The Planning Inspectorate

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

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

19 February 2014

CONTENTS

1.0 INTRODUCTION

Background

1.1 Dong Energy Burbo Extension (UK) Limited (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 Burbo Bank Extension offshore wind farm (the Project). 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 ExA 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 Development Consent Order (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: Natural England (NE) and Natural Resources Wales (NRW), are consulted formally 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 initially submitted screening and integrity matrices with their DCO application in the applicant's Habitats Regulations Assessment Report (Doc Ref 4.3). The applicant wrote to the ExA

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[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). It should be noted that the proposed order area for the draft Burbo Bank Extension Offshore Wind Farm DCO is located within UK territorial waters.

(letter dated 10 September 2013) requesting changes to the application that had been submitted. The changes involved the increase of the installed capacity of the project by 1MW and to revise the structure of the submitted Deemed Marine Licence (DML). In response to questions from the ExA, the applicant submitted an Environmental Audit of the Environmental Statement and HRA report (Appendix 5 of the applicant's Written Response to Deadline I) and an updated version of the screening and integrity matrices (Appendix 7) on 28 October 2013. The ExA provided interested parties with an opportunity to comment on the application changes and the submitted material, following which he accepted the proposed changes to the application for examination purposes on 9 December 2013.

1.5 The updated 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 Examining Authority, with the support of the Environmental Services Team of the Planning Inspectorate, throughout the examination using the following documents:

Application Documents

- Habitats Regulations Assessment Report Document 4.3 (Doc. Ref. APP-018)
- Environmental Statement Documents 5.1 and 5.2 (Doc. Refs APP-020 to APP-081)
- Post hearing Appendix 1: Draft Development Consent Order (Version 5 – February 2014) (Doc. Ref. APP-097)

Representations

RELEVANT REPRESENTATIONS

- Relevant representations Marine Management Organisation (Doc. Ref. REP-003)
- Relevant representations Mr J.R. Hall (Doc. Ref. REP-009)
- Relevant representations Mrs Jean Hall (Doc. Ref. REP-012)

[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.

- Relevant representations Sefton Borough Council (Doc. Ref. REP-019)

  Relevant representations Wirral Borough Council (Doc. Ref. REP-023)
- Relevant representations Natural England (Doc. Ref. REP-028)
- Relevant representations The Environment Agency (Doc. Ref. REP-030)
- Relevant representations Natural Resources Wales (Doc. Ref. REP-031)
- Relevant representations The Royal Society for the Protection of Birds (Doc. Ref. REP-032)

DOCUMENTS RECEIVED FOR DEADLINE I

- DONG Energy - Response to Written Representations and First Round of Responses to ExA Questions Resulting from Deadline I (Doc. Ref. REP-104)
- DONG Energy – Appendix 4 - Applicant's response to Section 51 Advice on the Section 55 Checklist (Doc. Ref. REP-037)
- DONG Energy – Appendix 5 - Environmental audit of ES and HRA Report re proposed increase to 259MW (Doc. Ref. REP-038)
- DONG Energy – Appendix 6 - Comments on the relevant representations (Doc. Ref. REP-039)
- DONG Energy – Appendix 7 - Changes to the applicant's draft HRA matrices to inform the report on the implications for European sites (Doc. Ref. REP-040)
- DONG Energy - Appendix 8 – Clarification Note to Natural England on Omitted Natura 2000 and SSSI Sites (Doc. Ref. REP-041)
- DONG Energy - Appendix 9 – Clarification note ornithology Paper 1: Manx shearwater displacement (Doc. Ref. REP-042)
- DONG Energy - Appendix 10 – Clarification note ornithology Paper 2: Definition of regional bird populations (Doc. Ref. REP 043)
- DONG Energy - Appendix 11 – Clarification note ornithology Paper 3: Historical data analysis (Doc. Ref. REP-044)
- DONG Energy - Appendix 12 – Clarification note ornithology Paper 4: Displacement of common scoter due to vessel movement (Doc. Ref. REP-045)
- DONG Energy - Appendix 13 – Clarification note ornithology Paper 5: Screening for breeding SPA seabirds in the non-breeding season (Doc. Ref. REP-046)

- DONG Energy - Appendix 14 – Clarification note ornithology Paper 6: Update to species group partitioning and collision risk modelling (Doc. Ref. REP-047)
- DONG Energy - Appendix 15 – Clarification note ornithology Paper 7: Red-throated diver displacement (Doc. Ref. REP-048)
- DONG Energy - Appendix 16 – Clarification note ornithology Paper 8 PBR analysis of common tern, lesser black-backed gull, and herring gull colonies (Doc. Ref. REP-049)
- DONG Energy - Appendix 17 – Clarification note ornithology Paper 9: Review of evidence used in cumulative impact assessments (Doc. Ref. REP-050)
- DONG Energy Appendix 18 - Clarification note ornithology Paper 10: Implications of the BAE Warton gull control measures (Doc. Ref. REP-051)
- DONG Energy - Appendix 20 – Clarification note on matters relating to the evidence base relating to metocean and coastal processes following Section 56 representations from the MMO, NE, NRW and EA (Doc. Ref. REP-053)
- DONG Energy - Appendix 24 – Clarification note NRW queries on cobble habitats and benthic character (Doc. Ref. REP-057)
- DONG Energy - Appendix 25 – Clarification note to NE on hearing capabilities in lamprey (Doc. Ref. REP-058)
- DONG Energy - Appendix 26 – Clarification note to NE and NRW on EMF effects on fish species arising from subsea cabling (Doc. Ref. REP-059)
- DONG Energy - Appendix 29 – Clarification note to MMO, NE, NRW and EA on the disposal of dredged material (Doc. Ref. REF-062)
- DONG Energy - Appendix 30 - Clarification note to NE on metocean and coastal cabling rock scour protection and designated sites (Doc. Ref. REP-063)
- DONG Energy - Appendix 31 – Clarification note to the EA on metocean and coastal Processes, currents and stratification (Doc. Ref. REP-064)
- DONG Energy - Appendix 32 – Clarification note to the MMO on metocean and coastal processes methodology and environmental statement comments (Doc. Ref. REP-065)
- DONG Energy - Appendix 33 – Clarification note to NRW on metocean and coastal processes export cable, scour, SSC and sediment accumulation (Doc. Ref. REP-066)
- DONG Energy - Appendix 34 – Clarification note to NE on water and sediment quality (Doc. Ref. REP-067)

- DONG Energy - Appendix 35 – Clarification note to the MMO on sediment quality (Doc. Ref. REP-068)
- DONG Energy - Appendix 36 – Clarification note to MMO, NE, NRW and EA on metocean and cable processes cable burial assessment (Doc. Ref. REP-069)
- DONG Energy - Appendix 37 – Clarification note to MMO queries on reference to biotope MusB.Sem (Doc. Ref. REP-070)
- Natural England - written representation and accompanying documents (Doc. Ref. 089-094)
- Natural Resources Wales - written representation and Annex E (ornithological expert report) (Doc. Ref. REP-096 to REP-097)
- The Royal Society for the Protection of Birds (Doc. Ref. REP-098 to REP-099)

DOCUMENTS RECEIVED FOR DEADLINE II

- DONG Energy – applicant's written response to Deadline II (Doc. Ref. REP-146)
- DONG Energy – Appendix 1 - Approach to the assessment of red-throated diver (Doc. Ref. REP-137)
- DONG Energy – Appendix 2 - Clarification note on matters relating to migrating adult salmon and sea trout (Doc. Ref. REP-138)
- DONG Energy – Appendix 3 - Clarification note common tern feature of the Mersey Narrows and North Wirral Foreshore SPA (Doc. Ref. REP-139)
- DONG Energy – Clarification note – response to Natural England's comments on Habitats Regulations Assessment of SPA features in the non-breeding season (Doc. Ref. REP-143)
- RSPB Comments on responses to Examining Authority's first written questions (Doc. Ref. REP-147)

DOCUMENTS RECEIVED FOR DEADLINE III

- DONG Energy – applicant's written response to deadline III (Doc. Ref. REP-152)
- Natural England - written summary of submissions and evidence provided during the issue specific hearings on 19-21 November 2013 (Doc. Ref. REP-155)
- Natural Resources Wales - written summary of submissions and evidence provided during the issue specific hearings on 19 to 21 November 2013 (Doc. Ref. REP-156)
- Marine Management Organisation - written summary of submissions and evidence provided during the issue specific hearings on 19-21 November 2013 (Doc. Ref. REP-157)

DOCUMENTS RECEIVED FOR DEADLINE V

- DONG Energy - Further submission in advance of Issue Specific Hearing 3 (Doc. Ref. REP-185)
- DONG Energy - Appendix 9 - Lesser black-backed gull collision risk modelling: an update to the in-combination assessment (amended version) (Doc. Ref. REP-195)
- DONG Energy - Appendix 10 - Position statement: status with regards to lesser black-backed gull and in-combination effects (Doc. Ref. REP-196)
- DONG Energy - Appendix 11 - Red-throated diver displacement: clarification of density dependent effects (Doc. Ref. REP-197)
- DONG Energy - Appendix 12 - Position statement: Status with regards to outstanding concerns on red-throated diver displacement (Doc. Ref. REP-198)
- DONG Energy - Appendix 13 - Position statement: Status with regard to outstanding concern on adult salmon migration and proposed condition (Doc. Ref. REP-199)
- DONG Energy - Appendix 14 - Proposed amendment to draft Deemed Marine Licence condition 15: Proposal to install piled offshore substation foundations in the period April to May (updated version) (Doc. Ref. REP-200)
- DONG Energy - Appendix 20 - Position statement: Status with regards to EMF and cable heating concerns regarding 1MW maximum capacity increase (Doc. Ref. REP-206)
- DONG Energy - written response to Deadline V (Doc. Ref. REP-208)
- DONG Energy - Post hearing Appendix 3: Decision notice dated 20 November 2013 (ref: 31/2013/0400/PF) (Doc. Ref. REP-211)
- DONG Energy - Post hearing Appendix 9: Speaking note for Dr Tim Norman on red-throated divers (Doc. Ref. REP-217)
- DONG Energy - Post hearing Appendix 7: Updated lesser black-backed gull in combination collision risk assessment, following questions related to Issue Specific Hearing 3 including apportioning of colony data (Doc. Ref. REP-215)
- DONG Energy - Post hearing Appendix 8: Position statement on the offshore substation piling condition (Doc. Ref. REP-216)
- DONG Energy - Post hearing Appendix 11: Red-throated diver displacement: Clarification of density-dependent effects v3 (Doc. Ref. REP-219)

- Natural England - written summary of the oral representations made by Natural England at the issue specific hearings held on 28-30 January 2013 (Doc. Ref. REP-230)
- Marine Management Organisation - written summary of submissions provided during issue specific hearing 3 (Doc. Ref. REP-231)
- Natural Resources Wales - Summary of submissions and evidence provided at the issue specific hearings dated 28, 29 January 2014 (Doc. Ref. REP-232)
- Natural Resources Wales – Draft Marine Licence (Doc. Ref. REP 233)

Statements of Common Ground

- Statement of Common Ground with the Environment Agency (Appendix 52 of the applicant's written response to Deadline I) (Doc. Ref. REP-121)
- Statement of Common Ground with the Marine Management Organisation (Appendix 53 of the applicant's written response to Deadline I) (Doc. Ref. REP-122)
- Statement of Common Ground with Natural England (ornithological matters) (Appendix 55 of the applicant's written response to Deadline I) (Doc. Ref. REP-124)
- Statement of Common Ground with Natural England (general matters) (Appendix 56 of the applicant's written response to Deadline I) (Doc. Ref. REP-125)
- Statement of Common Ground with Natural Resources Wales (Appendix 57 of the applicant's written response to Deadline I) (Doc. Ref REP-126)
- Draft Statement of Common Ground with the RSPB (Appendix 63 of the applicant's Written Response to Deadline I) (Doc. Ref. REP-132)
- DONG Energy - Post hearing Appendix 6: Agreed supplementary Statement of Common Ground with Natural England regard lesser black-backed gull (deadline V) (Doc. Ref. REP-214)
- DONG Energy - Post hearing Appendix 10: Draft Supplementary Statement of Common Ground with Natural England and Natural Resources Wales regarding red-throated diver (deadline V) (Doc. Ref. REP-218)

Hearing Documents

HEARING AUDIO

- Issue Specific Hearing Audio 19 November- 21 November 2013 (Doc. Ref. HE-14 to HE-21)

- Issue Specific Hearing Audio 28-30 January 2014 (Doc. Ref. HE-28 to HE-35)

DOCUMENTS RECEIVED FOR DEADLINE III – documents accepted at Issue Specific Hearings held on 19, 20 and 21 November 2013

- DONG Energy - Clarification note Lesser black-backed gull Morecambe Bay SPA (Doc. Ref. H1-Doc 1)
- DONG Energy - Clarification note Herring gull foraging range (Doc. Ref. H1-Doc 2)
- DONG Energy - Clarification note Collision risk modelling options and potential collision height data (Doc. Ref. H1-Doc 3)
- DONG Energy - Matter A(a) High level review of designated sites (Doc. Ref. H1-Doc 4)
- DONG Energy - Collision risk modelling for common gull and great black-backed gull in relation to the proposed Project (H1-Doc 5)
- DONG Energy - Kentish Flats Diver surveys 2009-10 (Percival report) (Doc. Ref. H1-Doc 6)
- DONG Energy - Statement of Common Ground between NE and Vattenfall in relation to Kentish Flats – final version (Doc. Ref. H1-Doc 7)
- Natural England – Warton aerodrome cull licence (Doc. Ref. H1-Doc 8)
- Natural England – Defra decision letter in regards to the Warton aerodrome gull cull licence (Doc. Ref. H1-Doc 9)
- Natural England – "Peterson et al" report (Doc. Ref. H1-Doc 10)
- DONG Energy - Speaking notes of Mr Stephen Bellew, Dr Jeremy Nedwell and Mr John Webb (Doc. Ref. H1-Doc 11)
- DONG Energy – Speaking note of Dr Tim Norman (Doc. Ref. H1-Doc 12)

Other Documents

- Letter from Scottish Natural Heritage to the Planning Inspectorate (Doc. Ref. CORR-005)
- DONG Energy - Response to Rule 6 (Doc. Ref. HE-04)

Structure of this Report

1.7 The remainder of this report is in three parts:

(i) Section 2 identifies the European sites, potential impacts, mitigation measures and the main issues that were considered within the HRA process for the DCO.

(ii) Section 3 comprises screening matrices for the European sites that 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

(iii) Section 4 comprises matrices for the 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 its/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:

- Aberdaron Coast and Bardsey Island SPA
- Bowland Fells SPA
- Cardigan Bay SAC
- Copeland Islands SPA
- Dee Estuary SPA
- Dee Estuary Ramsar
- Dee Estuary SAC
- Duddon Estuary Ramsar
- Duddon Estuary SPA
- Eileanan agus Sgeiran Lios mór SAC
- Liverpool Bay SPA
- Lleyn Peninsula & the Sarnau SAC
- Menai Strait and Conwy Bay SAC
- Mersey Estuary SPA
- Mersey Estuary Ramsar
- Mersey Narrows and North Wirral Foreshore pSPA
- Mersey Narrows and North Wirral Foreshore pRamsar
- Morecambe Bay SPA
- Morecambe Bay Ramsar
- Murlough SAC
- Pembrokeshire Marine SAC
- Ribble and Alt Estuaries SPA
- Ribble and Alt Estuaries Ramsar
- River Dee and Bala Lake SAC
- Roaringwater Bay and Islands SAC
- Sefton Coast SAC
- Shell Flat and Lune Deep SAC
- Skerries and Causeway SAC
- Skokholm and Skomer SPA
- South-East Islay Skerries SAC
- Strangford Lough SAC
- The Maidens SAC
- Upper Solway Flats and Marshes SPA
- Upper Solway Flats and Marshes Ramsar

2.3 The applicant has not provided evidence to demonstrate that European sites identified above were agreed with Natural England (NE) and Natural Resources Wales (NRW). NE and NRW were questioned orally about European sites and impacts during the

Issue Specific Hearing held between 19 and 21 November and raised no additional sites. No interested party has suggested that any other European site should be considered.

Potential Impacts

2.4 The potential impacts upon the identified European sites which are considered within the applicant's HRA Report are provided in the table below.

Potential impacts considered within the screening (Stage 1) and integrity (Stage 2) matrices

Designated sites	Impacts in submission information	Presented in matrices as
Ornithological features Aberdaron Coast and Bardsey Island SPA Bowland Fells SPA Copeland Islands SPA Dee Estuary SPA Dee Estuary Ramsar Duddon Estuary Ramsar Duddon Estuary SPA Liverpool Bay SPA Mersey Estuary SPA Mersey Estuary Ramsar Mersey Narrows and North Wirral ForeshoreSPA Mersey Narrows and North Wirral	**Construction** • Disturbance and displacement from increased vessel and construction activity • Indirect impacts on prey species from pile driving	• Disturbance/displacement • Indirect effects
	Operation • Avoidance and displacement from wind farm site due to turbine presence • Barrier effects • Direct collision with turbine blades	• Disturbance/displacement • Barrier • Turbine collision
	Decommissioning • Disturbance and displacement from increased vessel and decommissioning activity	• Disturbance/displacement • Indirect effects
	In-combination • Disturbance and displacement due to boat traffic and	• In-combination effects

Designated sites	iImpacts in submission information	Presented in matrices as
Foreshore Ramsar Morecambe Bay SPA Morecambe Bay Ramsar Ribble and Alt Estuaries SPA Ribble and Alt Estuaries Ramsar Skokholm and Skomer SPA Upper Solway Flats and Marshes SPA Upper Solway Flats and Marshes Ramsar	construction activities, and during operation • Collision with turbine blades	
Migratory fish features Dee Estuary SAC River Dee and Bala Lake SAC	**Construction** • Death or injury caused by piling activity • Behavioural disturbance caused by piling activity • Increase in suspended sediment concentration as a result of foundation installation	• Death/injury • Behavioural changes • Increases in suspended sediment concentration
	Operation • Electromagnetic effects from export and inter-array cables	• Electromagnetic field
	Decommissioning • Behavioural disturbance caused	• Behavioural changes

Designated sites	iImpacts in submission information	Presented in matrices as
	by decommissioning activity • Increase in suspended sediment concentration as a result of foundation removal	• Increases in suspended sediment concentration
	In-combination • Construction effects • EMF	• Construction • EMF
Marine mammal features Cardigan Bay SAC Eileanan agus Sgeiran Lios mór SAC Lleyn Peninsula & the Sarnau SAC Murlough SAC Pembrokeshire Marine SAC Skerries and Causeway SAC South-East Islay Skerries SAC Strangford Lough SAC The Maidens SAC	**Construction** • Potential physical damage and displacement as a result of piling and other construction activities • Temporary effects on the distribution and abundance of prey species due to habitat disturbance and direct prey disturbance • Habitat loss • Potential increase in vessel strike between vessels and marine mammals as a result of increased vessel activity	• Construction disturbance • Indirect effects • Habitat loss • Construction vessel collision
	Operation • Disturbance and displacement of marine mammals resulting from operational noise • Potential vessel strike as a result of increased vessel activity	• Disturbance • Operational vessel collision
	Decommissioning	

Designated sites	iImpacts in submission information	Presented in matrices as
	• Potential physical damage and temporary disturbance and displacement as a result of deconstruction activities • Temporary effects on the distribution and abundance of prey species due to habitat disturbance and direct prey disturbance • Habitat loss • Potential increase in vessel strike between vessels and marine mammals as a result of increased vessel activity.	• Construction disturbance • Indirect effects • Habitat loss • Decommissioning vessel collision
	In-combination • Potential physical disturbance and temporary disturbance and displacement from piling and other activities • Potential increase in vessel strike between vessels and marine mammals as a result of increased vessel activity	• In-combination effects
Annex I habitat features Cardigan Bay SAC Dee Estuary SAC Lleyn Peninsula and the Sarnau SAC	**Construction** • Increase in suspended sediment concentration as a result of foundation installation • Increase in suspended sediment concentration as a result of inter-array	• Increase in suspended sediment concentration from foundation construction • Increase in suspended sediment concentration from inter-array cabling • Habitat loss

Designated sites	iImpacts in submission information	Presented in matrices as
Menai Strait and Conwy Bay SAC Murlough SAC Pembrokeshire Marine SAC River Dee and Bala Lake SAC Sefton Coast SAC Shell Flat and Lune Deep SAC Skerries and Causeway SAC Strangford Lough SAC The Maidens SAC	cable installation • Direct habitat loss	
	Operation • Changes to sediment transport regime due to turbine presence • Indirect habitat loss	• Changes in sediment transport • Habitat loss
	Decommissioning	• Increase in suspended sediment concentration
	In-combination • Interaction of sediment plumes from other sources	• Interaction sediment plumes

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

In-combination impacts

2.6 The applicant has addressed in-combination impacts within the matrices. The following wind farms have been included in the in-combination assessment carried out by the applicant:

- West of Duddon Sands
- Walney I and II

- Walney Extension
- Ormonde
- Rhyl Flats
- Barrow
- Navitus Bay
- North Hoyle
- Gwynt y Môr
- Atlantic Array
- Rhiannon
- Codling Park
- Oriel

2.7 The applicant drew on the information in the Environmental Statements (ES) for the projects listed above to inform the in-combination assessment for Burbo Bank Extension. However the ESs for these other wind farms did not always contain the data that the applicant required for in-combination assessment. Collision risk modelling for instance was only undertaken for some of the wind farms. Through the course of the examination the applicant and the Statutory Nature Conservation Bodies (SNCBs) came to an agreement about which wind farms should be included within the in-combination assessment and how the issues around missing data should be addressed.

