights as may be so agreed.

(3) Where a transfer or grant has been made in accordance with this article references in this Order to the undertaker, except in paragraphs (4) and (5) shall include references to the transferee or the lessee.

(4) The exercise by a person of any benefits or rights conferred in accordance with any transfer or grant under this article shall be subject to the same restrictions, liabilities and obligations as would apply under this Order if those benefits or rights were exercised by the undertaker.

(5) Not later than 21 days after entering into any transfer or grant under paragraph (1) the undertaker shall give written notice to the Secretary of State, Trinity House, the PLA, the MCA and the MMO stating the name and address of the person to whom the benefits or rights were conferred and the date when the transfer or grant is to take effect (which shall not be earlier than the date of receipt of the notice by whichever of the Secretary of State, Trinity House, the PLA, the MCA or the MMO is the last to be notified).

Requirements, appeals etc

8.—(1) Where an application is made to the local planning authority for any consent, agreement or approval required by requirements 3 or 12-15 (requirements that relate to land above MLW), the following provisions apply, so far as they relate to a consent, agreement or approval of a local planning authority required by a condition imposed on a grant of planning permission, as if the requirement was a condition imposed on the grant of planning permission-

- (a) sections 78 and 79 of the 1990 Act (right of appeal in relation to planning decisions);
- (b) any orders, rules or regulations which make provision in relation to a consent, agreement or approval of a local planning authority required by a condition imposed on the grant of planning permission.

(2) For the purposes of paragraph (1), a provision relates to a consent, agreement or approval of a local planning authority required by a condition imposed on a grant of planning permission in so far as it makes provision in relation to an application for such a consent, agreement or approval or the grant or refusal of such an application, or a failure to give notice on such an application.

(3) For the purposes of the application of section 262 of the 1990 Act (meaning of "statutory undertaker") to appeals pursuant to this article, the undertaker is deemed to be a holder of a licence under section 6 of the Electricity Act 1989.

Public rights of navigation

9.—(1) Subject to paragraphs (2) and (3), the rights of navigation over the places in the sea where the individual wind turbine generators are located shall be extinguished.

(2) The extinguishment of the rights of navigation over the places identified in paragraph (1) shall take effect 14 days after the undertaker has submitted a plan to the Secretary of State, Trinity House, the PLA, the MCA and the MMO showing the precise locations of the foundations of each of the wind turbine generators to be constructed as part of the authorised development.

(3) The aforesaid rights of navigation shall be extinguished in respect of any one wind turbine generator until that wind turbine generator has been decommissioned and permanently removed, immediately after which the rights of navigation shall resume.

(4) The plan submitted in accordance with paragraph (2) shall be published by the undertaker as required by the Secretary of State.

Abatement of works abandoned or decayed

10.—(1) Where the authorised project or any part of it is abandoned or suffered to fall into decay the Secretary of State may by notice in writing require the undertaker at its own expense either to repair and restore the authorised project or any part, or to remove the authorised project and restore the site to its former condition, to such an extent and within such limits as the Secretary of State thinks proper.

(2) In circumstances where the undertaker is required to remove the authorised project, without prejudice to any obligations on the undertaker deriving from any notice served under section 105(2) of the 2004 Act, the notice may also require the restoration of the site of the relevant part of the authorised project to a safe and proper condition within an area and to such an extent as may be specified in the notice.

(3) If the undertaker fails to comply in any respect with a notice served under this article within the period of 30 days beginning with the date of service of the notice, the Secretary of State may take whatever steps the Secretary of State considers appropriate to achieve the result required by the notice; and any expenditure incurred by the Secretary of State in doing so shall be recoverable from the undertaker.

Survey of works

11.—(1) If the Secretary of State considers it expedient to do so, the Secretary of State may order a survey and examination of the authorised project or of the site on which it is proposed to construct the authorised project, and any expenditure incurred by the Secretary of State in any such survey and examination shall be recoverable from the undertaker.

(2) Except in the case of an emergency such surveys shall not be ordered more frequently than once a year, and before ordering such a survey the Secretary of State shall-

- (a) consult the undertaker in order to establish what relevant survey information is already available; and
- (b) give the undertaker an opportunity to carry out the survey itself.

Deemed licence under the Marine and Coastal Access Act 2009

12. The undertaker is granted a deemed licence under Part 4 Chapter 1 of the 2009 Act to carry out the works and make the deposits described in Schedule 2, subject to the licence conditions set out in that Schedule which are deemed to have been attached to the licence by the Secretary of State under Part 4 of the 2009 Act.

Saving for Trinity House

13. Nothing in this Order prejudices or derogates from any of the rights, duties or privileges of Trinity House.

Crown Rights

14.—(1) Nothing in this Order shall:

- (a) prejudicially affect any estate, right, power, privilege, authority or exemption of the Crown; or
- (b) authorise the undertaker to take, use, enter upon or in any manner interfere with any land, hereditaments or rights of whatever description (including any part of the shore or bed of the sea or any river, channel, creek, bay or estuary) belonging to-
 - (i) Her Majesty in right of the Crown and under the management of the Crown Estate Commissioners without the consent in writing of those Commissioners; or
 - (ii) a government department or held in trust for Her Majesty for the purposes of a government department without the consent in writing of that government department.

(2) A consent under paragraph (1)(b) may be given unconditionally or may be subject to such conditions or upon such terms as may be considered necessary or appropriate.

Certification of plans etc

15.—(1) The undertaker shall, as soon as practicable after the making of this Order, submit to the Secretary of State copies of –

- (a) the Order limits plan;
- (b) the land plan;
- (c) the works plan; and
- (d) any other plans or documents referred to in this Order

for certification that they are true copies of the documents referred to in this Order.

(2) A plan or document so certified shall be admissible in any proceedings as evidence of the contents of the document of which it is a copy.

Arbitration

16. Any difference under any provision of this Order, unless otherwise provided for, shall be referred to and settled by a single arbitrator to be agreed between the parties or, failing agreement, to be appointed on application of either party (after giving notice in writing to the other) by the Secretary of State.

