



Department
of Energy &
Climate Change

**RECORD OF THE HABITATS REGULATIONS ASSESSMENT UNDERTAKEN
UNDER REGULATION 61 OF THE CONSERVATION OF HABITATS AND
SPECIES REGULATIONS 2010 (AS AMENDED) AND REGULATION 25 OF THE
OFFSHORE HABITATS REGULATIONS FOR AN APPLICATION UNDER THE
PLANNING ACT 2008 (AS AMENDED)**

AND

TRANSBOUNDARY CONSIDERATIONS

***Project Title:* NAVITUS BAY WIND PARK**

Date: September 2015

CONTENTS

SECTION	TITLE	PAGE
1	INTRODUCTION	4
2	PROJECT DESCRIPTION	9
3	PROJECT LOCATION AND DESIGNATED SITES	13
4	SCREENING FOR LIKELY SIGNIFICANT EFFECTS	16
5	APPROPRIATE ASSESSMENT	24
	<ul style="list-style-type: none"> • Bewick's swan • Gadwall • Atlantic salmon • Mediterranean gull • Northern gannet • Black legged kittiwake • Sandwich tern 	26 28 30 39 45 49 52
6	TRANSBOUNDARY CONSIDERATIONS	
	<ul style="list-style-type: none"> • Channel Islands: Alderney West Coast and Burhou Islands Ramsar site 	55
7	CONCLUSIONS ON SITE INTEGRITY	59
8	REFERENCES	63
	ANNEX A	66

TABLES

TITLE	PAGE
Table 1 - Sites where a LSE cannot be ruled out	18
Table 2 - Plans and projects included within the Applicant's in-combination impacts assessment	21
Table 3 - Conservation objectives for Avon Valley SPA	26
Table 4 - Conservation objectives for Avon Valley SPA and Ramsar site	28
Table 5 - Conservation objectives for the River Avon SAC and River Itchen SAC	30
Table 6 - Conservation Limit compliance data	31
Table 7 - Assessment criteria used to assess the potential effect of underwater noise on marine species	32
Table 8 - Conservation objectives for Solent and Southampton Water SPA and Poole Harbour SPA and Ramsar site	39
Table 9 Conservation objectives for Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA	46

FIGURES

TITLE	PAGE
Figure 1 - Project Location Plan	13
Figure 2 – Contour plot showing the predicted 90 and 75 dBht effect ranges for salmon during the installation of 8m and 3.5m piles in the northern most positions	33

1. INTRODUCTION

Background

- 1.1 This is a record of the Habitats Regulation Assessment (HRA) that the Secretary of State for Energy and Climate Change (SoS) has undertaken under the Conservation of Habitats and Species Regulations 2010 (as amended) (the Habitats Regulations) and the Offshore Marine Conservation (Natural Habitats & c.) Regulations 2007 (as amended) (the Offshore Habitats Regulations) in respect of the Development Consent Order (DCO) and Deemed Marine Licence (DML) for the proposed Navitus Bay Offshore Wind Park and its associated infrastructure (the Project). For the purposes of these regulations, the SoS is the competent authority
- 1.2 On 10 April 2014 Navitus Bay Development Ltd (NBDL) (hereafter ‘the Applicant’) submitted an application to the Planning Inspectorate (PINS), for consent under Section 37 of the Planning Act 2008 (as amended) for the construction and operation of an offshore wind park comprising up to 194 wind turbines with an installed capacity of up to 970 MW, as well as associated offshore and onshore infrastructure. The 153 square kilometre offshore array would be located on the bed of the English Channel, off the Dorset and Hampshire Coast.
- 1.3 A Turbine Area Mitigation Option (TAMO) proposed by the Applicant during the examination is for an offshore wind park comprising 105 wind turbines with an installed capacity of up to 630 MW, covering an area of 79 square kilometres as well as associated onshore and offshore infrastructure. This HRA assesses the Project as originally applied for (i.e. not the TAMO) as the original application represents the maximum scenario that has the potential to be granted development consent. This is the same approach taken by PINs in preparing the RIES (RIES: para 2.25).
- 1.4 The Project is described in more detail in Section 2.
- 1.5 In England and Wales, offshore energy generating stations greater than 100 MW constitute nationally significant infrastructure projects (NSIPs) and applications for consent are subject to the requirements of the Planning Act

2008 (as amended). This Project constitutes an NSIP as it has a generation capacity of up to 970MW.

- 1.6 The Project was accepted by PINS on 8 May 2014 and a four member Panel of Inspectors ('the Panel') was appointed as the Examining Authority (ExA) for the application. The examination of the Project application began on 11 September 2014 and was completed on 11 March 2014. The Panel submitted its report ('The Panel's report') to the SoS on 11 June 2015.
- 1.7 The SoS's conclusions on habitats and wild birds issues contained in this HRA report have been informed by the Panel's Report, and further information and analysis, including a Report on the Implications for European Sites (RIES) and written responses to it.

Habitats Regulations Assessment

- 1.8 Council Directive 92/43/EC on the conservation of natural habitats and of wild fauna and flora (the Habitats Directive) and Council Directive 2009/147/EC on the conservation of wild birds (the Birds Directive) aim to ensure the long-term survival of certain species and habitats by protecting them from adverse effects of plans and projects.
- 1.9 The Habitats Directive provides for the designation of sites for the protection of habitats and species of European importance. These sites are called Special Areas of Conservation (SACs). The Birds Directive provides for the classification of sites for the protection of rare and vulnerable birds and for regularly occurring migratory species. These sites are called Special Protection Areas (SPAs). SACs and SPAs are collectively termed European sites and form part of a network of protected sites across Europe. This network is called Natura 2000.
- 1.10 The Convention on Wetlands of International Importance 1972 (the Ramsar Convention) provides for the listing of wetlands of international importance. These sites are called Ramsar sites. UK Government policy is to afford Ramsar sites in the United Kingdom the same protection as European sites.
- 1.11 In the UK, the Habitats Regulations transpose the Habitats and Birds Directives into national law as far as the 12 nm limit of territorial waters. Beyond territorial waters, the Offshore Habitats Regulations serves the same function for the

UK's offshore marine area. The Project covers areas within and outside the 12 nm limit and on shore so both sets of Regulations apply.

1.12 Regulation 61 of the Habitats Regulations provides that:

“.....before deciding to give consent, permission or other authorisation for, a plan or project which is likely to have a significant effect on a European site (either alone or in combination) and which is not directly connected with or necessary to the management of the site, the competent authority must make an appropriate assessment of the implications for the site in view of the site's conservation objectives.”

1.13 Regulation 25 of the Offshore Habitats Regulations provides that:

“.....before deciding to give consent, permission or other authorisation for, a plan or project which is to be carried out on any part of the waters or on or in any part of the seabed or subsoil comprising an offshore marine area or on or in relation to an offshore marine installation and which is likely to have a significant effect on a European marine site (either alone or in combination) and which is not directly connected with or necessary to the management of the site, the competent authority must make an appropriate assessment of the implications for the site in view of the site's conservation objectives.”

1.14 This Project is not directly connected with, or necessary to, the management of a European site or a European marine site. The Habitats and Offshore Habitats Regulations require that, where the project is likely to have a significant effect (LSE) on any such site, an appropriate assessment (AA) is carried out to determine whether or not the project will adversely affect the integrity of the site in view of its Conservation Objectives. In this document, the assessments as to whether there are LSEs, and, where required, the AAs, are collectively referred to as the HRA.

1.15 The report also contains analysis and assessment of the potential impacts of the Project upon a designated site in other European Union Member State (“transboundary site”) in section 6, ‘Transboundary Considerations’.

1.16 This HRA takes account of mitigation measures being secured, by requirements and conditions, within the DCO and DML, if made.

The RIES and Statutory Consultation

- 1.17 Under the Habitats Regulations the competent authority must, for the purposes of an AA, consult the appropriate nature conservation body and have regard to any representation made by that body within such reasonable time as the authority specify.
- 1.18 Natural England (NE) is the Statutory Nature Conservation Body (SNCB) for England and for English waters within the 12 nm limit. The Joint Nature Conservation Committee (JNCC) is the SNCB beyond 12 nm however this duty has been discharged to NE following the 2013 Triennial Review of both organisations (Defra, 2013). However, JNCC retains responsibility as the statutory advisor for European Protected sites that are located outside the territorial sea and UK internal waters (i.e. more than 12 nautical miles offshore).
- 1.19 The Panel prepared a report, with support from the Planning Inspectorate Environmental Services Team, on the Implications for European Sites (RIES), based on working matrices prepared by the Applicant. The RIES documented the information received during the examination and presented the Panel's understanding of the main facts regarding the HRA to be carried out by the SoS.
- 1.20 The RIES was published on PINS planning portal website and circulated to interested parties on 20 February 2015 and comments were sought by 5 March 2015 for the purposes of statutory consultation. The RIES and the written responses to it have been taken into account in this assessment.
- 1.21 The SoS is content to accept the Panel's recommendation that the RIES and written responses to it can be relied upon to provide information to inform an appropriate assessment (para 20.1.8 of the Panel's report).

Background

- 1.22 This HRA report should be read in conjunction with the following documents that provide extensive background information:
- Planning Act 2008. Navitus Bay Wind Park. The Examining Authorities Report to the Secretary of State, 1 March 2015 (the Panel's Report)

- Report on the Implications for European Sites (RIES). Navitus Bay Wind Park. An Examining Authority report prepared with the support of the Environmental Services Team. 20 February 2015 (The RIES) [PD - 014]
- The Applicant's HRA Screening Report [APP - 059]
- The Applicant's HRA Report [APP – 060]
- The Applicant's updated HRA Matrices [REP-3326]
- Statements of Common Ground (SoCG) with NE 16 October 2014 [REP-3132], 29 January 2015 [REP-3679] and 5 March 2015 [REP-3696]
- Tern Foraging and Underwater Noise HRA Technical Note' [REP-3688]
- The Panel's version of draft DCO [PD – 013]
- The Environmental Statement (the ES)
- Navitus Bay Development Ltd – Response to Rule 17 request in regard to Appendix 43 [REP-3429]
- Navitus Bay Development Limited - Appendix 34 Matters Relating to Migrating Adult Salmon clarification note (REP-3241)
- Natural England's written representations [REPs: 2461, 2900, 4072]
- Natural England's response to the Examining Authorities first round of written questions at deadline II 20 October 2014 [REP 3070].
- Natural England's response to Examining Authorities second round of written questions and summary of oral case from Hearing 29 January 2015 [REP – 3715]
- States of Alderney – Response to ExA's second round of written questions [REP – 3608]
- The Environment Agency's written representations [REP - 2922, 3634, 4079]

2. PROJECT DESCRIPTION

Project Components

- 2.1 The Project will comprise the construction and operation of up to 194 three bladed, horizontal axis wind turbine generators (WTG), with a total installed capacity of up to 970MW, as well as up to:
- 198 foundations and associated scour protection, where necessary
 - Three offshore substation platforms (OSP)
 - One meteorological mast
 - A network of associated cabling consisting of export, inter-array and inter-substation cables
 - Six onshore underground cables, and
 - One onshore substation
- 2.2 Each of the turbines will have a maximum blade tip height of up to 200 meters above lowest astronomical tide (LAT), a maximum hub height of 112 meters above LAT and a maximum rotor diameter of 176 meters. Each of the turbines will be fixed to the seabed by one of three foundation types, namely; gravity base, steel monopile or space frame foundation.
- 2.3 Up to three offshore substation platforms, fixed to the seabed by gravity base or space frame foundations, will be used to collect power from the wind turbine generators.
- 2.4 A network of cables will either be laid underground or on the seabed and will interconnect the turbines, the substation platforms and the meteorological mast, which will be fixed to the seabed by one of three foundation types, namely: gravity base, steel monopile or space frame foundation.
- 2.5 Full details of the infrastructure to be used in the Project will be detailed in the DCO for the project, if it is made.

Rochdale Envelope

- 2.6 In this Project the Applicant has adopted a 'Rochdale Envelope' approach within their Environmental Statement (ES). The Rochdale Envelope is a term used in planning to reflect that often a developer will not know all of the details associated with the proposal at the time of application. The Rochdale

Envelope allows a developer to set out the broad range of options under consideration and then carry out an ES based on the realistic worst case scenario (RWCS) for each of those options. These options are used within the ES to assess the significance of the Project's environmental effects. This allows the Applicant to apply for a DCO that allows some flexibility in the final design of the Project whilst providing certainty that no greater environmental effects than those described in the ES can occur, providing the final project design lies within the options assessed

- 2.7 The ES assesses the Project against a maximum development envelope of 194 wind turbines of 5 MW, 6 MW or 8 MW output (with a total generating capacity of no greater than 970MW) on one or more of three foundation types namely: gravity base foundation, steel monopile foundation and space frame foundation. Although indicative locations for the offshore structures have been developed and assessed as set out in the ES, the Applicant has sought to preserve flexibility in the final project design. The Project is however, bound by the DCO application boundary, which sets out areas within which the infrastructure can be located, together with various technical restrictions.

Development stages

Construction

- 2.8 The Applicant states in the ES that the offshore elements will be built out in up to three stages over a period of up to four and half years. The timing of these stages will be effected by temporary or other seasonal restrictions imposed by the consents and permits needed to construct the Project, weather, the availability of contractors, vessels and materials, supply chain limitations and the timing of onshore works, including possible delays in grid connection works.
- 2.9 The proposed onshore cabling methodology is outlined in the ES, along with the proposed installation approaches, the Applicant proposes to use two methods; open trenching and trenchless. The Applicant states that the construction of the onshore cable corridor and the onshore substation would be undertaken in three stages, with the primary construction activities taking

place in years 2 and 3, and the final works for cable and electrical infrastructure installation taking place in years 2 and 5. A code of construction practice has been prepared by the Applicant for the onshore works, which includes environmental controls and management measures, which will be used to draft the Construction Environmental Management Plan (CEMP) which would be secured through a requirement in the DCO, if made.

