The Planning Inspectorate

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

An Examining Authority report prepared with the support of the Environmental Services Team

14 April 2014

CONTENTS

1.0 INTRODUCTION

Background

1.1 DONG Energy (the Applicant) has applied to the Secretary of State for a development consent order (DCO) under section 37 of the Planning Act 2008 (as amended) for the proposed Walney Extension Offshore Wind Farm. The Secretary of State has appointed an Examining Authority (ExA) to conduct an examination of the application, to report its findings and conclusions, and to make a recommendation to the Secretary of State as to the decision to be made on the application.

1.2 The relevant Secretary of State is the competent authority for the purposes of the Habitats Directive[1] and the 2010 Habitats Regulations[2] for applications submitted under the Planning Act regime (as amended). The findings and conclusions on nature conservation issues reported by the Examining Authority will assist the Secretary of State in performing their duties under the Habitats Regulations.

1.3 This report compiles, documents and signposts information provided within the DCO application, and the information submitted throughout the examination by both the Applicant and interested parties. It is issued to ensure that interested parties including the statutory nature conservation bodies, Joint Nature Conservation Committee (JNCC)/ Natural England (NE)/ Natural Resources Wales (NRW)/ Scottish National Heritage (SNH), are consulted formally, as appropriate, on habitats regulations matters. This process may be relied on by the Secretary of State for the purposes of Regulation 61(3) of the Habitats Regulations.

Documents Used to Inform this Report

1.4 The Applicant updated the screening and integrity matrices in response to the first round of ExA questions (submitted to the ExA on 16 December 2013). A further update was provided on 14 March 2014, in response to Q1.85 of the ExA second written questions.

---

[1] Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (as codified) (the 'Habitats Directive')

[2] The Conservation of Habitats and Species Regulations 2010 (as amended) (the 2010 Habitats Regulations). The Offshore Marine Conservation (Natural Habitats, &c) Regulations 2007 (as amended) (Offshore Marine Regulations) will apply beyond UK territorial waters (12 nautical miles). These regulations are relevant when an application is submitted for an energy project in a renewable energy zone (except any part in relation to which the Scottish Ministers have functions).

1.5 These matrices presented the Applicant's evidence on whether the project, alone or in-combination with other projects, potentially affects a European site[3], and whether it is likely to have a significant impact on key features of each European site.

1.6 The matrices presented within this report have been updated by the ExA, with the support of the Environmental Services Team of the Planning Inspectorate, throughout the examination using the following documents:

Application Documents

- Walney Extension Offshore Windfarm Habitats Regulations Assessment Report. June 2013. Document 7.0 (Doc Ref: AD-052)
- Walney Extension Offshore Windfarm Habitats Regulations Assessment Charts. June 2013. Document 7.1 (Doc Ref: AD-053)
- Walney Extension Offshore Windfarm Habitats Regulations Assessment Report Annexes. June 2013. Document 7.2 (Doc Ref: AD-054)
- Walney Extension Offshore Windfarm Environmental Statement. Chapter 10 Benthic Ecology. June 2013. Document 10.1.10 (Doc Ref: AD-077)
- Walney Extension Offshore Windfarm Environmental Statement. Chapter 10 Benthic Ecology Charts. June 2013. Document 10.1.41 (Doc Ref: AD-108)
- Walney Extension Offshore Windfarm Environmental Statement. Annex B.4.A Benthic Ecology Technical Report. June 2013. Document 10.2.9 (Doc Ref: AD-153)
- Walney Extension Offshore Windfarm Environmental Statement. Chapter 11 Fish and Shellfish Resource. June 2013. Document 10.1.11 (Doc Ref: AD-078)
- Walney Extension Offshore Windfarm Environmental Statement. Chapter 11 Fish and Shellfish Resource Charts Parts 1-5. June 2013. Documents 10.1.42A-10.1.42E (Doc Refs: AD-109 to AD-113)

[3] European sites include Special Areas of Conservation (SACs), candidate Special Areas of Conservation (cSACs) and Special Protection Areas (SPAs) which are protected under the Habitats Regulations. As a matter of policy, the Government also applies the procedures of the Habitats Regulations to potential SPAs (pSPAs), Ramsar sites, and (in England) proposed Ramsar sites and sites identified, or required, as compensatory measures for adverse effects on any of the above sites.

- Walney Extension Offshore Windfarm Environmental Statement. Annex B.5.A Fish and Shellfish Resource Technical Report. June 2013. Document 10.2.19 (Doc Ref: AD-164)
- Walney Extension Offshore Windfarm Environmental Statement. Annex B.5.B Fish and Shellfish Resource Appendix 1. June 2013. Document 10.2.20 (Doc Ref: AD-165)
- Walney Extension Offshore Windfarm Environmental Statement. Annex B.5.C Fish and Shellfish Resource Appendix 2. June 2013. Document 10.2.21 (Doc Ref: AD-166)
- Walney Extension Offshore Windfarm Environmental Statement. Chapter 12 Marine Mammals. June 2013. Document 10.1.12 (Doc Ref: AD-079)
- Walney Extension Offshore Windfarm Environmental Statement. Chapter 12 Marine Mammals Charts. June 2013. Document 10.1.43 (Doc Ref: AD-114)
- Walney Extension Offshore Windfarm Environmental Statement. Annex B6 Marine Mammals. June 2013. Document 10.2.24 (Doc Ref: AD-169)
- Walney Extension Offshore Windfarm Environmental Statement. Chapter 13 Offshore Ornithology. June 2013. Document 10.1.13 (Doc Ref: AD-080)
- Walney Extension Offshore Windfarm Environmental Statement. Chapter 13 Offshore Ornithology Charts. June 2013. Document 10.1.44 (Doc Ref: AD-115)
- Walney Extension Offshore Windfarm Environmental Statement. Annex B.7.A Ornithology Technical Report. June 2013. Document 10.2.25 (Doc Ref: AD-170)
- Walney Extension Offshore Windfarm Environmental Statement. Annex B.7.B DCE aerial survey report. June 2013. Document 10.2.26 (Doc Ref: AD-171)
- Walney Extension Offshore Windfarm Environmental Statement. Annex B.7.C Theoretical collision assessment. June 2013. Document 10.2.27 (Doc Ref: AD-172)
- Walney Extension Offshore Windfarm Environmental Statement. Annex B.7.D CRM and migration assessment. June 2013. Document 10.2.28 (Doc Ref: AD-173)

- Walney Extension Offshore Windfarm Environmental Statement. Annex B.7.E PBR and SPA Apportioning. June 2013. Document 10.2.29 (Doc Ref: AD-174)
- Walney Extension Offshore Windfarm Environmental Statement. Chapter 14 Intertidal Ornithology. June 2013. Document 10.1.14 (Doc Ref: AD-081)
- Walney Extension Offshore Windfarm Environmental Statement. Annex B.7.F Intertidal ornithology Technical Report. June 2013. Document 10.2.30 (Doc Ref: AD-175)
- Walney Extension Offshore Windfarm Environmental Statement. Shadow European Protected Species Licence Application. June 2013. Document 12.7 (Doc Ref: AD-067)

Relevant Representations

- Relevant Representations Natural England and JNCC. 20 September 2013. (Doc Ref: RR-063)
- Relevant Representations Environment Agency. 20 September 2013. (Doc Ref: RR-056)
- Relevant Representations Isle of Man Government. 19 September 2013. (Doc Ref: RR-040)

Written Representations

- Written Representations Natural England. 16 December 2013. (Doc Ref: D1-019)
- Written Representations Environment Agency. 13 December 2013. (Doc Ref: D1-012)
- Written Representations Butterfly Conservation and Lancashire Moth Group. November 2013. (Doc Ref: D1-005)

Responses to ExA's First Questions

- Response to First Questions Marine Management Organisation. 12 December 2013 (Doc Ref: D1-027)
- Response to First Questions Natural England. 16 December 2013 (Doc Ref: D1-037)
- Response to First Questions Natural Resources Wales. 16 December 2013 (Doc Ref: D1-038)
- Response to First Questions Northern Ireland Environment Agency 28 November 2013 (Doc Ref: D1-025)
- Response to First Questions DONG Energy. 15 December 2013 (Doc Ref: D1-040)

- Response to First Questions DONG Energy - Appendix 5.1 Partitioning of unidentified birds recorded during project-specific surveys. 14 October 2013 (Doc Ref: D1-041)
- Response to First Questions DONG Energy - Appendix 5.2 Aerial and boat-based survey data statistical comparison. 14 October 2013 (Doc Ref: D1-042)
- Response to First Questions DONG Energy - Appendix 5 3 Definition of regional populations. 14 October 2013 (Doc Ref: D1-043)
- Response to First Questions DONG Energy - Appendix 5.4 Underwater noise impacts on migratory fish and associated rivers. 7 November 2013 (Doc Ref: D1-044)
- Response to First Questions DONG Energy - Appendix 5.5 Approach to collision risk modelling for pink-footed geese (Anser brachyrhynchus) and Whooper swan (Cygnus Cygnus). October 2013 (Doc Ref: D1-045)
- Response to First Questions DONG Energy - Appendix 5.6 Collision risk modelling and potential collision height. 22 November 2013 (Doc Ref: D1-046)
- Response to First Questions DONG Energy - Appendix 5.7 Export cable installation and maintenance within Morecambe Bay SAC and SPA. 27 November 2013 (Doc Ref: D1-047)
- Response to First Questions DONG Energy - Appendix 5.8 Cumulative impact assessment source data. 2 December 2013 (Doc Ref: D1-048)
- Response to First Questions DONG Energy - Appendix 5.9 Comparison of the precision of boat-based and aerial surveys. 3 December 2013 (Doc Ref: D1-049)
- Response to First Questions DONG Energy - Appendix 5.10 Clarification note on proposed working restrictions to further minimise potential disturbance to internationally important numbers of qualifying features of Morecambe Bay SPA. 9 December 2013 (Doc Ref: D1-050)
- Response to First Questions DONG Energy - Appendix 10.5 Confirmation from Northern Ireland Environment Agency regarding Whooper swan (Cygnus Cygnus) populations in Northern Ireland. 12 December 2013 (Doc Ref: D1-072)
- Response to First Questions DONG Energy - Appendix 10.7 Summary of onshore mitigation measures in response to ExA question 1.27. 15 December 2013 (Doc Ref: D1-074)

Responses to ExA's Second Questions

- Response to Second Questions DONG Energy. 4 March 2014 (Doc Ref: D4-002)

- Response to Second Questions DONG Energy - Appendix 1 Horizontal Directional Drilling feasibility review. 18 February 2014 (Doc Ref: D4-003)
- Response to Second Questions DONG Energy - Appendix 2 Clarification note on HDD impact on Morecambe Bay SAC and Belted Beauty moth (Lycia zonaria). February 2014 (Doc Ref: D4-004)
- Response to Second Questions DONG Energy - Appendix 13 Updated Lesser black backed gull in-combination assessment. March 2014 (Doc Ref: D4-016)
- Response to Second Questions DONG Energy - Appendix 14 Herring gull collision risk apportioning. February 2014 (Doc Ref: D4-017)
- Response to Second Questions DONG Energy - Appendix 15 HRA clarification note - screening of breeding birds outside of the breeding season. March 2014 (Doc Ref: D4-018)
- Response to Second Questions Natural England. 3 March 2014, including Supplementary Expert Report (Doc Ref: D4-036)
- Response to Second Questions Dong Energy – Revised HRA matrices. 14 March 2014 (Doc Ref: D4A-003)
- Response to Second Questions by PPA Authorities. 4 March 2014 (Doc Ref: D4-031)
- Response to Second Questions by Marine Management Organisation. 4 March 2014 (Doc Ref: D4-029)
- Response to Second Questions by Environment Agency. 4 March 2014 (Doc Ref: D4-027)

Responses to ExA's request for further information

- Response to ExA's request for further information Natural Resources Wales. 14 March 2014 (Doc Ref: D4A-006)

Hearing Documents

- Natural England's written summary from first Issue Specific Hearing 4 February 2014 (Doc Ref: D3-009)
- Issue Specific Hearing Recording on Biodiversity and Nature Conservation Part 1 (Doc Ref: EV-013)
- Issue Specific Hearing Recording on Biodiversity and Nature Conservation Part 2 (Doc Ref: EV-014)
- Issue Specific Hearing Recording on Biodiversity and Nature Conservation Part 3 (Doc Ref: EV-015)
- Natural England's written summary from the Issue Specific Hearings held on 27-28 March 2014 (Doc Ref: D5-039)

Comments on responses to ExA second questions (*deadline 3 April)*

- Dong Energy Walney Extension Ltd. 10 March 2014. Comments on responses to ExA's second written Questions in relation to Fish Monitoring (Doc Ref: D4A-016)

Deadline I

- Dong Energy Walney Extension Ltd. Underwater noise impacts on migratory fish and associated rivers. 7 November 2013. Appendix 5.4 (Doc Ref: D1-044)

Deadline IV

- Republic of Ireland, Transboundary Representation. 11 March 2014 (Doc Ref: D4-037)

Statements of Common Ground (SoCG)

- DONG Energy Walney Extension Ltd. SoCG with Marine Management Organisation. 12 December 2013. Appendix 4.1 (Doc Ref: SCG-001)
- Dong Energy Walney Extension Ltd. SoCG with Natural England. 19, 20 February 2014. 3, 24 and 25 March 2014. (Doc Ref: SCG-018 as updated)
- Dong Energy Walney Extension Ltd. SoCG with Environment Agency 9 December 2013 (Doc Ref: SCG-015)
- Dong Energy Walney Extension Ltd. SoCG with Butterfly Conservation and Lancashire Moth Group. 11, 18 and 24 March 2014 (Doc Ref: SCG-010 as updated)
- Dong Energy Walney Extension Ltd. SoCG with Isle of Man Government. 14 March 2014 (Doc Ref: SCG-025)
- Dong Energy Walney Extension Ltd. SoCG with MMO 15 and 29 January, 14 February (Doc Ref: SCG-001 as updated)
- Dong Energy Walney Extension Ltd. SoCG with Whale and Dolphin Conservation Society. 12 December 2013 (Doc Ref: SCG-006)

Structure of this Report

1.7 The remainder of this report is in three parts:

- Section 2 identifies the European sites, potential impacts, mitigation measures and the main issues that were considered within the HRA process;

- Section 3 comprises screening matrices for the European sites which might potentially be affected by the project (Stage 1 of the HRA process). These matrices collate evidence on whether the project is likely to have significant effects on the key features of each European site alone, or in-combination with other projects. The European sites for which a likely significant effect is identified on one or more of its key features are taken forward to Section 4 of this report; and

- Section 4 comprises matrices for those European sites identified in Section 3 for which a likely significant effect cannot be excluded. The matrices summarise the anticipated effects on the integrity of the European sites, in the context of their conservation objectives (Stage 2 of the HRA process).