Signed by authority of the Secretary of State for Energy and Climate Change

[Address]
[Date]

Name
Head of [Unit]
Department for Energy and Climate Change

SCHEDULES

SCHEDULE 1 Authorised Project

PART 1 Authorised Development

A nationally significant infrastructure project as defined in sections 14(1)(a) and 15 of the 2008 Act comprising an offshore wind turbine generating station with an installed capacity of up to 51 MW being an extension to the existing Kentish Flats offshore wind farm located on the bed of the sea approximately 7.8 kilometres off the coast of Kent and on land within the administrative area of Canterbury City Council and consisting of the following:

Within the offshore development area:

Work No. 1a

- (i) between 10 and 17 (inclusive) wind turbine generators fixed to the seabed by monopile foundations; and

Work No. 1b

- (ii) a network of subsea inter-array cables connecting the wind turbine generators to each other.

Co-ordinates for offshore development area

<i>Point</i>	<i>Latitude (DMS)</i>	<i>Longitude (DMS)</i>	<i>Point</i>	<i>Latitude (DMS)</i>	<i>Longitude (DMS)</i>
A1	51°27'58.960"	01°01'57.889"	A4	51°27'08.400"	01°08'02.400"
A2	51°28'06.600"	01°03'13.800"	A5	51°26'48.536"	01°08'27.326"
A3	51°26'49.200"	01°04'51.000"	A6	51°26'21.713"	01°04'00.060"

Associated Development

Within the export cable area:

Work No. 2a

- (i) A connection consisting of subsea cables from one or more of the wind turbine generators comprised within Work No. 1a to shore, including cable crossing works, and terminating at the cable transition pit; and

Work No. 2b

- (ii) A cable transition pit, including cables.

Co-ordinates for export cable area

<i>Point</i>	<i>Latitude (DMS)</i>	<i>Longitude (DMS)</i>	<i>Point</i>	<i>Latitude (DMS)</i>	<i>Longitude (DMS)</i>
B1	51°26'49.516"	01°03'25.151"	B8	51°22'20.604"	01°05'58.812"
B2	51°26'57.154"	01°04'41.017"	B9	51°22'19.812"	01°05'58.812"
B3	51°26'49.200"	01°04'51.000"	B10	51°22'19.92"	01°05'56.256"

B4	51°27'08.400"	01°08'02.400"	B11	51°22'33.685"	01°05'26.707"
B5	51°26'44.304"	01°08'32.636"	B12	51°26'26.282"	01°05'32.847"
B6	51°26'30.954"	01°06'19.501"	B13	51°26'17.484"	01°04'05.369"
B7	51°22'34.716"	01°06'13.284"			

PART 2

Ancillary Works

- (a) temporary landing places, moorings or other means of accommodating vessels in the construction and/or maintenance of the authorised development;
- (b) buoys, beacons, fenders and other navigational warning or ship impact protections works; and
- (c) temporary works for the benefit or protection of land or structures affected by the authorised development.

PART 3

Requirements

Interpretation

1.—(1) In this Part of this Schedule—

“commence” means beginning to carry out any material operation (as defined in Section 56(4) of the 1990 Act) forming part of the authorised development other than operations consisting of site clearance, demolition work, archaeological investigations, investigations for the purpose of assessing ground conditions, remedial work in respect of any contamination or other adverse ground conditions, diversion and laying of services, erection of any temporary means of enclosure, the temporary display of site notices or advertisements and “commencement” shall be construed accordingly;

“the CAA” means the Civil Aviation Authority constituted by the Civil Aviation Act 1982(a) or any successor to its statutory functions;

“English Heritage” means the Historic Buildings and Monuments Commission for England or any successor to its statutory functions;

“Natural England” means the body established by section 1 of the Natural Environment and Rural Communities Act 2006(b) and includes any successor to its statutory functions;

“notice to mariners” includes any notice to mariners which may be issued by the Admiralty, Trinity House, Queen’s harbourmasters, government departments and harbour and pilotage authorities; and

“the UK Hydrographic Office” means the Hydrographic Office of the Ministry of Defence, Taunton, Somerset TA1 2DN or any replacement body or successor to its functions.

“Work No” means that part of the authorised development with the corresponding number specified in Part 1 of this Schedule

(2) In this Schedule references to the locations of a wind turbine are references to the centre point of that turbine.

(a) 1982 c.16

(b) 2006 c.16. Section 1 was amended by s.311(2) and s.311(3) of the Marine and Coastal Access Act 2009 (c.23)

Time limits

2. The authorised development shall commence no later than the expiration of five years beginning with the date this Order comes into force or the expiration of such longer period as the Secretary of State may direct in writing.

Detailed design approval

3. - (1) No authorised development shall commence until the location and detailed specifications for Work Nos 2a and 2b above mean low water level have been submitted to and approved in writing by the local planning authority.
- (2) The detailed specifications for Work Nos 2a and 2b above mean low water level shall accord with the principles of the project design statement and shall only take place within the limits of deviation shown on the works plan.
- (3) Work Nos 2a and 2b must be carried out in accordance with the details approved under paragraph (1).
- (4) Subject to sub-paragraphs (1) and (2), the authorised development must be carried out in accordance with the following application plans-
- (a) the order limits plan; and
 - (b) the works plan.

Detailed design parameters

4.-The wind turbine generators forming part of the authorised development shall be located within the Order limits and within 160 metres of the grid co-ordinates listed below.

<i>Turbine</i>	<i>Latitude (DMS)</i>	<i>Longitude (DMS)</i>	<i>Turbine</i>	<i>Latitude (DMS)</i>	<i>Longitude (DMS)</i>
T1	51°27'56.719"	01°02'11.603"	T10	51°26'48.994"	01°04'17.918"
T2	51°28'00.579"	01°02'47.537"	T11	51°26'27.428"	01°04'04.186"
T3	51°27'38.990"	01°02'33.993"	T12	51°26'31.046"	01°04'39.957"
T4	51°27'42.632"	01°03'10.491"	T13	51°26'34.817"	01°05'15.662"
T5	51°27'21.259"	01°02'56.378"	T14	51°26'42.074"	01°06'27.237"
T6	51°27'24.677"	01°03'32.602"	T15	51°26'45.659"	01°07'03.019"
T7	51°27'03.300"	01°03'19.206"	T16	51°26'49.262"	01°07'38.798"
T8	51°27'06.943"	01°03'54.979"	T17	51°26'52.861"	01°08'14.578"
T9	51°26'45.416"	01°03'42.001"			

5. Except with the prior written approval of the Secretary of State and as assessed in the environmental statement all wind turbine generators forming part of the authorised development shall be of the same make, model and size, have three blades and shall not:

- (a) exceed a height of 145 metres or be less than 115 metres when measured from mean sea level to the tip of the vertical blade;
- (b) exceed a height of 85 metres or be less than 70 metres to the hub when measured from mean sea level;
- (c) exceed a rotor diameter of 120 metres or have a rotor diameter of less than 90 metres;
- (d) have a distance of less than 22 metres between the lowest point of the rotating blade of the wind turbine and mean high water level;
- (e) subject to requirement 9 be lit unless the lighting used is of a shape, colour and character as required by the Air Navigation Order 2009 or as directed by the CAA; and
- (f) subject to requirement 9, be painted in any colour other than submarine grey RA7035.