Operation and Maintenance

- 2.10 The Applicant states in its ES that the Project will require maintenance by a dedicated full time team. An operation and maintenance strategy will be developed prior to construction, and will depend on a number factors including health, safety, environmental management, accessibility, spare parts and availability and staff requirements.
- 2.11 The Applicant states that there will be no need to have permanent access to the cable landfall and onshore cable corridor once it is operational. There will be planned maintenance inspections which would use pre-existing access to reach the cables. It is proposed that the onshore substation will be unmanned, with only infrequent visits for routine inspection and maintenance.

Decommissioning

- 2.12 The operational lifespan of the Project is anticipated to be up to 25years. The Applicant proposes to dismantle offshore structures in accordance with relevant guidelines and good practice at the time of decommissioning, and the works are expected to take up to two years to complete.
- 2.13 An onshore decommissioning plan will be developed by the Applicant when the onshore connection works cease commercial operation. It is anticipated that the onshore cabling would be left in-situ, and the plant and surface structures of the onshore substation would be removed to a minimum of 0.5meters below ground level.
- 2.14 The offshore elements of the Project fall within the scope of the Energy Act 2004 which includes decommissioning provisions. Broadly speaking, the SoS may require a person who is responsible for an offshore renewable energy installation to prepare a costed decommissioning programme and ensure that it is carried out. The SoS can approve, modify or reject a decommissioning programme at any point.

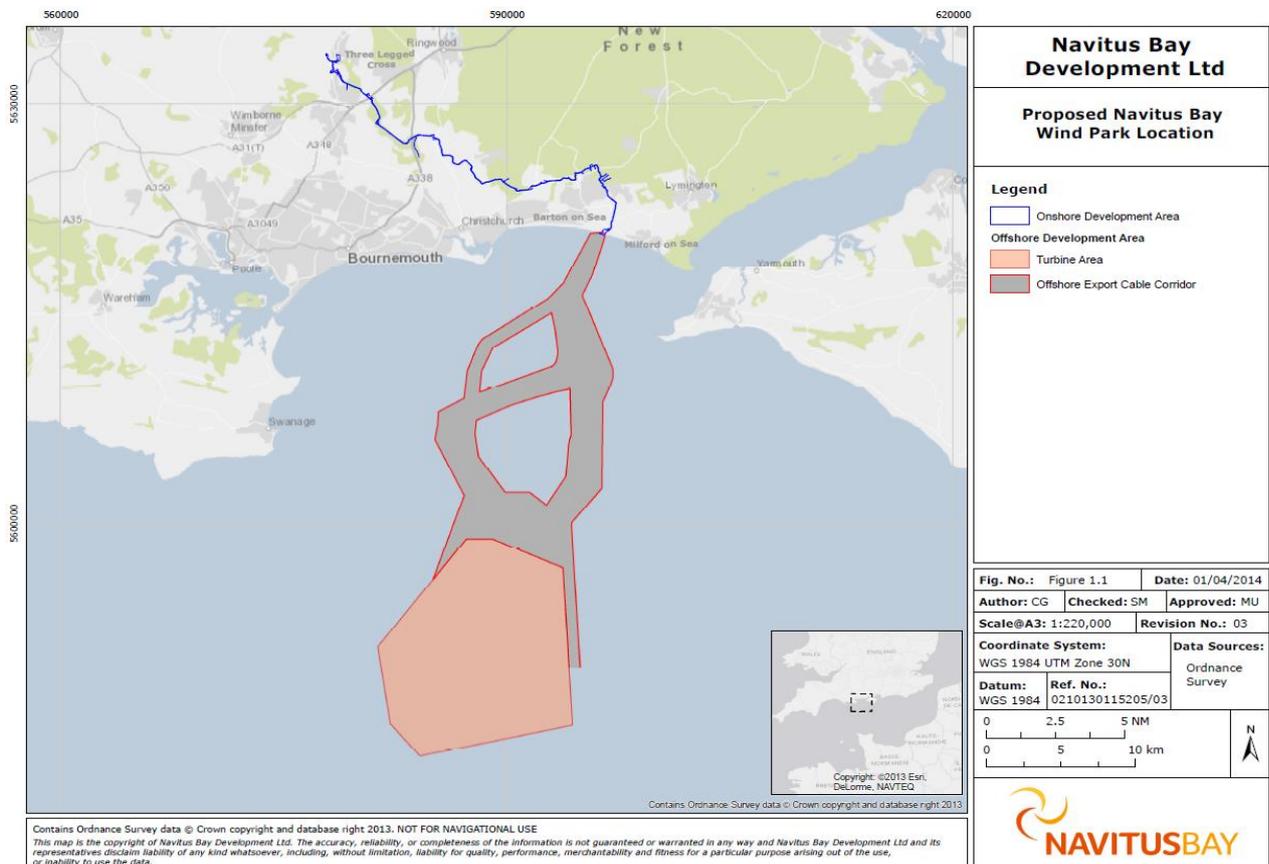
- 2.15 Decommissioning activities will need to comply with all relevant UK legislation at the time it takes place. The person(s) responsible for the wind park will produce and agree a decommissioning programme with the Department of Energy and Climate Change (DECC) and in consultation with the Marine Management Organisation (MMO), SNCBs or their respective successors.
- 2.16 If the environmental baseline were to be similar to the current situation, then the impacts of decommissioning of the Project could be expected to be similar to the anticipated impacts of construction, without the impacts of piling. There is no reason to suppose that the impacts of decommissioning will cause an adverse effect on site integrity and on this basis, the SoS considers that it is reasonable not to include a detailed discussion on decommissioning impacts in this report. She is satisfied that decommissioning effects will be addressed fully by the relevant authorities, prior to decommissioning and in light of more detailed information on decommissioning processes and environmental conditions at that time.

3. PROJECT LOCATION AND DESIGNATED SITES

Location

- 3.1 The offshore elements of the Project are located to the west of the Isle of Wight, off the Dorset and Hampshire coasts, within Zone 7 of the Crown Estate’s Round 3 offshore wind farm leasing areas. At its nearest points to land it will be approximately 14.4km from Durlston Head (on the Isle of Purbeck) and 17.3km from Scratchell’s Bay (on the Isle of Wight). A location map is found in Figure 1.
- 3.2 The proposed onshore cable route is approximately 35km long and is located between Taddiford Gap, Barton-on-Sea, where the offshore export cables would make landfall, and a new substation to be located at Three Legged Cross, East Dorset. A map of the onshore infrastructure is shown in Figure 1, and it is this route that has been assessed in the Applicant’s ES.

Figure 1: Project Location Plan (Source: ES, Vol A, Chapter 1, figure 1.1)



European and International Sites

- 3.3 The Applicant identified 125 European sites to be screened for LSE. The RIES lists these sites and provides a summary for the UK sites on whether the or not the Applicant's conclusion for no likely significant effect or adverse effect was disputed by any interested party. There is significant overlap between SPA and Ramsar site designations so, for the purposes of this assessment, consideration of the Ramsar site designations has been undertaken in parallel with the SPA designation as all relevant species are covered by both designations.
- 3.4 The UK sites listed below were identified in the RIES as sites where the Applicant had identified that there was a LSE in their updated matrices submitted at deadline IV (REP 3326):
- River Avon SAC
 - Avon Valley SPA
 - Avon Valley Ramsar site
 - River Itchen SAC
 - Solent and Southampton Water SPA
 - Poole Harbour SPA
 - Poole Harbour Ramsar site
- 3.5 The following UK sites are where NE disagreed with the Applicant and considered that there was a LSE in addition to those sites listed above (REP 4072):
- Flamborough and Filey Coast pSPA
 - Flamborough Head and Bempton Cliffs SPA
- 3.6 The Applicant also identified the potential for the Project to affect an extensive number of European sites located in other countries, known as 'transboundary sites'. There were:
- 32 Irish sites
 - 19 French sites
 - 6 German sites
 - 1 Danish site
 - 1 Channel Island site

- 3.7 The potential impacts upon these sites are considered in more detail within the transboundary section of this report (section 6).
- 3.8 For reference, all sites which were screened for a possible LSE by the Applicant are listed in Annex A.

4. SCREENING FOR LIKELY SIGNIFICANT EFFECTS

Likely Significant Effects Test

- 4.1 Under the Habitats Regulations, the SoS must consider whether a development will have a likely significant effect (LSE) on a European site, either alone or in-combination with other plans or projects. A LSE is, in this context, any effect that may be reasonably predicted as a consequence of a plan or project that may affect the conservation objectives of the features for which the site was designated, but excluding trivial or inconsequential effects. An AA is required if a plan or project is likely to have a significant effect on a European site, either alone or in combination with other plans or projects.
- 4.2 The purpose of this test is to identify LSEs on European sites that may result from the Project and to record the SoS's conclusions on the need for an AA and her reasons for screening activities, sites or plans and projects for further consideration in the AA. For those features where a LSE is identified, these must be subject to an AA. This review of potential implications can be described as a 'two-tier process' with the LSE test as the first tier and the review of effects on integrity (AA) as the second tier.
- 4.3 This section addresses this first step of the HRA, for which the SoS has considered the potential impacts of the Project both alone and in-combination with other plans and projects on each of the interest features of the 125 European sites identified in the RIES and the Panel's report to determine whether or not there will be an LSE. Where there are predicted LSEs, these are described in Table 1. Further details are set out in the RIES matrices.

Treatment of decommissioning impacts

- 4.4 At the end of the Project lifetime, it is likely that decommissioning of the project will take place and at that point separate authorisation will be required, as a planning matter, after the preparation of an EIA and HRA (including appropriate consultation with the relevant SNCBs). It is not possible at this stage to predict with any certainty what the European and Ramsar site context of the Project will be in the future: sites may increase or decrease in importance over that time.

4.5 However, if the environmental baseline were to be similar to the current situation, then the impacts of decommissioning of the Project could be expected to be similar to the anticipated impacts of construction, without the impacts of piling. There is no reason to suppose that the impacts of decommissioning would cause an adverse impact on site integrity and on this basis, the SoS considers that it is reasonable not to include a detailed discussion on decommissioning impacts in this report. She accepts in principle the advice in the RIES that the effects will be similar in nature to those during construction and she is satisfied that they will be addressed fully by the relevant authorities, prior to decommissioning and in light of more detailed information on decommissioning processes and environmental conditions at that time.

Likely Significant Effects

4.6 The RIES sets out the potential impacts of each stage of the Project and describes if these could impact on a European site's features. The RIES also describes potential impacts from this project on the European sites identified within the Applicant's HRA. For birds, this includes impacts such as disturbance/ displacement and pile driving impacting on prey species during construction of the Project. During the operation of the wind turbines, there could also be displacement of birds from the wind park site, direct collision with the turbines and potential for the wind park to cause a barrier to the movement of migrating birds. For fish this includes a barrier to the movement of migrating Atlantic salmon from piling noise.

4.7 Appendix 3 of the RIES summaries the screening exercise undertaken as part of the examination for the 19 sites where detailed screening matrices were carried out by the Applicant. In addition another site outside of the UKs jurisdiction, but with the potential for a LSE from the Project; the Alderney West Coast and Burhou Islands Ramsar site was also assessed, this is considered under section 6 of this report.

4.8 In considering whether there would be an LSE from the Project alone or in combination there was some disagreement between NE, other parties and the Applicant, who as a result provided updated screening matrices during

the examination (REP-3326). In the SoS' opinion the potential for LSE cannot be excluded for the 8 sites and their features listed in Table 1 and these sites have been taken forward to the AA.

4.9 The SoS considers that LSEs could not be ruled out for the following features: Bewick's swan, gadwall, Mediterranean gull, sandwich tern, northern gannet, black legged kittiwake and Atlantic salmon, as a result of the Project alone and in-combination with other plans and projects. These are features of 8 European sites which may be affected.

Table 1 Sites where a LSE cannot be ruled out

Site	Feature	Effect	Project Alone	Project in-combination
Avon Valley SPA	Bewick's swan (<i>Cygnus columbianus</i>)	Disturbance and displacement	Y	Y
	Gadwall (<i>Anas strepera</i>)			
Avon Valley Ramsar site	Gadwall (<i>Anas strepera</i>)	Disturbance and displacement	Y	Y
Poole Harbour SPA	Mediterranean gull (<i>Larus melanocephalus</i>)	Collision risk	Y	Y
	Sandwich tern (<i>Thalasseus sandvicensis</i>)	Indirect impact on prey species	Y	Y
Solent and Southampton Water SPA	Mediterranean gull (<i>Larus melanocephalus</i>)	Collision risk	Y	Y
	Sandwich tern (<i>Thalasseus sandvicensis</i>)	Indirect impact on prey species	Y	Y
River Avon SAC	Atlantic Salmon (<i>Salmo salar</i>)	Disturbance	Y	Y
River Itchen SAC	Atlantic Salmon (<i>Salmo salar</i>)	Disturbance	Y	Y
Flamborough Head and Bempton Cliffs SPA	Gannet (<i>Morus bassana</i>)	Collision risk	N	Y
	Kittiwake (<i>Rissa tridactyla</i>)			

Flamborough and Filey Coast pSPA	Gannet (<i>Morus bassana</i>)	Collision risk	N	Y
	Kittiwake (<i>Rissa tridactyla</i>)			

- 4.10 The information within the Applicant’s updated screening assessment document (REP 3326) presents the potential interactions of each stage of the Project (construction, operation, decommissioning) with the qualifying features of the 8 sites listed in Table 1. The SoS agrees with the Panel that, LSEs cannot be excluded from 6 of the sites identified in Table 1 when the Project is considered alone or in-combination with other plans and projects. The SoS also considers that LSE cannot be excluded in-combination with other plans and projects for the gannet and kittiwake features of an additional 2 sites, Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA. This is in line with NE’s advice (REP 4072) and is detailed in Appendix 3 of the RIES. The Panel did not consider this was the case in their report; however the SoS has given weight to the advice of NE in drawing her conclusions.
- 4.11 The potential for LSEs in combination with other plans and projects could not be ruled out for features at the same 8 European sites (see Table 1). LSEs on all the other qualifying features at the other sites were excluded with the agreement of NE and for this reason the SoS has focussed her AA on the features of the 8 sites listed in Table 1.
- 4.12 In their 23 June 2014 representation (REP 2461), NE raised a possible impact and difference of view with the Applicant on Dorset Heaths SAC, Dorset Heathlands Ramsar site, Flamborough and Filey Coast pSPA, Flamborough Head and Bempton Cliffs SPA and Alde Ore Estuary SPA. The Applicant originally screened in LSE for Dorset Heaths SAC and Dorset Heathlands Ramsar sites due to loss, change or damage to the habitats which the sites are designated for, specifically wet and dry heath habitats, but ruled out adverse effect on integrity. As a result of concerns raised by NE and other interested parties over the potential to restore these habitats, the Applicant extended the area of trenchless crossing so that there would be no surface works within the SAC and Ramsar site. NE and other interested parties

therefore concluded that no LSE could be reached for these sites, which the SoS concurs with. There was discussion over whether there was a LSE for the woodlark and Dartford Warbler features of the Dorset Heathlands SPA due to disturbance and habitat loss. However due to the trenchless crossing of the site and the visitor survey showing that increases in visitor disturbance were unlikely NE concluded that there would be no LSE for the SPA in their response dated 5th March 2015 (REP 4072). The SoS concurs with this assessment and has not undertaken a AA for Dorset Heathlands SPA.