2.0 KEY POINTS

European Sites

2.1 The project is not connected with or necessary to the management for nature conservation of any of the European sites considered within the assessment.

2.2 The Applicant's HRA Report identified the following European sites for inclusion within the assessment:

- Ailsa Craig SPA
- Eileanan agus Sgeiran Lios mór SAC
- River Bladnoch SAC
- South East Islay Skerries SAC
- Treshnish Isles SAC
- Upper Solway Flats and Marshes Ramsar
- Upper Solway Flats and Marshes SPA
- Copeland Islands SPA
- Lough Foyle Ramsar
- Lough Foyle SPA
- Lough Neagh and Lough Beg SPA
- Lough Neagh and Lough Beg Ramsar
- Murlough SAC
- Skerries and Causeway SAC
- Strangford Lough SAC
- The Maidens SAC
- Upper Lough Erne Ramsar
- Upper Lough Erne SPA
- Blasket Islands SAC
- Horn Head and Rinclevan SAC
- Lambay Island SPA
- Lambay Island SAC
- Lough Swilly SPA
- Lower River Shannon SAC
- Roaringwater Bay and Islands SAC
- Rockabill to Dalkey Island cSAC

- Rutland Island and Sound SAC
- Saltee Islands SPA
- Saltee Islands SAC
- Slaney River Valley SAC
- West Connacht Coast SAC
- Aberdaron Coast and Bardsey Island SPA
- Afon Gwyrfai a Llyn Cwellyn SAC
- Cardigan Bay SAC
- Cors Fochno and Dyfi Ramsar
- Dyfi Estuary SPA
- Grassholm SPA
- Lleyn Peninsula and the Sarnau SAC
- Pembrokeshire Marine SAC
- River Dee and Bala Lake SAC
- Skokholm and Skomer SPA
- Ynys Feurig
- Cemlyn Bay and The Skerries SPA
- Dee Estuary SAC
- Dee Estuary SPA
- Liverpool Bay SPA
- The Dee Estuary Ramsar
- Bowland Fells SPA
- Drigg Coast SAC
- Duddon Estuary SPA
- Duddon Estuary Ramsar
- Martin Mere SPA
- Martin Mere Ramsar
- Mersey Estuary Ramsar
- Mersey Estuary SPA
- Mersey Narrows and North Wirral Foreshore pSPA
- Mersey Narrows and North Wirral Foreshore pRamsar
- Morecambe Bay Ramsar
- Morecambe Bay SAC

- Morecambe Bay SPA
- Ribble and Alt Estuaries Ramsar
- Ribble and Alt Estuaries SPA
- River Derwent and Bassenthwaite Lake SAC
- River Eden SAC
- Shell Flat and Lune Deep SAC
- Solway Firth SAC
- Croker Carbonate Slabs SAC
- Pisces Reef Complex SAC

2.3 Within paragraph 5.2.1 of the HRA report (Doc Ref: AD-052) it is stated that the screening exercise to identify which European sites may be affected by the development was carried out in the light of site specific surveys, consultation with the SNCB's and interested parties and discussion with the Planning Inspectorate.

Potential Impacts

2.4 The potential impacts upon the identified European sites which are considered within the Applicant's HRA Report are provided in Table 2.1.

Table 2.1 Potential Impacts considered in the Applicant's HRA Report

Designated sites	**Impacts in submission information**	**Presented in matrices as**
For Ornithological Features		
Aberdaron Coast and Bardsey Island SPA Ailsa Craig SPA Bowland Fells SPA Copeland Islands SPA Cors Fochno and Dyfi Ramsar Dee Estuary Ramsar Dee Estuary SPA Duddon Estuary Ramsar Duddon Estuary SPA Dyfi Estuary SPA Grassholm SPA Lambay Island SPA Liverpool Bay SPA Lough Foyle Ramsar Lough Foyle SPA	**Construction**	
	Disturbance and displacement from increased vessel and construction activity	Disturbance/ displacement
	Indirect impacts on prey species from pile driving	Indirect effects
	Operation	
	Avoidance and displacement from wind farm site due to turbine presence	Disturbance/ displacement

Designated sites	**Impacts in submission information**	**Presented in matrices as**
Lough Neagh and Lough Beg SPA Lough Swilly SPA Mersey Estuary SPA Martin Mere Ramsar Martin Mere SPA Mersey Estuary Ramsar Mersey Narrows and North Wirral Foreshore pRamsarMersey Narrows and North Wirral Foreshore pSPA Morecambe Bay Ramsar Morecambe Bay SPA Ribble and Alt Estuaries Ramsar Ribble and Alt Estuaries SPA Saltee Islands SPA Skokholm and Skomer SPA Upper Lough Erne Ramsar Upper Lough Erne SPA Upper Solway Flats and Marshes Ramsar Upper Solway Flats and Marshes SPA Ynys Feurig, Cemlyn Bay and The Skerries SPA	Barrier effects	Barrier
	Direct collision with turbine blades	Turbine collision
	Decommissioning	
	Disturbance and displacement from increased vessel and decommissioning activity	Disturbance/ displacement
	Indirect impacts on prey species from decommissioning activity	Indirect effects
	In-combination	
	Disturbance and displacement due to boat traffic and construction activities, and during operation.	Disturbance/ displacement
	Collision with turbine blades	Turbine collision
	In-combination construction effects such as disturbance/displacement and indirect effects on prey	Construction
For migratory fish features		
Afon Gwyrfai a Llyn Cwellyn SAC Dee Estuary SAC River Bladnoch SAC River Dee and Bala Lake SAC River Derwent and Bassenthwaite Lake SAC River Eden SAC Solway Firth SAC	**Construction**	
	Death or injury caused by piling activity	Death / injury
	Behavioural disturbance caused by piling activity	Behavioural changes

Designated sites	Impacts in submission information	Presented in matrices as
	Increase in suspended sediment concentration (SCC) as a result of foundation installation	Increases in SCC
	Operation	
	Electromagnetic field (EMF) effects from export and inter-array cables	EMF
	Decommissioning	
	Behavioural disturbance caused by decommissioning activity	Behavioural changes
	Increase in suspended sediment concentration (SCC) as a result of foundation removal	Increases in SCC
For marine mammal features		
Blasket Islands SAC Cardigan Bay SAC Eileanan agus Sgeiran Lios mór SAC Horn Head and Rinclevan SAC Lambay Island SAC Lleyn Peninsula & the Sarnau SAC Lower River Shannon SAC Murlough SAC Pembrokeshire Marine SAC Roaringwater Bay and Islands SAC Rockabill to Dalkey Island cSAC Rutland Island and Sound SAC Saltee Islands SAC Skerries and Causeway SAC Slaney River Valley SAC	**Construction**	
	Potential physical damage and temporary disturbance and displacement as a result of piling and other construction activities	Construction disturbance
	Temporary effects on the distribution and abundance of prey species due to habitat disturbance and direct prey disturbance	Indirect effects

Designated sites	**Impacts in submission information**	**Presented in matrices as**
South-East Islay Skerries SAC Strangford Lough SAC The Maidens SAC Treshnish Isles SAC West Connacht Coast SAC	Habitat loss	Habitat loss
	Potential increase in vessel strike between vessels and marine mammals as a result of increased vessel activity	Construction vessel collision
	Operation	
	Disturbance and displacement of marine mammals resulting from operational noise	Disturbance
	Potential vessel strike between vessels and marine mammals as a result of increase vessel activity	Operational vessel collision
	Decommissioning	
	Potential physical damage and temporary disturbance and displacement as a result of deconstruction activities	Construction disturbance
	Temporary effects on the distribution and abundance of prey species due to habitat disturbance and direct prey disturbance	Indirect effects
	Habitat loss	Habitat loss

Designated sites	Impacts in submission information	Presented in matrices as
	Potential increase in vessel strike between vessels and marine mammals as a result of increased vessel activity	Decommissioning vessel collision
	In-combination	
	Potential physical damage and temporary disturbance and displacement from piling and other construction activities	Disturbance
	Potential increase in vessel strike between vessels and marine mammals as a result of increased vessel activity	Collision
For Annex 1 Habitat Features		
Blasket Islands SAC Cardigan Bay SAC Croker Carbonate Slabs SAC Dee Estuary SAC Drigg Coast SAC Horn Head and Rinclevan SAC Lambay Island SAC Lleyn Peninsula and the Sarnau SAC Menai Straits and Conwy Bay SAC Morecambe Bay SAC Murlough SAC Pembrokeshire Marine SAC Pisces Reef Complex SACRiver Derwent and Bassenthwaite Lake SAC River Eden SAC	**Construction**	
	Increase in SSC as a result of foundation installation	Increase SSC - foundations
	Increase in SSC as a result of inter-array cable installation	Increase SSC - inter-array cables
	Direct habitat loss Disturbance as a result of cable installation	Habitat loss / disturbance
	Operation	
	Changes to sediment transport regime due to turbine presence	Changes to sediment transport

Designated sites	Impacts in submission information	Presented in matrices as
Roaringwater Bay and Islands SAC Rutland Island and Sound SAC Saltee Islands SAC Shell Flat and Lune Deep SAC Skerries and Causeway SAC Slaney River Valley SAC Solway Firth SAC Strangford Lough SAC The Maidens SAC Treshnish Isles SAC	Indirect habitat loss (turbine foundations / power cables)	Habitat loss
	Decommissioning	
	Increase in SSC as a result of foundation removal	Increase in SSC
	In-combination	
	Interaction of sediment plumes from other sources	Sediment plume interaction

2.5 In paragraph 3.3.8 of the HRA (Doc Ref: AD-052) gives a definition of how a significant effect has been considered in the Applicant's report:

'In the determination of likely significant effect, guidance has been provided in Habitat Regulations Guidance Note 3 (HRGN3), "The Determination of Likely Significant Effect under the Habitats Regulations". This involves a preliminary consideration of whether a qualifying feature is likely to be directly or indirectly affected (in which case there is a presumption that a significant effect is likely). In such a case (where a significant effect is likely), a fuller consideration should then be applied, using further analysis and information, to confirm and justify the presence or absence of "likely significant effect" (LSE). Appropriate assessment is needed in cases where LSE is identified or cannot reasonably be excluded.'

2.6 In paragraph 7.2.6 of the HRA (Doc Ref: AD-052) it is stated:

'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 designation. In addition, an adverse effect would be one which caused a detectable reduction in the species and /or habitats for which a site was designated, at the scale of the site rather than at the scale of the location of the impact Article 1 of the Habitats Directive defines the conservation status of a natural habitat as favourable when "the specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future".

An adverse effect on site integrity will not occur if it can be shown that in the long term, the population of the species as a viable component of the site will be maintained despite potential impacts. 'Long term' is considered to be a period of at least five years'.

2.7 A three step approach was developed by the Applicant for determining likely significant effect as described in paragraph 5.1.2 of the HRA. The steps involve firstly, determining which sites are present in the study area and which sites are outside the study area but support interest features of European sites, then reviewing existing literature and site surveys to determine species presence within the study area, and finally determining possible mechanisms for an effect.

2.8 The NE written representation (Doc Ref: D1-019) has also identified the following potential impacts as relevant to the proposed development which were not considered within the Applicant's HRA Report:

Adverse effect on the integrity of Martin Mere SPA due to potential impacts on the qualifying features of Whooper swan (Cygnus Cygnus) and pink-footed geese (Anser brachyrhynchus). However within NE's response to the Examining Authority's Second Written Questions (Doc Ref: D4-036) it was concluded, based on further information provided by the Applicant, that the conclusion of no likely significant effect for Martin Mere SPA could be agreed.

In-combination impacts

2.9 The Applicant has addressed in-combination impacts within the matrices. The following projects have been included in the in-combination assessment carried out by the Applicant:

- Burbo Bank Extension
- Burbo Bank Operational
- Ormonde
- Gwynt-Y-Môr
- North Hoyle
- Rhyl Flats
- Robin Rigg
- Walney 1
- Walney 2
- Barrow
- West of Duddon Sands
- Navitus Bay

- Arklow Bank Phase 1
- Arklow Bank Phase 2
- Codling Wind Park
- Codling Wind Park Extension
- Oriel
- Dublin Array
- Atlantic Array
- Celtic Array (Rhiannon)

2.10 The above projects were considered in the in-combination assessment but there is no evidence presented in the HRA of agreement over the selection of these sites.

Mitigation measures

2.11 The Applicant's HRA report details the mitigation embedded in the project in section 9.1. The majority of these measures are also recorded in the DCO and others will be secured through the Construction Environmental Management Plan (CEMP).

Diadromous Fish

2.12 The inter-array and export cables will be armoured and buried to a minimum target depth of 0.5m to 2m (max 8m). A worst case scenario of 10% of inter-array and export cabling is assumed to be protected by rock dumping/mattressing where target burial depths cannot be achieved.

2.13 During construction, overnight working practices will be employed so that construction activities are continuous for 24 hours, thus reducing the overall period of time for potential impacts to fish communities in the vicinity of the Project.

2.14 Where pile driving activity is required, soft start procedures will be implemented. This involves reducing the piling hammer pressure and the subsequent sound level starting at a lower level, gradually increasing to full piling pressure. This enables fish in the area disturbed by the sound levels to move away from the piling before any adverse physiological impacts are caused.

Marine Mammals

2.15 During pile driving operations throughout the construction phase of the project, standard JNCC mitigation measures will be adhered to as set out within The Statutory Nature Conservation Agency Protocol for Minimising the Risk of Injury to Marine Mammals from Piling Noise.

2.16 A 500 m mitigation area will be monitored before and during piling activities by dedicated marine mammal observers and / or Passive Acoustic Monitoring (PAM) software; and the use of soft start procedure, for no less than 30 minutes, prior to the commencement of pile driving.

2.17 A detailed Marine Mammal Monitoring Protocol (MMMP) will be developed for the Project in close consultation with the JNCC and Natural England and this will feed into the CEMP for the site. This will follow best practice guidance and will incorporate standard mitigation including standard protocol and procedures during construction piling.

2.18 All vessel operators will be required to follow appropriate codes of conduct and management procedures. Codes of conduct will advise vessel operators on the appropriate course of action if a marine mammal is encountered, such as avoiding abrupt changes to course or speed, and this will reduce the potential for collision risk with vessels.

2.19 Vessel operators will also be required to follow published guidelines and best practice with regards to safe handling of waste and potential pollutants on vessels. Strict control and mitigation measures will be implemented through the EMP, which will contain a pollution control and spillage response plan.