6.—(1) The total length of the cables comprising Work No 1b shall not exceed 12 kilometres.

(2) The total length of the cables comprising Work No 2a shall not exceed 18 kilometres.

(3) The number of cables forming part of Work No 2a and installed within the export cable area shall not exceed two.

7. Each monopile foundation forming part of the authorised development shall not have a diameter greater than 6 metres.

Safety Management

8.—(1) No authorised development shall commence until the Secretary of State, in consultation with the MCA, has given written approval of a plan for an active safety management system in accordance with the MCA recommendations in Annex 4 of the document MGN 371 Offshore Renewable Energy Installations (OREIs) – Guidance on UK Navigational Practice, Safety and Emergency Response Issues.

(2) No authorised development shall commence until the Secretary of State, in consultation with the MCA, has given written approval of a plan providing full details of the emergency co-operation plans for the construction, operation and decommissioning phases of the authorised development which satisfies the MCA recommendations in Annex 5 of the document MGN 371 Offshore Renewable Energy Installations (OREIs) – Guidance on UK Navigational Practice, Safety and Emergency Response Issues.

(3) The active safety management system and emergency response and co-operation plans must be implemented as approved unless otherwise agreed in writing by the Secretary of State.

Lighting

9. The undertaker shall during the whole period from the start of construction of the authorised development to the completion of decommissioning:

- (a) exhibit such lights, marks, sounds, signals and other aids to navigation as Trinity House, may from time to time direct;
- (b) colour all structures in the authorised development as directed by Trinity House;
- (c) provide relevant information to the MCA to assist in the timely and efficient issuing of notices to mariners and other navigational warnings of the position and nature of the works, such information to be provided to mariners in the shipping and fishing industry as well as to recreational mariners;
- (d) notify Trinity House as soon as reasonably practicable of both the progress and completion of the authorised development and any aids to navigation established from time to time; and
- (e) provide reports on the working condition of aids to navigation periodically as requested by Trinity House.

Aviation Safety

10.—(1) Prior to the commencement of the authorised development the following information shall be provided in writing to the UK Hydrographic Office and Defence Infrastructure Organisation Safeguarding:

- (a) the date of the commencement and completion of construction of the authorised development;
- (b) the maximum height of any construction equipment to be used;
- (c) the latitude, longitude and height of each wind turbine generator installed; and
- (d) which wind turbine generators are to be fitted with aviation obstruction lighting,

and the UK Hydrographic Office and Defence Infrastructure Organisation Safeguarding shall be notified of any changes to the information supplied under this paragraph and of the completion of construction of the authorised development.

(2) No wind turbine generator forming part of the development shall begin to be constructed until the Secretary of State, having consulted with the Civil Aviation Authority and all relevant Air Navigation Services Providers, is satisfied that mitigation to address the impact of the authorised development on civil aviation will be implemented and maintained for the life of the authorised project and that arrangements have been put in place to ensure that such mitigation is implemented before the development gives rise to any adverse impact on air traffic services for civil aviation.

(3) For the purposes of this requirement;

- (a) “wind turbine generator” does not include the installation of turbine foundations and transition pieces;
- (b) “Defence Infrastructure Organisation Safeguarding” means Ministry of Defence Safeguarding, Defence Infrastructure Organisation, Kingston Road, Sutton Coldfield, West Midlands B75 7RL and any successor body to its functions; and
- (c) “Air Navigation Service Provider” means any person or organisation certified and designated by the Civil Aviation Authority for the provision of air traffic services to civil aviation.

Provision against danger to navigation

11. In case of damage to, or destruction or decay of, the authorised development or any part thereof the undertaker shall as soon as reasonably practicable notify Trinity House and shall lay down such buoys, exhibit such lights and take such other steps for preventing danger to navigation as Trinity House may from time to time direct.

Archaeology above mean low water level

12.—(1) No part of the authorised development above mean low water level shall commence until a written scheme for the investigation of areas of archaeological interest above MLW has, after consultation with English Heritage, been submitted to and approved by the local planning authority.

(2) The scheme shall identify areas where field work and/or a watching brief are required, and the measures to be taken to protect, record or preserve any significant archaeological remains that may be found.

(3) Any archaeological works or watching brief carried out under the approved scheme must be by a suitably qualified person or body approved by the local planning authority.

(4) Any archaeological works or watching brief must be carried out in accordance with the approved scheme unless otherwise agreed in writing by the local planning authority.

Ecological management plan above mean low water level

13.—(1) No part of the authorised development above mean low water level shall commence until a written ecological management plan relating to the land above MLW and reflecting the survey results and ecological mitigation measures included in the environmental statement, after consultation with Natural England, has been submitted to and approved by the local planning authority.

(2) The ecological management plan shall include an implementation timetable and must be carried out as approved unless otherwise agreed in writing by the local planning authority.

Code of Construction Practice

14.—(1) No part of the authorised development above mean low water level shall commence until a code of construction practice relating to the works authorised above MLW has been submitted to and approved by the local planning authority.

(2) All construction works shall be undertaken in accordance with the approved code unless otherwise agreed in writing by the local planning authority.

Construction hours

15.—(1) Construction work above mean low water level shall only take place between 0800 and 1800 hours on weekdays and 0800 and 1300 hours on Saturdays, and not on Sundays or public holidays, unless otherwise agreed in writing by the local planning authority.