2.8 It should be noted that on 26 November 2013 Channel Energy Ltd withdrew the application for the Atlantic Array wind farm. References to it within the screening and integrity matrices have been retained since it formed part of the applicant's Habitats Regulations Assessment (HRA).

Mitigation measures

2.9 The applicant's HRA Report details the mitigation measures embedded in the Project (see Table 8.1).

2.10 During the course of the examination the applicant and the SNCBs also agreed on amendments to the Development Consent Order/Deemed Marine Licence to address concerns raised by the SNCBs. These were:

- A condition on the Deemed Marine Licence requiring a vessel traffic management plan during construction and operation of the authorised scheme, to include vessel routing for any vessels operating from the Port of Barrow such that all such vessels avoid the area of the Liverpool Bay SPA plus a 2km buffer from

the boundary of the SPA during the period October to March and in the area north of grid reference 53.41.0 N in order to avoid the disturbance of wintering aggregations of common scoter at, and in the vicinity of, the Shell Flat (see draft DCO version dated February 2014 Schedule 2, Part 2, Condition 11).

- A condition on the DCO and DML to reduce the impacts on adult salmon migration by restricting the combination of size and number of monopile foundations (see draft DCO version dated February 2014, Schedule 2, requirement 5(4)

Issues

2.11 The following issues arise that readers of this report need to be aware of:

- Works are proposed in English waters under the DCO and in Welsh waters and in Wales under other consent processes. They give rise to effects in England and English waters, Wales and Welsh waters;
- The applicant has proposed changes to the application; and
- Concerns have been raised about the applicant's ornithological data, modelling and assessment.

The location of works, effects and consent processes

2.12 The works that would be consented under the DCO are the construction and operation of the Burbo Bank Extension wind farm, offshore substations, inter-array cabling and the export cable within English waters. Consent for the section of the export cable within Welsh waters is being sought under a Marine Licence application made to Natural Resources Wales which remains under consideration. Consent for onshore works in Wales under an application for planning permission was sought from Denbighshire County Council and granted in November 2013.

2.13 The applicant's HRA report covers the potential effects of the Project from both the DCO works and the export cable in both English and Welsh waters. The Environmental Statement covers works in English waters, Welsh waters and on land in Wales. When the Project was accepted for examination it was noted in the section 55 checklist that the scope of the HRA Report differed both from that of the Environmental Statement (ES) and from the works described in the DCO. In response to this, and to section 51 advice from the Planning Inspectorate the applicant provided a note clarifying which of the effects assessed in the HRA Report and ES and which mitigation measures are pertinent to the DCO (see the applicant's written response to Deadline I, Appendix 4).

2.14 NRW is the competent authority for the purposes of the Habitats Directive and the 2010 Habitats Regulations for the Marine Licence application in relation to works in Welsh waters. This RIES may assist NRW in performing its duties in respect of the effects of works proposed in English waters in combination with works in Wales and in Welsh waters, on relevant European sites and features.

2.15 NRW has provided the ExA with a draft version of the Marine Licence (Appendix 1 of NRW's response to deadline V). This was supplied on the understanding that the draft is entirely without prejudice to any subsequent determination of the licence by the decision-maker in Wales.

2.16 NRW has also advised on the areas they will consider in relation to the HRA of the licence (listed below) (see NRW's response to Deadline V).

- Potential disturbance effects on common scoter (feature of Liverpool Bay SPA) arising from vessels associated with the cabling works
- Potential effects on sediment transport supporting the Dee Estuary SAC and Mersey Narrows and North Wirral Foreshore SPA, Mersey Estuary SPA and the Sefton Coast SAC arising from cable burial and protection
- Potential effects on the Dee Estuary SAC and River Dee and Bala Lake SAC fish features (particularly sea lamprey and river lamprey) arising from electromagnetic fields.

2.17 NRW is aware that the applicant has provided a number of clarification notes in relation to the DCO examination which they will take into account if necessary (see NRW response to Deadline V).

2.18 This RIES has taken account of the effects of works proposed in Wales and in Welsh waters in combination with works in English waters, on relevant European Sites and features.

2.19 NRW is the competent authority for the purposes of the Habitats Directive and the 2010 Habitats Regulations for the Marine License application in relation to works in Welsh waters. This RIES may assist NRW in performing its duties in respect of the effects of works proposed in English waters in combination with works in Wales and in Welsh waters, on relevant European Sites and features.

Changes to the application

2.20 In their response to the Rule 6 letter from the ExA the applicant sought to amend their proposals to raise the installed capacity from

258MW to 259MW. They provided an audit of their ES and HRA report to establish whether the change in installed capacity affected the assessments within their ES and HRA Report. The applicant's conclusion was that the increase in installed capacity would not affect the conclusions within the ES and HRA Report (see the applicant's written response to Deadline I, Appendix 5).

Ornithological data, modelling and assessment concerns

2.21 In their relevant representations NE and NRW raised concerns about the applicant's baseline ornithological data, in particular the use of historic data. The Royal Society for the Protection of Birds (RSPB) also raised concerns in their written representations. The applicant produced a series of clarification notes as part of their written response to Deadline I. NE and NRW were then able to agree that they were able to accept the applicant's baseline data (see the applicant's written response to Deadline I, Appendices 55 and 57).

2.22 NRW, NE and the RSPB also raised concerns about the applicant's modelling of ornithological impacts. Particular concerns were raised about the choice of collision risk model. The SNCBs recommend the use of Band model option 1, while the applicant views Band model option 3 as being the most appropriate. However the parties were able to compromise on the use of Band model option 2. The choice of recovery factor ('*F*') used in the applicant's Potential Biological Removal modelling was also the subject of debate. However the applicant was able to demonstrate that the numbers of birds likely to be killed through collision with turbines was such that the *F* factors were small enough to meet the SNCB's concerns (see matrices 1, 3 and 4 in Section 4 of this report). This summarisation takes account of additional oral submissions on lesser black-backed gull at the Issue Specific Hearing held from 28-30 January 2014 and associated written responses submitted for Deadlines IV and V.

2.23 NRW, NE and the RSPB also raised concerns about the applicant's assessment of displacement effects on red-throated diver. These related in chief to the choice of scenarios used in assessing displacement and the consideration of density-dependent mortality. Taking account of additional oral submissions on red-throated diver at the Issue Specific Hearing held from 28-30 January 2014 and associated written responses submitted for Deadlines IV and V, no agreement has so far been reached on these points (see matrix 2 in Section 4.0 of this report).

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Likely significant effects

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

- Bowland Fells SPA (breeding lesser black-backed gulls only)
- Liverpool Bay SPA (over-wintering red-throated diver only)
- Mersey Narrrows and North Wirral Foreshore SPA (common tern)
- Morecambe Bay SPA (breeding lesser black-backed gulls only)
- Ribble and Alt Estuaries and Ramsar (breeding lesser black-backed gulls only)
- River Dee and Bala Lake SAC (Atlantic salmon only)

2.25 The scope of the screening exercise and its conclusion has been agreed with NE and NRW (see Statements of Common Ground applicant's Written Response to Deadline I, Appendices 55,56 and 57).

2.26 The features of the European sites detailed above have therefore been taken forward to the integrity matrices in Section 4 of this report.

Effects on integrity

2.27 The applicant concluded that the project will not adversely affect the integrity of the European sites and features detailed in paragraph 2.22. This was agreed with NE and NRW with the exception of the red-throated diver feature of Liverpool Bay SPA.

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3.0 STAGE 1: SCREENING FOR LIKELY SIGNIFICANT EFFECTS

Background

3.1 The Burbo Bank Extension offshore wind farm 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 Burbo Bank Extension offshore wind farm in relation to the potentially affected European sites.

Stage 1 Matrices Key

3.3 ✓ = Applicant has concluded that significant effects cannot be excluded

X = Applicant has concluded that significant effects can be excluded

? = Applicant's conclusions disputed by an interested party

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

Name of European site: Aberdaron Coast and Bardsey Island SPA												
Distance to NSIP: 180 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 (breeding)	Xa	Xc,d	Xa	Xb		Xb		Xe		Xf	Xf	Xf
Chough (breeding and wintering)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg

Evidence supporting conclusions:

a: Manx shearwater 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 (see the applicant's HRA Report Section 5, Table 5.1).

b: Manx shearwater show flexibility with respect to foraging area and have a varied diet. In the applicant's view, 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 the applicant's HRA Report Section 5, Table 5.1).

c: Maximum numbers of Manx shearwater were recorded during the dispersal period indicating, in the applicant's view, that the site is not important for foraging during the breeding season. This is supported by only 28% of birds observed foraging during surveys. The Irish Sea provides vast alternative habitat for Manx shearwater and, in addition, the species is highly flexible in its habitat use (see the applicant's HRA Report Section 5, Table 5.2). NRW expressed concerns in their relevant representations on the apportionment of birds to different SPA populations (see NRW's relevant representations Annex 1, paragraph 2.1). The applicant undertook additional analysis which was presented in Appendix 9, Paper 1 of the applicant's written response to Deadline I. NRW agree that, as the analysis showed that even at 100% mortality of displaced birds only 0.2 % of the population would be affected, a significant effect was unlikely (see NRW's written representations, Annex E paragraphs 25-27).

d: Low densities present within the Burbo Bank Extension offshore wind farm site and it is expected that birds will continue to pass through the wind farm site during operation, so no predicted barrier effect (see the applicant's HRA Report Section 5, Table 5.2).

e: No collisions of Manx shearwater were predicted to occur at a 98% avoidance rate (see the applicant's HRA Report, Section 5, Table 5.2).

f: Maximum numbers of Manx shearwater were recorded during the dispersal period indicating in the applicant's view that the site is not important for foraging during the breeding season, this is supported by only 28% of birds observed foraging during surveys. The Irish Sea provides vast alternative habitat for Manx shearwater and, in addition, the species is highly flexible in its habitat use (see the applicant's HRA Report Section 5, Table 5.1). Whilst there is potential for in-combination effects during operation of the Burbo Bank Extension offshore wind farm with Rhiannon and Walney wind farms due to the large densities of birds present within the Irish Sea Zone, the applicant is of the view that the Burbo Bank Extension offshore wind farm would only make a small contribution to any cumulative displacement effects due to the low numbers of this species present within the Burbo Bank Extension offshore wind farm site (see the applicant's HRA Report Section 7.2, Table 7.6). The applicant has also concluded that there is no potential for in-combination significant effects from collision risk due to the low proportion of birds surveyed at risk height (see the applicant's HRA Report Section 7.2, Table 7.6). NRW expressed concerns in their relevant representations on the adequacy of the in-combination assessment (see NRW's relevant representations Annex 1, paragraph 2.1). The applicant undertook additional analysis which was presented in Appendix 9, Paper 1 of the applicant's written response to Deadline I. NRW agree that, if displacement is considered for the 3 relevant wind farms (Atlantic Array, Walney and the Burbo Bank Extension offshore

wind farm), even at 100% displacement and 100% mortality of displaced birds, this would be unlikely to have a significant effect (NRW's written representations, Annex E paragraphs 25-27).

g: Not present in the Burbo Bank Extension offshore wind farm site surveys (see the applicant's HRA Report Section 3.7, Table 3.5).

Stage 1 Matrix 2: Bowland Fells SPA

Site Code: UK9005151

Name of European site: Bowland Fells SPA												
Distance to NSIP: 55 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 (breeding)	Xa	Xa,b	Xa	Xa		Xa		✓c		Xa	✓d	Xa
Hen harrier (breeding)	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe
Merlin (breeding)	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe

Evidence supporting conclusions:

a: Lesser black-backed gull 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 applicant's HRA Report Section 5, Table 5.1).

b: Lesser black-backed gulls will continue to pass through the Burbo Bank Extension offshore wind farm area during the operational phase and no barrier to movement is predicted by the applicant (see applicant's HRA Report Section 5, Table 5.2).

c: The applicant's HRA Report identified, at a 98% avoidance rate, a total of 176 lesser black backed gull collisions, indicating the potential for a likely significant effect (see applicant's HRA Report Section 5, Table 5.2). NE raised concerns about the applicant's assessment (see NE's relevant representations paragraph 2.2.1). They agree with the applicant that likely significant effects cannot be excluded (see applicant's written response to Deadline I, Appendix 55 Statement of Common Ground with NE paragraph 9.3).

d: A likely significant effect is predicted in the applicant's HRA Report for the Burbo Bank Extension offshore wind farm alone and further collisions from the operation of the wind farms listed in Table 7.2 will increase the annual collision rate, see applicant's HRA Report Section 7.2, Table 7.6. NE raised concerns about the applicant's assessment (see NE's relevant representations, paragraph 2.2.1). NE agree with the applicant that likely significant effects cannot be excluded (see applicant's written response to Deadline I, Appendix 55 Statement of Common Ground with NE, paragraph 9.3)

e: These terrestrial species were not recorded at the Burbo Bank Extension offshore wind farm site.

Stage 1 Matrix 3: Cardigan Bay SAC

Site Code: UK9005151

Name of European site: Cardigan Bay SAC															
Distance to NSIP: 240 km															
European site features (marine mammals)	**Likely Effects of NSIP**														
	Disturbance			*Collision*			*Indirect effects*			*Habitat loss*			*In-combination effects*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Grey seal	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa	Xa		Xa	Xa	Xa	Xa
Bottlenose dolphin	Xb	Xb	Xb	Xb	Xb	Xb	Xb		Xb	Xb		Xb	Xb	Xb	Xb
Sea lamprey	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc
River lamprey	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc

Sandbanks which are slightly covered by sea water all the time	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc
Reefs	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc
Submerged or partially submerged sea caves	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc	Xc

Evidence supporting conclusions:

a: Low numbers of grey seal surveyed during 2006 and 2008, and due to the distance between the Burbo Bank Extension offshore wind farm site and SAC no likely significant effects are predicted by the applicant, see Section 4.5, Table 4.3 of the applicant's HRA Report. NRW have confirmed that, in view of the short anticipated piling duration and the pending provision of a suitable marine mitigation protocol, they have concluded that the proposal will not adversely affect the integrity of the SAC (NRW's relevant representations Annex 1, paragraph 3.1).

b: Given the rare occurrence of bottlenose dolphin in the Liverpool Bay area and the distance of the Burbo Bank Extension offshore wind farm from the SAC no likely significant effects are predicted by the applicant, see Section 4.5, Table 4.3 of the applicant's HRA Report. NRW have confirmed that, in view of the short anticipated piling duration and the pending provision of a suitable marine mitigation protocol they have concluded that the proposal will not adversely affect the integrity of the SAC (NRW's relevant representations Annex 1, paragraph 3.1).

c: These features are not assessed in the applicant's HRA Report. The applicant defined receptor specific study areas within their HRA Report (see paragraph 3.2.1 and Table 3.1) and these features do not appear to fall within those study areas defined in the applicant's HRA Report. It should also be noted that no interested parties have raised any concerns about potential impacts on these features.

Stage 1 Matrix 4: Copeland Islands SPA

Site Code: UK9020291

Name of European site: Copeland Islands SPA												
Distance to NSIP: 200 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 (breeding)	Xa	Xc,d	Xa	Xb		Xb		Xe		Xa	Xf	Xa
Arctic tern (breeding)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg

Evidence supporting conclusions:

a: Manx shearwater 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 (see the applicant's HRA Report Section 5, Table 5.1).

b: Manx shearwater show flexibility with respect to foraging area and have a varied diet. In the applicant's view, 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 the applicant's HRA Report Section 5, Table 5.1).

c: Maximum numbers of Manx shearwater were recorded during the dispersal period indicating, in the applicant's view, that the site is not important for foraging during the breeding season. This is supported by only 28% of birds observed foraging during surveys. The Irish Sea provides vast alternative habitat for Manx shearwater and, in addition, the species is highly flexible in its habitat use (see the applicant's HRA Report Section 5, Table 5.2).

d: Low densities present within the Burbo Bank Extension offshore wind farm site and it is expected that birds will continue to pass through the wind farm site during operation, so no predicted barrier effect (see the applicant's HRA Report Section 5, Table 5.2).

e: No collisions of Manx shearwater were predicted to occur at a 98% avoidance rate (see the applicant's HRA Report, Section 5, Table 5.2).

f: Maximum numbers of Manx shearwater were recorded during the dispersal period indicating the site is not important for foraging during the breeding season, this is supported by only 28% of birds observed foraging during surveys. The Irish Sea provides vast alternative habitat for Manx shearwater and, in addition, the species is highly flexible in its habitat use (see the applicant's HRA Report Section 5, Table 5.1). Whilst there is potential for in combination effects during operation of the Burbo Bank Extension offshore wind farm with Rhiannon and Walney wind farms, due to the large densities of birds present within the Irish Sea Zone the applicant is of the view that the Burbo Bank Extension offshore wind farm would only make a small contribution to any cumulative displacement effects due to the low numbers of this species, present within the Burbo Bank Extension offshore wind farm site (see the applicant's HRA Report Section 7.2, Table 7.6). NRW expressed concerns in their relevant representations on the adequacy of the in-combination assessment (see NRW's relevant representations Annex 1, paragraph 2.1). The applicant undertook additional analysis which was presented in Appendix 9, Paper 1 of the applicant's written response to Deadline I. NRW do not specifically refer to the Copeland Islands SPA in Annex E to their written representations. However, the SoCG between NRW and the applicant identifies where areas of disagreement remain and the effects on the Copeland Islands SPA are not included (see the applicant's written response to Deadline I, Appendix 57).

g: No Arctic tern were recorded in site surveys, see the applicant’s HRA Report Section 3.7, Table 3.5.