2.20 Decommissioning of the foundation structures will follow available guidance and good practice and will be determined in close consultation with regulators and advisors as part of the process of developing the separate decommissioning plan required prior to construction.

Intertidal Ornithology

2.21 The installation of the export cables in the intertidal will take place within an area of importance to birds, i.e. Morecambe Bay SPA and Ramsar. Intertidal works will be conducted outside of the time period October to March inclusive to avoid an adverse effect on the internationally and nationally important numbers of waterbirds using the study area.

Offshore Ornithology

2.22 A code of conduct for vessel operators will help reduce disturbance of seabirds. Guidance on avoiding large rafts of birds and/or feeding aggregations during transits to the Project Site from port will be provided.

Mitigation Outlined within the ExA's draft DCO Includes:

2.23 Noise attenuation within the Construction Noise Management Plan (requirement 34 of DCO).

2.24 Soft start for piling (condition 9.1f of Schedule 9 of the ExA's draft DCO)

2.25 Mitigation of artificial light emissions (requirement 37 of the ExA's draft DCO).

2.26 Mitigation against flood risk (requirement 38 of the ExA's draft DCO).

Issues

2.27 The initial lack of collision predictions from Band (2012) model Options 1 and 2, led to NE's suggestion that Option 1 outputs were required for kittiwake (Rissa tridactyla) and gannet (Morus bassanus). The redefinition of regional population to NE's satisfaction resulted in some additional outstanding matters relating to collision risk. NE asked that collision risk outputs from all relevant Options of the Band (2012) model should be presented. The Applicant provided a clarification note based on the agreed scope for Deadline IV (4th March) (Doc Ref: D4-016). The Applicant discussed this clarification note with NE on the 24 March. NE considered the information provided and made its own calculations of predicted impacts. As a screening tool, the aim was to identify features of any SPAs at apparently increased risk of mortality from wind farm operation. As predicted impacts resulted in only minor increases to background mortality, NE were able to advise a conclusion of no adverse effect was appropriate for all features of all SPAs considered.

2.28 The potential impact on the non-breeding (over wintering) Pink-footed goose (Anser brachyrhynchus) population, a qualifying feature of the Martin Mere, Morecambe Bay and Ribble and Alt Estuaries SPAs due to collision with offshore wind turbine generators. The lack of certainty surrounding some of the model assumptions meant previously that NE could not agree with the conclusion of no adverse effect on the integrity of the relevant SPAs. NE amended their stance due to additional information regarding the model assumptions provided by the Applicant and agree there is no adverse effect on the integrity of the relevant SPAs (Doc Ref: SCG-018).

2.29 The potential impact on the non-breeding (over wintering) Whooper swan (Cygnus Cygnus) population, a qualifying feature of the Martin Mere and Ribble and Alt Estuaries SPAs due to collision with offshore wind turbine generators. The lack of certainty surrounding some of the model assumptions meant that NE initially had concerns. However, the Applicant provided further information regarding predicted mortality allowing NE to conclude that there would be no likely significant effect for the breeding Whooper swan (Cygnus Cygnus) feature of the Martin Mere and Ribble & Alt Estuaries SPAs (Doc Ref: SCG-018).

2.30 The potential impact on three breeding lesser black-backed gull (Larus fuscus) populations, a qualifying feature of the Ribble and Alt Estuaries, Bowland Fells and Morecambe Bay SPAs due to additional mortality arising from collision with offshore wind turbine generators. NE have acknowledged that the project alone is unlikely to have a significant adverse effect on any of the three SPAs individually, or in combination. The approach used in this assessment is the same as that applied in the Burbo Bank Extension Case (Doc Ref: D4-036).

2.31 The potential impact on the breeding herring gull (Larus argentatus) populations, a qualifying feature of Morecambe Bay SPA due to additional mortality arising from collision with offshore wind turbine generators. NE acknowledged that this part of the assessment was hampered by the lack of quantitative data on herring gull collisions from other wind farms. However, further discussion and information provided by the Applicant has resulted in NE agreeing that there will be no adverse effect on the integrity of the herring gull breeding feature of the Morecambe Bay SPA (Doc Ref: D5-039).

2.32 In its relevant representations, NE were reassured that the Applicant intended to pursue the use of Horizontal Directional Drilling (HDD) at the cable landfall in order to reduce impacts to the saltmarsh, a feature of the Morecambe Bay SAC, and its population of Belted Beauty moth (Lycia zonaria) a UK priority species. NE was, however, concerned that there was no provision for the potential failure or unfeasibility of HDD, and requested that alternatives be assessed by the Applicant. Subsequently, NE provided comments on the Applicant's revised HDD method and mitigation and also made recommendations on pre-commencement activities, HDD procedures and proposed mitigation. In Natural England's written summary of hearings dated 3 April 2014 (Doc Ref: D5-039) it is stated "Natural England [are now able] to conclude no adverse effect beyond reasonable scientific doubt on the Morecambe Bay SAC (Atlantic Salt Meadow and Salicornia and other annuals features specifically) because:

- The mitigation and working practice measures in place to allow rapid detection, containment, clean-up of any breakout;
- The proposal for further survey works (geotechnical walkover and additional boreholes) will increase the accuracy of HDD and reduce the risk of breakout;
- The highest risk of an outbreak is on the lower, or pioneer areas of the marsh, which have relatively quicker recovery times than the higher marsh;
- The works will take place in the summer months which is during the growing season for saltmarsh plants, further facilitating recovery;

- Overall this means a relatively small area (0.033% of the saltmarsh features of the SAC) is likely to be impacted and there is a very high chance that the saltmarsh will recover."

2.33 Potential impacts to the River Eden SAC not brought forward for assessment in the HRA Report by the Applicant. The EA have now agreed the Clarification Note - Underwater Noise Impacts on Migratory Fish and Associated Rivers, which sets out how migratory fish in rivers including the River Eden SAC are taken into account in the ES (Doc Ref:D1-044). The Applicant and the EA agree the methodology employed to model underwater noise impacts, and the EIA methodology (SCG-015). Following their review of the Clarification Note, the EA are also satisfied that there will be no significant impact on sea lamprey or eel species (or associated rivers). Whilst the EA and the Applicant agree that rivers are appropriately considered in the EIA, the EA do not agree with the Applicant's conclusion for behavioural impacts on salmonid species (Atlantic salmon and sea trout) as slight (adverse) significance in the ES, given a difference in opinion on levels of sensitivity, magnitude and interaction with relation to behavioural impacts on smolts from underwater noise (Doc Ref: SCG-015).

2.34 In the SoCG dated 24 March 2014 (Doc Ref: SCG-010 as updated) it is recorded that the Applicant, Butterfly Conservation (BC) and Lancashire Moth Group (LNG) are in general agreement with regards to the potential impact of HDD on the Belted Beauty moth (Lycia zonaria). BC and LMG remain concerned as to the potential impact of HDD on the Belted Beauty moth (Lycia zonaria). The draft DCO also includes a requirement to translocate moths pre-construction and monitor the saltmarsh post construction in the event of a breakout of bentonite during HDD. With regards to the post-construction monitoring it is noted that the Applicant submits that a period of 5 years would be sufficient, whereas BC and LMG submit that a 10 year period should be adopted as the minimum. NE have agreed that a 5 year period would be sufficient however (Doc Ref: D5-039). Provisions for post-construction monitoring and the timing of construction lighting near the salt marsh at Middleton Sands would be covered by the Environmental Mitigation and Monitoring Plan under requirement 16(4) of the ExA's draft DCO.

2.35 It is noted by the ExA that the Isle of Man is not a European Economic Area (EEA) State. They nevertheless expressed concern at the potential impact of the proposed development on Manx shearwater (Puffinus puffinus) at the Calf of Man colony. Following discussions with the Applicant, the Isle of Man (IOM) Government agreed that the issues relating to collision and avoidance by Manx shearwater (Puffinus puffinus) had been assessed and the IOM Government agreed that any effect on the Calf of Man colony is not likely to be significant. The IOM Government accepted the clarification proposed on monitoring.

The IOM Government will also liaise with the MMO regarding the availability and use of scientific data (Doc Ref: SCG-025).

2.36 At Ref 11.4 of the SoCG of the MMO (Doc Ref: SCG-002) reference is made to discussions on noise propagation modelling between the Applicant and the MMO. The SoCG records that the Applicant has provided the MMO with confirmation that the Subacoustech methodology conforms to draft Marine Scotland guidance on the suitability of modelling approaches for the assessment of underwater noise impacts. The MMO agrees that the underwater noise assessment has been presented in an appropriate manner. The MMO does not require further assessment or information from the Applicant.

2.37 In their SoCG the Whale and Dolphin Conservation Society (Doc Ref: SCG-006) remain concerned regarding:

- surveys conducted in respect of cetaceans, which they considered inadequate
- the impacts for pile driving, which are considered to range further than considered in the modelling exercise
- the impact of noise during construction on cetaceans, which is considered to be higher than assessed in Document 12.7 (Doc Ref: AD-067)
- further consideration should be given to cumulative impacts than has been given in the ES; and
- the provisions for proposed monitoring as set out in the DML at Schedule 9 of the ExA's draft DCO.

Likely significant effects

2.39 As a result of their screening assessment, the Applicant concluded that significant effects cannot be excluded on the following European sites:

- Aberdaron Coast and Bardsey Island SPA
- Bowland Fells SPA
- Copeland Islands SPA
- Liverpool Bay SPA
- Morecambe Bay Ramsar
- Morecambe Bay SAC
- Morecambe Bay SPA
- Ribble and Alt Estuaries Ramsar
- Ribble and Alt Estuaries SPA

- Skokholm and Skomer SPA

2.40 The scope of the screening exercise and its conclusion was not agreed with NE. NE also initially identified that potential for significant effects could not be excluded on a further site – Martin Mere SPA. However within NE's response to the Examining Authority's Second Written Questions (Doc Ref: D4-036) it was stated that, based on further information provided by the Applicant, NE could agree the conclusion of no likely significant effect for Martin Mere SPA.

2.41 Therefore, features of the European sites detailed above at paragraph 2.39 have been taken forward to the integrity matrices in Section 4 of this report.

Effects on integrity

2.42 The Applicant concluded at the time of submission of the application that the project will not adversely affect the integrity of the European sites and features detailed in paragraph 2.39. This was not initially agreed by the Applicant with NE who had outstanding concerns regarding collision risk for birds. Additional information provided by the Applicant has allowed NE to agree that the project will have no significant adverse effect on the integrity of these sites (Doc Ref: D5-039).

3.0 STAGE 1: SCREENING FOR LIKELY SIGNIFICANT EFFECTS

Background

3.1 The project is not connected with or necessary to the management for nature conservation of the European sites considered within the assessment.

3.2 This section reports on the screening for likely significant effects of the project in relation to the potentially affected European sites.

Stage 1 Matrices Key

3.3 ✓ = Likely significant effect cannot be excluded

X = Likely significant effect can be excluded

C = construction

O = operation

D = decommissioning

3.4 Evidence supporting the conclusions is detailed in footnotes for each table with reference to relevant supporting documentation.

3.5 Where an impact is not considered relevant for a feature of a European site, the cell in the matrix is formatted as follows:

Stage 1 Matrix 1: Aberdaron Coast and Bardsey Island SPA

Site Code: UK9013121

Distance to project: 147 km

European site features	Likely Effects of NSIP											
	Disturbance / displacement / barrier			Indirect effects			Turbine collision			In-combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D
Manx shearwater (Puffinus puffinus) (breeding)	✓a	✓a	✓a	Xb		Xb		Xe		Xc	✓a	Xc
Chough (Pyrrhocorax pyrrhocorax) (breeding and wintering)	Xf	Xf	Xf	Xf		Xf		Xf		Xf	Xf	Xf

Evidence supporting conclusions:

a: Manx shearwater (Puffinus puffinus) are highly mobile foragers that spend significant proportions of time in flight (Furness and Wade, 2012), they are not considered to be vulnerable to disturbance from boat traffic.

Peak numbers were observed in May 2012 and September 2012 with 29% of birds recorded observed in foraging activity. Due to the large numbers of birds present at the Project wind farm site and the Project site being within mean-maximum foraging range for this breeding species at Aberdaron Coast and Bardsey Island SPA there is potential for a likely significant effect from displacement. See HRA Report (Doc Ref: AD-052), Table 6.1.

b: Manx shearwater (Puffinus puffinus) show flexibility with respect to foraging area and have a varied diet. As an omnivorous species, they do not entirely rely on fish in their diet and may be insensitive to the temporary displacement of fish. See HRA Report (Doc Ref: AD-052), Table 6.1.

c: The HRA Report Table 8.9 considers the potential for in-combination displacement effects during the construction period. Given the extent of foraging habitat available to this species in the Irish Sea and their low sensitivity to displacement (Furness et al, 2013) no likely significant effect is predicted.

e: No collisions of Manx shearwater (Puffinus puffinus) were predicted to occur at a 98% avoidance rate. See HRA Report (Doc Ref: AD-052), Table 6.1.

f: Due to distance from the Project site to this SPA there is considered to be no mechanism for an effect on these breeding or wintering populations. Bird not recorded in the Project site surveys.

Reference

Furness R.W, Wade H,M, Masden E.A., (2013). Assessing vulnerability of marine bird populations to offshore wind farms. Journal of Environmental Management, 119 (2013), pp56 – 66.