(2) Nothing in paragraph (1) precludes a start-up period from 0730 to 0800 on weekdays and Saturdays and a shut-down period from 1800 to 1830 on weekdays and from 1300 to 1330 on Saturdays.

Decommissioning

16.—(1) No part of the authorised development shall commence until a written decommissioning programme in compliance with any notice served upon the undertaker by the Secretary of State pursuant to section 105(2) of the 2004 Act has been submitted to the Secretary of State for approval.

(2) The written decommissioning programme shall satisfy the requirements of section 105(8) of the 2004 Act.

(3) The decommissioning of the authorised development shall be undertaken in accordance with the approved decommissioning programme or any subsequent decommissioning programme approved in writing by the Secretary of State.

(4) For the avoidance of doubt detailed decommissioning measures are not authorised by this Order. Decommissioning measures will be set out in the decommissioning programme required under 16._(1). An updated Environmental Statement may be required.

Requirement for written approval

17. Where under any of the above requirements the approval or agreement of the Secretary of State, the local planning authority or another person or body is required, that approval or agreement must be given in writing.

Amendments to approved details

18. With respect to any requirement which requires the authorised development to be carried out in accordance with the details approved by the local planning authority or any other person or body, the approved details shall be taken to include any amendments that may subsequently be approved in writing by the local planning authority or that other person or body.

SCHEDULE 2

DEEMED LICENCE UNDER THE MARINE AND COASTAL ACCESS ACT 2009

PART 1

Interpretation

1.—(1) In this Schedule—

“the 1990 Act” means the Town and Country Planning Act 1990;

“the 2008 Act” means the Planning Act 2008;

“the 2009 Act” means the Marine and Coastal Access Act 2009;

“authorised deposits” means the substances and articles specified in paragraph 2(3) of Part 1 of this Schedule;

“authorised development” means the development described in Part 1 of Schedule 1 of the development consent order and any other development authorised by the Order, which is development within the meaning of section 32 of the 2008 Act;

“Cefas” means the Centre for Environment, Fisheries and Aquaculture Science or any replacement body or successor to its functions;

“the centre point of a wind turbine” means the centre point bisecting the turbine tower, transition piece and foundation;

“commence” means beginning to carry out any material operation (as defined in section 56(4) of the 1990 Act) forming part of the authorised development other than operations consisting of site clearance, demolition work, archaeological investigations, investigations for the purpose of assessing ground conditions, remedial work in respect of any contamination or other adverse ground conditions and “commencement” shall be construed accordingly;

“enforcement officer” means a marine enforcement officer within the meaning of section 235 of the 2009 Act;

“English Heritage” means the Historic Buildings and Monuments Commission for England or any successor to its statutory functions;

“the Environment Agency” means the body established under the Environment Act 1995(a) or any successor to its statutory functions;

“the environmental statement” means the document certified as the environmental statement by the Secretary of State for the purposes of the Order and dated October 2011;

“the Health and Safety Executive” or “HSE” means the body established under section 10 of the Health and Safety at Work etc. Act 1974 or any successor to its statutory functions or other authority performing, carrying out or having the same regulatory functions as the HSE at the date of this licence;

“the intertidal area” means the area between mean high water level and mean low water level;

“the Kingfisher Fortnightly Bulletin” means the bulletin published by the Humber Seafood Institute or such other alternative publication approved in writing by the MMO;

“licensed activities” means the activities listed in Part 1 of this Schedule;

“the licence conditions” means the conditions set out in Part 2 of this Schedule;

(a) 1995 c.25

“the Maritime and Coastguard Agency” or “MCA” means the executive agency of the Department for Transport or any successor to its statutory functions;

“the Marine Management Organisation” or “MMO” means the body created under the Marine and Coastal Access Act 2009 which is responsible for the monitoring and enforcement of this licence or any successor to its statutory functions;

“mean high water level” or MHW means the level of mean high water spring tides;

“mean low water level” or “MLW” means the level of mean low water spring tides;

“monopile foundation” means a metal pile, typically cylindrical, driven and/or drilled into the seabed and associated equipment;

“Natural England” means the body established by section 1 of the Natural Environment and Rural Communities Act 2006 or any successor to its statutory functions;

“notice to mariners” includes any notice to mariners which may be issued by the Admiralty, Trinity House, Queen's harbourmasters, government departments and harbour and pilotage authorities;

“the Order” means the Kentish Flats Extension Order [201X];

“the Order limits” means the limits shown on the Order limits plan within which the authorised development may be carried out;

“the Order limits plan” means plan No 2.1 (Drawing No 9V9546/30/001 Rev 004) certified as the Order limits plan by the Secretary of State for the purposes of the development consent order;

“PLA” means the Port of London Authority or any successor to its statutory functions;

“the project design statement” means the document certified as the project design statement by the Secretary of State for the purposes of the Order being document reference number 7.2 dated 10 October 2011;

“the requirements” means the requirements set out in Schedule 1 Part 3 of the Order;

“regulatory authorities” means any government department, public, local or regulatory or any other authority or institution having regulatory functions, powers, duties and obligations having the full force of law;

“Trinity House” means the Corporation of Trinity House of Deptford Strond or any successor to its statutory functions;

“the UK Hydrographic Office” means the Hydrographic Office of the Ministry of Defence, Taunton, Somerset TA1 2DN or any replacement body or successor to its functions;

“wind turbine generator” or “wind turbine” means a structure comprising any or all of a tower, transition piece, rotor, blades, nacelle and ancillary electrical and other equipment which may include lighting, j-tubes, transition piece, access and rest platforms, access ladders, boat access systems, corrosion protection systems, fenders and maintenance equipment, fixed to a foundation;

“undertaker” means, subject to article 7(3) of the Order, Vattenfall Wind Power Ltd;

“vessel” means every description of vessel, however propelled or moved, and includes a non-displacement craft, a personal watercraft, a seaplane on the surface of the water, a hydrofoil vessel, a hovercraft or any other amphibious vehicle and any other thing constructed or adapted for movement through, in, on or over water and which is at the time in, on or over water; and

“VHF” means very high frequency.

(2) References in this Schedule to any statute, order, regulation or similar instrument shall be construed as a reference to the statute, order, regulation or instrument as amended by any subsequent statute, order, regulation or instrument or as contained in any subsequent re-enactment.