- 4.13 LSE was screened out for the nightjar feature of the Dorset Heathlands SPA for collision risk, after updated modelling demonstrated that there would be very little increase in baseline mortality as a result of the Project. The SoS agrees with this conclusion.
- 4.14 NE raised concerns about the LSE on lesser black backed gulls of the Alde Ore Estuary SPA from collision risk, however after the Applicant submitted a revised collision risk monitoring assessment, NE agreed to no LSE either alone or in-combination, the SoS concurs with this conclusion.

Likely Significant Effects: Project In-Combination

- 4.15 A number of other plans and projects could potentially affect some of the same European sites as the Project. These include a number of planned and existing offshore wind farms (OWFs), as well as a number of other activities in the vicinity of the Project location such as commercial development, residential development, transport development, aggregate dredging activities, navigational dredging and disposal activities, tidal power and offshore oil and gas developments.
- 4.16 Table 2 identifies those plans and projects that have been considered in-combination with the Project. These other plans and projects may affect some of the same European sites as the Project and have been screened in for further consideration. The SoS is content to limit the LSE in-combination assessment to those plans and projects listed in Table 2.
- 4.17 All parties were in agreement that those features for which a LSE could not be excluded alone (listed in Table 1), a LSE could also not be excluded in-combination with other plans and projects for the same reasons. A LSE alone

was excluded for the features of Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Bay pSPA listed in Table 1, however having considered the representations made by NE, the SoS considers that a LSE in-combination could not be excluded.

- 4.18 In considering the impact of the Project in-combination with other plans and projects, LSEs on all other qualifying features were excluded to the agreement of all parties. For this reason, the SoS has focussed her in-combination AA on the features listed in Table 1. Please see the transboundary considerations (section 6) for consideration of in-combination impacts on sites outside of the UK.

Table 2 Plans and projects included within the Applicant’s in combination impacts assessment (Applicant’s HRA Screening Report – APP 059)

Onshore projects	
Project Type	Project Name
Commercial development	Christchurch and East Dorset Core Strategy (CEDCS), Woolsbridge Industrial Estate, Three Legged Cross
Residential development	(CEDCS) Redevelopment of the former St Leonards Hospital Site
Transport development	(CEDCS) B3072 Ferndown – West Moors- Three Legged Cross – Verwood
	Woolsbridge Industrial Estate, Three Legged Cross, Wimborne BH21 6SZ
Offshore Projects	
Project Type	Project Name
Offshore wind farms	Rampion
	East Anglia One
	East Anglia Three
	East Anglia Four
	Heron Wind
	Njord
	Breesea
	Optimus
	Dogger Bank A and B
	Alpha
	Bravo
	Eastern Development Area
	Burbo Bank Extension

	Dudgeon
	Galloper
	Gwynt y Mor
	Humber Gateway
	Kentish Flats extension
	Lincs
	London Array 2
	Race Bank
	Teeside
	Triton Knoll
	Walney Extension
	West of Duddon Sands
	Westermost Rough
	Le Treport
	Fécamp
	Courselle-sur-Mer (Calvados)
	Saint-Brieuc
	Cote d'Albatre I and II
	Haute Normandie
	3B (Brassure de Bass)
	Cherbourg
Aggregates	Areas: 127, 137,340,451/1, 451/2, 351, 372/1, 122/3, 395/1, 395/2, 122/2, 500/1, 500/2, 500/3, 500/4, 500/5, 500/6, 124/2, 409
Oil and Gas	Wytch Farm oil field
	Beacon oil field
	Development of 26 th licencing round blocks 97/14, 97/15 and 98/11
	Development of 26 th licencing round blocks 98/6b, 98/7b, 98/8, 98/12 (part) and 98/13 (split)
	Development of 26 th licencing round blocks 98/13 (split) and 98/14 (part)
	Various 27 th licencing round licensing blocks
Renewables	Alderney Interconnector
Tidal power	Adjacent to site off St Catherines Pt, IOW
	Alderney
Capital Dredging	Southampton Water and Solent
Maintenance Dredging	Southampton Water
	Poole Harbour
Dredge disposal	Nab Tower
	Needles

- 4.19 During the examination there were concerns raised by some interested parties on the conclusions of the in-combination assessment, but most of these were resolved during the examination. Challenge Navitus (a local community group) and other interested parties did not agree with the approach taken by the Applicant to assess in-combination effects. However, NE, the Environment Agency (EA) and the Panel agreed with the methodology and the SoS supports this view.

Harbour Porpoise

- 4.20 Following close of the Examination the SoS has been made aware of a list of sites that may be recommended as draft (d)SACs and notes that one such site is located in the southern North Sea and one is located in the Bristol Channel. These sites have been recommended as there is evidence that they may support qualifying populations of Harbour porpoise (*Phocoena phocoena*). The sites are still at the early stages of consideration for possible future designation with approvals and formal consultation to follow. The SoS is of the opinion that as the Project is some considerable distance from these sites it would not damage the possibility of any future cSACs and would not lead to any LSE. Consequently these sites have been screened out of this HRA

Conclusions on Likely Significant Effects

- 4.21 The SoS considers that there is an LSE, as a result of the Project alone and in-combination with other plans and projects, on the European sites and features summarised in Table 1, and it is these features that are relevant to this AA.
- 4.22 Having given due consideration to the information and analysis presented to her, the SoS considers that the scope of the AA should be those sites and features for which LSE could not be excluded as identified in Table 1. The SoS considers that sufficient information has been provided to inform a robust assessment in line with her duties under the Habitats Regulations.
- 4.23 The SoS has considered which plans and projects should be included in the in-combination assessment and these are listed in Table 2.

5. APPROPRIATE ASSESSMENT

Test for Adverse Effect on Site Integrity

- 5.1 An AA is triggered when the competent authority, in this case the SoS, determines that a plan or project is likely to have a significant effect on a European site. Guidance issued by the European Commission states that the purpose of an AA is to determine whether adverse effects on the integrity of the site can be ruled out as a result of the plan or project, either alone or in-combination with other plans and projects, in view of the site's conservation objectives (European Commission, 2000).
- 5.2 The purpose of this AA is therefore to determine whether or not adverse effects on the integrity of those sites and features identified at the LSE 'screening stage' can be ruled out as a result of the Project alone or in-combination with other plans and projects in view of the sites conservation objectives and using the best scientific evidence available.
- 5.3 If the competent authority cannot ascertain the absence of an adverse effect on site integrity within reasonable scientific doubt, then under the Habitats Regulations, alternative solutions should be sought. In the absence of an acceptable alternative, the Project can proceed only if there are imperative reasons of overriding public interest (IROPI). Considerations of IROPI are beyond the scope of this AA.

Approach taken for this Appropriate Assessment

- 5.4 The RIES was consulted upon by the Planning Inspectorate and supplementary information was subsequently provided by the Applicant. The Panel's report notes that agreement was reached between all parties that adverse effect on integrity both alone and in-combination could be excluded for all sites.
- 5.5 The SoS is of the opinion that, where all relevant parties are confident that an adverse effect can be excluded, she is content to rely on the RIES, written responses to it, other written representations and the Panel's recommendations to inform her view. She considers that the evidence behind these judgements has been fully tested as part of the examination process. For these reasons, a high-level assessment is considered to be appropriate for all 8 sites listed in Table 1.

Conservation Objectives

- 5.6 European Commission guidance indicates that disturbance to a species or deterioration of a European site must be considered in relation to the integrity of that site and its conservation objectives (European Commission, 2000). Section 4.6.3 defines site integrity as:
- “...the coherence of the site’s ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified.”*
- 5.7 Conservation objectives outline the desired state for any European site, in terms of the interest features for which it has been designated. If these interest features are being managed in a way which maintains their nature conservation value, they are assessed as being in a ‘favourable condition’. An adverse effect on integrity is likely to be one which prevents the site from making the same contribution to favourable conservation status for the relevant feature as it did at the time of its designation (English Nature, 1997).
- 5.8 There are no set thresholds at which impacts on site integrity are considered to be adverse. This is a matter for interpretation on a site-by-site basis, depending on the designated feature and nature, scale and significance of the impact. The conservation objectives for the site for which LSE were identified have been taken into account by the SoS in reaching her decision, alongside the potential for adverse effects on integrity, as a result of the Project both alone and in-combination with other plans and projects.

Bewick's swan (*Cygnus columbianus*)

5.9 The Project could lead to a LSE upon the Bewick's Swan feature of the following European site:

- **Avon Valley SPA** - (0 km from Application site as within the transmission cable route) Over winter, the site regularly supports 135 Bewick's swans representing at least 1.9% of the wintering population in Great Britain (5 year peak mean 1991/2 - 1995/6). The River Avon SPA encompasses the lower reaches of the River Avon and its floodplain. The site extends for approximately 20 km between Bickton and Christchurch. The River Avon displays wide fluctuations in water level and parts of the valley are regularly flooded in winter. The valley includes one of the largest expanses of unimproved floodplain grassland in Britain, which support wintering Bewick's Swans (JNCC, 2006c).

5.10 Visual and noise disturbance during the construction phase of the Project, as a result of a transmission cable crossing the River Avon Project, is the key issue for Bewick's swan in the Avon Valley SPA as well as disturbance from artificial light emissions from the site compounds (REP 3326, APP 060).

5.11 The conservation objectives for the Avon Valley SPA are found in Table 3.

Table 3 conservation objectives for Avon Valley SPA (Natural England, 2014a)

Conservation objectives	<p>Subject to natural change, ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and, • The distribution of the qualifying features within the site.
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Assessment of Effects on Integrity Alone and In-combination

- 5.12 In order to mitigate for the visual and noise disturbance impacts, the Applicant has made a commitment to avoid both construction and decommissioning works between November and February inclusive within 250m of the SPA boundary. This would be a condition of the DCO if it was made.
- 5.13 The Applicant has also made a commitment to have no vehicle access within the SPA, or forward of the trees screening the construction compounds, during the construction of the River Avon crossing.
- 5.14 The risk from artificial light emissions has been reduced to acceptable levels through mitigation measures such as the design of site lighting to minimise spillage into the site and avoiding works in the vicinity during the darkest months. This would be secured through a requirement in the DCO if it is made. NE are in agreement with this (REP 3070).

Conclusions

- 5.15 As a result of the above proposed mitigation the SoS agrees with the conclusions reached by the Panel and NE as detailed in the RIES and the Panel's report and the Applicants HRA report, that there will be no adverse effect on the integrity of the Bewick's swan qualifying feature of the Avon Valley SPA either alone or in-combination with other plans or projects.

Gadwall (*Anas strepera*)

5.16 There is potential for the Project to lead to a LSE upon the Gadwall feature of the following two European sites:

- **Avon Valley SPA and Avon Valley Ramsar site¹** (0 km to Application site as within the transmission cable route) Over winter the site regularly supports 667 gadwalls representing at least 2.2% of the wintering population in Great Britain (5 year peak mean 1991/2 – 1995/6) (JNCC 2006c, RSISa, 1999).

5.17 Visual and noise disturbance during the construction phase of the Project, as a result of a transmission cable crossing the River Avon, is the key issue for Gadwall in the Avon Valley SPA and Ramsar site, as well as disturbance from artificial light emissions from the site compounds (REP 3326, APP 060).

5.18 The conservation objectives for the SPA and Ramsar site² are found in Table 4 below.

Table 4 conservation objectives for Avon Valley SPA and Ramsar site (Natural England, 2014a)

Conservation objectives	<p>Subject to natural change, ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and, • The distribution of the qualifying features within the site.
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¹ There is spatial overlap between the Avon Valley SPA and Ramsar site

² The SoS assumes that the conservation objectives for the Avon Valley SPA also apply to the relevant overlapping features of the Avon Valley Ramsar site.

Assessment of Effects on Integrity Alone and In-combination

- 5.19 In order to mitigate for the visual and noise disturbance impacts the Applicant has made a commitment to avoid both construction and decommissioning works between November and February inclusive within 250m of the SPA and Ramsar site boundaries. This would be a condition of the DCO if it was made.
- 5.20 The Applicant has also made a commitment to have no vehicle access within the SPA or Ramsar site, or forward of the trees screening the construction compounds, during the construction of the River Avon crossing.
- 5.21 The risk from artificial light emissions has been reduced to acceptable levels through mitigation measures such as the design of site lighting to minimise spillage into the site and avoiding works in the vicinity during the darkest months. This would be secured through a requirement in any DCO that is made. NE are in agreement with this (REP 3070).

Conclusions

- 5.22 As a result of the above proposed mitigation the SoS agrees with the conclusions reached by the Panel and NE as detailed in the RIES and the Panel's report and the Applicants HRA report, that there will be no adverse effect on the integrity of the gadwall qualifying feature of the Avon Valley SPA and Ramsar site either alone or in-combination with other plans or projects.

Atlantic salmon (*Salmo salar*)

5.23 There is potential for the Project to lead to a LSE upon the Atlantic salmon feature of the following two European sites:

- **River Avon SAC** (0 km to Application site as within the transmission cable route) The River Avon supports 501-1000 Atlantic salmon (JNCCd 2011).
- **River Itchen SAC** (29.1 km from project offshore turbine area) The River Itchen supports 251-500 Atlantic salmon (JNCCe 2011).