Stage 1 Matrix 2: Bowland Fells SPA

Site Code: UK9005151

Distance to project: 54 km

European site features	Likely Effects of NSIP											
	Disturbance / displacement / barrier			Indirect effects			Turbine collision			In-combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D
Lesser black backed gull (Larus fuscus) (breeding)	Xa	Xa,b	Xa	Xa		Xa		✓d		Xa	✓e	Xa
Hen Harrier (Circus cyaneus) (breeding)	Xf	Xf	Xf	Xf		Xf		Xf		Xf	Xf	Xf

Merlin (Falco columbarius) (breeding)	Xf	Xf	Xf	Xf		Xf		Xf		Xf	Xf	Xf

Evidence supporting conclusions:

a: Lesser black-backed gull (Larus fuscus) frequently associate with vessels and human activity (e.g. fishing activity) (Mitchell et al., 2004) and may exploit novel foraging opportunities created by construction and decommissioning activities that may make prey more available to them. See HRA Report (Doc Ref: AD-052) , Table 6.1.

b: Lesser black-backed gulls (Larus fuscus) will continue to pass through the wind farm area during the operational phase and no barrier to movement is predicted. See HRA Report (Doc Ref: AD-052), Table 6.1.

d: At a 98 % avoidance rate (and using Band (2012) collision risk model option 3 (HRA Report (Doc Ref: AD-052), Annex 1, paragraph A1.22)), a total of 20 Lesser black-backed gull (Larus fuscus) collisions were predicted during the breeding season (HRA Report, Annex 2, Table 3), of these birds one bird was considered to originate from Bowland Fells SPA (HRA Report (Doc Ref: AD-052), Annex 2, Table 5). A more recent analysis of the Project by the Applicant ("Clarification Note: collision risk modelling options and potential collision height", issued to Natural England and JNCC on 22nd November 2013) identifies a total of 24 predicted Lesser black-backed gull (Larus fuscus) collisions at the Project site using Band (2012) Option 2, and 11 collisions using Band (2012) Option 3 (Table 10). Despite these relatively low numbers, the HRA Report considered that due to concerns over the conservation status of these birds at this SPA a further assessment should be undertaken (a potential biological removal (PBR) analysis) and likely significant effect should not be ruled out at this stage (HRA Report (Doc Ref: AD-052), Table 6.11).

e: A number of offshore wind farm sites lie within mean-maximum foraging range from the Bowland Fells SPA colony (HRA Report (Doc Ref: AD-052), Table 8.7). A likely significant in-combination effect could not be excluded as a result of operational collision risk, consequently further assessment is required (HRA Report, Table 8.9).

f: Species not recorded at the Project site as a mainly terrestrial species it is unlikely to be foraging at sea.

Stage 1 Matrix 3: Copeland Islands SPA

Site Code: UK9020291

Distance to project: 120 km

European site features	Likely Effects of NSIP											
	Disturbance / displacement / barrier			Indirect effects			Turbine collision			In-combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D
Manx shearwater (Puffinus puffinus) (breeding)	✓a	✓a	✓a	Xb		Xb		Xe		Xc	✓a	Xc
Arctic tern (Sterna paradisaea)	Xf	Xf	Xf	Xf		Xf		Xf		Xf	Xf	Xf

Evidence supporting conclusions:

a: Manx shearwater (Puffinus puffinus) are highly mobile foragers that spend significant proportions of time in flight (Furness and Wade, 2012) and are not considered to be vulnerable to disturbance from boat traffic. Peak numbers were observed in May 2012 and September 2012 with 29% of birds recorded observed in foraging activity.

Due to the large numbers of birds present at the Project wind farm site and the Project site being within mean to maximum foraging range for this breeding species at Copeland Islands SPA there is potential for a likely significant effect from displacement. See HRA Report (Doc Ref: AD-052), Table 6.1.

b: Manx shearwater (Puffinus puffinus) show flexibility with respect to foraging area and have a varied diet. As an omnivorous species, they do not entirely rely on fish in their diet and may be insensitive to the temporary displacement of fish. See HRA Report (Doc Ref: AD-052), Table 6.1.

c: The HRA Report Table 8.9 considers the potential for in-combination displacement effects during the construction period. Given the extent of foraging habitat available to this species in the Irish Sea and their low sensitivity to displacement (Furness et al, 2013) no likely significant effect is predicted.

e: No collisions of Manx shearwater (Puffinus puffinus) were predicted to occur at a 98% avoidance rate. See HRA Report (Doc Ref: AD-052), Table 6.1.

f: Due to the distance of the SPA from the Project site there is considered to be no mechanism for an effect on this breeding population. The bird was present only in negligible numbers in the Project site surveys.

Reference

Furness R.W, Wade H,M, Masden E.A., (2013). Assessing vulnerability of marine bird populations to offshore wind farms. Journal of Environmental Management, 119 (2013), pp56 - 66.

Stage 1 Matrix 4: Liverpool Bay SPA

Site Code: UK9020294

Distance to project: 17 km

European site features	Likely Effects of NSIP											
	Disturbance / displacement / barrier			Indirect effects			Turbine collision			In-combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D
Red-throated diver (Gavia stellate)	✓a	Xb	Xb	Xb		Xb		Xb		Xb	Xb	Xb
Common scoter (Melanitta nigra)	✓a	Xb	Xb	Xb		Xb		Xb		Xb	Xb	Xb

Evidence supporting conclusions

a: Low densities within project area and the SPA is 17 km from Project boundary, however the export cable corridor runs through the northern extent of the SPA, HRA Report Table 5.4, with the potential for temporary displacement. A likely significant effect cannot be excluded at this stage.

b: Low densities within the Project area and designated SPA is 17 km from Project boundary. Due to the distance of the wind farm site from the SPA no effects predicted, HRA Report (Doc Ref: AD-052).

Stage 1 Matrix 5: Martin Mere SPA

Site Code: UK9005111

Distance to project: 65 km

European site features	Likely Effects of NSIP											
	Disturbance / displacement / barrier			Indirect effects			Turbine collision			In-combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D
Bewick's swan (Cygnus columbianus)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Whooper swan (Cygnus Cygnus)	Xe	Xe	Xe	Xe		Xe		Xc		Xe	Xc	Xe
Pink-footed goose (Anser brachyrhynchus)	Xe	Xe	Xe	Xe		Xe		Xd		Xe	Xd	Xe

Pintail (Anas acuta)	Xb	Xb	Xb	Xb		Xb		Xb		Xb	Xb	Xb
Wetland assemblage	Xb	Xb	Xb	Xb		Xb		Xb		Xb	Xb	Xb

Evidence supporting conclusions

a: No Bewick swans were recorded at the Project site. This species is noted in the HRA Report as a feature of this and other SPAs but is not explicitly assessed in the Report.

b: No wildfowl or wader species were recorded on site. An analysis was undertaken using the Migration Analysis Tool to estimate the collision risk to an assemblage of waterbird species using the coastal network of SPAs (including Martin Mere SPA). Estimated collision rates were very low and no likely significant effect was predicted (HRA Report (Doc Ref: AD-052), section 6.3.6 and Tables 6.8 to 6.10)

c: The potential risk to Whooper swan (Cygnus Cygnus) from turbine collision at the Project offshore wind farm has been assessed in detail (HRA Report section 6.2, HRA Report annex 1, appendix 3, ES Annex B.7.C (document reference 10.2.27)) including the autumn and spring migration along the "west coast flyway" and the potential for within-winter movements between England and Ireland. Evidence for the number of within-winter Whooper swan (Cygnus Cygnus) movements is based on recorded sightings of ringed birds over a 30 year period (ES Annex B.7.C, Appendix 1). The analysis - detailed at HRA Report Annex 1, Appendix 3 - includes results showing a range of avoidance rates (Table 25), a range of collision height values (Table 26), and a range of assumptions about the proportion of the migrating population that it is likely to cross the Project site (Table 24). Following collision risk modelling the impact on the Whooper swan (Cygnus Cygnus) population is considered to be not significant. (0.45 % of the combined Ribble and Alt Estuaries SPA and Martin Mere SPA population (HRA Report (Doc Ref: AD-052), Table 6.7)).

The clarification note "Approach to collision risk modelling for pink-footed goose and Whooper swan (Cygnus Cygnus)" (issued on 27th October 2013 by the Applicant) estimates a collision risk mortality of 3.09 Whooper swan (Cygnus Cygnus) per annum to this SPA (Doc Ref: D1-045).

d: Following collision risk modelling the impact on the Pink-footed goose (Anser brachyrhynchus) population is considered to be not significant. (0.006 % of the combined Ribble and Alt Estuaries SPA and Martin Mere SPA population (HRA Report (Doc Ref: AD-052), Table 6.6)).

e: Neither migrating Whooper swan (Cygnus Cygnus) nor pink-footed geese (Anser brachyrhynchus) are not considered to be vulnerable to these effects at the Project Site.

Stage 1 Matrix 6: Morecambe Bay Ramsar

Site Code: UK11045

Distance to project: 20 km

European site features	Likely Effects of NSIP											
	Disturbance / displacement / barrier			Indirect effects			Turbine collision			In-combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D
Internationally important numbers of breeding lesser black-backed gull (Larus fuscus)	Xa	Xa,b	Xa	Xa		Xa		✓c		Xa	✓d	Xa
Internationally important numbers of breeding herring gull (Larus argentatus)	Xf	Xf	Xf	Xg		Xg		✓h		Xi	✓j	Xi

Internationally important for passage ringed plover (Charadrius hiaticula)	✓n	Xo	Xo	Xo		Xo		Xp		Xo	Xp	Xo
Internationally important wintering waterfowl assemblage > 20,000 birds	✓n	Xo	Xo	Xo		Xo		Xp		Xo	Xp	Xo
Internationally important numbers of breeding sandwich tern (Sterna sandvicensis)	Xk	Xk	Xk	Xk		Xk		Xk		Xk	Xk	Xk

Internationally important numbers in Spring/Autumn of shelduck, Pintail (Anas acuta), cormorant (Phalacrocoracidae), eider (Somateria mollissima), ringed plover (Charadrius hiaticula), oystercatcher (Haematopus), grey plover (Pluvialis squatarola), sanderling (Calidris alba), curlew (Numenius arquata), redshank (Tringa tetanus), turnstone (Arenaria interpres), Lesser black-backed gull (Larus fuscus)	✓n	Xo	Xo	Xo		Xo		Xp		Xo	Xp	Xo

Internationally important numbers during winter of great crested grebe (Podiceps cristatus), widgeon (Anas penelope), goldeneye (Bucephala clangula), red-breasted merganser (Mergus serrator), lapwing (Vanellus vanellus), knot (Calidris canutus), dunlin (Calidris alpine), bar-tailed godwit (Limosa lapponica)	✓n	Xo	Xo	Xo		Xo		Xp		Xo	Xp	Xo
Internationally important numbers during winter of pink-footed goose (Anser brachyrhynchus).	Xr	Xr	Xr	Xr		Xr		Xq		Xr	Xq	Xr

Evidence to supporting conclusions

a: Lesser black-backed gull (Larus fuscus) frequently associate with vessels and human activity (e.g. fishing activity) (Mitchell et al., 2004) and may exploit novel foraging opportunities created by construction and decommissioning activities that may make prey more available to them. See HRA Report (Doc Ref: AD-052), Table 6.1.

b: Lesser black-backed gulls (Larus fuscus) will continue to pass through the wind farm area during the operational phase and no barrier to movement is predicted. See HRA Report (Doc Ref: AD-052), Table 6.1.

c: At a 98 % avoidance rate (and using Band (2012) collision risk model option 3 (HRA Report (Doc Ref: AD-052), Annex 1, paragraph A1.22)), a total of 20 Lesser black-backed gull (Larus fuscus) collisions were predicted during the breeding season (HRA Report, Annex 2, Table 3), of these birds 14 were considered to originate from the Morecambe Bay SPA (HRA Report, Annex 2, Table 5). A more recent analysis of the Project by the Applicant ("Clarification Note: collision risk modelling options and potential collision height", issued to Natural England and JNCC on 22nd November 2013) identifies a total of 24 predicted Lesser black-backed gull (Larus fuscus) collisions at the Project site using Band (2012) Option 2, and 11 collisions using Band (2012) Option 3 (Table 10). Despite these relatively low numbers, the HRA Report considered that due to concerns over the conservation status of these birds a further assessment should be undertaken (a PBR analysis) and likely significant effect should not be ruled out at this stage (HRA Report (Doc Ref: AD-052), Table 6.11).

d: A number of offshore wind farm sites lie within mean to maximum foraging range from the Morecambe Bay SPA colony (HRA Report (Doc Ref: AD-052), Table 8.7). Consequently a likely significant in-combination effect could not be excluded as a result of operational collision risk, consequently further assessment is required (HRA Report, Table 8.9).

f: Herring gull are highly mobile foragers that spend significant proportions of time in flight (Furness and Wade, 2012) and hence are not considered to be especially vulnerable to boat traffic or construction activities. There is little indication that herring gull will be displaced from operational wind farms. These species are amongst the most flexible in their habitat use and may be observed to take advantage of new foraging opportunities created by human activity (HRA Report (Doc Ref: AD-052), Table 6.1).

g: Herring gull show flexibility with respect to foraging area and have a varied diet. Omnivorous species in particular that do not entirely rely on fish in their diet may be insensitive to the temporary displacement of fish even should this occur. (HRA Report (Doc Ref: AD-052), Table 6.1).

h: At a 98 % avoidance rate (and using Band (2012) Option 3), a total of 70 herring gull collisions were predicted during the breeding season, of these 29 were apportioned to the Morecambe Bay SPA (HRA Report, Annex 2, Table 4). A likely significant effect cannot be excluded (HRA Report (Doc Ref: AD-052), Table 6.1).

i: There is no potential for cumulative construction effects on herring gull as Burbo Bank Extension, Rhiannon and Navitus Bay wind farms are beyond the mean maximum foraging range (41 km, Thaxter et al, 2012) of breeding birds originating from Morecambe Bay SPA.

j: A small number of other offshore wind farms lie in the foraging range of this species from the Morecambe Bay Ramsar colony (HRA Report (Doc Ref: AD-052), Table 8.7). A likely significant in-combination collision risk effect cannot be excluded at this stage.

k: Although located within the foraging range for this species recorded numbers at the Project site were considered to be too low (maximum population estimate of 6 birds) for a significant effect (through collision risk) to occur.

n: As a result of the installation of export power cables through the intertidal area there is the potential for internationally and nationally important numbers of waterbirds to be disturbed and displaced from the intertidal areas during these works. HRA Report (Doc Ref: AD-052), Table 6.2.

o: No wildfowl or wader species were recorded at the Project wind farm site. The Project wind farm site is considered by the Applicant to be too distant from the SPA for the Project to have any impact on these features alone or in-combination with other plans or projects (other than through construction works in the intertidal zone).

p: No wildfowl or wader species were recorded at the Project wind farm site. An analysis was undertaken by the Applicant using the Migration Analysis Tool to estimate the collision risk to an assemblage of waterbird species using the coastal network of SPAs (including the Morecambe Bay SPA).

Estimated collision rates were very low and no likely significant effect was predicted (HRA Report (Doc Ref: AD-052), section 6.3.6 and Tables 6.8 to 6.10) from the operational wind farm.

q: The collision risk to over-wintering pink-footed geese (Anser brachyrhynchus) from the Project windfarm alone and in-combination was assessed as no more than 0.04% of the Morecambe Bay SPA population (HRA Report (Doc Ref: AD-052), Table 6.6) and hence not likely to result in a significant effect.

r: Pink-footed geese (Anser brachyrhynchus) were not recorded at the Project offshore wind farm site. These birds are considered to have the potential to interact with the Project only as a result of collision risk with operational turbines (HRA Report (Doc Ref: AD-052), sections 6.2.1 to 6.2.10).