(3) In this Schedule references to the locations of a wind turbine are references to the centre point of that turbine.

(4) Except where otherwise notified in writing by the relevant organisation, the primary point of contact with the organisations listed below and the address for returns and correspondence shall be:

- (a) Marine Management Organisation
Marine Environment Team
PO Box 1275
Newcastle upon Tyne
NE99 5BN
Tel: 0191 376 2525
- (b) Marine Management Organisation
Coastal Office
Fish Market
Rock-A-Nore Road
Hastings
East Sussex
TN34 3DW
- (c) Trinity House
Tower Hill
London
EC3N 4DH
Tel: 020 7481 6900;
- (d) The United Kingdom Hydrographic Office
Admiralty Way
Taunton
Somerset
TA1 2DN
Tel: 01823 337 900;
- (e) Maritime and Coastguard Agency
Navigation Safety Branch
Bay 2/04
Spring Place
105 Commercial Road
Southampton
SO15 1EG
Tel: 023 8032 9191;
- (f) Centre of Environment, Fisheries and Aquaculture Science
Pakefield Road
Lowestoft
Suffolk
NR33 0HT
Tel: 01502 562 244;
- (g) The Environment Agency
Orchard House
Endeavour Park
London Road
Addington
West Malling
Kent
ME19 5SH
Tel: 01732 223272

- (h) Natural England
Hercules House
Hercules Road
Lambeth
London
SW1 7DU
Tel: 0300 060 4911
- (i) English Heritage
Eastgate Court
195-205 High Street
Guildford
GU1 3EH
Tel: 01483 252 057.
- (j) Port of London Authority
London River House
Royal Pier Road
Gravesend
Kent
DA12 2BG
Tel 01474 562200

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Details of licensed marine activities

2.—(1) Subject to the licence conditions this licence authorises the undertaker (and any agent or contractor acting on their behalf) to carry out the following licensable marine activities pursuant to section 66(1) of the 2009 Act:

- (a) the deposit at sea of the substances and articles specified in paragraph (3);
- (b) the construction of works in or over the sea and/or on or under the sea bed; and
- (c) sampling or investigative works required in connection with paragraphs (a) and (b).

(2) Such activities are authorised in relation to the construction and operation of:

Within the offshore development area:

Work No. 1a

- (i) between 10 and 17 (inclusive) wind turbine generators fixed to the seabed by monopile foundations; and

Work No. 1b

- (ii) a network of inter-array cables connecting the wind turbine generators to each other.

Co-ordinates for offshore development area

<i>Point</i>	<i>Latitude (DMS)</i>	<i>Longitude (DMS)</i>	<i>Point</i>	<i>Latitude (DMS)</i>	<i>Longitude (DMS)</i>
A1	51°27'58.960"	01°01'57.889"	A4	51°27'08.400"	01°08'02.400"
A2	51°28'06.600"	01°03'13.800"	A5	51°26'48.536"	01°08'27.326"
A3	51°26'49.200"	01°04'51.000"	A6	51°26'21.713"	01°04'00.060"

And associated development within the meaning of section 115(2) of the 2008 Act comprising:

Within the export cable area:

Work No. 2a

- (i) A connection within the Order limits seaward of mean high water level consisting of subsea cables from one or more of the wind turbine generators comprised within Work No. 1a to shore, including cable crossing works.

Co-ordinates for export cable area

<i>Point</i>	<i>Latitude (DMS)</i>	<i>Longitude (DMS)</i>	<i>Point</i>	<i>Latitude (DMS)</i>	<i>Longitude (DMS)</i>
B1	51°26'49.516"	01°03'25.151"	B8	51°22'20.604"	01°05'58.812"
B2	51°26'57.154"	01°04'41.017"	B9	51°22'19.812"	01°05'58.812"
B3	51°26'49.200"	01°04'51.000"	B10	51°22'19.92"	01°05'56.256"
B4	51°27'08.400"	01°08'02.400"	B11	51°22'33.685"	01°05'26.707"
B5	51°26'44.304"	01°08'32.636"	B12	51°26'26.282"	01°05'32.847"
B6	51°26'30.954"	01°06'19.501"	B13	51°26'17.484"	01°04'05.369"
B7	51°22'34.716"	01°06'13.284"	B9	51°22'19.812"	01°05'58.812"

(3) For the avoidance of doubt, this licence does not authorise the decommissioning of the authorised development for which a separate marine licence may be required.

(4) The substances or articles authorised for deposit at sea are:

metal;

stone and rock;

concrete;

sand; and

plastic/synthetic.

(5) The provisions of section 72 of the 2009 Act shall apply to this licence, save that the provisions of section 72(7) relating to the transfer of the licence shall only apply to a transfer not falling within article 7 of the Order.

PART 2
Licence Conditions

Design parameters

1. The wind turbine generators forming part of the authorised development shall be located within the Order limits and within 160 metres of the grid co-ordinates listed below.

<i>Turbine</i>	<i>Latitude (DMS)</i>	<i>Longitude (DMS)</i>	<i>Turbine</i>	<i>Latitude (DMS)</i>	<i>Longitude (DMS)</i>
T1	51°27'56.719"	01°02'11.603"	T10	51°26'48.994"	01°04'17.918"
T2	51°28'00.579"	01°02'47.537"	T11	51°26'27.428"	01°04'04.186"
T3	51°27'38.990"	01°02'33.993"	T12	51°26'31.046"	01°04'39.957"
T4	51°27'42.632"	01°03'10.491"	T13	51°26'34.817"	01°05'15.662"
T5	51°27'21.259"	01°02'56.378"	T14	51°26'42.074"	01°06'27.237"
T6	51°27'24.677"	01°03'32.602"	T15	51°26'45.659"	01°07'03.019"
T7	51°27'03.300"	01°03'19.206"	T16	51°26'49.262"	01°07'38.798"
T8	51°27'06.943"	01°03'54.979"	T17	51°26'52.861"	01°08'14.578"
T9	51°26'45.416"	01°03'42.001"			

2. Except with the prior written approval of the Secretary of State and as assessed in the environmental statement all wind turbine generators forming part of the authorised development shall be of the same make, model and size, have three blades and shall not:

- (a) exceed a height of 145 metres or be less than 115 metres when measured from mean sea level to the tip of the vertical blade;
- (b) exceed a height of 85 metres or be less than 70 metres to the hub when measured from mean sea level;
- (c) exceed a rotor diameter of 120 metres or have a rotor diameter of less than 90 metres;
- (d) have a distance of less than 22 metres between the lowest point of the rotating blade of the wind turbine and mean high water level;
- (e) subject to Order requirement 9 be lit unless the lighting used is of a shape, colour and character as required by the Air Navigation Order 2009 or as directed by the CAA^a; and
- (f) subject to Order requirement 9, be painted in any colour other than submarine grey RA7035.