Stage 1 Matrix 5: The Dee Estuary SPA

Site code: UK9013011

Name of European site: The Dee Estuary SPA												
Distance to NSIP: 6 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*
Common tern (breeding)	Xa,u	Xc,d,u	Xa,u	Xb,u		Xb,u		Xe		Xh,u	Xf,g,u	Xf,u
Little tern (breeding)	Xi	Xi	Xi	Xi		Xi		Xi		Xi	Xi	Xi
Sandwich tern (on passage)	Xj,u	Xk,l,u	Xj,u	Xj,u		Xj,u		Xm,u		Xn,u	Xn,u	Xn,u
Bar-tailed godwit (over wintering)	Xo	Xo	Xo	Xo		Xo		Xo		Xo	Xo	Xo
Redshank (on passage)	Xo	Xo	Xo	Xo		Xo		Xo		Xo	Xo	Xo
Black-tailed godwit (over wintering)	Xo	Xo	Xo	Xo		Xo		Xo		Xo	Xo	Xo
Curlew (over wintering)	Xo	Xo	Xo	Xo		Xo		Xo		Xo	Xo	Xo
Dunlin (over wintering)	Xo	Xo	Xo	Xo		Xo		Xo		Xo	Xo	Xo

Grey plover (over wintering)	Xo	Xo	Xo	Xo		Xo		Xo		Xo	Xo	Xo
Knot (over wintering)	Xo	Xo	Xo	Xo		Xo		Xo		Xo	Xo	Xo
Oystercatcher (over wintering)	Xo	Xo	Xo	Xo		Xo		Xo		Xo	Xo	Xo
Pintail (over wintering)	Xo	Xo	Xo	Xo		Xo		Xo		Xo	Xo	Xo
Redshank (over wintering)	Xo	Xo	Xo	Xo		Xo		Xo		Xo	Xo	Xo
Shelduck (over wintering)	Xo	Xo	Xo	Xo		Xo		Xo		Xo	Xo	Xo
Teal (over wintering)	Xo	Xo	Xo	Xo		Xo		Xo		Xo	Xo	Xo
Waterfowl assemblage including cormorant	Xo,p,u	Xo,q,r,u	Xo,p,u	Xo,p,u		Xo,p,u		Xo,s,u		Xo,t,u	Xo,t,u	Xo,t,u

Evidence supporting conclusions:

a: Common tern were primarily recorded during passage periods with a lower reliance on the Burbo Bank Extension offshore wind farm site and with a notable low proportion of birds observed exhibiting foraging behaviour (8.7%). See Section 5, Table 5.1 of the applicant's HRA Report.

b: Terns have a specialised diet, being dependent on clupeids and sandeels (Stienen *et al.,* 2000). Sandeels are relatively insensitive to noise effects (Jensen *et al.,* 2004) so potential noise effects are more likely to disturb or displace clupeids from the region around the wind farm. None of the tern species show any particular reliance on the Burbo Bank Extension offshore wind farm site, with only a few individuals recorded foraging during boat-based surveys. See Section 5, Table 5.1 of the applicant's HRA Report.

c: As a generalist forager, common tern is likely to exploit a wide range of prey in a variety of habitats, foraging in inshore areas whenever the opportunity arises (Brown and Grice, 2005), therefore this species is not expected to be displaced from the wind farm area. See Section 5, Table 5.2 of the applicant's HRA Report.

d: Post-construction studies of offshore wind farms show there is evidence that terns show relatively little avoidance of wind farms, and are unlikely to perceive them as a barrier (Pettersson 2005). At Zeebrugge, terns routinely fly through the line of turbines with no apparent deviation (Everaert and Stienen 2007). See Section 5, Table 5.2 of the applicant's HRA Report.

e: The applicant initially identified a potential significant effect which required further analysis (See Section 5, Table 5.2 of the applicant's HRA Report). However, NE's relevant representations indicated that the Dee Estuary SPA no longer supports a breeding population of common tern (see paragraph 5.1.1). As a result of this the additional analysis provided by the applicant in Appendix 16 of the applicant's written response to Deadline I did not include the common tern population at this SPA.

f: Common tern were identified as a sensitive receptor in the Environmental Statements for Rhyl Flats, North Hoyle and Gwynt Y Môr. Evidence from existing wind farms is that tern species will continue to forage within operational wind farms and there is no reason to suspect that the cumulative magnitude of any avoidance or displacement effect will be greater than that which was predicted for the Burbo Bank Extension offshore wind farm alone. See Section 7.2, Table 7.6 of the applicant's HRA Report.

g: NE has advised in their relevant representations that no breeding population of common tern currently exists at the Dee Estuary SPA (see NE's relevant representations, paragraph 5.1.1). This means that there is no potential for in-combination effects on the SPA population.

h: There is no potential for in-combination construction impacts, no offshore wind farms within foraging range will be constructed at the same time as the Burbo Bank Extension offshore wind farm. See Section 7.2, Table 7.5 of the applicant's HRA Report.

i: No little tern were recorded in site surveys, see Section 3.7, Table 3.5 and Section 4.6, Table 4.4 (footnote 3) of the applicant's HRA Report.

j: Sandwich tern were primarily recorded during the passage period with a low proportion of birds exhibiting foraging behaviour (21.4%). Terns are highly mobile foragers (Furness and Wade, 2012) and hence not considered vulnerable to boat traffic or construction activity. Tern species do not seem to show any particular reliance on wind farm site. No likely significant effect is predicted during the construction and decommissioning phases. See Section 5, Table 5.1 of the applicant's HRA Report.

k: Sandwich tern does not appear to be displaced by operational wind farms (Pettersson, 2005; Petersen *et al.,* 2006). Highest densities in the Burbo Bank Extension offshore wind farm site occurred during passage periods when displacement is unlikely. See Section 5, Table 5.2 of the applicant's HRA Report.

l: As a passage feature there is potential for wind farms to present a barrier to migratory movement. In the applicant's view, given the size of the wind farm, any additional movement will represent a negligible increase in overall flight distances and is unlikely to result in any additional energetic cost (Masden *et al.,* 2009, 2010). See Section 5, Table 5.2 of the applicant's HRA Report.

m: Only 1.5 collisions per annum were predicted during the passage period for this species at a 98% avoidance rate. See Section 5, Table 5.2 of the applicant's HRA Report.

n: Only the construction phase of Atlantic Array (see paragraph 2.8 of this report) and Navitus Bay offshore wind farms have the potential to occur simultaneously with the construction phase of the Burbo Bank Extension offshore wind farm (see the applicant's HRA Report, Table 7.3). Construction related effects from both projects will not interact. In addition Atlantic Array and Navitus Bay are outside the main migratory routes for this species (see applicant's HRA Report Table 7.9).

o: No wildfowl or wader species were recorded on site and consequently no likely significant effect is anticipated for the wader and wildfowl assemblage species that are a feature of the coastal and estuarine sites in the vicinity of the proposed Burbo Bank Extension offshore wind farm . See Section 4.6, paragraphs 4.6.5-4.6.10 of the applicant's HRA Report. NB: The applicant's original matrices did not refer to this features individually but simply as 'waterfowl species'. It has been assumed that footnote (o) therefore applies to this species or assemblage.

p: Cormorant spend a substantial proportion of their activity cycle on water and show some sensitivity to disturbance from boat traffic and construction activity (Furness & Wade, 2012). However densities recorded in the Burbo Bank Extension offshore wind farm site were low with the majority of birds transiting or associated with structures and no birds observed foraging in the area. See Section 5, Table 5.1 of the applicant's HRA Report.

q: During the wintering period cormorant tend to favour inshore waters and therefore displacement during the operational phase of the Burbo Bank Extension offshore wind farm is not considered to be significant. See Section 5, Table 5.2 of the applicant's HRA Report.

r: Recent studies at Egmond aan Zee in the Netherlands (Lindeboom *et al.,* 2011) have shown that cormorant have used that wind farm, employing the turbine bases as perches and fishing within the site, therefore barrier effects on this species are not anticipated. See Section 5, Table 5.2 of the applicant's HRA Report.

s: At an avoidance rate of 98% 15 cormorant collisions predicted representing 0.5% of the collective SPA population. See Section 5, Table 5.2 of the applicant's HRA Report.

t: Monitoring surveys from North Hoyle recorded cormorant nesting in the met mast with no significant change in usage of the site between construction and operational phases. Low densities of cormorant were recorded in monitoring surveys from Rhyl flats and during boat based surveys of Gwynt-Y-Môr few cormorant were recorded within the Burbo Bank Extension offshore wind farm site. See the applicant's HRA Report Section 7.2, Table 7.8.

u: NE initially highlighted potential risk to this feature in their relevant representations (see paragraph 5.3.5) but in response to the ExA's first round of questions stated that they agreed with the applicant's analysis of the effects on this SPA (see NE's written representations, response to question 1.11).

Stage 1 Matrix 6a: The Dee Estuary Ramsar (bird features)

Site code: UK11082

Name of European site: The Dee Estuary Ramsar												
Distance to NSIP: 6 km												
Ramsar site bird 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*
Ramsar criterion 5: Assemblage of wintering waterbirds	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Ramsar criterion 6: redshank (spring/autumn peak counts)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Teal (winter peak counts)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Shelduck (winter peak counts)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Oystercatcher (winter peak counts)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa

Curlew (winter peak counts)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Pintail (winter peak counts)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Grey plover (winter peak counts)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Knot (winter peak counts)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Dunlin (winter peak counts)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Black-tailed godwit Iceland (breeding)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Bar-tailed godwit	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Redshank	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa

Evidence supporting conclusions:

a: No wildfowl or wader species were recorded on site and consequently no likely significant effect is anticipated for the wader and wildfowl assemblage species that are a feature of the coastal and estuarine sites in the vicinity of the proposed Burbo Bank Extension offshore wind farm. See Section 4.6, paragraphs 4.6.5-4.6.10 of the applicant's HRA Report. NB: The applicant's original matrices did not refer to this features individually but simply as 'wintering waterbirds'. It has been assumed that footnote (a) therefore applies to this feature.

Stage 1 Matrix 6b: The Dee Estuary Ramsar (other features)

Site code: UK11082

Name of European site: Dee Estuary Ramsar															
Distance to NSIP: 6 km															
Ramsar site features	**Likely Effects of NSIP**														
	Increase in suspended sediment concentration from foundation construction			*Increase in suspended sediment concentration from inter-array cabling*			*Habitat loss*			*Changes to sediment transport*			*Sediment plume interaction*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Ramsar criterion 1: Estuaries	Xa		Xa	Xb			Xc	Xd			Xd		Xe		Xe
Mudflats and sandflats not covered by seawater at low tide	Xa		Xa	Xb			Xc	Xd			Xd		Xe		Xe
Salicornia and other annuals colonising mud and sand	Xa		Xa	Xb			Xc	Xd			Xd		Xe		Xe
Annual vegetation of drift lines	Xa		Xa	Xb			Xc	Xd			Xd		Xe		Xe

Vegetated sea cliffs of the Atlantic and Baltic coasts	Xf		Xf	Xf			Xc	Xc			Xf		Xf		Xf
Embryonic shifting dunes	Xf		Xf	Xf			Xf	Xf			Xf		Xf		Xf
Shifting dunes along the shoreline with Ammophila arenaria ('white dunes')	Xf		Xf	Xf			Xf	Xf			Xf		Xf		Xf
Fixed dunes with herbaceous vegetation ('grey dunes')	Xf		Xf	Xf			Xf	Xf			Xf		Xf		Xf
Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Xf		Xf	Xf			Xc	Xc			Xf		Xf		Xf
Humid dune slacks	Xf		Xf	Xf			Xf	Xf			Xf		Xf		Xf
Ramsar criterion 2: breeding colonies of natterjack toad	Xg	Xg	Xg	Xg	Xg	Xg	Xg	Xg	Xg	Xg	Xg	Xg	Xg	Xg	Xg

Evidence supporting conclusions:

NB: The footnotes for the applicant's matrices refer to Table 4.2 which only refers to the Dee Estuary SAC.

a: Sand and coarser sediment deposition generally occurs within 260m of the release point and the applicant's assessment considers the potential for an impact up to one tidal excursion (in the region of 11 km) from the source of the impact (see the applicant's HRA Report, paragraphs 3.2.1 and 4.4.9); given the distance between turbines will be 700m (minimum) in the applicant's view there is unlikely to be any interaction between plumes created by simultaneous drilling.

b: Evidence from suspended sediment concentration (SSC) monitoring at the existing site showed that cable installation had small scale impacts on localised SSC. Effects were measurable only up to a few hundreds of metres away, never approaching the threshold level of 3,000 mg/l agreed with the regulatory authorities as part of the FEPA licence. See the applicant's HRA Report, paragraph 4.4.11.

c: The Burbo Bank Extension offshore wind farm site area is 6 km away from the boundary of the Dee Estuary Ramsar, and the export cable is 2 km away at its closest point. Consequently, it is considered by the applicant that there is no potential for a direct effect on habitat interest features of this Ramsar. See the applicant's HRA Report, Section 4.4, Table 4.2 and paragraph 4.4.21.

d: No far field effects are predicted during the operational phase, see the applicant's HRA Report, Section 4.4, Table 4.2. The SNCBs raised concerns in relation to Dee Estuary SAC. As the features affected for Dee Estuary Ramsar are similar to the features of the Dee Estuary SAC, it has been assumed for this RIES that the SNCB advice would be similar. The SNCBs raised concerns in their relevant representations about disruption to sediment supply (see NRW's relevant representations Annex 1, paragraph 2.5 and NE's relevant representations, paragraphs 5.3.1-5.3.4). The applicant undertook further analysis (see the applicant's Written response to Deadline I, Appendix Appendices 30 and 36). As these state that scour protection is not likely to be required for the export cable the SNCBs conclude that the Burbo Bank Extension offshore wind farm is unlikely to have a significant effect on the SAC (see NRW's written representations, Annex B, paragraphs 5.1.3-5.1.6 and NE's written representations, paragraphs 6.12.2–6.12.8). However, the SNCBs advise that, as the applicant intends to complete their Cable Burial Assessment post-consent, a condition should be inserted into the Deemed Marine Licence to deal with the situation should the export cable become exposed during operation (see NRW's written representations, Annex B, paragraph 5.1.7 and NE's written representations, paragraphs 6.12.9-6.12.10). The applicant however, is of the view that this is unnecessary because if it was unable to lay the cables to the required depth using the methodologies in the DCO they would have to apply for a separate Marine Licence (see applicant's Written response to Deadline II, paragraph 7.3).

e: As no far field effects are predicted to occur during the operational phase, there is no potential for interactive effects with other plans and projects in the area. See the applicant's HRA Report Section 4.4, paragraphs 4.4.15-4.4.20.

f: In the applicant's view the habitat features of this Ramsar site are located too far away from both the offshore and onshore components of the Burbo Bank Extension offshore wind farm site for an effect to be possible (see the applicant's HRA Report Section 4.4, paragraph 4.4.22).

g: This feature is not assessed in the applicant's HRA Report. The applicant defined receptor specific study areas within their HRA Report (see paragraph 3.2.1 and Table 3.1). This feature does not appear fall within those study areas defined

in the applicant's HRA Report. It should also be noted that no interested parties have raised any concerns about potential impacts on these features.

Stage 1 Matrix 7a: The Dee Estuary SAC (Annex I habitat features /non-marine species)

Site code: UK0030131

Name of European site: Dee Estuary SAC															
Distance to NSIP: 6 km															
European site features **(Annex I habitat features /species (non-marine))**	**Likely Effects of NSIP**														
	Increase in suspended sediment concentration from foundation construction			*Increase in suspended sediment concentration from inter-array cabling*			*Habitat loss*			*Changes to sediment transport*			*Sediment plume interaction*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Mudflats and sandflats not covered by seawater at low tide	Xa		Xa	Xb			Xc	Xd			Xd		Xe		Xe

Salicornia and other annuals colonising mud and sand	Xa		Xa	Xb			Xc	Xd			Xd		Xe		Xe
Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Xg		Xg	Xg			Xg	Xg			Xg		Xg		Xg
Estuaries	Xa		Xa	Xb			Xc	Xd			Xd		Xe		Xe
Annual vegetation of drift lines	Xa		Xa	Xb			Xc	Xd			Xd		Xe		Xe
Vegetated sea cliffs of the Atlantic and Baltic coasts	Xc		Xc	Xc			Xc	Xc			Xc		Xc		Xc
Embryonic shifting dunes	Xf		Xf	Xf			Xf	Xf			Xf		Xf		Xf
Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')	Xf		Xf	Xf			Xf	Xd			Xf		Xf		Xf
Fixed dunes with herbaceous vegetation ('grey dunes')	Xf		Xf	Xf			Xf	Xd			Xf		Xf		Xf
Humid dune slacks	Xg		Xg	Xg			Xg	Xg			Xg		Xg		Xg
Petalwort							Xf				Xf				

Evidence supporting conclusions:

a: Sand and coarser sediment deposition generally occurs within 260m of the release point and the applicant's assessment considers the potential for an impact up to one tidal excursion (in the region of 11 km) from the source of the impact (see the applicant's HRA Report, paragraphs 3.2.1 and 4.4.9): given the distance between turbines will be 700m (minimum) in the applicant's view there is unlikely to be any interaction between plumes created by simultaneous drilling.

b: Evidence from suspended sediment concentration (SSC) monitoring at the existing Burbo Bank wind farm showed that cable installation had small scale impacts on localised SSC. Effects were measurable only up to a few hundreds of metres away, never approaching the threshold level of 3000mg/l agreed with the regulatory authorities as part of the FEPA licence. See applicant's HRA Report, paragraph 4.4.11.

c: The Burbo Bank Extension offshore wind farm site area is 6 km away from the boundary of the Dee Estuary SAC, and the export cable is 2 km away at its closest point. Consequently, it is considered by the applicant that there is no potential for a direct effect on habitat interest features of this SAC, see applicant's HRA Report Section 4.4, Table 4.2 and paragraph 4.4.21.

d: No far field effects are predicted during the operational phase. See applicant's HRA Report Section 4.4, Table 4.2 and paragraph 4.4.20. The SNCBs raised concerns in their relevant representations about disruption to sediment supply (see NRW's relevant representations, Annex 1, paragraph 2.5 and NE's relevant representations, paragraphs 5.3.1-5.3.4). The applicant undertook further analysis (see the applicant's written response to Deadline I, Appendix Appendices 30 and 36). As these state that scour protection is not likely to be required for the export cable the SNCBs conclude that the Burbo Bank Extension offshore wind farm is unlikely to have a significant effect on the SAC (see NRW's written representations, Annex B, paragraphs 5.1.3-5.1.6 and NE's written representations paragraphs 6.12.2–6.12.8). However, they advise that as the applicant intends to complete their Cable Burial Assessment post-consent a condition should be inserted into the Deemed Marine Licence to deal with the situation should the export cable become exposed during operation (see NRW's written representations, Annex B paragraph 5.1.7 and NE's written representations, paragraphs 6.12.9-6.12.10). The applicant however, is of the view that this is unnecessary because if it was unable to lay the cables to the required depth using the methodologies in the DCO they would have to apply for a separate Marine Licence (see applicant's written response to Deadline II, paragraph 7.3).

e: As no far field effects will occur during the operational phase, there is no potential for interactive effects with other plans and projects in the area, see the applicant's HRA Report Section 4.4, paragraphs 4.4.15-4.4.20.

f: In the applicant's view the habitat features of this Ramsar site are located too far away from both the offshore and onshore components of the Burbo Bank Extension offshore wind farm site for an effect to be possible (see the applicant's HRA Report Section 4.4, paragraph 4.4.22).

g: This feature is not covered in the applicant's matrices or HRA Report, although the applicant's HRA Report does state that the Burbo Bank Extension offshore wind farm and the export cable are too far from the SAC to directly affect habitat features (see footnote (c) above). NRW in their relevant representations (see Annex 1, paragraphs 2.5) advised that the impacts on the dune features should be assessed. However, in their subsequent written representation they advise that it is possible to conclude, in relation to effects generated by scour protection, that habitat features are not likely to be significantly affected (see footnote (d) above).