Stage 1 Matrix 7: Morecambe Bay SAC

Site Code: UK0013027

Distance to project: 20 km

European site features	Likely Effects of NSIP														
	Increase in SSC - foundations			Increase in SSC - inter-array cables			Habitat loss / disturbance			Changes to sediment transport			Sediment plume interaction		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Estuaries	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Mudflats and sandflats not covered by seawater at low tide	Xa		Xa	Xa			✓c	Xb			Xa		Xa		Xa

Large shallow inlets and bays	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Reefs	Xa		Xa	Xd			Xd	Xd			Xa		Xa		Xa
Perennial vegetation of stony banks	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Salicornia and other annuals colonising mud and sand	Xa		Xa	Xa			Xe	Xg			Xa		Xa		Xa
Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Xa		Xa	Xa			Xe	Xg			Xa		Xa		Xa

Shifting dunes along the shoreline with Ammophila arenaria (`white dunes`)	Xa		Xa	Xa			Xf	Xf			Xa		Xa		Xa
Fixed dunes with herbaceous vegetation (`grey dunes`)	Xa		Xa	Xa			Xf	Xf			Xa		Xa		Xa
Humid dune slacks	Xa		Xa	Xa			Xf	Xf			Xa		Xa		Xa
Sandbanks which are slightly covered by sea water all the time	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa

Coastal lagoons	Xa		Xa	Xa			Xf	Xf			Xa		Xa		Xa
Embryonic shifting dunes	Xa		Xa	Xa			Xf	Xf			Xa		Xa		Xa
Atlantic decalcified fixed dunes (Calluno-Ulicetea)	Xa		Xa	Xa			Xf	Xf			Xa		Xa		Xa
Dunes with Salix repens ssp.argentea (Salicion arenariae)	Xa		Xa	Xa			Xf	Xf			Xa		Xa		Xa

European site features (Annex II species)	Likely significant effects																	
	Disturbance			Indirect effects			Habitat loss			Collision			In-combination disturbance			In-combination collision		
	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D	C	O	D
Great crested newt (Triturus cristatus)	Xh	Xh	Xh	Xh	Xh	Xh	Xh	Xh	Xh				Xh	Xh	Xh			

Evidence to support conclusions

a: The offshore wind farm site is located too far away for any direct or indirect effects on this feature.

b: Scour effects due to exposure of the export cables or cable protection measures are not considered to be of a magnitude to result in a likely significant effect. HRA Report (Doc Ref: AD-052), Table 6.3. Clarification note "Export cable installation and maintenance within Morecambe Bay SAC and SPA" (27th November 2013), paragraphs 6.10 to 6.12.

c: As export power cables were proposed to be installed across the intertidal habitat (mudflats and sandflats features), a likely significant effect couldn't initially be discounted.

d: There are no identified areas of Annex I reef habitat along the export cable corridor (HRA Report (Doc Ref: AD-052), Table 5.2). Any subsequent maintenance measures will take place within the export cable corridor and no operational impacts on this feature are expected. Clarification note "Export cable installation and maintenance within Morecambe Bay SAC and SPA" (27th November 2013), paragraph 7.2.

e: The Applicant has submitted a report detailing the approach to HDD (horizontal directional drilling) below the saltmarsh feature at Middleton Sands (Clarification Note on HDD impact on Morecambe Bay SAC and Belted Beauty moth (Lycia zonaria) submitted as Appendix 2 to the Applicant's Written Response to Deadline IV (4th March 2014)) (Doc Ref: D4-004). This report provides an update to the assessment presented in the HRA Report (Doc Ref: AD-052), considering the increased likelihood of bentonite breakout at the landfall and supersedes the clarification note 'Update on environmental effects associated with HDD at the landfall' submitted as Appendix 6 to the Applicant's deadline II submission.

The possibility of bentonite breakout during drilling operations, the associated measures to manage and mitigate any outbreak, and localised minor subsidence above the drill path may result in small, localised and temporary impacts of smothering/disturbance on the Annex I saltmarsh features, with 0.034% of the total SAC saltmarsh features potentially affected, approximately 0.82% of the saltmarsh area at Middleton Sands. These impacts are not considered to undermine the conservation objectives of the designated site and consequently are considered not likely to have a significant effect on the Morecambe Bay SAC.

f: This habitat feature is not present at or near the cable landfall site (Potts Corner, Middleton Sands).

g: There are no anticipated impacts on these features from the operation of the export power cable.

h: This feature is not present in the vicinity of the export cable landfall site in the SAC. Similarly the Project site is considered too distant from this SAC for any indirect effect to occur on this species as a consequence of an effect on the habitat that supports this feature (humid dune slacks).

Stage 1 Matrix 8: Morecambe Bay SPA

Site Code: UK9005081

Distance to project: 20 km

European site features	Likely Effects of NSIP											
	Disturbance / displacement / barrier			Indirect effects			Turbine collision			In-combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D
Breeding lesser black-backed gull (Larus fuscus)	Xa	Xa,b	Xa	Xa		Xa		✓c		Xa	✓d	Xa
Breeding herring gull (Larus argentatus)	Xf	Xf	Xf	Xg		Xg		✓h		Xi	✓j	Xi
Breeding sandwich tern (Sterna sandvicensis)	Xk	Xk	Xk	Xk		Xk		Xk		Xk	Xk	Xk

Breeding little tern (Sterna albifrons)	Xm	Xl	Xl	Xm		Xl		Xl		Xm	Xl	Xl
Wintering bar-tailed godwit (Limosa lapponica)	✓n	Xo	Xo	Xo		Xo		Xp		Xo	Xp	Xo
Wintering golden plover (Pluvialis apricaria)	✓n	Xo	Xo	Xo		Xo		Xp		Xo	Xp	Xo
On passage - ringed plover (Charadrius hiaticula)	✓n	Xo	Xo	Xo		Xo		Xp		Xo	Xp	Xo
On passage - sanderling (Calidris alba)	✓n	Xo	Xo	Xo		Xo		Xp		Xo	Xp	Xo

Over wintering - curlew (Numenius arquata), dunlin (Calidris alpine), knot (Calidris canutus), grey plover (Pluvialis squatarola), Pintail (Anas acuta), redshank (Tringa tetanus), shelduck, turnstone (Arenaria interpres)	✓n	Xo	Xo	Xo		Xo		Xp		Xo	Xp	Xo
Over wintering pink-footed goose (Anser brachyrhynchus)	Xr	Xr	Xr	Xr		Xq		Xr		Xr	Xq	Xr
A breeding season assemblage > 20,000 seabirds	Xs	Xs	Xs	Xs		Xs		Xs		Xs	Xs	Xs

A wintering assemblage > 20,000 waterfowl	✓n	Xo	Xo	Xo		Xo		Xp		Xo	Xp	Xo

Evidence supporting conclusions

a: Lesser black-backed gull (Larus fuscus) frequently associate with vessels and human activity (e.g. fishing activity) (Mitchell et al., 2004) and may exploit novel foraging opportunities created by construction and decommissioning activities that may make prey more available to them. See HRA Report (Doc Ref: AD-052), Table 6.1.

b: Lesser black-backed gulls (Larus fuscus) will continue to pass through the wind farm area during the operational phase and no barrier to movement is predicted. See HRA Report (Doc Ref: AD-052), Table 6.1.

c: At a 98 % avoidance rate (and using Band (2012) collision risk model option 3 (HRA Report, Annex 1, paragraph A1.22)), a total of 20 Lesser black-backed gull (Larus fuscus) collisions were predicted during the breeding season (HRA Report, Annex 2, Table 3), of these birds 14 birds was considered to originate from the Morecambe Bay SPA (HRA Report, Annex 2, Table 5). A more recent analysis by the Project ("Clarification Note: collision risk modelling options and potential collision height", issued to Natural England and JNCC on 22nd November 2013) (Doc Ref: D1-046) identifies a total of 24 predicted Lesser black-backed gull (Larus fuscus) collisions at the Project site using Band (2012) Option 2, and 11 collisions using Band (2012) Option 3 (Table 10). Further information was provided by the applicant in accordance with the methodology used for the Burbo Bank Extension, this allowed NE to agree that there would be no significant adverse effect on integrity for Lesser black-backed gulls (Larus fuscus) (Doc Ref:D5-039).

d: A number of offshore wind farm sites lies within mean to maximum foraging range from the Morecambe Bay SPA colony (HRA Report, Table 8.7). Consequently a likely significant in-combination effect could not be excluded as a result of operational collision risk and further assessment is required (HRA Report (Doc Ref: AD-052), Table 8.9).

f: Herring gull are highly mobile foragers that spend significant proportions of time in flight (Furness and Wade, 2012) and hence are not considered to be especially vulnerable to boat traffic or construction activities. There is little indication that herring gull will be displaced from operational wind farms. These species are amongst the most flexible in their habitat use and may be observed to take advantage of new foraging opportunities created by human activity (HRA Report (Doc Ref: AD-052), Table 6.1).

g: Herring gull show flexibility with respect to foraging area and have a varied diet. Omnivorous species in particular that do not entirely rely on fish in their diet may be insensitive to the temporary displacement of fish even should this occur. (HRA Report (Doc Ref: AD-052), Table 6.1).

h: At a 98 % avoidance rate (and using Band (2012) Option 3), a total of 70 herring gull collisions were predicted during the breeding season. Of these 29 were apportioned to the Morecambe Bay SPA (HRA Report, Annex 2, Table 4). A likely significant effect cannot be excluded (HRA Report (Doc Ref: AD-052), Table 6.1).

i: There is no potential for cumulative construction effects on herring gull as Burbo Bank Extension, Rhiannon and Navitus Bay wind farms are beyond the mean maximum foraging range (41 km, Thaxter et al, 2012) of breeding birds originating from Morecambe Bay SPA.

j: A small number of other offshore wind farms lie in the foraging range of this species from the Morecambe bay SPA colony (HRA Report (Doc Ref: AD-052), Table 8.7). A likely significant in-combination collision risk effect cannot be excluded at this stage.

k: Although located within the foraging range for this species recorded numbers at the Project site were considered to be too low (maximum population estimate of 6 birds) for a significant effect (through collision risk) to occur.

l: The Project site is located beyond the mean maximum foraging range (6.3km, Thaxter et al, 2012) for this species at this SPA.

m: Construction works in the intertidal zone will not have a likely significant effect on little tern (Sterna albifrons) as a result of loss of prey species due to the small extent and temporary nature of the impact on benthic fauna in the intertidal zone. Additionally, construction work disturbance in the intertidal zone will not have a likely significant effect on breeding bird features due to the distance of the intertidal export cable corridor from the breeding bird colonies.

n: As a result of the installation of export power cables through the intertidal area there is the potential for internationally and nationally important numbers of wintering waterbirds to be disturbed and displaced from the intertidal areas during these works. HRA Report (Doc Ref: AD-052), Table 6.2.

o: No wildfowl or wader species were recorded at the Project wind farm site. The Project wind farm site is considered to be too distant from the SPA for the Project to have any impact on these features alone or in-combination with other plans or projects (other than through construction works in the intertidal zone).

p: No wildfowl or wader species were recorded at the Project wind farm site. An analysis was undertaken by the Applicant using the Migration Analysis Tool to estimate the collision risk to an assemblage of waterbird species using the coastal network of SPAs (including the Morecambe Bay SPA). Estimated collision rates were very low and no likely significant effect was predicted (HRA Report (Doc Ref: AD-052), section 6.3.6 and Tables 6.8 to 6.10) from the operational wind farm.

q: The collision risk to over-wintering pink-footed geese (Anser brachyrhynchus) from the Project windfarm alone and in-combination was assessed as no more than 0.04% of the Morecambe Bay SPA population (HRA Report, Table 6.6) and hence not likely to result in a significant effect.

r: Pink-footed geese (Anser brachyrhynchus) were not recorded at the Project offshore wind farm site. These birds are considered to have the potential to interact with the Project only as a result of collision risk with operational turbines (HRA Report (Doc Ref: AD-052), sections 6.2.1 to 6.2.10).

s: Refer to the assessments provided for Lesser black-backed gull (Larus fuscus), herring gull, Sandwich tern (Sterna sandvicensis) and little tern (Sterna albifrons).

Stage 1 Matrix 9: Ribble and Alt Estuaries Ramsar

Site Code: UK11057

Distance to project: 45 km

European site features	Likely Effects of NSIP											
	Disturbance / displacement / barrier			Indirect effects			Turbine collision			In-combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D
Breeding lesser black-backed gull (Larus fuscus)	Xb	Xb, c	Xb	Xb		Xb		✓d		Xb	✓e	Xb
Internationally important assemblage of wintering birds	Xf	Xf	Xf	Xf		Xf		Xf		Xf	Xf	Xf

Spring / Autumn waterfowl counts of international importance	Xf	Xf	Xf	Xf		Xf		Xf		Xf	Xf	Xf
Wintering Bewick swan, Pink-footed goose (Anser brachyrhynchus), Whooper swan (Cygnus Cygnus)	Xf	Xf	Xf	Xf		Xf		Xg		Xf	Xg	Xf
Wintering waterfowl - named species	Xf	Xf	Xf	Xf		Xf		Xf		Xf	Xf	Xf
Natterjack toad (Bufo calamita)												

Evidence supporting conclusions:

b: Lesser black-backed gull (Larus fuscus) frequently associate with vessels and human activity (e.g. fishing) (Mitchell et al., 2004) and may exploit novel foraging opportunities created by construction and decommissioning activities that may make prey more available to them. See HRA Report (Doc Ref: AD-052), Table 6.1.

c: Lesser black-backed gulls (Larus fuscus) will continue to pass through the wind farm area during the operational phase and no barrier to movement is predicted. See HRA Report (Doc Ref: AD-052), Table 6.1.

d: At a 98 % avoidance rate (and using Band (2012) collision risk model option 3 (HRA Report, Annex 1, paragraph A1.22)), a total of 20 Lesser black-backed gull (Larus fuscus) collisions were predicted during the breeding season (HRA Report, Annex 2, Table 3). Of these birds 2 were predicted to originate from the Ribble and Alt Estuaries SPA (HRA Report, Annex 2, Table 5). A more recent analysis by the Project ("Clarification Note: collision risk modelling options and potential collision height", issued to Natural England and JNCC on 22nd November 2013) identifies a total of 24 predicted Lesser black-backed gull (Larus fuscus) collisions at the Project site using Band (2012) Option 2, and 11 collisions using Band (2012) Option 3 (Table 10). Despite these relatively low numbers, the HRA Report considered that due to concerns over the conservation status of these birds a further assessment should be undertaken (a PBR analysis) and likely significant effect should not be ruled out at this stage (HRA Report (Doc Ref: AD-052), Table 6.11).

e: A number of offshore wind farm sites lies within mean-maximum foraging range from the Ribble and Alt Estuaries Ramsar site (HRA Report, Table 8.7). A likely significant in-combination effect could not be excluded as a result of operational collision risk, consequently further assessment is required (HRA Report (Doc Ref: AD-052), Table 8.9).

f: No wildfowl or wader species were recorded on site. An analysis was undertaken using the Migration Analysis Tool to estimate the collision risk to an assemblage of waterbird species using the coastal network of SPAs (including the Ribble and Alt Estuaries SPA). Estimated collision rates were very low and no likely significant effect was predicted (HRA Report (Doc Ref: AD-052), section 6.3.6 and Tables 6.8 to 6.10).

g: Following collision risk modelling the impact on the Whooper swan (Cygnus Cygnus) population is considered to be not significant. (0.45 % of the combined Ribble and Alt Estuaries SPA and Martin Mere SPA population (HRA Report, Table 6.7)). Following collision risk modelling the impact on the Pink-footed goose (Anser brachyrhynchus) population is considered to be not significant. (0.006 % of the combined Ribble and Alt Estuaries SPA and Martin Mere SPA population (HRA Report (Doc Ref: AD-052), Table 6.6)).