3. —(1) The total length of the cables comprising Work No 1b shall not exceed 12 kilometres.
- (2) The total length of the cables comprising Work No 2a shall not exceed 18 kilometres.
- (3) The number of cables forming part of Work No 2a and installed within the export cable area shall not exceed two.
- (4) Each monopile foundation forming part of the authorised development shall not have a diameter greater than 6 metres.
- (5) The undertaker shall notify the MMO in writing within 14 days of any changes to the detailed design parameters approved by the Secretary of State in accordance with licence condition 2.

Notifications and inspections

^a See VF response to R17-6

- 4.—(1) The undertaker shall ensure that:
- (a) a copy of this licence and any subsequent amendments or revisions to it are provided to:
 - (i) all agents and contractors notified to the MMO in accordance with the conditions of this licence; and
 - (ii) the masters and transport managers responsible for the vessels notified to the MMO in accordance with the conditions of this licence.
 - (b) Within 28 days of receipt of a copy of this licence those persons referred to at paragraph (a) shall provide a completed confirmation form to the MMO confirming their understanding of the terms and conditions of this licence.
 - (2) Only those persons and vessels notified to the MMO in accordance with the conditions of this licence are permitted to carry out the licensed activities.
 - (3) Copies of this licence shall also be available for inspection by an enforcement officer at all reasonable times at the following locations:
 - (a) the undertaker's registered address;
 - (b) any site office located at or adjacent to the construction site and used by the undertaker or its agents and contractors responsible for the loading, transportation or deposit of the authorised deposits and works; and
 - (c) on board each vessel or at the office of any transport manager with responsibility for vessels from which authorised deposits are to be made or authorised works undertaken.
 - (4) The undertaker must provide access, and if necessary appropriate transportation, at reasonable notice to the offshore construction site or any other associated works or vessels to facilitate any inspection that the MMO considers necessary to inspect the works during construction and operation of the authorised development.
 - (5) The undertaker must inform the MMO in writing at least five working days prior to the commencement of the licensed activities or any phase of them.
 - (6) At least 7 days prior to the commencement of the licensed activities the undertaker must publish in the Kingfisher Fortnightly Bulletin details of the vessel routes, timings and locations relating to the construction of the authorised development.
 - (7) The undertaker shall ensure that:
 - (a) a notice to mariners is issued at least ten days prior to the commencement of the licensed activities advising of the commencement of licensed activities within the offshore development area and the expected vessel routes from the local service ports to the turbine locations; and
 - (b) a second notice to mariners is issued advising of the commencement of licensed activities within the export cable area below mean high water level and the route of the subsea cable(s).
 - (8) The notices to mariners must be updated and reissued not less frequently than weekly and supplemented with VHF radio broadcasts agreed with the MCA in accordance with the construction programme approved under licence condition 9(1)(a). Copies of all notices shall be provided to the MMO.
 - (9) The undertaker must notify:
 - (a) the UK Hydrographic Office of both the progress and completion of the authorised development in order that all necessary amendments to nautical charts are made; and
 - (b) the MMO once the authorised development is completed and any lighting or marking required by the Order has been established.
 - (10) The undertaker must ensure that prior to the commencement of the licensed activities the following suitably qualified and experienced liaison officers are appointed and their identity and credentials provided as part of the project environmental management plan required by licence condition 9(1)(f):
 - (a) a Fisheries Liaison Officer or Officers; and

(b) an Environmental Liaison Officer or Officers.

(11) The responsibilities of the Environmental Liaison Officer shall include:

- (a) monitoring compliance with this licence and the plans and programmes required by licence condition 9;
- (b) being a central point of contact for the monitoring requirements set out in licence conditions 12, 13 and 14;
- (c) providing induction in relation to environmental policies and procedures;
- (d) ensuring that information is made available and circulated in such a way as to minimise interference with fishing operations and other users of the sea; and
- (e) consulting with representatives of relevant national, regional and local navigational interests on the plans required by licence condition 9(1)(g) and (i)
- (f) delivering the functions and duties required by the written scheme of archaeological investigation required by licence condition 9(1)(iv).

(12) The Fisheries Liaison Officer shall represent the views of fishermen to the MMO for the purposes of licence condition 9(1)(b).

(13) Both the Fisheries Liaison Officer and the Environmental Liaison Officer shall be required to establish and maintain communications between the undertaker, contractors, fishermen, conservation groups and other users of the sea for the duration of the licenced activities.

Chemicals, drilling and debris

5.—(1) All chemicals used in the construction of the authorised development, including any chemical agents placed within the monopile void, shall be selected from the List of Notified Chemicals approved for use by the offshore oil and gas industry under the Offshore Chemicals Regulations 2002 unless otherwise agreed in writing by the MMO prior to construction works commencing.

(2) All protective coatings and paints shall be suitable for use in the marine environment and approved by the Health and Safety Executive when required under EHS law. The use of such coatings shall accord with best environmental practice.

(3) The storage, handling, transport and use of fuels, lubricants, chemicals and other substances shall be undertaken so as to prevent releases into the marine environment including bunding of 110% of the total volume of all reservoirs and containers.

(4) Where foundation drilling works are proposed, in the event that any system other than water-based mud is proposed the MMO's written approval in relation to the proposed the disposal of any arisings shall be obtained before the drilling commences. If the disposal of the arisings has not been assessed within the environmental statement a separate marine licence will also be required.

(5) Written approval from the MMO following consultation with the MCA and Trinity House is required before any rock dumping is carried out. If the proposed rock dumping has not been assessed within the environmental statement a separate marine licence will also be required.

(6) The undertaker shall ensure that any debris or temporary works placed below mean high water level are removed on completion of the authorised development.