Stage 1 Matrix 7b: The Dee Estuary SAC (migratory fish species)

Site code: UK0030131

Name of European site: Dee Estuary SAC															
Distance to NSIP: 6 km															
European site features (migratory fish species)	**Likely Effects of NSIP**														
	Death/injury			*Behavioural changes*			*Increases in suspended sediment concentration*			*Electro-magnetic field*			*In-combination effects*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Sea lamprey	Xa		Xa	Xb		Xb	Xc		Xc		Xd		Xe	Xd	Xe
River lamprey	Xa		Xa	Xb		Xb	Xc		Xc		Xd		Xe	Xd	Xe

Evidence supporting conclusions:

a: Both river and sea lamprey lack any specialist hearing structures and their ear is relatively simple (they have no swim bladder or anatomical structure tuned to amplify sound signals), therefore they are considered to be hearing generalists. Therefore, physiological effects on lamprey are usually considered likely to occur only when the organism is very close to a powerful noise source (Popper 2005; Popper and Hastings). See applicant's HRA Report Section 5, Table 5.3. NE raised

concerns about the possibility that lamprey can hear frequencies between 20-100 Hz (see NE's relevant representations, paragraph 5.4.2). The applicant provided additional information to NE (see 'Clarification Note to NE on hearing capabilities in lamprey', Appendix 25 of the applicant's written response to Deadline I). NE concluded that, given the piling restrictions within the DCO and the limited period for which piling will be undertaken (one calendar year) likely significant effect can be excluded (see NE's written representations paragraphs 16.15.4-16.15.5).

b: There is a lack of information available about hearing in lamprey species and no reported audiograms exist for these species, studies show avoidance response to low frequency sound. See applicant's HRA Report Section 5, Table 5.3.

c: Increases in suspended sediment concentration (SSC) during the construction phase are not predicted by the applicant to reach levels equivalent to those during storm events. In addition, as river and sea lamprey are highly mobile in the marine environment, not being restricted by geographical features, they will be able to avoid the localised areas where the highest increased SSCs are reached, see applicant's HRA Report Section 5, Table 5.3. The SNCBs raised concerns about the assessment of the effects of changes in SSC on lamprey (see NRW's relevant representations Annex 1, paragraph 2.5 and NE's relevant representations, paragraph 5.3.5). The applicant provided additional information (see applicant's written response to Deadline I Appendices 29 and 33). Based on the applicant's additional information, the SNCBs concluded that significant effects could be excluded (see NRW's written representations Annex A, paragraphs 5.2.1-5.2.4 and NE's written representations paragraph 6.13.2).

d: Electro-magnetic field (EMF) effects are predicted to occur in a relatively small area and not expected to cause a barrier to lamprey migration, see applicant's HRA Report Section 5, Table 5.4. NRW raised concerns that the approach to assessment had not been sufficiently precautionary (see NRW's relevant representations Annex 1, paragraphs 2.4). The applicant advised that their approach was in line with the requirements of National Policy Statement EN-3, paragraphs 2.6.75-2.6.77. The applicant also draws attention to Schedule 2, Part 2, condition 8(g)(i) of the draft DCO (version current at 28/10/13) which requires a desk-based assessment of attenuation of EMF, shielding and cable burial depth (see applicant's Written response to Deadline I, paragraphs 1.22.2-1.22.4). NRW agree that this is sufficient to avoid significant effects from the Burbo Bank Extension offshore wind farm (see NRW's written representations paragraphs 3.2.1-3.2.2).

e: Construction phase of the Burbo Bank Extension offshore wind farm is only likely to overlap with the construction of Atlantic Array (see paragraph 2.8 in this report) and Navitus Bay offshore wind farms, due to the distance between these

sites noise effects will not overlap (see the applicant's HRA Report. Table 7.3). The SNCBs agree that in-combination effects are unlikely to lead to significant effects with respect to piling noise, EMF or changes to SSC (see footnotes (a)-(d) above).

Stage 1 Matrix 8: The Duddon Estuary SPA

Site code: UK9005031

Name of European site: The Duddon Estuary SPA												
Distance to NSIP: 75 km												
European site features	**Likely Effects of NSIP**											
	Disturbance/ displacement/barrier effects			*Indirect effects*			*Turbine collision*			*In-combination effects*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Sandwich tern (breeding)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Ringed plover (passage)	Xb	Xb	Xb	Xb		Xb		Xb		Xb	Xb	Xb
Sanderling (passage)	Xb	Xb	Xb	Xb		Xb		Xb		Xb	Xb	Xb
Knot (wintering)	Xc	Xc	Xc	Xc		Xc		Xc		Xc	Xc	Xc
Pintail (wintering)	Xc	Xc	Xc	Xc		Xc		Xc		Xc	Xc	Xc

Redshank (wintering)	Xc	Xc	Xc	Xc		Xc		Xc		Xc	Xc	Xc
Waterfowl assemblage (wintering)	Xc	Xc	Xc	Xc		Xc		Xc		Xc	Xc	Xc

Evidence supporting conclusions:

a: The Burbo Bank Extension offshore wind farm site at 75 km distance, is beyond the mean maximum foraging range (Thaxter *et al.,* 2012) for this species. Consequently no likely significant effect on this breeding species at this SPA is anticipated by the applicant (see Stage 1, Matrix 8, footnote (a) of the revised matrices in the applicant's written response to Deadline I, Appendix 7).

b: The applicant's HRA Report considers the potential for collision risk for migratory waterfowl species (see paragraphs 4.6.5 to 4.6.10). Species using the designated sites adjacent to the Burbo Bank Extension offshore wind farm site (namely Dee Estuary SPA / Ramsar, Mersey Estuary SPA and Ramsar, Mersey Narrows and North Wirral Foreshore SPA and Ramsar) are assessed for collision risk (using the Migration Assessment Tool (MAT)). Designated sites further north (Ribble and Alt Estuaries, Morecambe Bay) are scoped out of that assessment (see applicant's HRA Report, paragraph 4.6.7). On that basis the applicant has scoped out Duddon Estuary SPA / Ramsar (to the north of Morecambe Bay) (see Stage 1, Matrix 8, footnote (b) of the revised matrices in the applicant's written response to Deadline I, Appendix 7).

c: The distance of the Burbo Bank Extension offshore wind farm site from the SPA, the absence of these species from the Burbo Bank Extension offshore wind farm site surveys (see applicant's HRA Report, paragraphs 4.6.5 to 4.6.10), and the findings of the MAT analysis (reported under footnote (b) above), in the applicant's view provides evidence that there will be no likely significant effect on these wintering species of the Duddon Estuary SPA (see Stage 1, Matrix 8, footnote (c) of the revised matrices in the applicant's written response to Deadline I, Appendix 7).

Stage 1 Matrix 9: The Duddon Estuary Ramsar

Site code: UK9005031

Name of European site: The Duddon Estuary Ramsar												
Distance to NSIP: 75 km												
European site features	**Likely Effects of NSIP**											
	Disturbance/ displacement/barrier effects			*Indirect effects*			*Turbine collision*			*In-combination effects*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Ramsar criterion 5: Internationally important numbers of wildfowl in winter	Xc	Xc	Xc	Xc		Xc		Xc		Xc	Xc	Xc
Ramsar criterion 4: Nationally important numbers of wildfowl on spring/autumn passage	Xb	Xb	Xb	Xb		Xb		Xb		Xb	Xb	Xb
Ramsar criterion 6: Knot (wintering)	Xc	Xc	Xc	Xc		Xc		Xc		Xc	Xc	Xc
Pintail (wintering)	Xc	Xc	Xc	Xc		Xc		Xc		Xc	Xc	Xc
Redshank (wintering)	Xc	Xc	Xc	Xc		Xc		Xc		Xc	Xc	Xc

Noteworthy: nationally important numbers of breeding Sandwich tern and Little tern	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Ramsar criterion 2: Natterjack toad	Xd	Xd	Xd	Xd		Xd		Xd		Xd	Xd	Xd

Evidence supporting conclusions:

a: The Burbo Bank Extension offshore wind farm site at 75 km distance, is beyond the mean maximum foraging range (Thaxter *et al.,* 2012) for this species. Consequently no likely significant effect on this breeding species at this SPA is anticipated by the applicant (see Stage 1, Matrix 9, footnote (a) of the revised matrices in the applicant's written response to Deadline I, Appendix 7).

b: The applicant's HRA Report considers the potential for collision risk for migratory waterfowl species (see paragraphs 4.6.5 to 4.6.10). Species using the designated sites adjacent to the Burbo Bank Extension offshore wind farm site (namely Dee Estuary SPA / Ramsar, Mersey Estuary SPA and Ramsar, Mersey Narrows and North Wirral Foreshore SPA and Ramsar) are assessed for collision risk (using the Migration Assessment Tool (MAT)). Designated sites further north (Ribble and Alt Estuaries, Morecambe Bay) are scoped out of that assessment (see applicant's HRA Report, paragraph 4.6.7). On that basis the applicant has scoped out Duddon Estuary SPA / Ramsar (to the north of Morecambe Bay) (see Stage 1, Matrix 9, footnote (b) of the revised matrices in the applicant's written response to Deadline I, Appendix 7).

c: The distance of Burbo Bank Extension offshore wind farm site from the SPA, the absence of these species from the Burbo Bank Extension offshore wind farm site surveys (see applicant's HRA Report, paragraphs 4.6.5 to 4.6.10), and the findings of the MAT analysis (reported under footnote (b) above), in the applicant's view provides evidence that there will be no likely significant effect on these wintering species of the Duddon Estuary SPA (see Stage 1, Matrix 9, footnote (c) of the revised matrices in the applicant's written response to Deadline I, Appendix 7).

d: These features are not assessed in the applicant's HRA Report. The applicant defined receptor specific study areas within their HRA Report (see paragraph 3.2.1 and Table 3.1). These features do not appear to fall within those study areas defined in the applicant's HRA Report. It should also be noted that no interested parties have raised any concerns about potential impacts on these features.

Stage 1 Matrix 10: Eileanan agus Sgeiran Lios mór SAC

Site code: UK0030182

Name of European site: Eileanan agus Sgeiran Lios mór SAC															
Distance to NSIP: 450 km															
European site features (marine mammals)	**Likely Effects of NSIP**														
	Disturbance			*Collision*			*Indirect effects*			*Habitat loss*			*In-combination effects*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Common (harbour seal)	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa	Xa		Xa	Xa	Xa	Xa

Evidence supporting conclusions:

a: Distribution of common (harbour) seals in the Irish Sea is mainly along the north-east coast of Northern Ireland, where a number of SACs are designated for the species. There are few records of common (harbour) seals in and around the Liverpool Bay area, see the applicant's HRA Report Section 4.5, Table 4.3. This SAC is approximately 450 km from the Burbo Bank Extension offshore wind farm site and the applicant considers it too distant for the Burbo Bank Extension offshore wind farm to cause a likely significant effect on the SAC. Scottish Natural Heritage (SNH) has confirmed they do not feel that there are any outstanding natural heritage issues that they wish to raise during the examination (see letter from SNH to the Planning Inspectorate dated 16 October 2013).

Stage 1 Matrix 11: Liverpool Bay SPA

Site code: UK9020294

Name of European site: Liverpool Bay SPA												
Distance to NSIP: 0 km (Burbo Bank Extension offshore wind farm site mainly within SPA)												
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 (over wintering)	✓a	✓a Xc	?Xe	Xb		Xb		Xd		?Xf	✓g	?Xf
Common scoter (over wintering)	?Xh	?Xh	?Xh	Xh		Xh		Xh		?Xf	?Xh	?Xf
Sandwich tern (subject to review)	Xi	XjXk	Xi	Xi		Xi		Xl		Xm	Xm	Xm
Common tern (subject to review)	Xn	Xo	Xn	Xn		Xn		Xp		Xq	Xq	Xn
Little gull (subject to review)	Xr	Xr	Xr	Xr		Xr		Xr		Xs	Xs	Xr

Cormorant (subject to review)	Xt	Xu,v Xv	Xt	Xt		X t		Xw		Xx	Xx	Xt
Arctic tern (subject to review)	Xy	Xy	Xy	Xy		Xy		Xy		Xy	Xy	Xy
Little tern (subject to review)	Xz	Xz	Xz	Xz		Xz		Xz		Xz	Xz	Xz

Evidence supporting conclusions:

a: Red-throated diver is a species of high sensitivity to disturbance, as a result there is potential for a likely significant effect during the construction and operational phases of the Burbo Bank Extension offshore wind farm. See applicant's HRA Report Section 5, Tables 5.1 and 5.2. NE, NRW and the RSPB agreed that significant effects were likely and also raised conerns about the applicant's assessment (see NE's relevant representations, paragraphs 4.2.1-4.2.5, NRW's relevant representations Annex 1, paragraphs 1.2.1-1.2.5 and RSPB's relevant representations).

b: Red-throated diver are already likely to be displaced from the wind farm site and so indirect effects are not considered to have a likely significant effect, see applicant's HRA Report Section 5, Table 5.1.

c: Red-throated diver are already likely to be displaced from the wind farm site and barrier effects are not considered by the applicant to have a likely significant effect as peak areas of red-throated diver have been noted to occur to the west and north of the Burbo Bank Extension offshore wind farm (Webb *et al.,* 2006) and as such, the Burbo Bank Extension offshore wind farm does not provide a material barrier to any potential communiting between these areas. See applicant's HRA Report Section 5, Table 5.2.

d: Low numbers of birds flying at rotor height with only 1 collision per annum predicted representing 0.1% of the SPA population. See applicant's HRA Report Section 5, Table 5.2.

e: Birds will already be displaced during the operational phase of the Burbo Bank Extension offshore wind farm, any displacement occurring during the decommissioning phase will not be of any greater effect, see applicant's HRA Report Section 5, Table 5.1.

f: No other projects are expected to act in-combination with the Burbo Bank Extension offshore wind farm during the construction phase to have a LSE on this in Liverpool Bay SPA (see applicant's HRA Report Section 7.2, Table 7.7). NE, NRW and the RSPB raised conerns about the applicant's assessment with regard to red-throated diver (see NE's relevant representations, paragraphs 4.2.1-4.2.5, NRW's relevant representations Annex 1, paragraphs 1.2.1-1.2.5 and RSPB's relevant representations).

g: There is potential for cumulative displacement effects to occur during operation of the Burbo Bank Extension offshore wind farm and other wind farm sites within the Liverpool Bay SPA, see applicant's HRA Report Section 7.2, Table 7.8. NE, NRW and the RSPB agreed that significant effects were likely and also raised conerns about the applicant's assessment (see NE's relevant representations, paragraphs 4.2.1-4.2.5, NRW's relevant representations Annex 1, paragraphs 1.2.1-1.2.5 and RSPB's relevant representations).

h: Small number of common scoters recorded within the Burbo Bank Extension offshore wind farm site, maximum population of 149 equating to 0.27% of the Liverpool Bay population (54,675) (see applicant's HRA Report Section 5, Table 5.1). In the applicant's view there is no potential for a likely significant effect on the population during any of the wind farm phases (for potential effects during construction and operation: see applicant's HRA Report Section 5, Tables 5.1 and 5.2, respectively; and for potential in-combination effects during contruction and operation: see (footnote (f) and applicant's HRA Report Section 7.2, Table 7.8, respectively).The applicant's conclusion was disputed by NE and NRW in relation to the potential effects of disturbance on this species (see NE's relevant representations paragraphs 5.2.1-5.2.2 and NRW's relevant representations Annex 1 paragraph 2.3).