Stage 1 Matrix 10: Ribble and Alt Estuaries SPA

Site Code: UK9005103

Distance to project: 45 km

European site features	Likely Effects of NSIP											
	Disturbance / displacement / barrier			Indirect effects			Turbine collision			In-combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D
Breeding common tern (Sterna hirundo)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Breeding lesser black-backed gull (Larus fuscus)	Xb	Xb, c	Xb	Xb		Xb		✓d		Xb	✓e	Xb
Breeding ruff (Philomachus pugnax)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg

Wintering bar-tailed godwit (Limosa lapponica)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Wintering Bewick's swan (Cygnus columbianus)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Wintering golden plover (Pluvialis apricaria)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Passage ringed plover (Charadrius hiaticula)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Wintering knot (Calidris canutus)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Wintering oystercatcher (Haematopus)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg

Wintering Pintail (Anas acuta)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Wintering redshank (Tringa tetanus)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Wintering / passage sanderling (Calidris alba)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Wintering shelduck (Tadorna tadorna)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Wintering teal (Anas crecca)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Wintering wigeon (Anas penelope)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Wintering Whooper swan (Cygnus cygnus)	Xj	Xj	Xj	Xj		Xj		Xh		Xj	Xh	Xj

Wintering pink–footed goose (Anser brachyrhynchus)	Xj	Xj	Xj	Xj		Xj		Xi		Xj	Xi	Xj
Internationally important seabird assemblage during breeding season	Xk	Xk	Xk	Xk		Xk		Xk		Xk	Xk	Xk
Internationally important wintering waterfowl assemblage	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl

Evidence supporting conclusions

a: The Project windfarm site is beyond mean maximum foraging range for this species, see HRA Report, Table 5.4.

b: Lesser black-backed gull (Larus fuscus) frequently associate with vessels and human activity (e.g. fishing activity) (Mitchell et al., 2004) and may exploit novel foraging opportunities created by construction and decommissioning activities that may make prey more available to them. See HRA Report (Doc Ref: AD-052), Table 6.1.

c: Lesser black-backed gulls (Larus fuscus) will continue to pass through the wind farm area during the operational phase and no barrier to movement is predicted. See HRA Report (Doc Ref: AD-052), Table 6.1.

d: At a 98 % avoidance rate (and using Band (2012) collision risk model option 3 (HRA Report, Annex 1, paragraph A1.22)), a total of 20 Lesser black-backed gull (Larus fuscus) collisions were predicted during the breeding season (HRA Report, Annex 2, Table 3), of these birds 2 birds was considered to originate from the Ribble and Alt Estuaries SPA (HRA Report, Annex 2, Table 5). A more recent analysis by the Project ("Clarification Note: collision risk modelling options and potential collision height", issued to Natural England and JNCC on 22nd November 2013) identifies a total of 24 predicted Lesser black-backed gull (Larus fuscus) collisions at the Project site using Band (2012) Option 2, and 11 collisions using Band (2012) Option 3 (Table 10). Despite these relatively low numbers, the HRA Report considered that due to concerns over the conservation status of these birds a further assessment should be undertaken (a PBR analysis) and likely significant effect should not be ruled out at this stage (HRA Report (Doc Ref: AD-052), Table 6.11).

e: A number of offshore wind farm sites lies within mean-maximum foraging range from the Ribble and Alt Estuaries SPA colony (HRA Report (Doc Ref: AD-052), Table 8.7). A likely significant in-combination effect could not be excluded as a result of operational collision risk, consequently further assessment is required (HRA Report, Table 8.9).

g: No wildfowl or wader species were recorded on site. An analysis was undertaken using the Migration Analysis Tool to estimate the collision risk to an assemblage of waterbird species using the coastal network of SPAs (including the Ribble and Alt Estuaries SPA). Estimated collision rates were very low and no likely significant effect was predicted (HRA Report (Doc Ref: AD-052), section 6.3.6 and Tables 6.8 to 6.10).

h: The potential risk to Whooper swan (Cygnus Cygnus) from turbine collision at the Project offshore wind farm has been assessed in detail (HRA Report section 6.2, HRA Report annex 1, appendix 3, ES Annex B.7.C (document reference 10.2.27) including the autumn and spring migration along the "west coast flyway" and the potential for within-winter movements between England and Ireland. Evidence for the number of within-winter Whooper swan (Cygnus Cygnus) movements is based on recorded sightings of ringed birds over a 30 year period (ES Annex B.7.C, Appendix 1). The analysis - detailed at HRA Report Annex 1, Appendix 3 - includes results showing a range of avoidance rates (Table 25), a range of collision height values (Table 26), and a range of assumptions about the proportion of the migrating population that it is likely to cross the Project site (Table 24). Following collision risk modelling the impact on the Whooper swan (Cygnus Cygnus) population is considered to be not significant. (0.45 % of the combined Ribble and Alt Estuaries SPA and Martin Mere SPA population (HRA Report (Doc Ref: AD-052), Table 6.7)).

The clarification note "Approach to collision risk modelling for Pink-footed goose (Anser brachyrhynchus) and Whooper swan (Cygnus Cygnus)" (issued on 27th October 2013) estimates a collision risk mortality of 0.79 Whooper swan (Cygnus Cygnus) per annum to this SPA (Doc Ref:D1-045).

i: Following collision risk modelling the impact on the Pink-footed goose (Anser brachyrhynchus) population is considered to be not significant. (0.006 % of the combined Ribble and Alt Estuaries SPA and Martin Mere SPA population (HRA Report (Doc Ref: AD-052), Table 6.6)).

j: Migrating Whooper swan (Cygnus Cygnus) and pink-footed geese (Anser brachyrhynchus) are not considered to be vulnerable to these effects at the Project Site.

k: This assemblage feature includes breeding common tern (see a) above), breeding lesser black-backed gull (Larus fuscus) (see (b) to (e) above) and breeding black headed gull. Black headed gull were recorded only in very low densities at the wind farm site, HRA Report (Doc Ref: AD-052) tables 4.11 & 5.4.

l: This wintering assemblage includes the waterfowl and Bewick's swan (Cygnus columbianus) listed above, see (g) above.

Stage 1 Matrix 11: Skokholm and Skomer SPA

Site Code: UK9014051

Distance to project: 287 km

European site features	Likely Effects of NSIP											
	Disturbance / displacement / barrier			Indirect effects			Turbine collision			In-combination effects		
	C	O	D	C	O	D	C	O	D	C	O	D
Breeding / wintering Chough (Pyrrhocorax pyrrhocorax)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Breeding Short-eared owl (Asio flammeus)												

Breeding Storm petrel (Hydrobates pelagicus)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Breeding lesser black-backed gull (Larus fuscus)	Xf	Xf	Xf	Xf		Xf		Xf		Xf	Xf	Xf
Breeding Puffin (Fratercula arctica)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Breeding Manx shearwater (Puffinus puffinus)	✓a	✓a	✓a	Xb		Xb		Xe		Xc	✓a	Xc
Breeding Seabird assemblages	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg

Evidence to support conclusions

a: Manx shearwater (Puffinus puffinus) are highly mobile foragers that spend significant proportions of time in flight (Furness and Wade, 2012) and are not considered to be vulnerable to disturbance from boat traffic. Peak numbers were observed in May 2012 and September 2012 with 29% of birds recorded observed in foraging activity.

Due to the large numbers of birds present at the Project wind farm site and the Project site being within mean-maximum foraging range for this breeding species at Skokholm and Skomer SPA there is potential for a likely significant effect from displacement alone and in-combination. See HRA Report (Doc Ref: AD-052), Table 6.1.

b: Manx shearwater (Puffinus puffinus) show flexibility with respect to foraging area and have a varied diet. As an omnivorous species, they do not entirely rely on fish in their diet and may be insensitive to the temporary displacement of fish. See HRA Report (Doc Ref: AD-052), Table 6.1.

c: The HRA Report (Doc Ref: AD-052) Table 8.9 considers the potential for in-combination displacement effects during the construction period. Given the extent of foraging habitat available to this species in the Irish Sea, the predicted number and location of wind farm sites concurrently in construction, and the bird's low sensitivity to displacement (Furness et al, 2013) no likely significant effect is predicted.

e: No collisions of Manx shearwater (Puffinus puffinus) were predicted to occur at a 98% avoidance rate. See HRA Report (Doc Ref: AD-052), Table 6.1.

f: This species is a breeding feature of this SPA and is present at the Project site but the Project site lies beyond the mean-maximum foraging range (141 km (Thaxter et. al., 2012)) for this species so there is considered to be no potential for a significant effect on this feature of this SPA.

g: Due to the distance from the Project site to this SPA there is considered to be no mechanism for an effect on this feature of the SPA.

Reference

Furness R.W, Wade H,M, Masden E.A., (2013). Assessing vulnerability of marine bird populations to offshore wind farms. Journal of Environmental Management, 119 (2013), pp56 - 66.

Thaxter, C. B., Lascelles, B., Sugar, K., Cook, A. S. C. P., Roos, S., Bolton, M., Langston, H. W. and Burton N. H. K. (2012). Seabird Foraging Ranges as a Tool for Identifying Candidate Marine Protected Areas. Biological Conservation.

4.0 STAGE 2: EFFECTS ON INTEGRITY

Background

4.1 The screening exercise has identified the potential for a likely significant effect on one or more features of the European sites considered. This section summarises the anticipated effects on the integrity of each of the European sites below, in the context of their conservation objectives.

Stage 2 Matrices Key

✓ = Adverse effect on integrity cannot be excluded

× = Adverse effect on integrity can be excluded

C= construction

O = operation

D = decommissioning

4.2 Evidence supporting the conclusions is detailed in footnotes for each table with reference to relevant supporting documentation.

4.3 Where an impact is not considered relevant for a feature of a European site, the cell in the matrix is formatted as follows:

Stage 2 Matrix 1: Aberdaron Coast and Bardsey Island SPA

Site Code: UK9013121

Distance to project: 147 km

European site features	*Displacement*			*In-combination – displacement*		
	C	*O*	*D*	*C*	*O*	*D*
Manx shearwater (Puffinus puffinus)	X a	X a			X a	

Evidence to support conclusions

a: Manx shearwater (Puffinus puffinus) were present during May 2012, aerial survey numbers did not breach the threshold for regional importance. Aerial survey data shows that the species was present in higher numbers during May and September, with lower numbers present during mid-summer. This suggests that the site was most utilised during migratory periods by Manx shearwater (Puffinus puffinus), with a lower number of birds using the study area for foraging excursions from colonies in the breeding season (HRA Report (Doc Ref: AD-052), Section 7.8).

The Applicant has undertaken further analysis of collision and displacement risk to Manx shearwater (Puffinus puffinus) collision risk was assessed as negligible (less than 0.07 birds per annum) due to the flight height of this species. Displacement risk was assessed using, separately, abundance values from aerial data at the Project site and boast-based survey data. Displacement values were apportioned to the three SPAs (Aberdaron Coast and Bardsey Island, Copeland Islands, and Skokholm and Skomer) for which the Project is in mean maximum foraging range. At the assessed 30% displacement level and 10% mortality rate less than 1% of the Aberdaron Coast and Bardsey Island SPA population is affected regardless of whether boat or aerial survey abundance data are used.

Displacement analysis was also undertaken for the Project by the Applicant in combination with the Burbo Bank Extension project. The predicted combined displacement values were similarly below a 1% threshold for this SPA. The Applicant concludes no adverse effect on this feature of the Aberdaron Coast and Bardsey Island SPA.

The Isle of Man Government in its Statement of Common Ground with Dong Energy dated 14 March 2014 (Doc Ref: SCG-025) agree that issues relating to collision and avoidance by Manx shearwater (Puffinus puffinus) has been assessed and agree that any effect on the 'Calf of Man' colony is not likely to be significant.

Natural Resources Wales stated in their further information on HRA impacts to proposed Welsh sites submitted at the ExA's request for the deadline of 14 March 2014 that they are of the opinion that none of the proposed changes to the Aberdaron Coast and Bardsey Island SPA would require a review of the Habitat Regulations Assessment for the Walney Offshore Wind Farm, indicating that Natural Resources Wales are satisfied impacts on Aberdaron Coast and Bardsey Island SPA have been adequately assessed (Doc Ref: D4A-006).

Stage 2 Matrix 2: Bowland Fells SPA

Site Code: UK9005151

Distance to project: 54 km

European site features	*Collision risk*			*In-combination – collision*		
	C	*O*	*D*	*C*	*O*	*D*
Lesser black-backed gull (Larus fuscus)		X a			X b	

Evidence supporting conclusions

a: A report "Clarification note: Lesser black-backed gull (Larus fuscus) in-combination collision risk assessment and SPA apportioning" was submitted by the Applicant as Appendix 13 to the Written Response to Deadline IV (4th March 2014) (Doc Ref: D4-016). Within this report, the Applicant has undertaken further analysis of the likely collision risk to Lesser black-backed gulls (Larus fuscus) at the Project site. This analysis follows the same format as that used for the Burbo Bank Extension Offshore wind farm. Of the 24 predicted breeding season collisions at the Project site (based using the worst case turbine scenario (207 x 3.6MW turbines), Band (2012) option 2, and a 98% avoidance rate) [Table 10, "Clarification Note: collision risk modelling options and potential collision height" submitted as Appendix 5.6 to Deadline I (16th December 2013) (Doc Ref: D1-046)] 20 collisions are apportioned to the 3 SPAs (Bowland Fells, Morecambe Bay, Ribble and Alt Estuaries) for which the Project site is within foraging range. Of these 20, two collisions at the Project site are apportioned to the Bowland Fells SPA [Appendix 13.1, of the report submitted by the Applicant as Appendix 13 to the Written Response to Deadline IV (Doc Ref: D4-016)]. The Applicant concludes "no adverse effect" from the Project alone on this interest feature of the Bowland Fells SPA.