5.24 The conservation objectives for the River Avon SAC and River Itchen SAC are found in Table 5.

Table 5 conservation objectives for the River Avon SAC and River Itchen SAC (Natural England, 2014b,c)

Site	Conservation objectives
River Avon SAC	<p>Subject to natural change, ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its qualifying features, by maintaining or restoring;</p> <ul style="list-style-type: none"> • The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.
River Itchen SAC	<p>Subject to natural change, ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the Favourable Conservation Status of its qualifying features, by maintaining or restoring;</p> <ul style="list-style-type: none"> • The extent and distribution of qualifying natural habitats and habitats of qualifying species • The structure and function (including typical species) of qualifying natural habitats • The structure and function of the habitats of qualifying species • The supporting processes on which qualifying natural habitats and the habitats of qualifying species rely • The populations of qualifying species, and, • The distribution of qualifying species within the site.

Status of the stock in the River Avon and River Itchen

- 5.25 In England and Wales there are 64 principal salmon rivers that have the annual status of their individual river stocks reported to International Council for the Exploration of the Sea (ICES) and the North Atlantic Salmon Conservation Organisation (NASCO). Six of these rivers, the Frome, Piddle, Dorset Stour, Hants Avon, Test and Itchen, have salmon populations that will transit past the Project area during both their outbound and inbound migrations, representing nearly 10% of England and Wales’s principal salmon rivers and the entirety of their chalkstream salmon populations (REP-3634).
- 5.26 Conservation limits have been developed to assess the status of the principal salmon rivers stocks. The limits indicate the minimum desirable spawning stock levels below which stocks should not be allowed to fall in order to not have a reduction in the number of juvenile fish produced in the next generation.
- 5.27 Table 6 shows the Conservation Limit compliance data for the River Itchen and River Avon, they are either “At Risk” or “Probably At Risk” for their current and predicted compliance period.

Table 6 Conservation Limit compliance data (REP – 3634)

River	Current compliance (2013)	Predicted compliance (2018)
Itchen	PaR	PaR
Avon	AR	PaR
Key = AR – at risk; PaR – probably at risk of complying with conservation limit		

Atlantic salmon migration patterns

- 5.28 Atlantic salmon (*Salmo salar*) are anadromous fish, meaning that the adults migrate from the sea to breed in freshwater. After a period of 1-6 years the young salmon migrate downstream to the sea as ‘smolts’. Salmon have a homing instinct that draws them back to spawn in the river of their birth after 1-3 years in the sea.
- 5.29 Data for the local area of the Project proposal suggest that adult salmon arrive throughout the spring and summer with the peak arrival in mid to late July, with the majority of adult salmon expected to have arrived in their rivers of birth by mid-August (REP- 2922).

5.30 The peak smolt run to the sea in the area is predicted to be from the first week in April to the third week in May, with some seasonal variations depending on environmental conditions such as water temperature and water flow rates (the ES).

Assessment of Effects on Integrity Alone and In-combination

River Avon SAC and River Itchen SAC

Potential impacts of piling noise on migrating Salmon

5.31 Underwater noise as a result of the installation of wind turbine foundations may create a barrier to salmon movement which could prevent the adult fish from reaching the River Itchen or the River Avon to spawn or prevent smolts from leaving the rivers to enter the sea.

5.32 The Applicant used a noise exposure level of 90dBht (salmon) as the level of strong avoidance behaviour, where greater than 95% of individuals would be expected to show this response. A lower threshold of 75dBht (salmon) was used to indicate a level at which a significant avoidance reaction by the majority of individuals would occur, but habituation or context may limit the effect (the ES). Table 7 shows the dBht (species) effects of underwater noise.

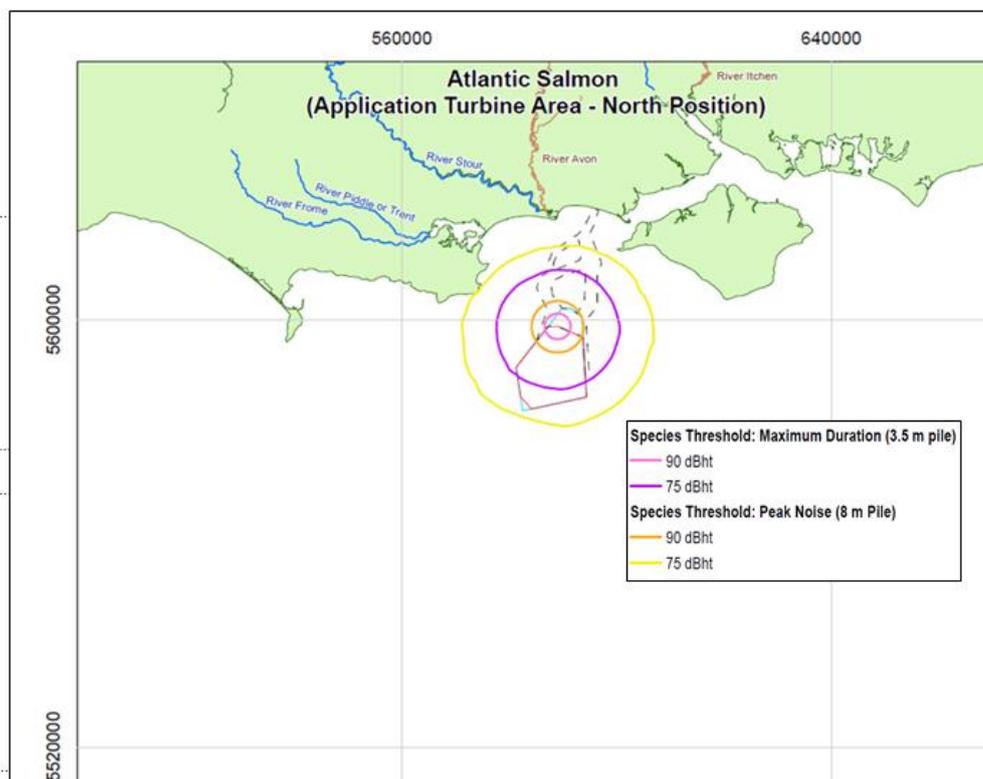
Table 7. Assessment criteria used to assess the potential effect of underwater noise on marine species (REF- Appendix 10.2 ES)

Level in dBht(<i>Species</i>)³	Effect
0 – 50	Low likelihood of disturbance
75 and above	Significant avoidance reaction by the majority of individuals but habituation or context may limit effect
90 and above	Strong avoidance reaction by virtually all individuals
Above 130	Possibility of traumatic hearing damage from single event

³ The effects on species from underwater noise are measured as dBht(species), which is a species specific measurement for estimating the behavioural effects of underwater noise.

5.33 A noise level above 75dBht (salmon) could provide a barrier to salmon migrating to and from the River Avon and River Itchen SACs, and to smolts migrating out to sea. This is because the noise level for 75dBht(salmon) could stretch from landfall near Swanage, across Poole and Christchurch Bays towards, but not making landfall, at the Needles, Isle of Wight (see Figure 2). This would result in 86% of the available migration channel from the south and west of the Isle of Wight being in the ≥ 75 dBht zone for monopiling in the northern most section of the development site (REP-3241).

Figure 2. Contour plot showing the predicted 90 and 75 dBht effect ranges for salmon during the installation of 8m and 3.5m piles in the northern most positions⁴.



5.34 The Applicant stated that there was an area of sea either side of the 75dBht noise contour for the 3.5m diameter pin piles along both the Dorset coast and

⁴Peak noise intensity is based on the installation of 8m diameter monopiles throughout the array, using a peak hammer intensity of 1800kJ, apart from in the monopile exclusion zone where space frame foundations would be installed. Maximum duration, is the maximum potential active piling duration which would result from the installation of 194 space frame foundations, using 3.5m diameter pin piles with a peak hammer energy of 1400kJ. For both scenarios it is assumed that construction will take place 24hours a day (the ES).

the Isle of Wight coast, which would allow a corridor for the free movement of Atlantic salmon. They recognised that the modelling for the 8m diameter monopiles showed that the 75dBht noise contour would reach the Dorset and Isle of Wight coasts. However, they consider that studies have demonstrated that returning adult salmon follow the coast, to within a few hundred meters of the shoreline, particularly in the vicinity of their home rivers. Therefore the adult salmon would be on the outer edges of the 75dBht contour when returning to their home rivers. They also stated that the salmon are likely to be near to the surface where the effects of noise will be reduced due the pressure release nature of the surface, and that returning salmon will also be highly motivated by their homing instinct, which may override the effects of noise disturbance, or increase their tolerance to it (the ES).

- 5.35 For smolts, the Applicant stated that when migrating from rivers to the sea they cover large distances over several weeks, and that mortality rates during the marine phase of their lifecycle are high. Therefore a delay of a few hours in their seaward migration, as a result of noise disturbance will have a minimal additional effect on the marine phase survival rates.
- 5.36 The Applicant argued that the piling works would only take place for approximately 388 hours across a 4.5 year period, or 16 days in total under the peak noise intensity scenario, therefore the proportion of time there would be noise generated by monopile piling would be very small.
- 5.37 NE, the MMO and the EA raised concerns over the potential impacts of piling noise on adult salmon and smolt migrating to and from the River Avon SAC and River Itchen SAC. They were concerned that the propagation of noise as a result of construction piling has the potential to impact on the migratory salmonid run over consecutive multiple years, which had the potential to adversely affect the species. They consider that there was a lack of evidence to support the Applicant's assessment and conclusions (20.8.47, 20.8.52: The Panel's report).
- 5.38 The EA advised that the Applicant had not provided enough evidence to support the assertion that adult salmon migratory drive would override their behavioural response to noise levels above 75dBht, or that the area of sea that would be affected by noise below this level would provide a large enough corridor to allow the salmon to migrate unhindered. They also considered that

the transit times of fish had not been satisfactorily addressed in the Applicant's proposed piling restrictions (EA REP 2922).

Smolts

5.39 As a result of discussions between interested parties and further evidence of the timing of the smolt migration from the EA, a consensus agreement was reached during the examination period, for a full restriction on piling activities for both pin piles and monopiles between 7th April and 15th May in any year, which would cover the main smolt migration period. As a result of this the EA and NE were in agreement that there would be no adverse effect on the integrity of the Atlantic salmon smolts of the River Avon and River Itchen SACs, providing that it is a condition of the DML, if it is made.

Adults

5.40 The Applicant concluded that only a minor proportion of migrating salmon, even during peak periods could be exposed to noise levels >75dBht (salmon). However in concluding this they were relying on the fact that piling activity would be intermittent and they had not considered the transit times it would take fish to move through the area (REP – 3241).

5.41 As a result of these concerns the Applicant proposed to extend piling restrictions to the period 16th May to 15th August (inclusive) and restrict the number of piles in these months, to reduce the noise exposure of adult Atlantic salmon transiting the area. This would cover the period when the majority of the adult salmon would migrate past the Project site.

5.42 The EA's and NE's advice is that the acceptable level of risk of exposure to migrating adult salmon to noise levels of $\geq 75\text{dBht}$ (salmon) is 25% in the period 16th May to 15th August (inclusive). The EA developed a model to define the number of piling risk hours which would be allowed in this period to ensure that the risk of exposure was not above 25%.

5.43 The 25% exposure level is taken as a precautionary figure to protect the SACs. An acceptable level of exposure risk rather than an acceptable impact has been used, as not enough is known about the proportion of individuals that will react and how they will react to given noise levels. Therefore limiting the risk of exposure to a noise level that is expected to cause a reaction is considered by

NE and the EA to be the most appropriate mechanism (REP 3634). The SoS agrees with this approach.

- 5.44 The Applicant considers that the exposure risk should be 40% as the EA's model is already highly precautionary, and is dealing with the risk of exposure rather than a known impact at that exposure. They consider that the layering of precaution, plus the inbuilt design parameters of the steel piles, which limits the amount of time any single pile can be driven into the seabed, will ensure that the noise exposure risk levels will remain well within the 25% threshold.
- 5.45 The EA and NE agreed that adverse effect on integrity could be excluded for migrating adult Atlantic salmon providing that there were restrictions on piling expressed as piling risk hours during the period 16th May to 15th August. The Applicant considers that the mitigation should be based on number of piles driven rather than piling risk hours.

Electro-magnetic field (EMF)

- 5.46 Atlantic salmon could be affected by electro-magnetic fields (EMF) from the transmission cables, which could cause a barrier to salmon movement either within the marine environment, or within the River Avon. This could potentially lead to a reduction in the number of adults reaching spawning grounds or the number of smolts reaching the sea. Atlantic salmon can be affected by EMF as they use the earth's magnetic field during their migration.
- 5.47 In the marine environment, the cables can have a repellent effect on fish at a distance of around 5m, if they are buried to a depth of 1.2m (Applicant's HRA report). Atlantic salmon are able to alter their depth when passing over the transmission cables, so they are unlikely to cause a barrier to movement. It is proposed the transmission cable will cross the River Avon at a target depth of 10m below the bed level, this will result in the magnetic fields produced being very low and unlikely to cause a barrier to movement within the river or effect the viability of eggs.
- 5.48 The transmission cables will also be shielded through the use of sheathing material in the cable design which will reduce the level of EMF.
- 5.49 As a result of this all parties agreed to a conclusion of no adverse effect on integrity of the River Avon and River Itchen SACs as a result of EMF.

River Avon SAC

- 5.50 The noise and vibration of horizontal directional drilling (HDD) equipment as it passes under the River Avon to install the onshore transmission cable could temporarily prevent salmon moving up or down stream of the crossing point and the vibrations could also result in a reduction in the viability of salmon eggs in the early stages of their development (Applicant's HRA report).
- 5.51 Due to the lack of information on the level of vibration associated with HDD equipment and impacts on salmon eggs, the EA advised that the risk should be removed through suitable mitigation in order to ensure there would be no adverse impact on integrity. Their advice was that HDD should not be used in the crossing of the River Avon between December and January. The Applicant has proposed to suspend all construction activity within 250m of the River Avon between November and February (inclusive), and this also forms part of the mitigation for the Avon Valley SPA and Ramsar site.
- 5.52 As a result of this all parties agreed that there will be no adverse effect on the integrity of the River Avon SAC as a result of the HDD.