NB: The applicant's matrix also referred to sandwich tern, common tern, little tern, cormorant, Arctic tern, little gull and a waterfowl assemblage as features of the SPA (see Stage 1, Matrix 11, of the revised matrices in the applicant's Written response to Deadline I, Appendix 7). NE also listed these features as potentially being affected by the proposed wind farm (see NE's relevant representations, paragraph 2.2.1). However, in response to the ExA's first round of questions NE explained that these features are those that JNCC are considering for future addition to the SPA citation and that they had only been included for awareness. There is no clear timetable for the addition of these features or any guarantee that

they will be added (see NE's written representations, response to question 1.12). There is no policy or legal requirement to consider these features; however since they could be added before the DCO for the Burbo Bank Extension offshore wind farm has been determined, they have been included in the RIES matrix.

i: Sandwich tern were primarily recorded during the passage period, with a low proportion of birds exhibiting foraging behaviour (21.4%). Terns are highly mobile foragers (Furness and Wade, 2012) and hence not considered vulnerable to boat traffic or construction activity. Tern species do not seem to show any particular reliance on wind farm site. No likely significant effect is predicted by the applicant during the construction and decommissioning phases. See the applicant's HRA Report Section 5, Table 5.1.

j: Sandwich tern does not appear to be displaced by operational wind farms (Pettersson, 2005; Petersen *et al.,* 2006). Highest densities in the Burbo Bank Extension offshore wind farm site occurred during passage periods when displacement is unlikely in the applicant's view. See the applicant's HRA Report Section 5, Table 5.2.

k: As a passage feature there is potential for wind farms to present a barrier to migratory movement, however given the size of the wind farm any additional movement will represent a negligible increase in overall flight distances and is unlikely, in the applicant's view, to result in any additional energetic cost (Masden *et al.,* 2009, 2010). See the applicant's HRA Report Section 5, Table 5.2.

l: Only 1.5 collisions per annum were predicted during the passage period for this species at an avoidance rate of 98%, see the applicant's HRA Report Section 5, Table 5.2.

m: Only the construction phase of Atlantic Array (see paragraph 2.8 in this report) and Navitus Bay offshore wind farm have the potential to occur simultaneously with the construction phase of the Burbo Bank Extension offshore wind farm (see the applicant's HRA Report, Section 7.2, Table 7.3). Construction related effects from both projects will not interact. Sandwich tern were recorded in low numbers during surveys of other wind farms in the Liverpool Bay SPA and as result a likely significant effect on Sandwich tern is not predicted by the applicant. See the applicant's HRA Report Section 7.2, Table 7.9. (NB this reference does not link to the evidence supporting the applicant's footnote – Table 7.9 states that Atlantic Array and Navitus Bay are outside the main migratory routes for this species). The applicant's HRA Report Section 7.2, Table 7.10 sets out the applicant's justification for the conclusion of no likely significant in-combination effects during operation of the Burbo Bank Extension offshore wind farm.

n: Tern species are highly mobile foragers that spend significant proportions of time in flight (Furness and Wade, 2012) and hence are not considered to be particularly vulnerable to disturbance by boat traffic or construction activity. None of the tern species show any particular reliance on the Burbo Bank Extension offshore wind farm site, with only a few individuals recorded foraging during boat-based surveys. No likely significant effects on common tern are predicted by the applicant during the construction and decommissioning phases of the Burbo Bank Extension offshore wind farm. See the applicant's HRA Report Section 5, Table 5.1.

o: As a generalist forager, common tern is likely to exploit a wide range of prey in a variety of habitats, foraging in inshore areas whenever the opportunity arises (Brown and Grice, 2005), therefore this species is not expected to be displaced from the Burbo Bank Extension offshore wind farm area. Post-construction studies of offshore wind farms show there is evidence that terns show relatively little avoidance of wind farms, and are unlikely to perceive them as a barrier (Pettersson 2005). See the applicant's HRA Report Section 5, Table 5.2.

p: Common tern is designated feature of several SPAs in the area; collision risk modelling predicted 12 collisions per annum, representing 0.94% of the cumulative SPA population (see the applicant's HRA Report Section 5, Table 5.2). In the applicant's view there is potential for likely significant effect on individual SPA populations (see the applicant's HRA Report Section 5, Table 5.2). NB This footnote included within the applicant's revised matrix appears to refer to cumulative effects but does not appear in the 'in-combination' column in the above matrix (see Stage 1, Matrix 11, footnote (p) of the revised matrices in the applicant's written response to Deadline I, Appendix 7).

q: Only the construction phase of Atlantic Array (see paragraph 2.8 in this report) and Navitus Bay offshore wind farm have the potential to occur simultaneously with the construction phase of the Burbo Bank Extension offshore wind farm (see the applicant's HRA Report Section 7.2, Table 7.3). Construction related effects from both projects will not interact. Evidence from existing wind farms is that tern species will continue to forage within operational wind farms and there is no reason to suspect that the cumulative impact of any avoidance or displacement effect will be of a greater magnitude than that predicted for the Burbo Bank Extension offshore wind farm alone. See Section 7.2, Tables 7.5 and 7.6.

r: Small numbers of birds found during the passage period with a low proportion of birds seen foraging within the Burbo Bank Extension offshore wind farm site. In the applicant's view there is no potential for likely significant effects during any of the Project phases (for potential effects during construction and operation: see applicant's HRA Report Section 5, Tables 5.1 and 5.2, respectively).

s: During construction no potential in-combinaiton likely significant effects are anticipated by the applicant as Atlantic Array (see paragraph 2.8 in this report) and Navitus Bay wind farm sites are outside migratory passage routes for this species, see the applicant's HRA Report, Section 7.2, Table 7.9. As a passage feature of the area little gull are unlikely to be at risk from displacement. Little gull were not identified as a sensitive receptor at any North Hoyle, Rhyl Flats or Gwynt-y-Môr offshore wind farms (see the applicant's HRA Report Section 7.2, Table 7.10). Relatively little is known regarding the eastward passage of little gulls. Records of little gulls moving north around or across Scotland in spring are extremely scarce (Cunningham 1983; Verrall & Bourne1982). That they fly south and around the Welsh coast and southern England is extremely unlikely, and not supported by any evidence. As the gulls move eastwards from Seaforth and Merseyside, they do so at great height (Smith 1987) and as result are unlikely to be at risk from in-combination collision effects (see the applicant's HRA Report, Section 7.2, Table 7.10).

t: Cormorant spend a substantial proportion of their activity cycle on water and show some sensitivity to disturbance from boat traffic and construction activity (Furness & Wade, 2012). However, densities recorded in the Burbo Bank Extension offshore wind farm site were low with the majority of birds transiting or associated with structures and no birds observed foraging in the area (see the applicant's HRA Report, Section 5, Table 5.1). NB Table 5.1 does not actually refer to cormorant as a feature of Liverpool Bay SPA so it has been assumed that the references to cormorant as a feature of Ribble and Alt Estuaries, Dee Estuary and Mersey Narrows and North Wirral Foreshore SPAs also apply to this SPA.

u: During wintering period cormorant tend to favour inshore waters and therefore displacement during the operational phase of the Burbo Bank Extension offshore wind farm is not considered to be significant (see the applicant's HRA Report, Section 5, Table 5.2). NB Table 5.2 does not refer to cormorant as a feature of Liverpool Bay SPA so it has been assumed that the references to cormorant as a feature of Ribble and Alt Estuaries, Dee Estuary and Mersey Narrows and North Wirral Foreshore SPAs also apply to this SPA.

v: Recent studies at Egmond aan Zee in the Netherlands (Lindeboom *et al.,* 2011) have shown that cormorant have used that wind farm, employing the turbine bases as perches and fishing within the site, therefore barrier effects on this species are not anticipated by the applicant, see the applicant's HRA Report Section 5, Table 5.2. NB Table 5.2 does not refer to cormorant as a feature of Liverpool Bay SPA so it has been assumed that the references to cormorant as a feature of Ribble and Alt Estuaries, Dee Estuary and Mersey Narrows and North Wirral Foreshore SPAs also apply to this SPA.

w: At an avoidance rate of 98%, 15 cormorant collisions are predicted representing 0.5% of the collective SPA population (see applicant's HRA Report, Section 5, Table 5.2). NB Table 5.2 does not actually refer to cormorant as a feature of Liverpool Bay SPA so it has been assumed that the references to cormorant as a feature of Ribble and Alt Estuaries, Dee Estuary and Mersey Narrows and North Wirral Foreshore SPAs also apply to this SPA.

x: During construction no potential in-combination likely significant effects are anticipated by the applicant as Atlantic Array (see paragraph 2.8 in this report) and Navitus Bay wind farm sites are outside the usage area for this species (see the applicant's HRA Report, Section 7.2, Table 7.7). Monitoring surveys from North Hoyle recorded cormorant nesting in the met mast with no significant change in usage of the site between construction and operational phases. Low densities of cormorant were recorded in monitoring surveys from Rhyl flats and during boat based surveys of Gwynt-y-Môr few cormorant were recorded within the Burbo Bank Extension offshore wind farm site (see applicant's HRA Report, Section 7.2, Table 7.8).

y: No Arctic tern were recorded in site surveys, see the applicant's HRA Report Section 4.6, Table 4.4.

z: No little tern were recorded in site surveys, see the applicant's HRA Report Section 3.7, Table 3.5 and Section 4.6, Table 4.4 (footnote 3).

Stage 1 Matrix 12a: Lleyn Peninsula and the Sarnau SAC (Annex II species)

Site code: UK0013117

Name of European site: Lleyn Peninsula and the Sarnau SAC															
Distance to NSIP: 115 km															
European site features **(Annex II species)**	**Likely Effects of NSIP**														
	Disturbance			*Collision*			*Indirect effects*			*Habitat loss*			*In-combination effects*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Grey seal	Xa	Xa	Xa	Xa	Xa	Xa	Xa		Xa	Xa		Xa	Xa	Xa	Xa
Bottlenose dolphin	Xb	Xb	Xb	Xb	Xb	Xb	Xb		Xb	Xb		Xb	Xb	Xb	Xb
Otter															

Evidence supporting conclusions:

a: Low numbers of grey seal surveyed during 2006 and 2008, and due to the distance between the Burbo Bank Extension offshore wind farm site and the SAC (a minimum distance of 115 km) no likely significant effects are predicted by the applicant (see the applicant's HRA Report Section 4.5, Table 4.3). NRW have confirmed that, in view of the short anticipated piling duration and the pending provision of a suitable marine mitigation protocol they have concluded that

the proposal will not adversely affect the integrity of the SAC (see NRW's relevant representations Annex 1, paragraph 3.1).

b: Given the rare occurrence of bottlenose dolphin in the Liverpool Bay area and the distance of the Burbo Bank Extension offshore wind farm from the SAC (a minimum of 115 km) no likely significant effects are predicted (see the applicant's HRA Report Section 4.5, Table 4.3). NRW have confirmed that, in view of the short anticipated piling duration and the pending provision of a suitable marine mitigation protocol they have concluded that the proposal will not adversely affect the integrity of the SAC (see NRW's relevant representations Annex 1, paragraph 3.1).

Stage 1 Matrix 12b: Lleyn Peninsula and the Sarnau SAC (Annex I habitats)

Site code: UK0013117

Name of European site: Lleyn Peninsula and the Sarnau SAC															
Distance to NSIP: 115 km															
European site features **(Annex I habitat features)**	**Likely Effects of NSIP**														
	Increase in suspended sediment concentration from foundation construction			*Increase in suspended sediment from inter-array cabling construction*			*Habitat loss*			*Changes to sediment transport*			*Sediment plume interaction*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Sandbanks which are slightly covered by seawater all the time	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Estuaries	Xa		Xa	Xa			Xa	Xa			xa		Xa		Xa
Coastal lagoons (Priority feature)	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa

Large shallow inlets and bays	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Reefs	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Mudflats and sandflats not covered by seawater at low tide	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Salicornia and other annuals colonising mud and sand	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Atlantic salt meadows (Glauco-Puccinellietaliea maritimae)	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Submerged or partially submerged sea caves	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa

Evidence supporting conclusions:

a: Sand and coarser sediment deposition generally occurs within 260m of the release point and the assessment considers the potential for an impact up to one tidal excursion (in the region of 11 km) from the source of the impact (see the applicant's HRA Report, paragraphs 3.2.1 and 4.4.9). This SAC is some 115 km distant from the Burbo Bank Extension offshore wind farm site (shortest sea route, via the Menai Straits) and as such is considered by the applicant to be too distant for any effect, alone or in-combination with other plans or projects, on the Annex I habitat features of this SAC. NB: this statement is only included in the applicant's revised screening matrix for this site and is not expressly included within the applicant's HRA Report (see the applicant's written response to Deadline I, Appendix 7).

Stage 1 Matrix 13: Menai Strait and Conwy Bay SAC

Site code: UK0030202

Name of European site: Menai Strait and Conwy Bay SAC															
Distance to NSIP: 31 km															
European site features **(Annex I habitat features)**	**Likely Effects of NSIP**														
	Increase in suspended sediment concentration from foundation construction			*Increase in suspended sediment concentration from inter-array cabling*			*Habitat loss*			*Changes to sediment transport*			*Sediment plume interaction*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Sandbanks which are slightly covered by sea water all the time	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Mudflats and sandflats not covered by seawater at low	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa

tide															
Reefs	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Large shallow inlets and bays	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Submerged or partially submerged sea caves	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa

Evidence supporting conclusions:

a: Sand and coarser sediment deposition generally occurs within 260m of the release point and the assessment considers the potential for an impact up to one tidal excursion (in the region of 11 km) from the source of the impact (see the applicant's HRA Report paragraphs 3.2.1 and 4.4.9). This SAC is some 31 km distant from the Burbo Bank Extension offshore wind farm site and as such is considered by the applicant as too distant for any effect to occur, alone or in-combination with other plans or projects, on the Annex I habitat features of this SAC. NB: this statement is only included in the applicant's revised screening matrix for this site and is not expressly included within the applicant's HRA Report (see the applicant's written response to Deadline I, Appendix 7). However, paragraph 9.2.6 in the applicant's HRA Report, records that agreement has been reached between Countryside Council for Wales (now NRW) and the applicant that there is no mechanism for a likely significant effect on this site.

Stage 1 Matrix 14: Mersey Estuary SPA

Site code: UK9005131

Name of European site: Mersey Estuary SPA												
Distance to NSIP: 16 km												
European site features (ornithology)	**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*
Golden plover (wintering)	Xa	Xa	Xa	Xa,d	Xd	Xa,d		Xb		Xa	Xb	Xa
Redshank (on passage)	Xa	Xa	Xa	Xa,d	Xd	Xa,d		Xb		Xa	Xb	Xa

Ringed plover (on passage)	Xa	Xa	Xa	Xa,d	Xd	Xa,d		Xb		Xa	Xb	Xa
Dunlin (over winter)	Xa	Xa	Xa	Xa,d	Xd	Xa,d		Xb		Xa	Xb	Xa
Pintail (over winter)	Xa	Xa	Xa	Xa,d	Xd	Xa,d		Xb		Xa	Xb	Xa
Redshank (over winter)	Xa	Xa	Xa	Xa,d	Xd	Xa,d		Xb		Xa	Xb	Xa
Shelduck (over winter)	Xa	Xa	Xa	Xa,d	Xd	Xa,d		Xb		Xa	Xb	Xa
Teal (over winter)	Xa	Xa	Xa	Xa,d	Xd	Xa,d		Xb		Xa	Xb	Xa
Over winter assemblage (> 20,000 waterfowl) including great crested grebe.	Xa,c	Xa,c	Xa,c	Xa,c,d	Xd	Xa,c,d		Xb,c		Xa,c	Xb,c	Xa,c

Evidence supporting conclusions:

a: No wildfowl or wader species were recorded on site and consequently no likely significant effect is anticipated by the applicant for the wader and wildfowl assemblage species that are a feature of the coastal and estuarine sites in the

vicinity of the proposed Burbo Bank Extension offshore wind farm, see the applicant's HRA Report Section 4.6, paragraphs 4.6.5-4.6.10.

b: Migratory bird collision risk modelling showed no collisions of migratory waders and wildfowl (see the applicant's HRA Report Section 4.6, paragraphs 4.6.5-4.6.10 and Table 4.5).

c: NE identified great crested grebe as a feature which could be affected by the Burbo Bank Extension offshore wind farm (see NE's relevant representations, paragraph 5.3). In response to the ExA's first round of questions however they agreed with the applicant's analysis of the effect on this feature (see NE's written representations, response to question 1.15).

d: NE raised concerns in their relevant representations about effects on the geomorphology of the SPA from effects on sediment transport linked to cable burial and scour protection (see NE's relevant representations, paragraphs 5.3.1-5.3.4). The applicant undertook further analysis (see the applicant's written response to Deadline I, Appendices 30 and 36). As these state that scour protection is not likely to be required for the export cable, NE concluded that the Burbo Bank Extension offshore wind farm is unlikely to have a significant effect on the SPA (see NE's written representations, paragraphs 6.12.1–6.12.8). However, NE advise that as the applicant intends to complete their Cable Burial Assessment post-consent a condition should be inserted into the Deemed Marine Licence to deal with the situation should the export cable become exposed during operation (see NE's written representations, paragraphs 6.12.9-6.12.10). The applicant however, is of the view that this is unnecessary because if it was unable to lay the cables to the required depth using the methodologies in the DCO they would have to apply for a separate Marine Licence (see applicant's written response to Deadline II paragraph 7.3).

Stage 1 Matrix 15: Mersey Estuary Ramsar

Site code: UK110041

Name of European site: Mersey Estuary Ramsar												
Distance to NSIP: 20 km												
Ramsar 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*
Ramsar criterion 5: Winter waterfowl assemblage of international importance	Xa	Xa	Xa	Xa		Xa		Xb		Xa	Xb	Xa

Ramsar criterion 6: shelduck (peak counts spring/autumn)	Xa	Xa	Xa	Xa		Xa		Xb		Xa	Xb	Xa
Black-tailed godwit (peak counts spring/autumn)	Xa	Xa	Xa	Xa		Xa		Xb		Xa	Xb	Xa
Redshank (peak counts spring/autumn)	Xa	Xa	Xa	Xa		Xa		Xb		Xa	Xb	Xa
Teal (peak counts in winter), pintail, dunlin at internationally important levels	Xa	Xa	Xa	Xa		Xa		Xb		Xa	Xb	Xa
Pintail (peak counts in winter)	Xa	Xa	Xa	Xa		Xa		Xb		Xa	Xb	Xa
Dunlin (peak counts in winter)	Xa	Xa	Xa	Xa		Xa		Xb		Xa	Xb	Xa

Evidence supporting conclusions:

a: No wildfowl or wader species were recorded on site and consequently no likely significant effect is anticipated for the wader and wildfowl assemblage species that are a feature of the coastal and estuarine sites in the vicinity of the proposed Burbo Bank Extension offshore wind farm, see applicant's HRA Report Section 4.6, paragraphs 4.6.5-4.6.10.

b: Migratory bird collision risk modelling showed no collisions of migratory waders and wildfowl (see applicant's HRA Report Section 4.6, paragraphs 4.6.5-4.6.10 and Table 4.5).