Natural England have stated in their response to ExA's second written questions with a supplementary expert report (Doc Ref: D4-036) that if the Applicant uses the same approach to assess the impacts upon Lesser black-backed gulls (Larus fuscus) as was used for the Burbo Bank Extension Offshore Wind Farm, they are likely to be able to conclude no adverse effect on integrity (AEOI) for Lesser black-backed gull (Larus fuscus) collisions with all relevant SPAs for offshore wind farms in the Irish Sea up to and including Walney Extension.

b: A report "Clarification note: Lesser black-backed gull (Larus fuscus) in-combination collision risk assessment and SPA apportioning" was submitted by the Applicant as Appendix 13 to the Written Response to Deadline IV (4th March 2014) (Doc Ref: D4-016). Within this report, the Applicant has undertaken further analysis of the likely in-combination collision risk to Lesser black-backed gulls (Larus fuscus) at the Project site. This analysis follows the same format as that used for the Burbo Bank Extension offshore wind farm. Using the analysis detailed in Appendix 13 a total of 24 breeding season collisions are predicted for the Project in-combination with nine other offshore wind farms present (or proposed, Burbo Bank Extension) in the Irish Sea within mean-maximum foraging range of this SPA [Appendix 13.1 of Appendix 13 (Doc Ref: D4-016)]. The Applicant's PBR analysis identifies this as a sustainable impact and equivalent to an "f" value of 0.036 [Table 24, Appendix 13 (Doc Ref: D4-016)]. The Applicant concludes "no adverse effect" from the Project in-combination with other projects on this interest feature of the Bowland Fells SPA.

Natural England have stated in their response to ExA's second written questions with a supplementary expert report (Doc Ref: D4-036) that if the Applicant uses the same approach to assess the impacts upon Lesser black-backed gulls (Larus fuscus) as was used for the Burbo Bank Extension Offshore Wind Farm, they are likely to be able to conclude no AEOI for Lesser black-backed gull (Larus fuscus) collisions with all relevant SPAs for offshore wind farms in the Irish Sea up to and including Walney Extension.

Stage 2 Matrix 3: Copeland Islands SPA

Site Code: UK9020291

Distance to project: 120 km

European site features	*Displacement*			*In-combination – displacement*		
	C	*O*	*D*	*C*	*O*	*D*
Manx shearwater (Puffinus puffinus)	X a	X a			X b	

Evidence to support conclusions

a: Manx shearwater (Puffinus puffinus) were present in May 2012, though aerial survey numbers did not breach the threshold for regional importance. Aerial survey data show that the species was present in higher numbers during May and September, with lower numbers present during mid-summer. This suggests that the site was most utilised during migratory periods by Manx shearwater (Puffinus puffinus), with a lower number of birds using the study area for foraging excursions from colonies in the breeding season. (HRA Report (Doc Ref: AD-052), Section 7.8).

The Applicant has undertaken further analysis of collision and displacement risk to Manx shearwater (Puffinus puffinus) at the Project site. Collision risk was assessed as negligible (less than 0.07 birds per annum) due to the flight height of this species. Displacement risk was assessed using, separately, abundance values from aerial data at the Project site and boat-based survey data. Displacement values were apportioned to the three SPAs (Aberdaron Coast and Bardsey Island, Copeland Islands, and Skokholm and Skomer) for which the Project is in mean to maximum foraging range. At the assessed 30% displacement level and 10% mortality rate less than 1% of the Copeland Islands SPA population is affected regardless of whether boat or aerial survey abundance data are used.

Displacement analysis was also undertaken for the Project in combination with the Burbo Bank Extension project. The predicted combined displacement values were similarly below a 1% threshold for this SPA. The Applicant concludes no adverse effect on this feature of the Copeland Islands SPA.

The Isle of Man Government in its Statement of Common Ground with Dong Energy dated 14 March 2014 (Doc Ref: SCG-025) agree that issues relating to collision and avoidance by Manx shearwater (Puffinus puffinus) has been assessed and that any effect on the Calf of Man colony is not likely to be significant.

Stage 2 Matrix 4: Liverpool Bay SPA

Site Code: UK9020294

Distance to project: 0 km

European site features	*Displacement*			*In-combination – displacement*		
	C	*O*	*D*	*C*	*O*	*D*
Red throated diver (Gavia stellate)	X a					
Common scoter (Melanitta nigra)	X a					

Evidence supporting conclusions

a: The citation data for the Liverpool Bay SPA show low numbers of both qualifying features recorded along the route of Project Offshore Cable Corridor where it crosses the northern limit of this SPA. The two qualifying features occur only seasonally in the SPA; Red-throated diver (Gavia stellate) are absent during Spring to early Autumn (Webb et al., 2006), while Common scoters (Melanitta nigra) are present from August to May with the most significant numbers present from August to March (NE and CCW, 2009). The cable installation operation will result in only temporary disturbance over an expected short duration (worst case 21 days at 1.5km of cable per day multiplied by 5 cables) within the SPA and will be restricted to slow moving boat traffic that is not considered to represent a level of disturbance beyond the background levels that the species are currently exposed to.

Consequently it is assessed that the Project's cable laying operation will not have an adverse effect on the integrity of the Liverpool Bay SPA from displacement of either species.

Stage 2 Matrix 5: Morecambe Bay Ramsar

Site Code: UK11045

Distance to project: 20 km

Ramsar features	*Collision*			*In-combination – collision*			*Disturbance*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Internationally important numbers of breeding lesser black-backed gull (Larus fuscus)		X a			X b				
Internationally important numbers of breeding herring gull (Larus argentatus)		X c			X d				
Over-wintering - curlew (Numenius arquata), dunlin (Calidris alpine), knot (Calidris canutus), grey plover (Pluvialis squatarola),							X e		

Pintail (Anas acuta), redshank (Tringa tetanus), shelduck (Tadorna tadorna), turnstone (Arenaria interpres)									

Evidence to support conclusions

a: The Applicant's assessment of collision risk to breeding lesser black-backed gull (Larus fuscus) has not distinguished between these birds as SPA features and Ramsar features. The following text, taken from the Morecambe Bay SPA matrix, is considered applicable also to the Morecambe Bay Ramsar: "The Applicant has undertaken further analysis of the likely collision risk to Lesser black-backed gull (Larus fuscus) at the Project site. This analysis follows the same format as that used for the Burbo Bank Extension offshore wind farm. A report 'Clarification note: Lesser black-backed gull (Larus fuscus) in-combination collision risk assessment and SPA apportioning' was submitted by the Applicant as Appendix 13 to the Written Response to Deadline IV (4th March 2014) (Doc Ref: D4-016). Of the 24 predicted breeding season collisions at the Project site (based using the worst case turbine scenario (207 x 3.6MW turbines), Band (2012) option 2, and a 98% avoidance rate) [Table 10, "Clarification Note: collision risk modelling options and potential collision height" submitted as Appendix 5.6 to Deadline I (16th December 2013) (Doc Ref: D1-046)] 20 collisions are apportioned to the three SPAs (Bowland Fells, Morecambe Bay, Ribble and Alt Estuaries) for which the Project site is within foraging range. Of these 20, 17 collisions at the Project site are apportioned to the Morecambe Bay SPA [Appendix 13.1, of the report submitted by the Applicant as Appendix 13 to the Written Response to Deadline IV (Doc Ref: D4-016)]. The Applicant concludes "no adverse effect" from the Project alone on this interest feature of the Morecambe Bay SPA." This has been agreed with NE (Doc Ref: D5-039).

b: The Applicant's assessment of in-combination collision risk to breeding lesser black-backed gull (Larus fuscus) has not distinguished between these birds as SPA features and Ramsar features.

The following text, taken from the Morecambe Bay SPA matrix, is considered applicable also to the Morecambe Bay Ramsar: "The Applicant has undertaken further analysis of the likely in-combination collision risk to Lesser black-backed gull (Larus fuscus) at the Project site. This analysis follows the same format as that used for the Burbo Bank Extension offshore wind farm. A report "Clarification note: Lesser black-backed gull (Larus fuscus) in-combination collision risk assessment and SPA apportioning" was submitted by the Applicant as Appendix 13 to the Written Response to Deadline IV (4th March 2014) (Doc Ref: D4-016). Using the analysis detailed in Appendix 13 a total of 111 breeding season collisions are predicted for the Project in-combination with nine other offshore wind farms present (or proposed, Burbo Bank Extension) in the Irish Sea within mean-maximum foraging range of this SPA [Appendix 13.1 of Appendix 13]. The Applicant's PBR analysis identifies this as a sustainable impact and equivalent to an "f" value of 0.111 [Table 22, Appendix 13]. The Applicant concludes "no adverse effect" from the Project in-combination with other projects on this interest feature of the Morecambe Bay SPA." This has been agreed with NE as the same approach has been used to assess the impacts upon Lesser black-backed gulls (Larus fuscus) as was used for the Burbo Bank Extension Offshore Wind Farm.

c: The Applicant's assessment of collision risk to breeding herring gull (Larus argentatus) has not distinguished between these birds as SPA features and Ramsar features. The following text, taken from the Morecambe Bay SPA matrix, is considered applicable also to the Morecambe Bay Ramsar: "The Applicant has undertaken further analysis of the likely collision risk to herring gull at the Project site, ["Clarification Note: Herring gull feature of Morecambe Bay SPA collision risk apportioning" provided as Appendix 14 to the Applicant's Written response to Deadline IV (4th March 2014) (Doc Ref: D4-019)]. Of the 36 breeding season herring gull collisions predicted at the Project site (using the worst case turbine scenario of 207 x 3.6MW turbines, Band (2012) option 2 and a 98% avoidance rate, Table 2 Appendix 14 (Doc Ref: D4-019)) 17 collisions are apportioned to the Morecambe Bay SPA (the remainder are apportioned to the regional (non-SPA) population) [Table 3, Appendix 14 (Doc Ref: D4-019)]. The Applicant's PBR analysis calculates this value as equivalent to an "f" value of 0.057 [Table 4, Appendix 14 (Doc Ref: D4-019)] and concludes the Project alone will have "no adverse effect" on this interest feature of the Morecambe Bay SPA." The Applicants final approach was the same as was adopted for Burbo Bank Extension Windfarm and this approach has been agreed with NE.

d: The Applicant's assessment of in-combination collision risk to breeding herring gull (Larus argentatus) has not distinguished between these birds as SPA features and Ramsar features.

The following text, taken from the Morecambe Bay SPA matrix, is considered applicable also to the Morecambe Bay Ramsar: "The Applicant identifies four offshore wind farm sites (in addition to the Project site) that lie within mean maximum foraging range (61 km) of the herring gull colony at this SPA (Barrow, Ormonde, Walney I&II, and West of Duddon Sands). However quantitative data on herring gull collision risk are only available from one site [section 6.3, Appendix 14 (Doc Ref: D4-019)] and a qualitative assessment was provided (presented in the HRA Report (Doc Ref: AD-052), section 8.9.10). Natural England investigated post-consent monitoring data for this species which appear to show herring gull using the wind farm areas in very low densities [Table 1, Natural England Supplementary export report, submitted at Deadline IV (4th March 2014) (Doc Ref: D4 -038)]. This allowed Natural England to agree with the Applicant's conclusion that the Project in-combination with other projects will not have an adverse effect on this interest feature of the Morecambe Bay SPA [paragraph 50, Natural England Supplementary expert report, submitted at Deadline IV (4th March 2014) (Doc Ref: D4 -038)]."

e: The Applicant has confirmed that Project intertidal construction works will be conducted outside of the time period October to March to avoid disturbance to the internationally and nationally important numbers of waterbirds using the intertidal zone and has agreed with Natural England [section 16.4, Statement of Common Ground with Natural England, provided for Deadline I (16th December 2013) (Doc Ref: SCG-018)] tidal working restrictions during the first two weeks of April to avoid disturbance to migratory birds. The Applicant concludes that no adverse effect on site integrity will occur with this mitigation in place, NE are in agreement (Doc Ref: D5-039).

Stage 2 Matrix 6: Morecambe Bay SAC

Site Code: UK0013027

Distance to project: 20 km

European site features	*Habitat Loss*		
	C	*O*	*D*
Mudflats and sandflats not covered by seawater at low tide	X a		

Evidence to support conclusions

a: HDD is now proposed in order minimise disturbance to the mudflats and sandflats this will be secured within the DCO. The use of HDD allows a conclusion of no adverse effect on site integrity. NE is in agreement (Doc Ref: D5-039) though there is some query over predicted recovery for the habitat whether five years will be adequate, as agreed with NE, or whether a 10 year minimum should be adopted as recommended by Butterfly Conservation (BC) and Lancashire Moth Group (LNG).

Stage 2 Matrix 7: Morecambe Bay SPA

Site Code: UK9005081

Distance to project: 20 km

European site features	*Collision*			*In-combination – collision*			*Disturbance*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
breeding lesser black-backed gull (Larus fuscus)		X a			X b				
breeding herring gull (Larus argentatus)		X c			X d				
Wintering: Bar-tailed godwit (Limosa lapponica); golden plover (Pluvialis apricaria); curlew (Numenius arquata); dunlin (Calidris alpine); grey plover (Pluvialis squatarola); knot (Calidris canutus); oystercatcher (Haematopus);							X e		

Pintail (Anas acuta); redshank (Tringa tetanus); shelduck (Tadorna); turnstone (Arenaria interpres); Ringed plover (Charadrius hiaticula); sanderling (Calidris alba)									

Evidence to support conclusions:

a: The Applicant has undertaken further analysis of the likely collision risk to Lesser black-backed gull (Larus fuscus) at the Project site. This analysis follows the same format as that used for the Burbo Bank Extension offshore wind farm. A report "Clarification note: Lesser black-backed gull (Larus fuscus) in-combination collision risk assessment and SPA apportioning" was submitted by the Applicant as Appendix 13 to the Written Response to Deadline IV (4th March 2014) (Doc Ref: D4-016). Of the 24 predicted breeding season collisions at the Project site (based using the worst case turbine scenario (207 x 3.6MW turbines), Band (2012) option 2, and a 98% avoidance rate) [Table 10, "Clarification Note: collision risk modelling options and potential collision height" submitted as Appendix 5.6 to Deadline I (16th December 2013) (Doc Ref:D1-046)] 20 collisions are apportioned to the 3 SPAs (Bowland Fells, Morecambe Bay, Ribble and Alt Estuaries) for which the Project site is within foraging range. Of these 20, 17 collisions at the Project site are apportioned to the Morecambe Bay SPA [Appendix 13.1, of the report submitted by the Applicant as Appendix 13 to the Written Response to Deadline IV (Doc Ref: D4-016)]. The Applicant concludes "no adverse effect" from the Project alone on this interest feature of the Morecambe Bay SPA. As agreed with NE also (Doc Ref: D5-039).

b: The Applicant has undertaken further analysis of the likely in-combination collision risk to Lesser black-backed gull (Larus fuscus) at the Project site. This analysis follows the same format as that used for the Burbo Bank Extension offshore wind farm.