Conclusions

- 5.53 Having considered all the evidence and information presented in the Panel's report, RIES, the Applicant's ES and HRA report and the relevant representations, and giving weight to the advice of NE and the EA, the SoS is in agreement with the Panel, NE and EA that the mechanism to ensure that there is no adverse effect on the integrity of the Atlantic salmon feature of the River Avon and River Itchen SACs is through imposing a limit on the number of piling risk hours during the 16th May to 15th August period (inclusive).
- 5.54 The SoS agrees with the Panel and other interested parties that there will be no adverse effect on the integrity of the Atlantic salmon feature of the River Itchen SAC and River Avon SAC from EMF, vibration impacts or piling noise, providing that the following are secured through conditions of the DML, if it is made:
- There is a no piling period between 7th April to 15th May (inclusive).
 - There is a limit on the number of 'piling risk hours' during the 16th May to 15th August period (inclusive). The number of hours should be as per table 1 in the EA and NEs joint representation (REP-4079).

- There is no construction activity within 250m of the River Avon between November and February (inclusive).

Mediterranean gull (*Larus melanocephalus*)

5.55 There is potential for the Project to lead to a LSE upon the Mediterranean gull feature of the following three European sites:

- **Solent and Southampton Water SPA** (22.13 km from Project turbine area): During the breeding season the area regularly supports 2 breeding pairs of Mediterranean gull which is 15.4% of the GB breeding population (calculated on mean 1994-1998 data) (JNCCa, 2006)
- **Poole Harbour SPA and Poole Harbour Ramsar site**⁵ (18.9 km from Project turbine area): During the breeding season the SPA and Ramsar regularly supports 5 breeding pairs of Mediterranean gull which is 38.5% of the GB breeding population (calculated on mean 1993-1997 data) (JNCCb, 2006, and RSISb, 1999)

5.56 There has been a large increase in the numbers of Mediterranean gull breeding along the south and east coast of England since these European sites were classified for Mediterranean gull. In 2010, the breeding population of the Solent and Southampton Water SPA was 5 pairs and Poole Harbour SPA was 80 pairs (REP-3132, page 25).

5.57 Collision risk during Project operation, both alone and in combination with other plans and projects, is the key issue for Mediterranean gull at Solent and Southampton Water SPA, Poole Harbour SPA and Poole Harbour Ramsar site.

5.58 The conservation objectives for the sites are found in Table 8.

Table 8 Conservation objectives for Solent and Southampton Water SPA and Poole Harbour SPA and Ramsar site

Site	Conservation objectives
Solent and Southampton Water SPA	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely

⁵ There is spatial overlap of the Poole Harbour SPA and Ramsar site

	<ul style="list-style-type: none"> • The population of each of the qualifying features, and, The distribution of the qualifying features within the site.
Poole Harbour SPA and Ramsar site ⁶	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and, • The distribution of the qualifying features within the site.

Collision risk modelling

5.59 There are two parts to estimating collision mortality. The first is to estimate the number of birds passing through the swept area of the turbines within the offshore wind farm (OWF). This is determined by calculating the number of birds which are likely to be passing through OWF and then factoring in the heights above sea level at which various species fly at to determine the numbers of birds at collision risk height. This calculation is done using a mathematical model, the Band model being the most commonly used. There are several different versions of the Band model which use bird flight height in different ways to produce different estimates of collision risk. Band models 1 and 2 (known as the basic Band model) assume that all individuals of a species of bird fly at the same height. For Band model 1, that height is determined by aerial or *in situ* boat surveys. For Band model 2, that height is based on published literature from Cook *et al* 2012. Band model 3 (known as the extended Band model) uses detailed flight height data (from Cook *et al*, 2012) to calculate the proportional risk to a bird according to its location within the swept rotor space. The rationale being that if a bird is closer to the nacelle then it is at greater risk of collision than if at the edge of the blade.

⁶ Conservation objectives for the Poole Harbour SPA are considered to apply to the relevant overlapping features of Poole Harbour Ramsar site.

- 5.60 The second step to estimating collision mortality is to define the percentage of birds that are likely to make a behavioural response to the presence of a wind farm (or to an individual turbine) so as to avoid flying on a path that puts them at risk of collision with the rotating turbine blades. This is known as the avoidance rate. The choice of avoidance rate has a significant influence on the number of predicted collisions. The overall avoidance rate will be the result of a combination of factors including macro-avoidance (of the whole wind farm, by diverting over or around it) and micro-avoidance (ability to avoid collision with a turbine blade once within a wind farm). In practice, the actual avoidance rate for any given location will also be affected by site-specific and temporal variations, including the layout of turbines, weather and visibility, whether the birds are foraging or migrating and also whether they are part of a large flock. Whilst collision avoidance rate can be generic, where essentially the same rate of turbine blade avoidance is assumed for a wide range of bird species, irrespective of any behavioural assumptions or empirical observations, it can also be tailored to a species or a group of species on the basis of qualitative assessments (taking known behaviours including manoeuvrability into account) and empirical data (such as surveys of actual bird behaviours for example blade avoidance, or mortality impacts evidenced by recovered dead bird counts).
- 5.61 Once the number of birds expected to collide with the wind turbines has been calculated, the next step is to determine what impact that will have on the species population on a recurring annual basis. There are several methods of doing this including Potential Biological Removal (PBR) and Population Viability Analysis (PVA). PBR analysis quantifies the potential level of additional mortality which could occur on an annual basis without resulting in a long term population decline. One of the key parts of the PBR calculation is determining what the recovery factor (f value) for a species is. This value (ranging between 0.1 and 1.0) is intended to compensate for the inherent uncertainties present when making estimates about impacts upon a population.
- 5.62 Collision risk modelling (CRM) for Mediterranean gull was initially not undertaken by the Applicant as numbers of individuals observed during site-specific surveys were very low and as the designated sites are located on the edge of the species mean maximum foraging distance. However, NE requested

that collision risk be undertaken to demonstrate de minimis effects and consider the effects in combination with Rampion offshore wind farm (ROWF) located to the east of the Isle of Wight (REP-2461 and REP-2900).

- 5.63 The Applicant undertook CRM for Mediterranean gull which used Option 1 of the Band Model, site-specific data on percentage of birds at Potential Collision Risk Height (PCH), and a 98% avoidance rate to determine the levels of additional mortality that could be supported by those populations without risk of decline (REP-3132 Appendix 5.10).
- 5.64 NE raised concerns with a number of aspects of the Applicant's CRM (paragraphs 8.1.28 to 8.1.35 of REP-2900). The Applicant subsequently undertook the further analytical steps requested by NE, including adding the extra mortality contribution from Rampion in winter to the year round total at Navitus Bay and apportioning this to the SPAs accordingly; the use of the 99.2% avoidance rate (that recommended for the basic Band model in Cook et al. (2014) for small gulls); and using Black headed gull flight height data from Johnston et al. (2014) as a proxy for Mediterranean gull. NE confirmed in the final SoCG with the Applicant dated 5 March 2015 (REP-3696) that 'the approach to collision risk modelling used to inform the assessment is suitable'.

Assessment of Effects on Integrity Alone and In-combination

Solent & Southampton Water SPA:

- 5.65 The total annual predicted collision mortalities are 2 Mediterranean gulls for the Project (4 for the upper 95% Confidence Level (CL) data) and 0.1 birds for Rampion (0.3 for upper 95% CL). Therefore, a total of 0-0.5 collisions per year are predicted depending on the breeding season apportionment method used (0% of collisions or 50% of collisions are birds from this site). To contextualise these figures, baseline mortality would remain at 16% if 0% of breeding season collisions were birds from this site. If 50% of collisions during the breeding season were birds from this site then baseline mortality goes from 16% without the wind farm(s) to 21% with the effect of the wind farm(s) (i.e. increase by 5%), however, this is for 0.5 collisions per year.
- 5.66 Based on this data, all parties, recommended a conclusion of no adverse effect on integrity of the Mediterranean gull feature of the Solent and Southampton

Water SPA arising from collisions with the Project both alone and in-combination with Rampion OWF (see REP: 3696).

Poole Harbour SPA and Ramsar site

- 5.67 The total annual predicted collision mortalities are 2 Mediterranean gulls for the Project (4 for the upper 95% CL data) and 0.1 birds for Rampion OWF (0.3 for upper 95% CL). Therefore, a total of 0.5-1 collisions per year are predicted for Navitus alone and in-combination with Rampion, depending on the breeding season apportionment method used (50% of collisions or 100% of collisions are birds from this site). To contextualise these figures, baseline mortality would increase from 16% without the wind farm(s) to 16.31-16.63% with the effect of the wind farm(s) (i.e. increase by 0.31-0.63%).
- 5.68 Based on this data, all parties recommended a conclusion of no adverse effect on integrity of the Mediterranean gull feature of the Poole Harbour SPA and Ramsar site arising from collisions with the Project both alone and in-combination with Rampion OWF (see REP: 3696).

Conclusions

- 5.69 Collisions with operational wind turbines were predicted to account for more than 1% of baseline mortality of Mediterranean gull at the Solent and Southampton Water SPA and Poole Harbour SPA and Ramsar site as a result of the Project alone and in-combination with other plans and projects and LSE could not be excluded.
- 5.70 The SoS has considered the modelled collision mortality levels, the advice of NE and the conclusions of the Panel and is in agreement that the predicted additional mortalities attributed to the Project, both alone and in-combination with other plans and projects, are small. She is of the view that this additional mortality is acceptable as it would not prevent the sites from achieving their conservation objectives. The SoS is satisfied that these conclusions are based on sound evidence and the best data that is available to her at this time.
- 5.71 The SoS agrees with the Panel's conclusion that no adverse effects on the integrity of the breeding Mediterranean gull populations of the Solent and Southampton Water SPA, Poole Harbour SPA or Pool Harbour Ramsar site are

expected to arise from the Project either alone or in-combination with other plans and projects.

Northern Gannet (*morus bassanus*)

5.72 There is potential for the Project to lead to a LSE upon the breeding Northern Gannet feature of the following two European sites:

- **Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA⁷**

5.73 The sites support large numbers of breeding seabirds including the only mainland-breeding colony of gannet in the UK. The seabirds feed and raft in the waters around the cliffs, outside the SPA, as well as feeding more widely in the North Sea. The intertidal chalk platforms are also used as roosting sites, particularly at low water.

5.74 As noted, the pSPA consists of a number of proposed changes to the existing Flamborough Head to Bempton Cliffs SPA, including the addition of northern gannet. The breeding gannet population has grown rapidly since the 1980's when only a few hundred breeding pairs were present to 8,469 pairs of 16,938 breeding adults (2008-2012); estimates of numbers in 2012 were 11,061 pairs or 22,122 breeding individuals (JNCC Seabird Colony Register Counts).

5.75 It is estimated that the UK population of gannets is 440,000 individuals (Baker et al, 2006). In the UK, the gannet population is concentrated in northern Scotland, and whilst they are widely distributed in English seas during winter, the only breeding colony in England is at Bempton Cliffs, Yorkshire.

⁷ Between 20 January 2014 and 14 April 2014, NE held a formal public consultation on the designation of the Flamborough and Filey Coast pSPA. This pSPA, if confirmed by the Secretary of State for the Environment, Food and Rural Affairs, would represent a geographical extension to the existing Flamborough Head to Bempton Cliffs SPA and add several species to the formal citation. Proposals are to ensure that the breeding seabirds of the SPA are protected by its boundary and list of classified features. The proposed site has been renamed the Flamborough and Filey Coast potential SPA (pSPA). It is Government policy to treat pSPAs as if they were a fully designated European site under the Habitats Regulations. As such, the SoS considers it important to consider the potential impacts of the Project upon this potential site. The pSPA consists of a number of proposed changes to the existing Flamborough Head to Bempton Cliffs SPA, including the addition of northern gannet and an update to the published population figures for migratory black-legged kittiwakes.

5.76 Collision risk during Project operation from the Project alone does not constitute a LSE, however a LSE is predicted from the Project, in combination with other plans and projects (REP-3715) and therefore an AA is required to determine whether there is potential for adverse effect on integrity of the northern gannet feature of the Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA

5.77 The conservation objectives for the Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA are found in Table 9.

Table 9 conservation objectives for Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA (Natural England, 2014d)

Conservation objectives	<p>Ensure that the integrity of the site is maintained or restored as appropriate, and ensure that the site contributes to achieving the aims of the Wild Birds Directive, by maintaining or restoring;</p> <ul style="list-style-type: none"> • The extent and distribution of the habitats of the qualifying features • The structure and function of the habitats of the qualifying features • The supporting processes on which the habitats of the qualifying features rely • The population of each of the qualifying features, and, • The distribution of the qualifying features within the site.
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Collision risk modelling

5.78 To determine the levels of additional mortality that could be supported by the gannet population without risk of decline, CRM for gannet was undertaken using Option 1 (using bird flight height estimates derived from a review of previous studies) and Option 3 of the Band Model, a 99% avoidance rate based on Marine Scotland Science (MSS) review of avoidance rates (Cook et al. 2014), and a biologically defined minimum population scale (BDMPS) approach (Furness 2015) to apportion ornithological impacts to the individual protected sites during the non-breeding season.