(7) At least 14 days prior to the commencement of the licensed activities the undertaker must submit to the MMO an audit sheet covering all aspects of the construction of the authorised development below mean high water level. The audit sheet shall include details of:

- (a) loading facilities;
- (b) vessels;
- (c) equipment;
- (d) shipment routes;

- (e) working schedules; and
 - (f) all components and materials to be used in the construction of the authorised development.
- (8) No licenced activities shall commence until the MMO has approved the audit sheet in writing.
- (9) The audit sheet shall be maintained throughout the construction of the authorised development and any changes notified immediately in writing to the MMO.
- (10) In the event that;
- (a) any of the materials on the audit sheet cannot be accounted for the MMO will require the undertaker to carry out a side scan sonar survey to plot all obstructions across the Order limits;
 - (b) any materials that cannot be accounted for are not located within the Order limits the MMO will require the undertaker to extend the side scan sonar survey to cover routes outside the Order limits used by the vessels in undertaking the authorised development.
- (11) Local fishermen shall be invited to send a representative to be present during the side scan sonar survey. Any new obstructions that the MMO believes to be associated with the authorised development shall be removed at the undertaker's expense.
- (12) For the purposes of this licence condition:
- (a) "best environmental practice" means best environmental practice as defined in Appendix 1 of the 1992 OSPAR Convention of the Protection of the Marine Environment of the North-East Atlantic;
 - (b) "EHS law" means all applicable legislation, regulations and legally binding codes of practice and guidance notes issued by regulatory authorities in so far as they relate to or apply to matters relating to the occupational health and safety of any person and/or to the pollution or protection of air, water, land or any or all organisms (including man).

Force majeure

6. If, due to stress of weather or any other cause the master of a vessel determines that it is necessary to deposit the authorised deposits outside of the Order limits because the safety of human life and/or of the vessel is threatened, full details of the circumstances of the deposit shall be notified to the MMO within 48 hours.

Seasonal restrictions

7. Except with the prior written approval of the MMO, following consultation with Cefas and Natural England, no monopiles shall be installed or works take place within the export cable area between 14 February and 31 May to avoid effects on herring spawning.

8. In the event that cable installation works take place between October and April (inclusive) any such works between mean low water and mean high water shall avoid the period two hours either side of high water to avoid disturbance to roosting turnstone.

Pre-construction plans and documentation

9.—(1) The licensed activities shall not commence until the following have been submitted to and approved in writing by the MMO. Except where otherwise stated or with the prior written approval of the MMO these documents must be submitted to the MMO for approval at least 4 months prior to the commencement of works;

- (a) A construction and monitoring programme to include details of:
 - (i) the proposed construction start date;
 - (ii) timings for mobilisation of plant, delivery of materials and installation works; and
 - (iii) the methodologies and timings for preparing and submitting survey specifications, data collection and analysis and submission of reports and the provision of this information to the MMO, Cefas and Natural England in accordance with licence

conditions 12 to 14. This must be submitted 4 months prior to the start of any related survey works.

- (b) The scope of the fish and shellfish surveys required by licence conditions 12(3)(d) and 14(d) shall be agreed by the MMO, following consultation with Cefas and the Fisheries Liaison Officer.
- (c) The plans required under paragraphs (g) and (i) shall be agreed by the MMO following consultation with the MCA, the PLA and Trinity House
- (d) Where compliance with the construction and monitoring programme agreed under paragraph (a) is not possible, the undertaker must notify the MMO in writing and submit a revised programme for approval. In circumstances where the revised programme affects other plans or documents agreed by the MMO under this paragraph the MMO may require construction works to cease until the revised programme has been approved.
- (e) A construction method statement in accordance with the project design statement and environmental statement and including details of:
 - (i) foundation installation, including drilling methods;
 - (ii) turbine installation, including any scour protection;
 - (iii) cable installation, including cable landfall;
 - (iv) contractors;
 - (v) vessels; and
 - (vi) associated works.
- (f) A project environmental management plan to include details of:
 - (i) a marine pollution contingency plan to address the risks, methods and procedures to deal with any spills and collision incidents during construction and operation of the authorised development in relation to all activities carried out below mean high water level;
 - (ii) a chemical risk analysis to include information regarding how and when chemicals are to be used, stored and transported in accordance with recognised best practice guidance;
 - (iii) waste management and disposal arrangements;
 - (iv) the appointment and responsibilities of any officers required in connection with the carrying out of the licensed activities;
 - (v) any seasonal restriction on construction works and
 - (vi) locations of any archaeological exclusion zones agreed as part of the written scheme of investigation approved under paragraph (iv) of this licence condition
- (g) A scour protection management and cable armouring plan providing details of the need, type, sources, quantity and installation methods for scour protection and cable armoury.
- (h) Only where driven or drilled pile foundations are used, a marine mammal mitigation protocol to include:
 - (i) identification of a marine mammal monitoring zone;
 - (ii) appointment of marine mammal observer(s);
 - (iii) proposals for the detection of marine mammals (visually and acoustically) within the marine mammal monitoring zone to be undertaken prior to the commencement of piling;
 - (iv) reporting methodology; and
 - (v) description of approved soft-start procedure to be used on commencement of piling.
- (i) Cable specification and installation plan, to include:
 - (i) technical specification of off-shore cables, including a desk-based assessment of attenuation of electro-magnetic field strengths, shielding and cable burial depth in accordance with industry good practice;

- (ii) a detailed cable laying plan, including geotechnical data and cable laying techniques;
 - (iii) provision that the depth of navigable water be maintained as far as reasonably practicable at a minimum of the depth stated upon the relevant Hydrographic Office charts current at the date the Order is made; and
 - (iv) provision to ensure that as far as reasonably practicable no hazard to navigation is created as a result of cable installation and protection works undertaken either during construction or during subsequent maintenance.
- (j) A written scheme of archaeological investigation in accordance with industry good practice to include:
- (i) details of responsibilities of the undertaker, archaeological consultant and contractor;
 - (ii) a methodology for any site investigation including any specifications for geophysical, geotechnical and diver or remotely operated vehicle investigations;
 - (iii) analysis and reporting of survey data to be submitted to the MMO within 3 months of survey completion and shall be agreed in writing with the MMO following consultation with English Heritage;
 - (iv) delivery of any mitigation including, where necessary, archaeological exclusion zones;
 - (v) monitoring during and post construction, including a conservation programme for finds;
 - (vi) archiving of archaeological material with a public archive in accordance with the Online Access to the Index of archaeological investigations (OASIS) system; and
 - (vii) a reporting and recording protocol, including reporting of any wreck or wreck material during construction, operation and decommissioning of the authorised development.