A report "Clarification note: Lesser black-backed gull (Larus fuscus) in-combination collision risk assessment and SPA apportioning" was submitted by the Applicant as Appendix 13 to the Written Response to Deadline IV (4th March 2014).

Using the analysis detailed in Appendix 13 a total of 111 breeding season collisions are predicted for the Project in-combination with nine other offshore wind farms present (or proposed, Burbo Bank Extension) in the Irish Sea within mean-maximum foraging range of this SPA [Appendix 13.1 of Appendix 13]. The Applicant's PBR analysis identifies this as a sustainable impact and equivalent to an "f" value of 0.111 [Table 22, Appendix 13]. The Applicant concludes "no adverse effect" from the Project in-combination with other projects on this interest feature of the Morecambe Bay SPA.

Natural England have stated in their response to ExA's second written questions with a supplementary expert report (Doc Ref: D4-036) that if the Applicant uses the same approach to assess the impacts upon Lesser black-backed gulls (Larus fuscus) as was used for the Burbo Bank Extension Offshore Wind Farm, they are likely to be able to conclude no AEOI for Lesser black-backed gull (Larus fuscus) collisions with all relevant SPAs for offshore wind farms in the Irish Sea up to and including Walney Extension.

c: The Applicant has undertaken further analysis of the likely collision risk to herring gull at the Project site, ["Clarification Note: Herring gull feature of Morecambe Bay SPA collision risk apportioning" provided as Appendix 14 to the Applicant's Written response to Deadline IV (4th March 2014) (Doc Ref: D4-019)]. Of the 36 breeding season herring gull collisions predicted at the Project site (using the worst case turbine scenario of 207 x 3.6MW turbines, Band (2012) option 2 and a 98% avoidance rate, Table 2 Appendix 14 (Doc Ref: D4-019) 17 collisions are apportioned to the Morecambe Bay SPA (the remainder are apportioned to the regional (non-SPA) population) [Table 3, Appendix 14 (Doc Ref: D4-019)]. The Applicant's PBR analysis calculates this value as equivalent to an "f" value of 0.057 [Table 4, Appendix 14 (Doc Ref: D4-019)] and concludes the Project alone will have "no adverse effect" on this interest feature of the Morecambe Bay SPA. NE is also in agreement (Doc Ref: D5-039).

d: The Applicant identifies four offshore wind farm sites (in addition to the Project site) that lie within mean maximum foraging range (61 km) of the herring gull colony at this SPA (Barrow, Ormonde, Walney I&II, and West of Duddon Sands).

However quantitative data on herring gull collision risk are only available from one site [section 6.3, Appendix 14 (Doc Ref: D4-019)] and a qualitative assessment was provided (presented in the HRA Report (Doc Ref: AD-052), section 8.9.10).

Natural England investigated post-consent monitoring data for this species which appear to show herring gull using the wind farm areas in very low densities [Table 1, Natural England Supplementary export report, submitted at Deadline IV (4th March 2014) (Doc Ref: D4-036)]. This allowed Natural England to agree with the Applicant's conclusion that the Project in-combination with other projects will not have an adverse effect on this interest feature of the Morecambe Bay SPA [paragraph 50, Natural England Supplementary expert report, submitted at Deadline IV (4th March 2014) (Doc Ref: D4-019)].

e: The Applicant has confirmed that Project intertidal construction works will be conducted outside of the time period October to March to avoid disturbance to the internationally and nationally important numbers of waterbirds using the intertidal zone and has agreed with Natural England [section 16.4, Statement of Common Ground with Natural England, provided for Deadline I (16th December 2013) (Doc Ref: SCG-018)] tidal working restrictions during the first two weeks of April to avoid disturbance to migratory birds. The Applicant concludes that no adverse effect on site integrity will occur with this mitigation in place, NE also are in agreement (Doc Ref: D5-039).

Stage 2 Matrix 8: Ribble and Alt Estuaries Ramsar

Site Code: UK11057

Distance to project: 45 km

Ramsar features	*Collision Risk*			*In-combination – collision*		
	C	*O*	*D*	*C*	*O*	*D*
Breeding lesser black-backed gull (Larus fuscus)		X a			X b	

Evidence to support conclusions

a: The Applicant's assessment of collision risk to breeding lesser black-backed gull (Larus fuscus) has not distinguished between these birds as SPA features and Ramsar features. The following text, taken from the Ribble and Alt Estuaries SPA matrix, is considered applicable also to the Ribble and Alt Estuaries Ramsar: "The Applicant has undertaken further analysis of the likely collision risk to Lesser black-backed gull (Larus fuscus) at the Project site. This analysis follows the same format as that used for the Burbo Bank Extension offshore wind farm.

A report "Clarification note: Lesser black-backed gull (Larus fuscus) in-combination collision risk assessment and SPA apportioning" was submitted by the Applicant as Appendix 13 to the Written Response to Deadline IV (4th March 2014) (Doc Ref: D4-016). Of the 24 predicted breeding season collisions at the Project site (based using the worst case turbine scenario (207 x 3.6MW turbines), Band (2012) option 2, and a 98% avoidance rate) [Table 10, "Clarification Note: collision risk modelling options and potential collision height" submitted as Appendix 5.6 to Deadline I (16th December 2013) (Doc Ref: D1-046)] 20 collisions are apportioned to the 3 SPAs (Bowland Fells, Morecambe Bay, Ribble and Alt Estuaries) for which the Project site is within foraging range. Of these 20, one collision at the Project site is apportioned to the Ribble and Alt Estuaries SPA [Appendix 13.1, of the report submitted by the Applicant as Appendix 13 to the Written Response to Deadline IV (Doc Ref: D4-016)]. The Applicant concludes "no adverse effect" from the Project alone on this interest feature of the Ribble and Alt Estuaries SPA."

b: The Applicant's assessment of in-combination collision risk to breeding lesser black-backed gull (Larus fuscus) has not distinguished between these birds as SPA features and Ramsar features. The following text, taken from the Ribble and Alt Estuaries SPA matrix, is considered applicable also to the Ribble and Alt Estuaries Ramsar: "The Applicant has undertaken further analysis of the likely in-combination collision risk to Lesser black-backed gull (Larus fuscus) at the Project site. This analysis follows the same format as that used for the Burbo Bank Extension offshore wind farm. A report "Clarification note: Lesser black-backed gull (Larus fuscus) in-combination collision risk assessment and SPA apportioning" was submitted by the Applicant as Appendix 13 to the Written Response to Deadline IV (4th March 2014) (Doc Ref: D4-016). Using the analysis detailed in Appendix 13 a total of 49 breeding season collisions are predicted for the Project in-combination with nine other offshore wind farms present (or proposed, Burbo Bank Extension) in the Irish Sea within mean-maximum foraging range of this SPA [Appendix 13.1 of Appendix 13] (Doc Ref: D4-016). The Applicant's PBR analysis identifies this as a sustainable impact and equivalent to an "f" value of 0.097 [Table 23, Appendix 13 (Doc Ref: D4-016)]. The Applicant concludes "no adverse effect" from the Project in-combination with other projects on this interest feature of the Ribble and Alt Estuaries SPA."

Natural England stated in their response to ExA's second written questions with a supplementary expert report (Doc Ref: D4-036)) that if the Applicant used the same approach to assess the impacts upon Lesser black-backed gulls (Larus fuscus) as was used for the Burbo Bank Extension Offshore Wind Farm, they are likely to be able to conclude no adverse effect on integrity or Lesser black-backed gull (Larus fuscus) collisions with all relevant SPAs for offshore wind farms in the Irish Sea up to and including Walney Extension. The Applicant applied the same approach hence NE has agreed that there is no adverse impact on integrity for lesser black-backed gull collisions.

Stage 2 Matrix 9: Ribble and Alt Estuaries SPA

Site Code: UK9005103

Distance to project: 45 km

European site features	*Collision Risk*			*In-combination – collision*		
	C	*O*	*D*	*C*	*O*	*D*
Lesser black-backed gull (Larus fuscus)		X a			X a	

Evidence to support conclusions

a: The Applicant has undertaken further analysis of the likely collision risk to Lesser black-backed gull (Larus fuscus) at the Project site. This analysis follows the same format as that used for the Burbo Bank Extension offshore wind farm. A report "Clarification note: Lesser black-backed gull (Larus fuscus) in-combination collision risk assessment and SPA apportioning" was submitted by the Applicant as Appendix 13 to the Written Response to Deadline IV (4th March 2014) (Doc Ref: D4-016). Of the 24 predicted breeding season collisions at the Project site (based using the worst case turbine scenario (207 x 3.6MW turbines), Band (2012) option 2, and a 98% avoidance rate) [Table 10, "Clarification Note: collision risk modelling options and potential collision height" submitted as Appendix 5.6 to Deadline I (16th December 2013) (Doc Ref: D1-046)] 20 collisions are apportioned to the 3 SPAs (Bowland Fells, Morecambe Bay, Ribble and Alt Estuaries) for which the Project site is within foraging range. Of these 20, one collision at the Project site is apportioned to the Ribble and Alt Estuaries SPA [Appendix 13.1, of the report submitted by the Applicant as Appendix 13 to the Written Response to Deadline IV (Doc Ref: 04-018)]. The Applicant concludes "no adverse effect" from the Project alone on this interest feature of the Ribble and Alt Estuaries SPA.

Natural England stated in their response to ExA's second written questions with a supplementary expert report (Doc Ref: D4-036) that if the Applicant used the same approach to assess the impacts upon Lesser black-backed gulls (Larus fuscus) as was used for the Burbo Bank Extension Offshore Wind Farm, they are likely to be able to conclude no AEOI for Lesser black-backed gull (Larus fuscus) collisions with all relevant SPAs for offshore wind farms in the Irish Sea up to and including Walney Extension. The Applicant applied the same approach hence NE has agreed that there is no adverse impact on integrity for Lesser black-backed gull (Larus fuscus) collisions.

b: The Applicant has undertaken further analysis of the likely in-combination collision risk to Lesser black-backed gull (Larus fuscus) at the Project site. This analysis follows the same format as that used for the Burbo Bank Extension offshore wind farm. A report "Clarification note: Lesser black-backed gull (Larus fuscus) in-combination collision risk assessment and SPA apportioning" was submitted by the Applicant as Appendix 13 to the Written Response to Deadline IV (4th March 2014) (Doc Ref: D4-016). Using the analysis detailed in Appendix 13 a total of 49 breeding season collisions are predicted for the Project in-combination with nine other offshore wind farms present (or proposed, Burbo Bank Extension) in the Irish Sea within mean-maximum foraging range of this SPA [Appendix 13.1 of Appendix 13 (Doc Ref: D4-016)]. The Applicant's PBR analysis identifies this as a sustainable impact and equivalent to an "f" value of 0.097 [Table 23, Appendix 13 (Doc Ref: D4-016)]. The Applicant concludes "no adverse effect" from the Project in-combination with other projects on this interest feature of the Ribble and Alt Estuaries SPA.

Natural England stated in their response to ExA's second written questions with a supplementary expert report (Doc Ref: D4-036) that if the Applicant used the same approach to assess the impacts upon Lesser black-backed gulls (Larus fuscus) as was used for the Burbo Bank Extension Offshore Wind Farm, they are likely to be able to conclude no AEOI for Lesser black-backed gull (Larus fuscus) collisions with all relevant SPAs for offshore wind farms in the Irish Sea up to and including Walney Extension. The Applicant applied the same approach hence NE has agreed that there is no adverse impact on integrity for Lesser black-backed gull (Larus fuscus) collisions.

Stage 2 Matrix 10: Skokholm and Skomer SPA

Site Code: UK9014051

Distance to project: 287 km

European site features	*Displacement*			*In-combination – displacement*		
	C	*O*	*D*	*C*	*O*	*D*
Manx shearwater (Puffinus puffinus)	X a	X b			X c	

Evidence to support conclusions

a: Manx shearwater (Puffinus puffinus) were present during May 2012, aerial survey numbers did not breach the threshold for regional importance. Aerial survey data shows that the species was present in higher numbers during May and September, with lower numbers present during mid-summer. This suggests that the site was most utilised during migratory periods by Manx shearwater (Puffinus puffinus), with a lower number of birds using the study area for foraging excursions from colonies in the breeding season. (HRA Report (Doc Ref: AD-052), section 7.8).

The Applicant has undertaken further analysis of collision and displacement risk to Manx shearwater (Puffinus puffinus) at the Project site. Collision risk was assessed as negligible (less than 0.07 birds per annum) due to the flight height of this species. Displacement risk was assessed using, separately, abundance values from aerial data at the Project site and boast-based survey data. Displacement values were apportioned to the three SPAs (Aberdaron coast and Bardsey Island, Copeland Islands, and Skokholm and Skomer) for which the Project is in mean maximum foraging range.

At the assumed 30% displacement level and 10% mortality rate less than 1% of the Skokholm and Skomer SPA population is affected regardless of whether boat or aerial survey abundance data are used. Displacement analysis was also undertaken for the Project in combination with the Burbo Bank Extension project. The predicted combined displacement values were similarly below a 1% threshold for this SPA. The Applicant concludes no adverse effect on this feature of the Skokholm and Skomer SPA.

The Isle of Man government in its statement of common ground with Dong Energy dated 14/03/14 (Doc Ref: SCG-025) have stated that they agree that issues relating to collision and avoidance by Manx shearwater (Puffinus puffinus) has been assessed and agree that any effect on the 'Calf of Man' colony is not likely to be significant.

Natural Resources Wales stated in their further information on HRA impacts to proposed Welsh European Sites submitted at the ExA's request for the deadline of 14 March 2014 that they are of the opinion that none of the proposed changes to the Skokholm and Skomer SPA would require a review of the Habitat Regulations Assessment for the Walney Offshore Wind Farm indicating that Natural Resources Wales are satisfied impacts on Aberdaron Coast and Bardsey Island SPA have been adequately assessed (Doc Ref: D4A-006).