Assessment of Effects on Integrity In-combination

Flamborough Head and Bempton Cliffs SPA / Flamborough and Filey Coast pSPA

- 5.79 For the Project alone, the total annual number of gannet collisions apportionable to the Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA is 1 adult gannet (representing less than a 1% increase in mortality relative to baseline) and a LSE from the Project alone was ruled out.
- 5.80 However the CRM shows that the impact of the Project, in-combination with North Sea and Channel OWFs, is not negligible and could lead to a LSE. The annual number of gannet collisions apportionable to the Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA from all North Sea and Channel OWFs (including the Project) is 177.
- 5.81 NE advise (REP-3696) that a density dependent PVA model for the Flamborough gannet colony predicts that an additional mortality of 200 adults would lead to a 5% chance that the colony growth rate would fall below 1 and that this might be an appropriate threshold recognising that the figure of 200 includes an element of precaution as that model does not account for the current rate of colony growth due to immigration.
- 5.82 NE advise (REP-3696) that a Potential Biological Removal (PBR) model threshold of 362 adults using an f value of 0.4 provides a sufficiently precautionary approach in the light of the continuing growth of the Flamborough gannet colony.
- 5.83 The in-combination mortality of 177 adult gannets from the Flamborough colony for North Sea and Channel OWFs (including the Project) is considerably lower than the PVA or PBR thresholds advised by NE to be acceptable. NE advise (REP-3696) that there would be no adverse effect on integrity of the gannet feature of the Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA arising from collision mortality from the Project, in-combination with other OWFs, on the basis of both the PVA and PBR analyses.

Conclusions

- 5.84 The SoS has considered the CRM undertaken by the Applicant and the advice of NE and is in agreement that the predicted additional mortalities attributed to the Project alone are negligible and those in-combination with other plans and projects are acceptable, being below thresholds previously agreed as not preventing the sites from achieving their conservation objectives. The SoS is satisfied that these conclusions are based on sound evidence and the best available scientific data.
- 5.85 The SoS concludes that no adverse effects on the integrity of the northern gannet feature of the Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA will arise from the Project alone or in-combination with other plans and projects as a result of collisions with wind turbines.

Black-Legged Kittiwake (*Rissa tridactyla*)

5.86 There is potential for the Project to lead to a LSE upon the breeding Kittiwake feature of the following two European sites:

- **Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA**

5.87 Upon designation, the Flamborough Head and Bempton Cliffs SPA supported 83,370 breeding pairs of kittiwake (17% of the UK population) (JNCC, 2006d and Revised citation JNCC 1992). As noted (footnote 7), the pSPA consists of a number of proposed changes to the existing Flamborough Head to Bempton Cliffs SPA, including an update to the published population figures for migratory black-legged kittiwakes.

5.88 Collision risk from the Project alone does not constitute a LSE, however a LSE is predicted from the Project, in-combination with other plans and projects (REP-3715) and therefore an AA is required to determine whether there is potential for an adverse effect on integrity.

5.89 The conservation objectives for Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA are found in Table 9.

Collision risk modelling

5.90 To determine the levels of additional mortality that could be supported by the kittiwake population without risk of decline, CRM was undertaken using Option 1 (using bird flight height estimates derived from a review of previous studies) and Option 3 of the Band Model, a 99% avoidance rate based on Marine Scotland Science review of avoidance rates (Cook et al. 2014), and a biologically defined minimum population scale (BDMPS) approach (Furness 2014) to apportion ornithological impacts to the individual protected sites during the winter period.

Assessment of Effects on Integrity In-combination

Flamborough Head and Bempton Cliffs SPA / Flamborough and Filey Coast pSPA

- 5.91 For the Project alone, the total annual number of kittiwake collisions apportionable to the Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA is 1.4 adult kittiwakes (representing less than a 1% increase in mortality relative to baseline) and a LSE from the Project alone was ruled out.
- 5.92 In-combination however, the in-combination CRM totals for North Sea and Channel OWFs are not negligible. The annual number of kittiwake collisions apportionable to the Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA from all North Sea and Channel OWFs (including the Project) is 371.
- 5.93 NE advise (REP-3696) that 500 adult kittiwake is the value at which a precautionary density-independent PVA model suggests the Flamborough kittiwake population would still have a >95% probability of continued growth. A density-dependent model predicts a more stable population and an additional mortality of 500 birds does not increase the probability of population decline significantly. NE advises (REP-3696) that a PBR model threshold of 573 adult kittiwakes, using an f value of 0.1, was also appropriate.
- 5.94 The in-combination mortality of 371 adult kittiwakes from the Flamborough colony for North Sea and Channel OWFs (including the Project) is considerably lower than the PVA or PBR thresholds advised by NE to be acceptable on previous applications. NE advise (REP-3696) that there would be no adverse effect on integrity of the kittiwake feature of the Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA arising from collision mortality from the Project in-combination with other OWFs, on the basis of both the PVA and PBR analyses.

Conclusions

- 5.95 The SoS has considered the results of the collision risk modelling undertaken by the Applicant and the advice of NE and is in agreement that the predicted additional mortalities attributed to the Project alone are negligible and those in-

combination with other plans and projects are acceptable, being below thresholds previously agreed as not preventing the sites from achieving their conservation objectives.

5.96 The SoS concludes that no adverse effects on the integrity of the Black-legged kittiwake feature of the Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA are expected to arise from the Project alone or in-combination with other plans and projects as a result of collision during project operation. The SoS is satisfied that these conclusions are based on sound evidence and the best available scientific data.

Sandwich tern (*Sterna sandvicensis*)

5.97 The Project could lead to a LSE upon the Sandwich tern feature of the following two European sites:

- **Solent and Southampton Water SPA:** The site regularly supports 231 breeding pairs of Sandwich tern, which is 1.7% of the 5 year mean peak 1993-1997 UK breeding population (JNCC, 2006e)
- **Poole Harbour SPA:** Sandwich tern is not currently identified as a qualifying feature of the Poole Harbour SPA but NE recommended it be assessed as NE are extending the boundary of the SPA, to include Sandwich tern (see the Panel's report page 411 and NE, 2015a).

5.98 The conservation objectives for Solent and Southampton Water SPA and Poole Harbour SPA are found in Table 8.

Impacts upon prey species during construction

5.99 Piling noise during construction of the Project, both alone and in-combination with other projects, may reduce prey availability for the Sandwich tern feature at Solent and Southampton Water SPA and Poole Harbour SPA. There is potential for overlap of Sandwich tern foraging ranges with the areas of impact upon their main prey species, sand eel (*Ammodytidae*), which may cause them to avoid the construction and adjacent areas and affect their physiology and behaviour.

5.100 The Applicant produced a 'Tern Foraging and Underwater Noise HRA Technical Note' (REP-3688) within which modelling was undertaken for sand eel to create noise contours in response to pile driving in order to quantify the risk of behavioural impact on sand eels from noise. In order to assess if noise would cause an impact on Sandwich tern, the Sandwich tern mean maximum and mean foraging ranges (Thaxter *et al.*, 2012) were added to the maps to identify if the noise propagation contours for either 75 or 90 dBht overlap.

Assessment of Impacts from the Development Alone/ Incombination

Solent and Southampton Water SPA and Poole Harbour SPA

5.101 The Applicant's Technical Note states that, although the mean maximum foraging range displays some overlap with the sand eel impact zone it

constitutes only a small fraction (less than one percent) of the overall foraging range for this species and there was no overlap of the mean foraging range (REP-3688).

5.102 On this basis, NE advises (REP-4072) that there would be no adverse effect on integrity of either site arising from indirect impacts during construction of the Project due to the limited portion of total sea area available to sandwich terns that overlaps with the noise sensitivity areas of their main prey species.

5.103 In addition, Sandwich terns were only recorded within the Turbine Area on a very small number of occasions from the Project specific surveys. The survey results suggest that the use of the Turbine Area, 4 km buffer zone and wider Zone 7 by Sandwich tern is very low and the population estimates during the breeding season are well below that required to reach thresholds necessary for regional, national or international importance (REP-3688).

5.104 Only one UK OWF is considered to have the potential to act in combination with the Project, the consented Rampion OWF. The Applicant asserts that as no impacts are predicted for the Project alone, there will be no in-combination impacts with respect to the piling operations associated with Rampion OWF.

Conclusions

5.105 The SoS has considered the modelling undertaken by the Applicant in its Technical Note (REP-3688), the advice of NE (REP-3715 and REP-4072) and the recommendations of the Panel (the Panel's report: 20.6.50). Based on the limited portion of Sandwich tern foraging range (less than 1%) that overlaps with the noise sensitivity areas of their main prey species, the SoS is in agreement that no adverse effects on the integrity of the Sandwich tern feature of the Solent and Southampton Water SPA and Poole Harbour SPA are expected to arise from the Project alone or in-combination with other plans and projects as a result of indirect impacts upon prey. The SoS is satisfied that these conclusions are based on sound evidence and the best available scientific data.

5.106 The Applicant has committed to piling restrictions for the construction period, including no piling operations between 7th April and 15th May during any year of construction and to additional restrictions in place between 16th May and 15th August in order to protect Atlantic Salmon (REP-3688). These

restrictions would be secured via requirements in the DCO/DML, if made, (see page 37-38). These piling restrictions would have the additional benefit of providing protection to Sandwich tern prey species, however conclusions of no adverse effect on integrity of the Sandwich tern feature of the Solent and Southampton Water SPA and Poole Harbour SPA are not reliant upon these restrictions.

6. TRANSBOUNDARY CONSIDERATIONS

- 6.1 Given the potential for this development to affect mobile features across a wide geographical area, the SoS has decided to assess the risks to European sites in other EU Member States, (referred to here as ‘transboundary sites’). Where a plan or project is likely to have a significant effect (either alone or in combination) on a Natura 2000 site in another Member State, the SoS will consider the likely impacts of the proposals on such sites when deciding whether or not to grant development consent. Guidelines on how transboundary effects should be taken into account in the DCO process are set out in DECC’s 2015 guidance note (DECC 2015). The Panel also considered the implications for these sites. The results of their considerations, and the SoS’s own views on this matter are presented below.
- 6.2 The Applicant considered an extensive list of transboundary European sites in their LSE screening matrices (APP 059 and REP 3326). They were:
- 32 Irish sites
 - 19 French sites
 - 6 German sites
 - 1 Danish site
 - 1 Channel Island site
- 6.3 The Applicant concluded no LSE for all of these sites in their updated matrices (REP 3326), apart from for the gannet feature of the Alderney West Coast and the Burhou Islands Ramsar site in the Channel Islands. A number of representations relating to this site were received during the examination, the SoS considers these here.
- 6.4 In their SoCG (29/01 – REP-3679) NE made it clear that they are not the statutory nature conservation body for the Channel Islands, but have provided advice and appraisal of the Applicant’s assessment of the gannet colony on the Alderney and West Coast and the Burhou Islands Ramsar Site. However, it is acknowledged that this site is outside the remit of Natural England.

Channel Islands: Alderney West Coast and Burhou Islands Ramsar site

- 6.5 The Alderney West Coast and Burhou Islands Ramsar site is approximately 78km from the development site and protects nesting populations of Atlantic puffin, European storm-petrel, great black-backed gull, lesser black-backed gull and nesting and breeding populations of gannets.
- 6.6 A likely significant effect was identified by the Applicant in their screening matrices for gannet as a result of disturbance and displacement during construction, operation and decommissioning, and an increase in collision risk, barrier effects and in-combination impacts during operation.
- 6.7 The population of gannets present at the Alderney Ramsar site is 7885 pairs (2011 figures), which represents 2.3% of the world population, and 3.4% of the British Isles population (Alderney Wildlife Trust, 2012).
- 6.8 Collision risk monitoring for gannet was undertaken using Option 1 of the band model (Band, 2012), using a site specific derived figure for the percentage of birds at potential collision height, and a 98% and 99% avoidance rate and a biologically defined minimum population scale (BDMPS) approach (Furness 2014) to apportion ornithological impacts to the individual protected sites.
- 6.9 The collision risk modelling shows that as a result of the Project there will be an increased mortality rate, relative to baseline, of 3.99%, assuming a 98% avoidance rate, which is the equivalent to 50 adult birds per year, and an increase of 2%, which is equivalent to 25 adult birds per year for a 99% avoidance rate. This is lower than the threshold at which there is a 5% probability of the Alderney colony going into decline, which is 114 adult birds per year for the population viability analysis (PVA) model for gannet. (The potential biological removal (PBR) has a tipping point threshold of 215 adult birds per year) (20.8.25: The Panel's report).
- 6.10 The in-combination CRM assessment is based on Rampion OWF, as quantitative collision mortality rates are not available for the other 6 OWFs within the mean maximum foraging range from the Alderney Ramsar. The results show that there will be an increased mortality rate, relative to baseline, of 8.3% for 98% avoidance rate, which is equivalent to 106 adult birds per year, and 4.16% for 99% avoidance rate, equivalent to 53 adult birds per year (20.8.26: the Panel's report).

- 6.11 A bespoke colony specific PVA was requested by NE and others during the examination, however NE concluded given the degree of precaution in the tipping point threshold a site specific PVA was not required (REP 3715).
- 6.12 In their representations (REP 3608) the State of Alderney (SOA) stated that they had no specific concerns with the assessment, but did feel that the methodology used to assess the impacts on the gannet populations is limited in its ability to identify significant variations in foraging behaviour, and that there should have been further consideration of avoidance impacts, however they did not feel that the CRM analysis needed to be reassessed.
- 6.13 The SoA requested that post installation monitoring of the Alderney Ramsar site gannet colony should be undertaken in order to extend the understanding of their use of the Channel waters and their interaction with the Application project. It is proposed that this provision would be secured as a condition of the DML, if made. This monitoring programme will provide some mitigation to the Alderney gannet colony by providing accurate data on movements for future assessments.
- 6.14 During the examination it was agreed that the potential for gannet to be disturbed or displaced during the construction and decommissioning phases is low as gannets cover large areas whilst on foraging trips (Thaxter et al, 2012) and the activities associated with these phases of the Project will be highly localised. During the operation and maintenance phases the potential for gannet to be lost from the population due to displacement has been calculated as being between 1 and 10 individuals per annum. It was agreed that this level of loss to the population is not great enough to prevent the Alderney gannet population from continuing to grow.
- 6.15 The Panel has acknowledged that the collision risk modelling results in an increase greater than 1% of baseline mortality rates, but can conclude no adverse effect on integrity alone or in-combination due to the predicted number of adult birds being lost per year, being below the tipping point thresholds. They conclude that this level of loss to the population is not great enough to prevent the Alderney gannet population from continuing to grow. This conclusion being based on the outputs of a Potential Biological Removal (PBR) model and a Population Viability Analysis (PVA).