(2) The undertaker shall comply with the plans and documentation approved under this licence condition in carrying out the licensed activities unless otherwise agreed in writing by the MMO.

Reporting of engaged agents, contractors and vessels

10.—(1) The undertaker shall provide the following information to the MMO:

- (a) at least 5 working days before any vessel, agent or contractor engages in any licensed activity the name and function of any agent or contractor appointed to engage in the licensed activities; and
- (b) each week during the construction of the authorised development a completed Hydrographic Note H102 listing the vessels currently and to be used in relation to the licensed activities.

(2) Any changes to the supplied details must be notified to the MMO in writing prior to the agent, contractor or vessel engaging in the licensed activities.

Equipment and Operation of Vessels Engaged in Licensed Activities

11.—(1) All vessels employed to perform the licensed activities shall be constructed and equipped to be capable of the proper performance of such activities in accordance with the conditions of this licence and shall comply with paragraphs (2) to (7).

(2) Subject to paragraph (3) all motor powered vessels must be fitted with:

- (a) electronic positioning aid to provide navigational data;
- (b) radar;
- (c) echo sounder; and
- (d) multi-channel VHF.

(3) No radio beacon or radar beacon operating on the marine frequency bands shall be installed or used without the prior written approval of the Secretary of State.

(4) All vessels' names or identification shall be clearly marked on the hull or superstructure of the vessel.

(5) All vessels shall exhibit signals in accordance with the requirements of the International Regulations for the Prevention of Collisions at Sea.

(6) All communication on VHF working frequencies shall be in English.

(7) No vessel shall engage in the licensed activities unless all the equipment specified in paragraph (2) is fully operational.

Pre-construction baseline

12.—(1) Any pre-construction baseline report shall take account of any existing environmental data, assessments and reports relevant to the Order limits.

(2) Prior to the commencement of the licensed activities the undertaker shall submit a pre-construction baseline report to the MMO for written approval at least 4 months prior to the start of any licensed activities. No licensed activities shall commence until the MMO has approved in writing the pre-construction baseline monitoring report. The form and content of the report, including any additional environmental monitoring, shall be as previously agreed in writing by the MMO following consultation with Cefas, Natural England and English Heritage.

(3) The pre-construction baseline report shall include;

- (a) data concerning the location and abundance of any benthic communities within the Order limits;
- (b) a Phase 1 survey of the intertidal area;
- (c) a swath-bathymetric survey including a side scan sonar survey including seabed anomalies of archaeological interest and those anomalies subject to exclusion zones and scour/spud marks across the Order limits;
- (d) data concerning existing fish and shellfish populations and spawning activity in the vicinity of the Order limits;
- (e) data concerning existing ornithological activity in the vicinity of the Order limits; and
- (f) a desk based assessment of known and predicted archaeology and paleo-environmental deposits

(4) In the event that the pre-construction baseline report contains sufficient information regarding the effects of the licensed activities on individual matters listed at paragraphs (3)(a) to (3)(e) the MMO shall not require further monitoring to be carried out in respect of that matter.

Construction monitoring

13.—(1) During construction the undertaker shall submit environmental monitoring reports to the MMO in accordance with the construction and monitoring programme approved under licence condition 9(1)(a) which shall include:

- (a) if jetting is used for cable installation, the monitoring of suspended sediment concentrations within the jetting area and at a suitable control location;
- (b) measurements of noise generated by the installation of the first four foundations, following which the MMO will determine whether further noise monitoring is required;
- (c) recording of any sightings of marine mammals within the Marine Mammal Mitigation Zone; and
- (d) ornithological monitoring.

(2) The results of any initial noise measurements provided in accordance with paragraph (1)(b) shall be provided to the MMO within six weeks of the installation of the first foundation piece. The assessment of this report by the MMO shall determine whether any further noise monitoring is required. In the event that the reported noise levels are

significantly in excess of those predicted in the environmental statement further pile installation shall only be carried out with the prior written approval of the MMO.

(3) In the event that the installation of the export cable(s) takes place between May and September, bathing water quality shall be monitored and reported to the Environment Agency in accordance with a written protocol agreed in advance of such works taking place. The protocol shall include procedures for setting the bathing water quality baseline, details of the appropriate standards and the steps to be taken in the event that, as a result of the export cable works, bathing water quality falls below the agreed standards.

Post construction

14. Post construction the undertaker shall submit environmental monitoring reports to the MMO in accordance with the construction and monitoring timetable approved under licence condition 9(1)(a) which shall include:

- (a) data from sample locations for benthic monitoring;
- (b) monitoring of the intertidal area;
- (c) swath-bathymetric surveys including spud mark monitoring and scour monitoring around the turbine foundations;
- (d) a survey of fish and shellfish populations in the vicinity of the Order limits; and
- (e) ornithological monitoring.

Amendments to approved details

15. With respect to any condition of this Schedule which requires the licensed activities to be carried out in accordance with the plans and programmes approved by the MMO, the approved plans and programmes shall be taken to include any amendments that may subsequently be approved in writing by the MMO.

EXPLANATORY NOTE

(This note is not part of the Order)

This Order grants development consent for, and authorises Vattenfall Wind Power Ltd to construct, operate and maintain a generating station in the sea approximately 7.8 kilometres off the coast of Kent together with all necessary and associated development. The Order imposes requirements in connection with the development for which it grants development consent.

The Order also grants a deemed marine licence for the marine licensable activities, being the deposit of substances and articles and the carrying out of works, involved in the construction of the generating station and associated development. The deemed marine licence imposes conditions in connection with the deposits and works for which it grants consent.

A copy of the plans and book of reference referred to in this Order and certified in accordance with article 15 (certification of plans, etc) of this Order may be inspected free of charge at the offices of Canterbury City Council at Military Road, Canterbury CT1 1YW.