Stage 1 Matrix 16: Mersey Narrows and North Wirral Foreshore SPA

Site code: UK9020287

Name of European site: Mersey Narrows and North Wirral Foreshore SPA												
Distance to NSIP: 6 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 and passage common tern	Xa	Xc,d	Xa	Xb,q		Xb,q		✓e		Xh	?Xf,g	Xh
Passage - little gull	Xi,p	Xi,p	Xi,p	Xl,p,q		Xl,p,q		Xm,p		Xn,p	Xo,p	Xi,p
Wintering -Bar-tailed godwit	Xj	Xj	Xj	Xj,q		Xj,q		Xj		Xj	Xj	Xj

Migratory species - Knot	Xj	Xj	Xj	Xj,q		Xj,q		Xj		Xj	Xj	Xj
Waterbird assemblage including cormorant	Xj,p	Xj,p	Xj,p	Xj,p,q		Xj,p,q		Xj,k,p		Xj,p	Xj,p	Xj,p

Evidence supporting conclusions:

NB: The applicant's HRA Report only refers to little gull as a feature of Liverpool Bay SPA in Section 5, Tables 5.1 and 5.2 and Section 7, Table 7.9 and 7.10. However, the same text has been used in relation to little gull in the applicant's matrices for Mersey Narrows and North Wirral Foreshore and Tables 5.1, 5.2, 7.9 and 7.10 (see Stage 1, Matrix 16 of the revised matrices in the applicant's written response to Deadline I, Appendix 7).

a: Common tern were primarily recorded during passage periods with a low reliance on the Burbo Bank Extension offshore wind farm site and with a notable low proportion of birds observed exhibiting foraging behaviour (8.7%) (see the applicant's HRA Report Section 5, Table 5.1).

b: Terns have a specialised diet, being dependent on clupeids and sandeels (Stienen *et al.,* 2000). Sandeels are relatively insensitive to noise effects (Jensen *et al.,* 2004) so potential noise effects are more likely to disturb or displace clupeids from the region around the wind farm. None of the tern species show any particular reliance on the Burbo Bank Extension offshore wind farm site, with only a few individuals recorded foraging during boat-based surveys (see the applicant's HRA Report Section 5, Table 5.1).

c: As a generalist forager, common tern is likely to exploit a wide range of prey in a variety of habitats, foraging in inshore areas whenever the opportunity rises (Brown and Grice, 2005), therefore this species is not expected to be displaced from the wind farm area (see the applicant's HRA Report Section 5, Table 5.2).

d: Post-construction studies of offshore wind farms show there is evidence that terns show relatively little avoidance of wind farms, and are unlikely to perceive them as a barrier (Pettersson 2005). At Zeebrugge, terns routinely fly through the line of turbines with no apparent deviation (Everaert and Stienen 2007) (see the applicant's HRA Report Section 5, Table 5.2).

e: During the breeding season at a 98% avoidance rate 12 collisions per annum are predicted by the appplicant, this represents 0.94% of the cumulative SPA population and could constitute a significant effect on this feature of the SPA (see the applicant's HRA Report Section 5, Table 5.2). NE agreed that a significant effect is likely for this feature (see the applicant's Written response to Deadline I, Appendix 5 Statement of Common Ground regarding ornithological matters, paragraph 9.3).

f: Common tern were identified as a sensitive receptor in the Environmental Statements for Rhyl Flats, North Hoyle and Gwynt-y-Môr. Evidence from existing wind farms is that tern species will continue to forage within operational wind farms and there is no reason to suspect that the cumulative impact of any avoidance or displacement effect will be of a greater magnitude than that which was predicted for the Burbo Bank Extension offshore wind farm alone (see the applicant's HRA report Section 7.2, Table 7.6). NE disputed this conclusion and advised that an assessment of cumulative impact with other wind farms in the vicinity was required (see NE's relevant representations paragraph 5.1.3) for the breeding population.

g: Common tern were identified as sensitive receptors at Rhyl Flats, North Hoyle and Gwynt-y-Môr. No collision data are available for these projects. The OWF sites are located considerably further west from the SPAs at which this species is a qualifying feature; boat-based surveys at Gwynt-y-Môr recorded this species in very low numbers – 13 individuals with none at risk height. In the applicant's view there is no reason to suggest that observations for the adjacent (and substantially smaller) sites of Rhyl Flats and North Hoyle would not show similar trends (see the applicant's HRA Report Section 7.2, Table 7.6). NE disputed this conclusion and advised that an assessment of cumulative impact with other wind farms in the vicinity was required (see NE's relevant representations, paragraph 5.1.3) for the breeding population.

h: There is no potential for in-combination construction impacts as no offshore wind farms within foraging range will be constructed at the same time as the Burbo Bank Extension offshore wind farm, see the applicant's HRA Report Section 7.2, Table 7.5.

i: Little gull were observed in three aerial surveys in 2010-2011, with peak numbers in April (and thus coinciding with known passage movement in Liverpool Bay) (see the applicant's HRA Report Section 4.6, Table 4.4). The period in which any migratory movements occur within the Burbo Bank Extension offshore wind farm site is likely to be short and the species has no reliance on habitat within the Burbo Bank Extension offshore wind farm site. In addition, they are highly mobile foragers that spend significant proportions of time in flight (Furness and Wade, 2012) and hence are not considered by the applicant to be particularly vulnerable to disturbance by boat traffic or construction activity. As a passage feature of the area little gull are unlikely to be at risk from displacement (see the applicant's HRA Report, Section 5, Table 5.1).

As a passage feature there is potential for wind farms to present a barrier to migratory movement, however given the size of the Burbo Bank Extension offshore wind farm, in the applicant's view, any additional movement will represent a negligible increase in overall flight distances and is unlikely to result in any additional energetic cost (Masden *et al.,* 2009, 2010) (see the applicant's HRA Report, Section 5, Table 5.2).

j: No wildfowl or wader species were recorded on site and consequently no likely significant effect is anticipated for the wader and wildfowl assemblage species that are a feature of the coastal and estuarine sites in the vicinity of the proposed Burbo Bank Extension offshore wind farm, see the applicant's HRA Report Section 4.6, paragraphs 4.6.5-4.6.10.

k: Migratory collision risk modelling showed no collisions of migratory waders and wildfowl, see the applicant's HRA Report Section 4.6, paragraphs 4.6.5 – 4.6.10 and Table 4.5.

l: Little gull has a broad choice of prey species, often associated with tidal fronts, and might opportunistically exploit fish disturbed by piling. Given that little gull were sighted during the passage period and the species has no reliance on the habitat within the Burbo Bank Extension offshore wind farm site with few birds exhibiting foraging behaviour during boat based surveys, indirect effects are unlikely during construction or decommissioning (see the applicant's HRA Report, Section 5, Table 5.1).

m: At an avoidance rate of 98%, 1 collision per annum is predicted for this species (see the applicant's HRA Report, Section5, Table 5.2 and Annex 1, Table 12).

n: Atlantic Array (see paragraph 2.8 in this report) and Navitus Bay wind farm sites (as potential in-combination construction activity) are outside migratory passage routes for this species. The spring passage of little gulls is east across England (Messenger, 1993) (see the applicant's HRA Report, Section 7.2, Table 7.9)).

o: Little gull were not identified during assessment as a sensitive receptor at the North Hoyle, Rhyl Flats or Gwynt y Môr offshore wind farms (see the applicant's HRA Report Section 7.2, Table 7.10). Records of little gulls moving north from Liverpool Bay around or across Scotland in spring are extremely scarce (Cunningham, 1983; Verrall & Bourne 1982). That they fly south and around the Welsh coast and southern England is, in the applicant's view, extremely unlikely, and not supported by any evidence. As the gulls move eastwards from Seaforth and Merseyside, they do so at great height (Smith, 1987) and as result are unlikely to be at risk from in-combination collision effects (see the applicant's HRA Report, Section 7.2, Table 7.10).

p: In their relevant representations NE advised that the little gull and cormorant features could potentially be affected (see NE's relevant representations, paragraph 2.2.1). However, in the ornithological Statement of Common Ground between NE and the applicant it is agreed that the only feature of the SPA likely to experience significant effects is the common tern (see the applicant's written response to Deadline I, Appendix 5 Statement of Common Ground regarding ornithological matters, paragraph 9.3).

q: NE raised concerns in their relevant representations about effects on the geomorphology of the SPA from effects on sediment transport linked to cable burial and scour protection (see NE's relevant representations, paragraphs 5.3.1-5.3.4). The applicant undertook further analysis (see the applicant's Written response to Deadline I, Appendix Appendices 30 and 36). As these appendices state that scour protection is not likely to be required for the export cable NE concluded that the Burbo Bank Extension offshore wind farm is unlikely to have a significant effect on the SPA (see NE's written representations paragraphs 6.12.1–6.12.8). However, NE advise that as the applicant intends to complete their Cable Burial Assessment post-consent a condition should be inserted into the Deemed Marine Licence to deal with the situation should the export cable become exposed during operation (see NE's written representations, paragraphs 6.12.9-6.12.10). The applicant however, is of the view that this is unnecessary because if it was unable to lay the cables to the required depth using the methodologies in the DCO they would have to apply for a separate Marine Licence (see applicant's written response to Deadline II paragraph 7.3).

Stage 1 Matrix 17: Mersey Narrows and North Wirral Foreshore Ramsar

Site code: UK11042

Name of European site: Mersey Narrows and North Wirral Foreshore Ramsar												
Distance to NSIP: 6 km												
Ramsar 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*
Ramsar criterion 4: common tern (passage)	Xa	Xc,d	Xa	Xb		Xb		✓e		Xh	Xf,g	Xh
Little gull (passage)	Xi	Xi	Xi	Xl		Xl		Xm		Xn	Xo	Xi

Ramsar criterion 5: Waterbird assemblage >20,000 individuals	Xj	Xj	Xj	Xj		Xj		Xj,k		Xj	Xj	Xj
Ramsar criterion 6: knot (wintering)	Xj	Xj	Xj	Xj		Xj		Xj,k		Xj	Xj	Xj
Bar-tailed godwit (wintering)	Xj	Xj	Xj	Xj		Xj		Xj,k		Xj	Xj	Xj

Evidence supporting conclusions:

NB: The applicant's HRA Report only refers to little gull as a feature of Liverpool Bay SPA in Section 5, Tables 5.1 and 5.2 and Section 7, Table 7.9 and 7.10. However, the same text has been used in relation to little gull in the applicant's matrices for Mersey Narrows and North Wirral Foreshore and Tables 5.1, 5.2, 7.9 and 7.10 (see Stage 1, Matrix 17 of the revised matrices in the applicant's written response to Deadline I, Appendix 7).

a: Common tern were primarily recorded during passage periods with a lower reliance on the Burbo Bank Extension offshore wind farm site and with a notable low proportion of birds observed exhibiting foraging behaviour (8.7%) (see the applicant's HRA Report Section 5, Table 5.1). Therefore, any disturbance/displacement/barrier effect is not considered by the applicant to be significant for this species.

b: Terns have a specialised diet, being dependent on clupeids and sandeels (Stienen *et al.,* 2000). Sandeels are relatively insensitive to noise effects (Jensen *et al.,* 2004) so potential noise effects are more likely to disturb or displace clupeids from the region around the wind farm. None of the tern species show any particular reliance on the Burbo Bank Extension

offshore wind farm site, with only a few individuals recorded foraging during boat-based surveys (see the applicant's HRA Report Section 5, Table 5.1).

c: As a generalist forager, common tern is likely to exploit a wide range of prey in a variety of habitats, foraging in inshore areas whenever the opportunity rises (Brown and Grice, 2005), therefore this species is not expected to be displaced from the wind farm area (see the applicant's HRA Report Section 5, Table 5.2).

d: Post-construction studies of offshore wind farms show there is evidence that terns show relatively little avoidance of wind farms, and are unlikely to perceive them as a barrier (Pettersson 2005). At Zeebrugge, terns routinely fly through the line of turbines with no apparent deviation (Everaert and Stienen 2007) (see the applicant's HRA Report Section 5, Table 5.2).

e: During the breeding season at a 98% avoidance rate 12 collisions per annum are predicted which represents 0.94% of the cumulative SPA population. Further assessment is required to determine the effect on individual SPAs (see the applicant's HRA Report Section 5, Table 5.2). During the breeding season at a 98% avoidance rate 12 collisions per annum are predicted, this represents 0.94% of the cumulative SPA population and could constitute a significant effect on this feature of the SPA (see the applicant's HRA Report Section 5, Table 5.2). NE agreed that a significant effect is likely for this feature of the SPA (see the applicant's written response to Deadline I, Appendix 5 Statement of Common Ground regarding ornithological matters, paragraph 9.3).

f: Common tern were identified as a sensitive receptor in the Environmental Statements for Rhyl Flats, North Hoyle and Gwynt-Y-Môr. Evidence from existing wind farms is that tern species will continue to forage within operational wind farms and there is no reason to suspect that the cumulative magnitude of any avoidance or displacement effect will be greater than that which was predicted for the Burbo Bank Extension offshore wind farm alone (see the applicant's HRA Report Section 7.2, Table 7.6). NB: NE have only raised concerns with regard to the breeding tern population of the SPA, in which NE disputed the applicant's conclusion and advised that an assessment of cumulative impact with other wind farms in the vicinity was required (see NE's relevant representations paragraph 5.1.3), but have not commented on the common tern passage feature of the Ramsar site.

g: Common tern were identified as sensitive receptors at Rhyl Flats, North Hoyle and Gwynt-Y-Môr. No collision data are available for these projects. The OWF sites are located considerably further west from the SPAs at which this species is a qualifying feature; boat-based surveys at Gwynt-Y-Môr recorded this species in very low numbers – 13 individuals with

none at risk height. In the applicant's view there is no reason to suggest that observations for the adjacent (and substantially smaller) sites of Rhyl Flats and North Hoyle would not show similar trends (see the applicant's HRA Report Section 7.2, Table 7.6). NB: NE have only raised concerns with regard to the breeding tern population of the SPA and have not commented on the common tern passage feature of the Ramsar site.

h: There is no potential for in-combination construction impacts as no offshore wind farms within foraging range will be constructed at the same time as the Burbo Bank Extension offshore wind farm (see the applicant's HRA Report Section 7.2, Table 7.5).

i: Little gull were observed in three aerial surveys in 2010-2011, with peak numbers in April (and thus coinciding with known passage movement in Liverpool Bay) (see the applicant's HRA Report Section 4.6, Table 4.4). The period in which any migratory movements occur within the Burbo Bank Extension offshore wind farm site is likely to be short and the species has no reliance on habitat within the Burbo Bank Extension offshore wind farm site. In addition, they are highly mobile foragers that spend significant proportions of time in flight (Furness and Wade, 2012) and hence are not considered by the applicant to be particularly vulnerable to disturbance by boat traffic or construction activity. As a passage feature of the area little gull are unlikely to be at risk from displacement (see the applicant's HRA Report, Section 5, Table 5.1).

As a passage feature there is potential for wind farms to present a barrier to migratory movement, however given the size of the Burbo Bank Extension offshore wind farm, in the applicant's view, any additional movement will represent a negligible increase in overall flight distances and is unlikely to result in any additional energetic cost (Masden *et al.,* 2009, 2010) (see the applicant's HRA Report, Section 5, Table 5.2).

j: No wildfowl or wader species were recorded on site and consequently no likely significant effect is anticipated for the wader and wildfowl assemblage species that are a feature of the coastal and estuarine sites in the vicinity of the proposed Burbo Bank Extension offshore wind farm. See the applicant's HRA Report Section 4.6, paragraphs 4.6.5 - 4.6.10.

k: Migratory collision risk modelling showed no collisions of migratory waders and wildfowl. See the applicant's HRA Report Section 4.6, paragraphs 4.6.5 – 4.6.10 and Table 4.5.

l: Little gull has a broad choice of prey species, often associated with tidal fronts, and might opportunistically exploit fish disturbed by piling. Given that little gull were sighted during the passage period and the species has no reliance on the habitat within the Burbo Bank Extension offshore wind farm site with few birds exhibiting foraging behaviour during boat based surveys, indirect effects are unlikely during construction or decommissioning (see the applicant's HRA Report, Section 5, Table 5.1).

m: Little gull, at an avoidance rate of 98%, 1 collision per annum is predicted for this species (see the applicant's HRA Report, Section 5, Table 5.2 and Annex 1, Table 12).

n: Atlantic Array (see paragraph 2.8 in this report) and Navitus Bay wind farm sites (as potential in-combination construction activity) are outside migratory passage routes for this species The spring passage of little gulls is east across England (Messenger, 1993) (see the applicant's HRA Report, Section 7.2, Table 7.9).

o: Little gull were not identified during assessment as a sensitive receptor at the North Hoyle, Rhyl Flats or Gwynt y Môr offshore wind farms (see the applicant's HRA Report Section 7.2, Table 7.10).Records of little gulls moving north from Liverpool Bay around or across Scotland in spring are extremely scarce (Cunningham, 1983; Verrall & Bourne 1982). That they fly south and around the Welsh coast and southern England is extremely unlikely, and not supported by any evidence. As the gulls move eastwards from Seaforth and Merseyside, they do so at great height (Smith, 1987) and as result are unlikely to be at risk from in-combination collision effects (see the applicant's HRA Report, Section 7.2, Table 7.10).

Stage 1 Matrix 18: Morecambe Bay SPA

Site code: UK9005081

Name of European site: Morecambe Bay SPA												
Distance to NSIP: 42 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 (breeding)	Xa	Xc	Xa	Xb		Xb		✓d		Xo	✓e	Xo
Herring gull (breeding)	Xg	Xf,h	Xg	Xg		Xg		✓i		Xo	✓j	Xo
Sandwich tern (breeding)	Xk	Xk	Xk	Xk		Xk		Xk		Xk	Xk	Xk

Little tern (breeding)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl
Bar-tailed godwit (wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Golden plover (wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Ringed plover (on passage)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Sanderling (on passage)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Curlew (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Dunlin (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Knot (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Grey plover (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Pintail (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm

Redshank (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Shelduck (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Oystercatcher (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Pink-footed goose (over wintering)	Xn	Xn	Xn	Xn		Xn		Xn		Xn	Xn	Xn
A breeding season assemblage > 20,000 seabirds	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
A wintering assemblage > 20,000 waterfowl	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm

Evidence supporting conclusions:

a: Lesser black-backed gull frequently associate with vessels and human activity (e.g. fishing activity) (Mitchell *et al.,* 2004) and may exploit novel foraging opportunities created by construction activities that may make prey more available to them. In addition, lesser black-backed gulls are highly mobile foragers that spend significant proportions of time in flight (Furness and Wade, 2012) and hence are not considered to be vulnerable to boat traffic or displacement by construction activities. Aerial survey data suggest that lesser black-backed gull densities on the Burbo Bank Extension offshore wind farm site are no greater than in the wider NW6a count zone shown in the applicant's HRA Report Figure 3.8 (see the

applicant's HRA Report Section 3.7, Table 3.5 and Section 5.1, Table 5.1 for consideration of impacts during construction and decommissioning activities).

b: Lesser black-backed gull 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 the applicant's HRA Report Section 5, Table 5.1).

c: There is little indication that lesser black-backed 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. The Burbo Bank Extension offshore wind farm site is not considered by the applicant to represent particularly important foraging habitat for these species as evidenced in the low or only medium use of the site (relative to the entire area). In the applicant's view, any displaced birds will have ample alternative foraging opportunities (see the applicant's HRA Report Section 5.1, Table 5.2). Lesser black-backed gulls will continue to pass through the Burbo Bank Extension offshore wind farm area during the operational phase and no barrier to movement is predicted (see the applicant's HRA Report Section 5, Table 5.2).

d: At a 98% avoidance rate, 176 lesser black backed gull collisions were predicted, indicating potential for a likely significant effect (see the applicant's HRA Report Section 5, Table 5.2). NE agreed that significant effects could not be excluded (see applicant's written response to Deadline I, Appendix 55, Statement of Common Ground between the applicant and NE regarding ornithological matters, paragraph 9.3).

e: A likely significant effect is predicted for the Burbo Bank Extension offshore wind farm alone and further collisions from the operation of Walney extension offshore wind farm and Rhiannon will increase the annual collision rate (see the applicant's HRA Report Section 7.2, Table 7.6). NE agreed that significant effects could not be excluded (see applicant's written response to Deadline I, Appendix 55, Statement of Common Ground between the applicant and NE regarding ornithological matters, paragraph 9.3).

f: In the applicant's view 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 (see the applicant's HRA Report Section 5, Table 5.2).

g: Herring gull show flexibility with respect to foraging area and have a varied diet. In the applicant's view 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 (see the applicant's HRA Report Section 5, Table 5.1).

h: Herring gulls will continue to pass through the Burbo Bank Extension offshore wind farm area during the operational phase and no barrier to movement is predicted by the applicant (see the applicant's HRA Report Section 5, Table 5.2).

i: At a 98% avoidance rate, 95 herring gull collisions were predicted indicating a potential for likely significant effect on this species (see the applicant's HRA Report Section 5, Table 5.2). NE agreed that significant effects could not be excluded (see applicant's written response to Deadline I, Appendix 55, Statement of Common Ground between the applicant and NE regarding ornithological matters).

j: A likely significant effect is predicted for the Burbo Bank Extension offshore wind farm alone and further collisions from the operation and further collisions from the operation of the wind farms listed in Table 7.2 will increase the annual collision rate (see the applicant's HRA Report Section 7.2, Table 7.6). NE agreed that significant effects could not be excluded (see applicant's written response to Deadline I, Appendix 55, Statement of Common Ground between the applicant and NE regarding ornithological matters).

k: The Burbo Bank Extension offshore wind farm site is located beyond the mean maximum foraging range for this species, so it has not been identified as a feature of the SPA that is likely to experience significant effects in Section 4.6, Table 4.4 of the applicant's HRA Report.

l: The Burbo Bank Extension offshore wind farm site is located beyond the mean maximum foraging range for this species, so it has not been identified as a feature of the SPA that is likely to experience significant effects in Section 4.6, Table 4.4 (footnote 3) of the applicant's HRA Report.

m: No wildfowl or wader species were recorded on site and consequently no likely significant effect is anticipated for the wader and wildfowl assemblage species that are a feature of the coastal and estuarine sites in the vicinity of the proposed Burbo Bank Extension offshore wind farm (see the applicant's HRA Report Section 4.6, paragraphs 4.6.5 - 4.6.10).

n: No geese were recorded at the Burbo Bank Extension offshore wind farm site. Over wintering pink-footed goose is a feature of Morecambe Bay SPA, Martin Mere SPA, and the Ribble and Alt Estuaries SPA as well as The Wash SPA, North Norfolk Coast SPA, and Broadland SPA on the East coast. These birds are not features of SPAs on the West Coast further south than Martin Mere SPA (NB: the distance of this site from the Burbo Bank Extension offshore wind farm is not stated in the applicant's HRA Report) and the Burbo Bank Extension offshore wind farm site is not considered to lie on the migration route for these birds (Niras, 2012). NB: This statement is not found within the applicant's HRA Report. Instead, it is contained within footnote (n) to the revised matrix for this site (see the applicant's written response to Deadline I, Appendix 7).

o: In the applicant's view there is no potential for cumulative construction effects on these species as both Atlantic Array (see paragraph 2.8 in this report) and Navitus Bay wind farms are beyond the foraging range of birds originating from Morecambe Bay SPA (see the applicant's HRA Report Section 7.2, Table 7.5).