- 6.16 The SoS has considered the collision risk monitoring undertaken by the Applicant and the advice of NE, RSPB and the SoA and is in agreement with the Panel that the predicted additional mortalities attributed to the Project alone and in-combination with other plans and projects are acceptable, being below thresholds previously agreed as not preventing the sites from achieving their conservation objectives. The SoS is satisfied that these conclusions are based on sound evidence and the best available scientific data.
- 6.17 The SoS concludes that no adverse effects on the integrity of the Northern Gannet feature of the Alderney West Coast and Burhou Islands Ramsar site are expected to arise from the Project alone or in-combination with other plans and projects as a result of collision during project operation, or through displacement and disturbance during construction, operation and decommissioning.

7. Conclusions on site integrity

- 7.1 The SoS has carefully considered the impacts of the Project alone and in-combination with other plans and projects on each of the interest features of the European sites identified, to determine whether there will be an LSE and whether an AA is required.
- 7.2 She considers that there is a risk of LSE on 8 European sites. These are:
- Avon Valley SPA (Bewick's swan and gadwall)
 - Avon Valley Ramsar site (gadwall)
 - Poole Harbour SPA (Mediterranean gull and Sandwich tern)
 - Solent and Southampton Water SPA (Mediterranean gull and Sandwich tern)
 - River Avon SAC (Atlantic Salmon)
 - River Itchen SAC (Atlantic Salmon)
 - Flamborough Head and Bempton Cliffs SPA (Gannet and Kittiwake)
 - Flamborough and Filey Coast pSPA (Gannet and Kittiwake)
- 7.3 The SoS agrees with the Panel's recommendation that an AA is required. She is satisfied that sufficient information is available to enable her to make an AA as required by the Habitats Regulations. This comprises environmental information provided to the Panel, its report to the SoS, written representations from the SNCBs and published data and analysis from other sources.
- 7.4 By the close of examination, all parties were in agreement that adverse effects on site integrity as a result of the Project both alone and in-combination could be excluded for all 8 sites where an LSE was identified.
- 7.5 The SoS has undertaken an assessment of the potential for adverse effect on all 8 European sites identified as having LSE. She agrees with the recommendations of the Panel, and concludes that no adverse effects on the integrity of these sites are expected to arise from the Project either alone or in-combination with other plans and projects, subject to the mitigation measures secured in the DCO and DML, if made.

7.6 A summary of the SoS's reasons for reaching her conclusions are set out below. The SoS is satisfied that these conclusions are based on sound evidence and the best available scientific data.

Atlantic salmon

7.7 Having considered all the evidence and information presented the SoS is in agreement with the Panel, NE and the EA that there will be no adverse effect on the integrity of the Atlantic salmon feature of the River Avon and River Itchen SACs either alone or in-combination with other plans or projects, providing that:

- there is a limit imposed on the piling risk hours during the 16th May to 15th August period (inclusive),
- there is no piling during the period 7th April to 15th May (inclusive), and
- there is no construction activity within 250m of the River Avon between November to February (inclusive).

Bewick's swan

7.8 The SoS agrees with the conclusions reached by the Panel and NE as detailed in the RIES and the Panel's report and the Applicant's HRA report, that there will be no adverse effect on the integrity of the Bewick's swan qualifying feature of the Avon Valley SPA and Ramsar site either alone or in-combination with other plans or projects.

Gadwall

7.9 As a result of the proposed mitigation the SoS agrees with the conclusions reached by the Panel and NE as detailed in the RIES and the Panel's report and the Applicant's HRA report, that there will be no adverse effect on the integrity of the gadwall qualifying feature of the Avon Valley SPA and Ramsar site either alone or in-combination with other plans or projects.

Mediterranean gull

7.10 The SoS has considered the collision risk monitoring undertaken by the Applicant, the advice of NE and conclusions of the Panel and is in agreement that the predicted additional mortalities attributed to the Project, both alone

and in-combination with other plans and projects, are small. She is of the view that this additional mortality is acceptable as it would not prevent the sites from achieving their conservation objectives. The SoS agrees with the Panel's conclusion that no adverse effects on the integrity of the breeding Mediterranean gull populations of the Solent and Southampton Water SPA, Poole Harbour SPA or Pool Harbour Ramsar site are expected to arise from the Project either alone or in-combination with other plans and projects.

Northern Gannet

- 7.11 The SoS has considered the collision risk monitoring undertaken by the Applicant and the advice of NE and is in agreement that the predicted additional mortalities attributed to the Project alone are negligible and those in-combination with other plans and projects are acceptable, being below thresholds previously agreed as not preventing the sites from achieving their conservation objectives. The SoS concludes that no adverse effects on the integrity of the Northern Gannet feature of the Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA are expected to arise from the Project alone or in-combination with other plans and projects as a result of collision during project operation.

Black-legged Kittiwake

- 7.12 The SoS has considered the collision risk monitoring undertaken by the Applicant and the advice of NE and is in agreement that the predicted additional mortalities attributed to the Project alone are negligible and those in-combination with other plans and projects are acceptable, being below thresholds previously agreed as not preventing the sites from achieving their conservation objectives. The SoS concludes that no adverse effects on the integrity of the Black-legged kittiwake feature of the Flamborough Head and Bempton Cliffs SPA and Flamborough and Filey Coast pSPA are expected to arise from the Project alone or in-combination with other plans and projects as a result of collision during project operation.

Sandwich Tern

7.13 The SoS has considered the modelling undertaken by the Applicant in its Technical Note (REP-3688), the advice of NE (REP-4072) and the recommendations of the Panel(the Panel's report: 20.6.50). Based on the limited portion of sandwich tern foraging range (less than 1%) that overlaps with the noise sensitivity areas of their main prey species, the SoS is in agreement that no adverse effects on the integrity of the Sandwich tern feature of the Solent and Southampton Water SPA and Poole Harbour SPA are expected to arise from the Project alone or in-combination with other plans and projects as a result of indirect impacts upon prey.

Transboundary Considerations

7.14 The SoS has considered the estimates provided from the collision risk modelling undertaken by the Applicant and the advice of NE, RSPB and the SoA and is in agreement with the panel that the predicted additional mortalities attributed to the Project alone and in-combination with other plans and projects are acceptable, being below the tipping point thresholds previously agreed as not preventing the sites from achieving their conservation objectives. The SoS is satisfied that these conclusions are based on sound evidence and the best available scientific data. The SoS concludes that no adverse effects on the integrity of the Northern Gannet feature of the Alderney West Coast and Burhou Islands Ramsar site are expected to arise from the Project alone or in-combination with other plans and projects as a result of collision during project operation, or through displacement and disturbance during construction, operation and decommissioning.

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REFERENCES

Alderney Wildlife Trust, 2012. Alderney West Coast and Burhou Islands Ramsar Site Management Strategy 2012 – 2016. Available at:

http://www.alderneywildlife.org/sites/default/files/2012-2016_five_year_strategy_plan.pdf

Cook, A.S.C.P., Johnston, A., Wright, L.J. and Burton, N.H.K. 2012. A review of flight heights and avoidance rates of birds in relation to offshore wind farms. BTO report commissioned by the Crown Estate.

Cook, A.S.C.P., Humphries, E.M., Masden, E.A., and Burton, N.H.K. 2014. The avoidance rates of collision between birds and offshore turbines. BTO research Report No 656 to Marine Scotland Science.

Department for Energy and Climate Change (DECC) 2015. Guidelines on the assessment of transboundary impacts of energy developments on Natura 2000 sites outside the UK. Available at:

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/408465/transboundary_guidelines.pdf

Department of Environment Food and Rural Affairs. 2013. Report of the Triennial Review of the Joint Nature Conservation Committee.

English Nature. 1997. Habitats regulations guidance note 1.

European Commission. 2000. Managing Natura 2000 sites. The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC.

Furness, R.W. 2015. *Non-breeding season populations of seabirds in UK waters: Population sizes for Biologically Defined Minimum Population Scales (BDMPS)*. Natural England Commissioned Reports, Number 164.

Johnston A, Aonghais S, Cook C. P., Wright L. J., Humphreys E. M., and Burton N. H. K. 2014. Modelling flight heights of marine birds to more accurately assess collision risk with offshore wind turbines. DOI: 10.1111/1365-2664.12191

Joint Nature Conservation Committee. 2006a:

<http://jncc.defra.gov.uk/pdf/SPA/UK9011061.pdf> (accessed 11 August 2015)

Joint Nature Conservation Committee. 2006b:

<http://jncc.defra.gov.uk/pdf/SPA/UK9010111.pdf> (accessed 11 August 2015)

Joint Nature Conservation Committee. 2006c:

<http://jncc.defra.gov.uk/pdf/SPA/UK9011091.pdf> (accessed 11 August 2015)

Joint Nature Conservation Committee. 2006d:

<http://jncc.defra.gov.uk/pdf/SPA/UK9006101.pdf> (accessed 11 August 2015)

Joint Nature Conservation Committee. 2006e:

<http://jncc.defra.gov.uk/pdf/SPA/UK9011061.pdf> (accessed 11 August 2015)

Joint Nature Conservation Committee. 2008:

<http://jncc.defra.gov.uk/pdf/RIS/UK11005.pdf> (accessed 11 August 2015)

Joint Nature Conservation Committee. 2011a:

<http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0013016.pdf>

(accessed 11 August 2015)

Joint Nature Conservation Committee. 2011b:

<http://jncc.defra.gov.uk/protectedsites/sacselection/n2kforms/UK0012599.pdf>

(accessed 11 August 2015)

Natural England. 2014a:

<http://publications.naturalengland.org.uk/publication/5741820348727296> (accessed

11 August 2015)

Natural England, 2014b:

<http://publications.naturalengland.org.uk/publication/6048472272732160> (accessed 11 August 2015)

Natural England, 2014c:

<http://publications.naturalengland.org.uk/publication/5130124110331904> (accessed 11 August 2015)

Natural England, 2014d:

<http://publications.naturalengland.org.uk/publication/5400434877399040> (accessed 17 August 2015)

Natural England, 2015a:

<http://publications.naturalengland.org.uk/publication/6229258099752960> (accessed 24 August 2015)

RSISa, 1999: <https://rsis.ramsar.org/RISapp/files/RISrep/GB926RIS.pdf> (accessed 11 August 2015)

RSISb, 1999: <https://rsis.ramsar.org/RISapp/files/RISrep/GB1005RIS.pdf> (accessed 11 August 2015)

Thaxter, C., Lascelles, B., Sugar, K., Cook, A.S.C.P., Roos, S., Bolton, M., Langston, R.H.W., and Burton, N.H.K. 2012. Seabird foraging ranges as a preliminary tool for identifying candidate Marine Protected Areas. *Biological Conservation*.

Doi:10.1016/j.biocon.2011.12.009.

Annex A: European Sites which were screened for a possible LSE by the Applicant (Source: REIS Appendix 2 and REP - 3326).

European site name	Qualifying features which were assessed for LSE	Distance to Navitus Bay Wind Park
UK sites		
Avon Valley SPA	Bewick's swan <i>Cygnus columbianus</i> Gadwall <i>Anas strepera</i>	0 km
Avon Valley Ramsar site	Diverse habitats Diverse flora and fauna Gadwall <i>Anas strepera</i>	0 km
River Avon SAC	Watercourses of plain to montane levels Desmoulin's whorl snail <i>Vertigo moulinsiana</i> Sea Lamprey <i>Petromyzon marinus</i> Brook Lamprey <i>Lampetra planeri</i> Atlantic Salmon <i>Salmo salar</i> Bullhead <i>Cottus gobio</i>	0km
Dorset Heathlands SPA	Nightjar <i>Caprimulgus europaeus</i> Dartford warbler <i>Sylvia undata</i> Woodlark <i>Lullula arborea</i> Hen Harrier <i>Circus cyaneus</i> Merlin <i>Falco columbarius</i>	0 km
Dorset Heathlands Ramsar site	Northern Atlantic wet heaths with <i>Erica tetralix</i> Depressions on peat substrate of the Rhynchosporion Southern Atlantic wet heaths with <i>Erica ciliaris</i> Diverse and rare flora and fauna Diverse and rich habitats	0 km
Dorset Heaths SAC	Northern Atlantic wet heaths with <i>Erica tetralix</i> European dry heaths Depressions on peat substrate of the <i>Rhynchosporion</i> Southern damselfly Molina meadows	0 km

	<p>Calcareous fens Alkaline fens Old acidiophilous oak woods Great crested newt</p>	
<p>Solent and Southampton Water SPA</p>	<p>Common tern <i>Sterna hirundo</i> Little tern <i>Sterna albifrons</i> Mediterranean gull <i>Larus melanocephalus</i> Roseate tern <i>Sterna dougallii</i> Sandwich tern <i>Sterna sandvicensis</i> Black-tailed godwit <i>Limosa limosa islandica</i> Dark-bellied brent goose <i>Branta bernicla bernicla</i> Ringed plover <i>Charadrius hiaticula</i> Teal <i>Anas crecca</i> Gadwall <i>Anas strepera</i> Little grebe Great crested grebe Cormorant Wigeon <i>Anas penelope</i> Redshank <i>Tringa tetanus</i> Pintail <i>Anas acuta</i> Shoveler Red-breasted merganser Grey plover <i>Pluvialis squatarola</i> Lapwing Dunlin <i>Calidris alpina alpina</i> Curlew <i>Numenius arquata</i> Shelduck <i>Tadorna tadorna</i></p>	<p>3.1 km</p>
<p>Solent and Southampton Water Ramsar site</p>	<p>Sheltered major channel with diverse habitats Nationally rare flora and fauna Dark-bellied brent goose <i>Branta bernicla bernicla</i> Teal <i>Anas crecca</i> Black-tailed godwit <i>Limosa limosa islandica</i></p>	<p>3.1 km</p>