Stage 1 Matrix 19: Morecambe Bay Ramsar

Site code: UK11045

Name of European site: Morecambe Bay Ramsar												
Distance to NSIP: 42 km												
Ramsar 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*
Ramsar criterion 6: lesser black-backed gull (breeding)	Xa	Xc	Xa	Xb		Xb		✓d		Xo	✓e	Xo
Herring gull (breeding)	Xg	Xf,h	Xg	Xg		Xg		✓i		Xo	✓j	Xo
Sandwich tern (breeding)	Xk	Xk	Xk	Xk		Xk		Xk		Xk	Xk	Xk

Great cormorant (peak count in spring/autumn)	Xn	Xn	Xn	Xn		Xn		Xn		Xn	Xn	Xn
Shelduck (peak count spring/autumn)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl
Pintail (peak count spring/autumn)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl
Eider (peak count spring/autumn)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl
Ringed plover (peak count spring/autumn)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl
Oystercatcher (peak count spring/autumn)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl
Grey plover (peak count spring/autumn)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl

Sanderling peak count spring/autumn	XI	XI	XI	XI		XI		XI		XI	XI	XI
Curlew (peak count spring/autumn, breeding)	XI	XI	XI	XI		XI		XI		XI	XI	XI
Oystercatcher (peak count spring/autumn)	XI	XI	XI	XI		XI		XI		XI	XI	XI
Redshank (peak count spring/autumn)	XI	XI	XI	XI		XI		XI		XI	XI	XI
Turnstone (peak count spring/autumn)	XI	XI	XI	XI		XI		XI		XI	XI	XI
Lesser black-backed gull (peak count spring/autumn)	XI	XI	XI	XI		XI		XI		XI	XI	XI

Great crested grebe (peak counts in winter)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl
Pink-footed goose (peak counts in winter)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Wigeon (peak counts in winter)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl
Goldeneye (peak counts in winter)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl
Red-breasted merganser (peak counts in winter)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl
Golden plover (peak counts in winter)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl
Lapwing (peak counts in winter)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl
Knot (peak counts in winter)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl

Dunlin (peak counts in winter)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl
Bar-tailed godwit (peak counts in winter)	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl
Ramsar criterion 4: Internationally important for passage ringed plover	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl
Ramsar criterion 5: Internationally important wintering waterfowl assemblage > 20,000 birds	Xl	Xl	Xl	Xl		Xl		Xl		Xl	Xl	Xl

Evidence supporting conclusions:

NB: The applicant's HRA Report refers to the Ramsar site in Tables 4.4, 4.6 and 6.1 but does not refer to it in Tables 5.1, 5.2, 7.5 or 7.6. Since the SPA and Ramsar features are similar, it seems reasonable to assume that the references in Tables 5.1, 5.2, 7.5 and 7.6 to the Morecambe Bay SPA, also apply to this Ramsar site. It has also been assumed that NE's comments in relation to the Morecambe Bay SPA also apply to this Ramsar site.

a: Lesser black-backed gull frequently associate with vessels and human activity (e.g. fishing activity) (Mitchell *et al.,* 2004) and may exploit novel foraging opportunities created by construction activities that may make prey more available to them. In addition, lesser black-backed gulls are highly mobile foragers that spend significant proportions of time in flight (Furness and Wade, 2012) and hence are not considered by the applicant to be vulnerable to boat traffic or displacement by construction activities. Aerial survey data suggest that lesser black-backed gull densities on the Burbo Bank Extension offshore wind farm site are no greater than in the wider NW6a count zone shown in the applicant's HRA Report Figure 3.8 (see the applicant's HRA Report Section 3.7, Table 3.5 and Section 5.1, Table 5.1 for consideration of impacts during construction and decommissioning activities).

b: Lesser black-backed gull 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 the applicant's HRA Report Section 5, Table 5.1).

c: There is little indication that lesser black-backed 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. The Burbo Bank Extension offshore wind farm site is not considered to represent particularly important foraging habitat for these species as evidenced in the low or only medium use of the site (relative to the entire area). In the applicant's view, any displaced birds will have ample alternative foraging opportunities (see the applicant's HRA Report Section 5.1, Table 5.2). Lesser black-backed gulls will continue to pass through the Burbo Bank Extension offshore wind farm area during the operational phase and no barrier to movement is predicted (see the applicant's HRA Report Section 5, Table 5.2).

d: At a 98% avoidance rate, 176 lesser black backed gull collisions were predicted, indicating potential for a likely significant effect (see the applicant's HRA Report Section 5, Table 5.2). NE agreed that significant effects could not be excluded (see applicant's written response to Deadline I, Appendix 55, Statement of Common Ground between the applicant and NE regarding ornithological matters, paragraph 9.3).

e: A likely significant effect is predicted for the Burbo Bank Extension offshore wind farm alone and further collisions from the operation of Walney extension offshore wind farm and Rhiannon will increase the annual collision rate (see the applicant's HRA Report Section 7.2, Table 7.6). NE agreed that significant effects could not be excluded (see applicant's

written response to Deadline I, Appendix 55, Statement of Common Ground between the applicant and NE regarding ornithological matters, paragraph 9.3)

f: In the applicant's view 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 (see the applicant's HRA Report Section 5, Table 5.2).

g: Herring gull show flexibility with respect to foraging area and have a varied diet. In the applicant's view 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 (see the applicant's HRA Report Section 5, Table 5.1).

h: Herring gulls will continue to pass through the wind farm area during the operational phase and no barrier to movement is predicted by the applicant (see the applicant's HRA Report Section 5, Table 5.2).

i: At a 98% avoidance rate, 95 herring gull collisions were predicted indicating a potential for likely significant effect on this species (see the applicant's HRA Report Section 5, Table 5.2). NE agreed that significant effects could not be excluded (see applicant's written response to Deadline I, Appendix 55, Statement of Common Ground between the applicant and NE regarding ornithological matters).

j: A likely significant effect is predicted for the Burbo Bank Extension offshore wind farm alone and further collisions from the operation and further collisions from the operation of the wind farms listed in Table 7.2, will increase the annual collision rate (see the applicant's HRA Rreport Section 7.2, Table 7.6). NE agreed that significant effects could not be excluded (see applicant's written response to Deadline I, Appendix 55, Statement of Common Ground between the applicant and NE regarding ornithological matters).

k: The Burbo Bank Extension offshore wind farm site is located beyond the mean maximum foraging range for this species, so it has not been identified as a feature of the Ramsar that is likely to experience significant effects in Section 4.6, Table 4.4 of the applicant's HRA Report.

l: No wildfowl or wader species were recorded on the Burbo Bank Extension offshore wind farm site and consequently no likely significant effect is anticipated for the wader and wildfowl assemblage species that are a feature of the coastal and

estuarine sites in the vicinity of the proposed Burbo Bank Extension offshore wind farm (see the applicant's HRA Report Section 4.6, paragraphs 4.6.5 - 4.6.10).

m: No geese were recorded at the Burbo Bank Extension offshore wind farm site. Over wintering pink-footed goose is a feature of Morecambe Bay SPA, Martin Mere SPA, and the Ribble and Alt Estuaries SPA as well The Wash SPA, North Norfolk Coast SPA, and Broadland SPA on the East coast. These birds are not features of SPAs on the West Coast further south than Martin Mere SPA (NB: the distance from this site to the Burbo Bank Extension offshore wind farm is not stated in the applicant's HRA Report) and the Burbo Bank Extension offshore wind farm site is not considered to lie on the migration route for these birds (Niras, 2012). NB: This statement is not found within the applicant's HRA Report. Instead, it has contained within footnote (n) to the revised matrix for this site (see the applicant's written response to Deadline I, Appendix 7).

n: This species is not referred to in the applicant's HRA Report in relation to this Ramsar site.

o: In the applicant's view there is no potential for cumulative construction effects on these species as both Atlantic Array (see paragraph 2.8 in this report) and Navitus Bay wind farms are beyond the foraging range of birds originating from Morecambe Bay (see the applicant's HRA Report Section 7.2, Table 7.5).

Stage 1 Matrix 20a: Murlough SAC (Annex II species)

Site code: UK0016612

Name of European site: Murlough SAC																		
Distance to NSIP: 190 km																		
European site features **(Annex II species)**	**Likely Effects of NSIP**																	
	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*
Common seal	Xa	Xa	Xa	Xa		Xa	Xa		Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Marsh fritillary butterfly																		

Evidence supporting conclusions:

a: Distribution of common (harbour) seals in the Irish Sea is mainly along the north-east coast of Northern Ireland, where a number of SACs are designated for the species. There a few records of common seals in and around the Liverpool Bay area (see the applicant's HRA Report Section 4.5, Table 4.3). The Burbo Bank Extension offshore wind farm is located

approximately 190 km from this SAC and is considered too distant by the applicant to have an effect alone or in-combination with other plans and projects (see the applicant's HRA Report, Section 4.5, paragraph 4.5.6).

Stage 1 Matrix 20b: Murlough SAC (Annex I habitats)

Site code: UK0016612

Name of European site: Murlough SAC															
Distance to NSIP: 190 km															
European site features **(Annex I habitat features)**	**Likely Effects of NSIP**														
	Increase in suspended sediment concentration from foundation construction			*Increase in suspended sediment concentration from inter-array cabling6*			*Habitat loss*			*Changes to sediment transport*			*Sediment plume interaction*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Fixed dunes with herbaceous vegetation ('grey dunes')	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa

Atlantic decalcified fixed dunes (Calluno-Ulicetea)	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Sandbanks which are slightly covered by sea water all the time	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Mudflats and sandflats not covered by seawater at low tide	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Embryonic shifting dunes	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Shifting dunes along the shoreline with Ammophila arenaria ('white dunes')	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Dunes with Salix repens spp. argentea (Salicion arenariae)	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa

Evidence supporting conclusions:

a: Sand and coarser sediment deposition generally occurs within 260m of the release point and the applicant's assessment considers the potential for an impact up to one tidal excursion (in the region of 11 km) from the source of the impact (see the applicant's HRA Report, paragraphs 3.2.1 and 4.4.9). This SAC is some 190 km distant from the Burbo Bank Extension offshore wind farm site and as such is considered by the applicant to be too distant for any effect, alone or in-combination with other plans or projects, on the Annex I habitat features (see the applicant's HRA Report, Section 4.5, paragraph 4.5.6).

Stage 1 Matrix 21a: Pembrokeshire Marine SAC (Annex II species)

Site code: UK0013116

Name of European site: Pembrokeshire Marine SAC																		
Distance to NSIP: 250 km																		
European site features **(Annex II species)**	**Likely Effects of NSIP**																	
	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*
Grey seal	Xa	Xa	Xa	Xa		Xa	Xa		Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Otter																		
Shore dock																		

Evidence supporting conclusions:

a: Low numbers of grey seal surveyed during 2006 and 2008, and due to the distance between the Burbo Bank Extension offshore wind farm site and SAC no likely significant effects are predicted by the applicant (see the applicant's HRA Report Section 4.5, Table 4.3). NRW have confirmed that, in view of the short anticipated piling duration and the pending provision of a suitable marine mitigation protocol they have concluded that the proposal will not adversely affect the integrity of the SAC (see NRW's relevant representations Annex 1, paragraph 3.1).

Stage 1 Matrix 21b: Pembrokeshire Marine SAC (Annex II species (fish))

Name of European site: Pembrokeshire Marine SAC															
Distance to NSIP: 250 km															
European site features (Annex II species, migratory fish)	**Likely Effects of NSIP**														
	Death/injury			*Behavioural changes*			*Increases in suspended sediment concentration*			*Electro-magnetic field*			*In-combination effects*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Sea lamprey	Xa			Xa		Xa	Xa		Xa		Xa		Xa	Xa	Xa
River lamprey	Xa			Xa		Xa	Xa		Xa		Xa		Xa	Xa	Xa
Allis shad	Xa			Xa		Xa	Xa		Xa		Xa		Xa	Xa	Xa
Twaite shad	Xa			Xa		Xa	Xa		Xa		Xa		Xa	Xa	Xa

Evidence supporting conclusions:

a: The SAC is considered too distant by the applicant (approximately 250 km) from the Burbo Bank Extension offshore wind farm site for any effects to occur on these species alone or in-combination with other plans or projects (see the applicant's HRA Report, Section 4.5, Table 4.3).

Stage 1 Matrix 21c: Pembrokeshire Marine SAC (Annex I habitats)

Name of European site: Pembrokeshire Marine SAC															
Distance to NSIP: 250 km															
European site features **(Annex I habitat features)**	**Likely Effects of NSIP**														
	Increase in SSC foundation			*Increase in SSC inter-array*			*Habitat loss*			*Changes to sediment transport*			*Sediment plume interaction*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Sandbanks which are slightly covered by sea water all the time	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Mudflats and sandflats not covered by seawater at low tide	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa

Submerged or partially submerged sea caves	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Coastal lagoons *Priority feature	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa

Evidence supporting conclusions:

a: Sand and coarser sediment deposition generally occurs within 260m of the release point and the assessment considers the potential for an impact up to one tidal excursion (in the region of 11 km) from the source of the impact (see the applicant's HRA report paragraphs 3.2.1 and 4.4.9). This SAC is some 250 km distant from the Burbo Bank Extension offshore wind farm site and as such the Burbo Bank Extension offshore wind farm is considered to be too distant for any effect, alone or in-combination with other plans or projects, on the Annex I habitat features (see the applicant's HRA Report, Section 4.5, paragraph 4.5.6).

Stage 1 Matrix 22: Ribble and Alt Estuaries SPA

Site code: UK9005103

Name of European site: Ribble and Alt Estuaries SPA												
Distance to NSIP: 6 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*
Common tern (breeding)	Xa	Xc, d	Xa	Xb		Xb		Xe		Xf,g	Xf	Xf,g
Ruff (breeding)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Lesser black-backed gull (breeding)	Xh	Xj	Xh	Xi		Xi		✓k		Xo	✓l	Xo
Bar-tailed godwit (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Bewick's swan (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Golden plover (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm

Whooper swan (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Ringed plover (on passage)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Sanderling (on passage)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Black-tailed godwit (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Dunlin (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Grey plover (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Knot (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Oystercatcher (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Pink-footed goose (over wintering)	Xp	Xp	Xp	Xp		Xp		Xp		Xp	Xp	Xp
Pintail (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Redshank (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Sanderling (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Shelduck (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Teal (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm
Wigeon (over wintering)	Xm	Xm	Xm	Xm		Xm		Xm		Xm	Xm	Xm

Breeding seabird assemblage > 20,000 individuals	Xn	Xn	Xn	Xn		Xn		Xn		Xn	Xn	Xn
Waterfowl assemblage > 20, 000 individuals	Xn	Xn	Xn	Xn		Xn		Xn		Xn	Xn	Xn

Evidence supporting conclusions:

a: Common tern were primarily recorded during passage periods with a lower reliance on the Burbo Bank Extension offshore wind farm site and with a notable low proportion of birds observed exhibiting foraging behaviour (8.7%) (see the applicant's HRA Report Section 5, Table 5.1). Therefore any disturbance/displacement/barrier effect is not considered by the applicant to be significant for this species.

b: Terns have a specialised diet, being dependent on clupeids and sandeels (Stienen *et al.,* 2000). Sandeels are relatively insensitive to noise effects (Jensen *et al.,* 2004) so potential noise effects are more likely to disturb or displace clupeids from the region around the wind farm. None of the tern species show any particular reliance on the Burbo Bank Extension offshore wind farm site, with few individuals recorded foraging during boat-based surveys (see the applicant's HRA Report Section 5, Table 5.1).

c: As a generalist forager, common tern is likely to exploit a wide range of prey in a variety of habitats, foraging in inshore areas whenever the opportunity arises (Brown and Grice, 2005). Therefore, this species is not expected to be displaced from the Burbo Bank Extension offshore wind farm area (see the applicant's HRA Report Section 5, Table 5.2).

d: Post-construction studies of offshore wind farms show there is evidence that terns show relatively little avoidance of wind farms, and are unlikely to perceive them as a barrier (Pettersson 2005). At Zeebrugge, terns routinely fly through the line of turbines with no apparent deviation (Everaert and Stienen 2007) (see the applicant's HRA Report Section 5, Table 5.2).

e: The applicant initially identified a potential significant effect which required further analysis (See Section 5, Table 5.2 of the applicant's HRA Report). However, NE's relevant representations indicated that the Ribble and Alt Estuaries SPA no

longer supports a breeding population of common tern (see paragraph 5.1.1). As a result of this, the additional analysis, in Appendix 16 of the applicant's written response to Deadline I, did not include the common tern population at this SPA.

f: NE's relevant representations indicated that the Ribble and Alt Estuaries SPA no longer supports a breeding population of common tern (see paragraph 5.1.1); as a result the Burbo Bank Extension offshore wind farm will not lead to an in-combination effect on this SPA.

g: There is no potential for in-combination construction impacts as no offshore wind farms within foraging range will be constructed at the same time as the Burbo Bank Extension offshore wind farm (see the applicant's HRA Report Section 7.2, Table 7.5).