Poole Harbour SPA	Common tern <i>Sterna hirundo</i> Mediterranean gull <i>Larus melanocephalus</i> Aquatic warbler Little egret <i>egretta garzetta</i> Avocet Black-tailed godwit Shelduck <i>Tadorna tadorna</i> Redshank <i>Tringa tetanus</i> Curlew <i>Numenius arquata</i> Lapwing Dunlin <i>Calidris alpina alpina</i> Red-breasted merganser Goldeneye Pochard Shoveler Dark-bellied brent goose <i>Branta bernicla bernicla</i> Cormorant	12.3 km
Poole Harbour Ramsar site	Bar built estuary with lagoon Nationally rare flora and fauna Natural habitats of community interest Common tern <i>Sterna hirundo</i> Mediterranean gull <i>Larus melanocephalus</i> Avocet Shelduck <i>Tadorna tadorna</i> Black-tailed godwit <i>Limosa limosa islandica</i>	12.3 km
River Itchen SAC	Atlantic salmon	29.1 km
Chichester and Langstone Harbours SPA	Sandwich tern <i>Sterna sandvicensis</i> Little tern <i>Sterna albifrons</i> Little egret <i>egretta garzetta</i> Bar-tailed godwit <i>Limosa lapponica</i> Black-tailed godwit <i>Limosa limosa islandica</i> Dark-bellied brent goose <i>Branta bernicla bernicla</i>	41.9 km

	Ringed plover <i>Charadrius hiaticula</i> Teal <i>Anas crecca</i> Little grebe Cormorant Wigeon <i>Anas penelope</i> Redshank <i>Tringa tetanus</i> Pintail <i>Anas acuta</i> Shoveler Red-breasted merganser Grey plover <i>Pluvialis squatarola</i> Lapwing Dunlin <i>Calidris alpina alpina</i> Knot Sanderling <i>Calidris alba</i> Whimbrel Shelduck <i>Tadorna tadorna</i>	
Chichester and Langstone Harbours Ramsar site	Estuarine basins Little tern <i>Sterna albifrons</i> Ringed plover <i>Charadrius hiaticula</i> Black-tailed godwit <i>Charadrius hiaticula</i> Redshank <i>Tringa tetanus</i> Dark-bellied brent goose <i>Branta bernicla bernicla</i> Shelduck <i>Tadorna tadorna</i> Grey plover <i>Pluvialis squatarola</i> Dunlin <i>Calidris alpina alpina</i>	41.9 km
Dungeness to Pett Level SPA	Mediterranean gull <i>Larus melanocephalus</i>	171.4 km
Alde-Ore Estuary SPA	Lesser black-backed gull <i>Larus fuscus</i>	273.2 km
Isles of Scilly Complex SAC	Grey seal	317.3 km
Flamborough Head and Bempton Cliffs SPA	Kittiwake <i>Rissa triactyla</i> Gannet <i>Morus bassanus</i>	412.8 km
Flamborough and Filey	Kittiwake <i>Rissa triactyla</i>	412.8 km

Coast pSPA	Gannet <i>Morus bassanus</i>	
UK SACs with grouped marine and coastal habitats		
South Wight Maritime SAC	Reefs Vegetated sea cliff of the Atlantic and Baltic coasts Submerged or partially submerged sea caves	1.3 to 11.3 km
Wight Barfleur Reef SAC	Reefs	
Solent Maritime SAC	Estuaries Spatina swards, and Atlantic salt meadows Sandbanks which are slightly covered by sea water all of the time Mudflats and sandflats not covered by sea water at low tide Coastal lagoons Annual vegetation of drift lines Perennial vegetation of stony banks Salicornia and other annuals colonising mud and sand Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes)	
Solent and Isle of Wight Lagoons SAC	Coastal lagoons	
Studland to Portland cSAC	Reefs	
Isle of Portland to Studland Cliffs SAC	Vegetated sea cliffs of the Atlantic and Baltic coasts Annual vegetation of drift lines	
St Albans Head to Durlston Head SAC	Vegetated sea cliffs of the Atlantic and Baltic coasts	
Dorset Heaths (Purbeck to Wareham) and Studland Dunes SAC	Embryonic shifting dunes Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>) Humid dune slacks	
UK SPAs supporting seabirds and seaducks outside of the English Channel		
Skomer and Skokholm SPA	Lesser Black-backed gull <i>Larus fuscus</i> Manx shearwater <i>Puffinus puffinus</i>	273.2 to 1136.4 km

	Puffin <i>Fratercula arctica</i> Razorbill <i>Alca torda</i> Guillemot <i>Uria aalge</i>	
Grassholm SPA	Gannet <i>Morus bassanus</i>	
Glannau Aberaron and Ynys Enlli/Aberdaron Coast and Bardsey Island SPA	Manx shearwater <i>Puffinus puffinus</i>	
Coquet Island SPA	Puffin <i>Fratercula arctica</i>	
Canna and Sanday SPA		
Lough Neagh and Lough Beg SPA	Lesser black-backed gull <i>Larus fuscus</i>	
Farne Islands SPA	Kittiwake <i>Rissa triactyla</i> Puffin <i>Fratercula arctica</i>	
Ailsa Craig SPA	Gannet <i>Morus bassanus</i> Lesser Black-backed gull <i>Larus fuscus</i>	
St Abb's Head to Fast Castle SPA	Kittiwake <i>Rissa triactyla</i>	
Marwick Head SPA		
Raithlin Island SPA	Puffin <i>Fratercula arctica</i> Lesser black-backed gull <i>Larus fuscus</i> Fulmar <i>Fulmarus glacialis</i>	
Firth of Forth Islands SPA	Gannet <i>Morus bassanus</i> Lesser black-backed gull <i>Larus fuscus</i> Puffin <i>Fratercula arctica</i> Kittiwake <i>Rissa triactyla</i> Fulmar <i>Fulmarus glacialis</i>	
Fowlsheugh SPA	Fulmar <i>Fulmarus glacialis</i>	
Buchan Ness to Collieston Coast SPA	Kittiwake <i>Rissa triactyla</i>	
Troup, Pennan and Lion's Head SPA		
Sumburgh Head SPA		

Shiant Isles SPA	Puffin <i>Fratercula arctica</i>	
Mingulay and Berneray SPA	Fulmar <i>Fulmarus glacialis</i>	
Flannan Isles SPA		
East Caithness Cliffs SPA	Puffin <i>Fratercula arctica</i> Great black-backed gull <i>Larus marinus</i> Fulmar <i>Fulmarus glacialis</i> Kittiwake <i>Rissa triactyla</i>	
Handa SPA	Fulmar <i>Fulmarus glacialis</i> Great skua <i>Catharcta skua</i>	
North Caithness Cliffs SPA	Puffin <i>Fratercula arctica</i>	
Cape Wrath SPA	Kittiwake <i>Rissa triactyla</i> Fulmar <i>Fulmarus glacialis</i>	
St Kilda SPA	Fulmar <i>Fulmarus glacialis</i> Puffin <i>Fratercula arctica</i> Great skua <i>Catharcta skua</i>	
Hoy SPA	Puffin <i>Fratercula arctica</i> Kittiwake <i>Rissa triactyla</i> Great black-backed gull <i>Larus marinus</i> Arctic skua <i>Stercorarius parasiticus</i> Fulmar <i>Fulmarus glacialis</i> Great skua <i>Catharcta skua</i>	
Copinsay SPA	Kittiwake <i>Rissa triactyla</i>	
Calf of Eday SPA	Great black-backed gull <i>Larus marinus</i> Fulmar <i>Fulmarus glacialis</i>	
Sule Skerry and Sule Stack SPA	Puffin <i>Fratercula arctica</i> Gannet <i>Morus bassanus</i>	
Rousay SPA	Kittiwake <i>Rissa triactyla</i>	
West Westray SPA	Arctic skua <i>Stercorarius parasiticus</i> Fulmar <i>Fulmarus glacialis</i>	
Papa Westray (North Hill and Holm) SPA	Arctic skua <i>Stercorarius parasiticus</i>	
North Rona and Sula Sgier	Puffin <i>Fratercula arctica</i>	

SPA	Great black-backed gull <i>Larus marinus</i>	
Fair Isle SPA	Kittiwake <i>Rissa triactyla</i> Great skua <i>Catharcta skua</i> Arctic skua <i>Stercorarius parasiticus</i> Gannet <i>Morus bassanus</i> Fulmar <i>Fulmarus glacialis</i> Puffin <i>Fratercula arctica</i>	
Foula SPA	Kittiwake <i>Rissa triactyla</i> Fulmar <i>Fulmarus glacialis</i> Puffin <i>Fratercula arctica</i> Great skua <i>Catharcta skua</i>	
Noss SPA	Puffin <i>Fratercula arctica</i> Kittiwake <i>Rissa triactyla</i> Fulmar <i>Fulmarus glacialis</i> Great skua <i>Catharcta skua</i> Gannet <i>Morus bassanus</i>	
Ronas Hill – North Roe and Tingon SPA	Great skua <i>Catharcta skua</i>	
Hermaness, Saxa Vord and Valla Field SPA	Kittiwake <i>Rissa triactyla</i> Fulmar <i>Fulmarus glacialis</i> Puffin <i>Fratercula arctica</i> Great skua <i>Catharcta skua</i> Gannet <i>Morus bassanus</i>	
Irish Sites supporting seabirds and seaducks		
Saltee Islands SPA	Fulmar <i>Fulmarus glacialis</i>	377.5 to 691.1 km
Cliffs of Moher SPA	Guillemot <i>Uria aalge</i> Puffin <i>Fratercula arctica</i> Razorbill <i>Alca torda</i>	
Wicklow Head SPA	Fulmar <i>Fulmarus glacialis</i>	
Howth Head Coast SPA		
Helvick Head to Ballyquin SPA		

Old Head of Kinsale SPA		
Galley Head to Duneen Point SPA		
Sheeps Head to Toe Head SPA		
Beara Peninsular SPA		
Kerry Head SPA		
Inveragh Peninsular SPA		
Dingle Peninsular SPA		
Deenish Island and Scariff Island SPA		
The Bull and the Cow Rocks SPA		
Loop Head SPA		
Inishmore SPA		
Aughris Head SPA		
High Island, Inishshark and Davillaun SPA		
Inishbofin, Inishdooley and Inishbeg SPA		
Duvillaun Islands SPA		
West Donegal Coast SPA		
Ireland's Eye SPA	Fulmar <i>Fulmarus glacialis</i>	
Puffin Island SPA	Puffin <i>Fratercula arctica</i>	
Blasket Islands SPA		
Skelligs SPA		
Tory Island SPA		
Bills Rocks SPA		
Stags of Broadhaven SPA		
Lambay Island SPA	Puffin <i>Fratercula arctica</i>	
Horn Head to Fadan Head		

SPA		
Clare Island SPA		
Illanmaster SPA		
French Sites supporting seabirds or seaducks		
Baie de Seine occidentale SPA	Common scoter <i>Melanitta nigra</i> Guillemot <i>Uria aalge</i> Kittiwake <i>Rissa triactyla</i> Razorbill <i>Alca torda</i>	95.9 to 318.1 km
Falaise du Bessin Occidental SPA	Fulmar <i>Fulmarus glacialis</i> Guillemot <i>Uria aalge</i> Razorbill <i>Alca torda</i>	
Cap d'Erquy-Cap Frehel SPA	Razorbill <i>Alca torda</i>	
Bancs des Flandres SPA		
Cap Sizun SPA		
Littoral Seino-Marin SPA	Common scoter <i>Melanitta nigra</i> Fulmar <i>Fulmarus glacialis</i> Guillemot <i>Uria aalge</i> Manx shearwater <i>Puffinus puffinus</i> Razorbill <i>Alca torda</i>	
Chausey SPA	Guillemot <i>Uria aalge</i> Razorbill <i>Alca torda</i>	
Estuaire et marais de la basse seine SPA	Razorbill <i>Alca torda</i>	
Littoral Augeron SPA	Common scoter <i>Melanitta nigra</i> Guillemot <i>Uria aalge</i> Manx shearwater Razorbill <i>Alca torda</i>	
Baie du Mont Saint Michel SPA	Common scoter <i>Melanitta nigra</i> Razorbill <i>Alca torda</i>	
Baie de Saint-Brieuc – Est SPA		
Tregor Goelo SPA	Fulmar <i>Fulmarus glacialis</i>	
Cote de Granit Rose-Sept Iles SPA	Fulmar <i>Fulmarus glacialis</i> Guillemot <i>Uria aalge</i>	

	Manx shearwater <i>Puffinus puffinus</i> Puffin <i>Fratercula arctica</i> Razorbill <i>Alca torda</i>	
Iles de la Colombiere, de la Nelliere et des Haches SPA	Common scoter <i>Melanitta nigra</i>	
Cap Gris-Nez SPA	Fulmar <i>Fulmarus glacialis</i> Guillemot <i>Uria aalge</i> Puffin <i>Fratercula arctica</i> Razorbill <i>Alca torda</i>	
Baie de Morlaix SPA	Puffin <i>Fratercula arctica</i>	
Ouessant – Molene SPA	Fulmar <i>Fulmarus glacialis</i> Manx shearwater <i>Puffinus puffinus</i> Puffin <i>Fratercula arctica</i> Razorbill <i>Alca torda</i>	
Camaret SPA	Fulmar <i>Fulmarus glacialis</i> Guillemot <i>Uria aalge</i>	
Baie de Vilaine SPA	Kittiwake <i>Rissa triactyla</i>	
German Sites supporting seabirds and seaducks		
Niedersächsisches Wattenmeer und angrenzendes Küstenmeer SPA	Kittiwake <i>Rissa triactyla</i>	377.5 to 691.1 km
Borkum- Riffgrund SPA	Gannet <i>Morus bassanus</i>	
Dogger Bank SPA	Fulmar <i>Fulmarus glacialis</i> Gannet <i>Morus bassanus</i> Kittiwake <i>Rissa triactyla</i>	
Sylter Aussenriff SPA	Gannet <i>Morus bassanus</i> Kittiwake <i>Rissa triactyla</i>	
Seevogelschutz zgebeit Hegoland SPA	Gannet <i>Morus bassanus</i> Kittiwake <i>Rissa triactyla</i>	
Ostliche Deutsche Bucht SPA	Fulmar <i>Fulmarus glacialis</i> Kittiwake <i>Rissa triactyla</i>	

Channel Islands Ramsar Sites		
Alderney West Coast and the Burhou Islands Ramsar Site	Gannet <i>Morus bassanus</i>	77.7 km
Danish Sites supporting seabirds and seaducks		
Sydilge Nordso SPA	Gannet <i>Morus bassanus</i>	787.4 km