h: Lesser black-backed gull frequently associate with vessels and human activity (e.g. fishing activity) (Mitchell *et al.,* 2004) and may exploit novel foraging opportunities created by construction activities that may make prey more available to them. In addition, lesser black-backed gulls are highly mobile foragers that spend significant proportions of time in flight (Furness and Wade, 2012) and hence are not considered by the applicant to be vulnerable to boat traffic or displacement by construction activities. Aerial survey data suggest that lesser black-backed gull densities on the Burbo Bank Extension offshore wind farm site are no greater than in the wider NW6a count zone shown in the applicant's HRA Report Figure 3.8 (see the applicant's HRA Report Section 3.7, Table 3.5 and Section 5.1, Table 5.1 for consideration of impacts during construction and decommissioning activities).

i: Lesser black-backed gull 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 the applicant's HRA Report Section 5, Table 5.1).

j: There is little indication that lesser black-backed 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. The Burbo Bank Extension offshore wind farm site is not considered to represent particularly important foraging habitat for these species as evidenced in the low or only medium use of the site (relative to the entire area). In the applicant's view, any displaced birds will have ample alternative foraging opportunities (see the applicant's HRA Report Section 5.1, Table 5.2). Lesser black-backed gulls will continue to pass through the wind farm area during the operational phase and no barrier to movement is predicted (see the applicant's HRA Report Section 5, Table 5.2).

k: At a 98% avoidance rate, 176 lesser black backed gull collisions were predicted, indicating potential for a likely significant effect. See the applicant's HRA report Section 5, Table 5.1. NE agreed that significant effects could not be excluded (see applicant's written response to Deadline I, Appendix 55, Statement of Common Ground between the applicant and NE regarding ornithological matters, paragraph 9.3). The RSPB also raised concerns about the applicant's approach to the assessment of collision risk for this feature of the SPA (see RSPB's relevant representations).

l: A likely significant effect is predicted for the Burbo Bank Extension offshore wind farm alone and further collisions from the operation o and further collisions from the operation of the wind farms listed in Table 7.2, will increase the annual collision rate (see the applicant's HRA Report Section 7.2, Table 7.6). NE agreed that significant effects could not be excluded (see applicant's written response to Deadline I, Appendix 55, Statement of Common Ground between the applicant and NE regarding ornithological matters, paragraph 9.3). The RSPB also raised concerns about the applicant's approach to the assessment of collision risk for this feature of the SPA (see RSPB's relevant representations).

m: No wildfowl or wader species were recorded on site and consequently no likely significant effect is anticipated for the wader and wildfowl assemblage species that are a feature of the coastal and estuarine sites in the vicinity of the proposed Burbo Bank Extension offshore wind farm (see the applicant's HRA Report Section 4.6, paragraphs 4.6.5 - 4.6.10).

n: This feature is not referred to in the applicant's HRA Report.

o: In the applicant's view there is no potential for cumulative construction effects on this species as both Atlantic Array (see paragraph 2.8 in this report) and Navitus Bay wind farms are beyond the foraging range of birds originating from Ribble and Alt Estuaries (see the applicant's HRA Report Section 7.2, Table 7.5).

p: No geese were recorded at the Burbo Bank Extension offshore wind farm site. Over wintering pink-footed goose is a feature of Morecambe Bay SPA, Martin Mere SPA, and the Ribble and Alt Estuaries SPA as well The Wash SPA, North Norfolk Coast SPA, and Broadland SPA on the East coast. These birds are not features of SPAs on the West Coast further south than Martin Mere SPA (NB: the distance of this site from the Burbo Bank Extension offshore wind farm is not stated in the applicant's HRA Report) and the Burbo Bank Extension offshore wind farm site is not considered to lie on the migration route for these birds (Niras, 2012). NB: This statement is not found within the applicant's HRA Report. Instead, it is contained within footnote (n) to the revised matrix for this site (see the applicant's Written response to

Deadline I, Appendix 7) and it has been assumed that justification provided by the applicant in footnote (n) for those sites also applies to the feature of pink-footed goose (over-wintering) at this SPA site.

Stage 1 Matrix 23: Ribble and Alt Estuaries Ramsar

Site code: UK11057

Name of European site: Ribble and Alt Estuaries Ramsar (bird species)												
Distance to NSIP: 6 km												
Ramsar site bird 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*
Ramsar criterion 5: wintering waterfowl (peak mean count 222038)	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe
Ramsar criterion 6: lesser black-backed gull (breeding)	Xa	Xb	Xa	Xh		Xh		✓c		Xi	✓d	Xi
Ringed plover (peak counts in spring/autumn)	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe
Grey plover (peak counts in spring/autumn)	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe

Knot (peak counts in spring/autumn)	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe
Sanderling (peak counts in spring/autumn)	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe
Dunlin (peak counts in spring/autumn)	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe
Black-tailed godwit (peak counts in spring/autumn)	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe
Redshank (peak counts in spring/autumn)	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe
Lesser black-backed gull (peak counts in spring/autumn)	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe
Bewick swan	Xf	Xf	Xf	Xf		Xf		Xf		Xf	Xf	Xf
Pink-footed goose (peak counts in winter)	Xf	Xf	Xf	Xf		Xf		Xf		Xf	Xf	Xf
Whooper swan (peak counts in winter)	Xf	Xf	Xf	Xf		Xf		Xf		Xf	Xf	Xf
Tundra swan (peak counts in winter)	Xf	Xf	Xf	Xf		Xf		Xf		Xf	Xf	Xf

Shelduck (peak counts in winter)	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe
Wigeon (peak counts in winter)	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe
Teal (peak counts in winter)	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe
Pintail (peak counts in winter)	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe
Oystercatcher	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe
Bar-tailed godwit	Xe	Xe	Xe	Xe		Xe		Xe		Xe	Xe	Xe
Ramsar criterion 2: natterjack toad	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg

Evidence supporting conclusions:

NB: The applicant's HRA Report refers to the Ramsar site in Tables 4.4, 4.6 and 6.1 but does not refer to it in Tables 5.1, 5.2, 7.5 or 7.6. Where SPA and Ramsar features are similar it has been assumed that the references in these tables to the Ribble and Alt Estuaries SPA also apply to the Ramsar site.

a: Lesser black-backed gull frequently associate with vessels and human activity (e.g. fishing activity) (Mitchell *et al.,* 2004) and may exploit novel foraging opportunities created by construction activities that may make prey more available to them. In addition, lesser black-backed gulls are highly mobile foragers that spend significant proportions of time in flight (Furness and Wade, 2012) and hence are not considered by the applicant to be vulnerable to boat traffic or displacement by construction activities. Aerial survey data suggest that lesser black-backed gull densities on the Burbo Bank Extension offshore wind farm site are no greater than in the wider NW6a count zone shown in the applicant's HRA Report Figure 3.8 (see the applicant's HRA Report Section 3.7, Table 3.5 and Section 5.1, Table 5.1 for consideration of impacts during construction and decommissioning activities).

b: There is little indication that lesser black-backed 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. The Burbo Bank Extension offshore wind farm site is not considered by the applicant to represent particularly important foraging habitat for these species as evidenced in the low or only medium use of the site (relative to the entire area). In the applicant's view, any displaced birds will have ample alternative foraging opportunities (see the applicant's HRA Report Section 5.1, Table 5.2). Lesser black-backed gulls will continue to pass through the Burbo Bank Extension offshore wind farm area during the operational phase and no barrier to movement is predicted (see the applicant's HRA Report Section 5, Table 5.2).

c: At a 98% avoidance rate, 176 lesser black backed gull collisions were predicted, indicating potential for a likely significant effect (see applicant's HRA report Section 5.1, Table 5.1). NE agreed that significant effects could not be excluded (see applicant's written response to Deadline I, Appendix 55, Statement of Common Ground between the applicant and NE regarding ornithological matters, paragraph 9.3).

d: A likely significant effect is predicted for the Burbo Bank Extension offshore wind farm alone and further collisions from the operation of the wind farms listed in Table 7.2, will increase the total annual collision rate. There is potential for a significant effect on the populations of lesser black-backed gull from Ribble and Alt, Morecambe Bay and Bowland Fells SPAs and so this issue is carried forward for further assessment. See the applicant's HRA Report Section 7.2, Table 7.6. NE agreed that significant effects could not be excluded (see applicant's written response to Deadline I, Appendix 55, Statement of Common Ground between the applicant and NE regarding ornithological matters, paragraph 9.3).

e: No wildfowl or wader species were recorded on site and consequently no significant effect is anticipated for the wader and wildfowl assemblage species that are a feature of the coastal and estuarine sites in the vicinity of the proposed Burbo Bank Extension offshore wind farm (see the applicant's HRA Report Section 4.6, paragraphs 4.6.5 - 4.6.10). NB: The applicant's matrices referred to spring/autumn wildfowl counts of international importance rather than individual features. It has been assumed that these are the features to which this footnote refers.

f: No geese were recorded at the Burbo Bank Extension offshore wind farm site. Over wintering pink-footed goose is a feature of Morecambe Bay SPA, Martin Mere SPA, and the Ribble and Alt Estuaries SPA as well as The Wash SPA, North Norfolk Coast SPA, and Broadland SPA on the East coast. These birds are not features of SPAs on the West Coast further south than Martin Mere SPA (NB: the distance of this site from the Burbo Bank Extension offshore wind farm is not stated

in the applicant's HRA Report) and the Burbo Bank Extension offshore wind farm site is not considered to lie on the migration route for these birds (Niras, 2012). NB: This statement is not found within the applicant's HRA Report. Instead, it is contained within footnote (n) to the revised matrix for this site (see the applicant's written response to Deadline I, Appendix 7) and it has been assumed that justification provided by the applicant in footnote (g) for those sites also applies to the feature of pink-footed goose (over-wintering) at this SPA site. The applicant's matrices do not refer to tundra swan so it has been assumed that this footnote also applies to this species.

g: This feature is not assessed in the applicant's HRA Report. The applicant defined receptor specific study areas within their HRA Report (see paragraph 3.2.1 and Table 3.1). It is assumed that these features do not fall within those study areas defined in the applicant's HRA Report. It should also be noted that no interested parties have raised any concerns about potential impacts on these features.

h: Lesser black-backed gull 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 the applicant's HRA Report Section 5, Table 5.1).

i: In the applicant's view there is no potential for cumulative construction effects on this species as both Atlantic Array (see paragraph 2.8 in this report) and Navitus Bay wind farms are beyond the foraging range of birds originating from Ribble and Alt Estuaries (see the applicant's HRA Report Section 7.2, Table 7.5).

Stage 1 Matrix 24: River Dee and Bala Lake SAC

Site code: UK0030252

Name of European site: River Dee and Bala Lake SAC															
Distance to NSIP: 32 km															
European site features **(Annex I habitat features)**	**Likely Effects of NSIP**														
	Death/injury			*Behavioural changes*			*Increases in suspended sediment concentrations*			*Electro-magnetic field*			*In-combination effects*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Sea lamprey	Xa		Xa	Xb		Xb	Xc		Xc		Xd		Xb		Xb
River lamprey	Xa		Xa	Xb		Xb	Xc		Xc		Xd		Xb		Xb
Atlantic salmon	Xe		Xe	✓f		Xe	Xg		Xg		Xh		Xj		Xi
Brook lamprey															
Bullhead															
Otter															

Floating water-plantain															
Water courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation															

Evidence supporting conclusions:

NB: The applicant's matrices do no refer to the feature 'water courses of plain to montane levels'. It is assumed that, as the applicant has concluded that as the other freshwater features would not be affected by the Burbo Bank Extension offshore wind farm, neither would this feature.

a: Both river and sea lamprey lack any specialist hearing structures and their ear is relatively simple (they have no swim bladder or anatomical structure tuned to amplify sound signals), therefore they are considered to be hearing generalists. Therefore, physiological effects on lamprey are usually considered likely to occur only when the organism is very close to a powerful noise source (Popper 2005; Popper and Hastings) (see the applicant's HRA Report Section 5, Table 5.3). NE raised concerns about the possibility that lamprey can hear frequencies between 20-100 Hz (see NE's relevant representations, paragraph 5.4.2). The applicant provided additional information to NE (see 'Clarification Note to NE on hearing capabilities in lamprey', Appendix 25 of the applicant's written response to Deadline I). NE concluded that, given the piling restrictions within the DCO and the limited period for which piling will be undertaken (one calendar year) likely significant effect can be excluded (see NE's written representations, paragraphs 16.15.4-16.15.5).

b: There is a lack of information available about hearing in lamprey species and no reported audiograms exist for these species, studies show avoidance response to low frequency sound (see the applicant's HRA Report Section 5, Table 5.3).

c: Increases in suspended sediment concentration (SSC) during the construction phase are not predicted by the applicant to reach levels equivalent to those during storm events. In addition, as river and sea lamprey are highly mobile in the marine environment, not being restricted by geographical features, they will be able to avoid the localised areas where

the highest increased SSCs are reached, see applicant's HRA Report Section 5, Table 5.3. The SNCBs raised concerns about the assessment of the effects of changes in SSC on lamprey (see NRW's relevant representations Annex 1, paragraph 2.5 and NE's relevant representations, paragraph 5.3.5). The applicant provided additional information (see applicant's written response to Deadline I Appendices 29 and 33). Based on the applicant's additional information, the SNCBs concluded that significant effects could be excluded (see NRW's written representations Annex A, paragraphs 5.2.1-5.2.4 and NE's written representations paragraph 6.13.2).

d: Electro-magnetic field (EMF) effects are predicted to occur in a relatively small area and not expected to cause a barrier to lamprey migration, see applicant's HRA Report Section 5, Table 5.4. NRW raised concerns that the approach to assessment had not been sufficiently precautionary (see NRW's relevant representations Annex 1, paragraphs 2.4). The applicant advised that their approach was in line with the requirements of National Policy Statement EN-3, paragraphs 2.6.75-2.6.77. They also draw attention to Schedule 2, Part 2, condition 8(g)(i) of the draft DCO (version current at 28/10/13) which requires a desk-based assessment of attenuation of EMF, shielding and cable burial depth (see applicant's Written response to Deadline I, paragraphs 1.22.2-1.22.4). NRW agree that this is sufficient to avoid significant effects from the Burbo Bank Extension offshore wind farm (see NRW's written representations paragraphs 3.2.1-3.2.2).

e: Underwater noise modelling predicts lethal effects to occur within 4m of the piling location for an 8m diameter pile. Physical injury is predicted within 80m of the piling location for an 8m pile. Soft start piling will be used, such that salmon will be able to flee the vicinity of the piling activity before the highest noise levels are reached (see the applicant's HRA Report Section 5, Table 5.3).

f: Avoidance ranges (ranges for behavioural response) for salmon were modelled at the 75dBht and 90dBht (Species) levels, for a single piling event for both 3m and 8m monopiles. The noise contour for 90dBht extends out to 4.4 km and for 75dBht to 12 km, presenting a potential barrier to migration of both adult salmon and smolts (see the applicant's HRA Report HRA report Section 5, Table 5.3). The SNCBs also advise that significant effects may occur (see NRW's relevant representations Annex 1, paragraph 2.4 and NE's relevant representations paragraphs 5.4.1-5.4.2).

g: Increases in SSC during the construction phase are not predicted to reach levels equivalent to those during storm events, salmon are highly mobile in the marine environment, not being restricted by geographical features, they will be able to

avoid the localised areas where the highest increased SSCs are reached (see the applicant's HRA Report Section 5, Table 5.3).

h: There is no potential for the exposure of salmon to electro-magnetic field (EMF) effects immediately pre or post entry to the River Dee. However, due to the position of the export cable route relative to the mouth of the estuary there is potential for exposure to EMFs during migration in and out of the estuary. The area where EMF effects may occur is small and it is not anticipated they will cause a barrier to migration (see the applicant's HRA Report Section 5, Table 5.4).

i: Noise as result of decommissioning activity will be of a lesser magnitude than during construction, it may result in a minor behavioural reaction but will not cause a barrier migration in the applicant's view. Increases in SSC during the decommissioning phase are not predicted to reach levels equivalent to those during storm events, salmon are highly mobile in the marine environment, not being restricted by geographical features, they will be able to avoid the localised areas where the highest increased SSCs are reached (see the applicant's HRA Report Section 5, Table 5.3).

j: The construction phase of the Burbo Bank Extension offshore wind farm is only likely to overlap with the construction phase of Atlantic Array (see paragraph 2.8 of this report) and Navitus offshore wind farms; due to the distance between the two sites noise effects are not predicted to overlap (see the applicant's HRA Report Section 7.3, paragraphs 7.3.1 to 7.3.7).

Stage 1 Matrix 25: Sefton Coast SAC

Site code: UK0013076

Name of European site: Sefton Coast SAC															
Distance to NSIP: 9 km															
European site features **(Annex I habitat features / species (non-marine))**	**Likely Effects of NSIP**														
	Increase in suspended sediment concentration from foundation construction			*Increase in suspended sediment concentration from inter-array cabling*			*Habitat loss*			*Changes to sediment transport*			*Sediment plume interaction*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Embryonic shifting dunes	Xa		Xa	Xb			Xc	Xc			Xd		Xa		Xa

Shifting dunes along the shoreline with Ammophila arenaria ('white dunes')	Xa		Xa	Xb			Xc	Xc			Xd		Xa		Xa
Fixed dunes with herbaceous vegetation ('grey dunes')	Xa		Xa	Xb			Xc	Xc			Xd		Xa		Xa
Dunes with Salix repens ssp. argentea (Salicion arenariae)	Xa		Xa	Xb			Xc	Xc			Xd		Xa		Xa
Humid dune slacks	Xa		Xa	Xb			Xc	Xc			Xd		Xa		Xa
Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)	Xa		Xa	Xb			Xc	Xc			Xd		Xa		Xa
Petalwort							Xc	Xc			Xd				
Great crested newt							Xc	Xc			Xd				

Evidence supporting conclusions:

a: Sand and coarser sediment deposition generally occurs within 260m of the release point and the applicant's assessment considers the potential for an impact up to one tidal excursion (in the region of 11 km) from the source of the impact (see the applicant's HRA Report, paragraphs 3.2.1 and 4.4.9); given the distance between turbines will be 700m (minimum) in the applicant's view there is unlikely to be any interaction between plumes created by simultaneous drilling.

b: Evidence from suspended sediment concentration (SSC) monitoring at the existing Burbo Bank wind farm showed that cable installation had small scale impacts on localised SSC. Effects were measurable only up to a few hundreds of metres away, never approaching the threshold level of 3000mg/l agreed with the regulatory authorities as part of the FEPA licence (see the applicant's HRA Report paragraph 4.4.11).

c: The proposed Burbo Bank Extension offshore wind farm site is 9 km away from the boundary of the Sefton Coast SAC, and the export cable is approximately 20 km away at its closest point. Consequently, it is considered by the applicant that there is no potential for a direct effect on habitat interest features of this SAC (see the applicant's HRA Report Section 4.4, Table 4.2 and paragraphs 4.4.4-4.4.5).

d: No far field effects are predicted by the applicant during the operational phase (see the applicant's HRA Report Section 4.4, Table 4.2 and paragraph 4.4.5). NE raised concerns in their relevant representations about disruption to sediment supply (see NE's relevant representations, paragraphs 5.3.1-5.3.4). The applicant undertook further analysis (see the applicant's written response to Deadline I, Appendix Appendices 30 and 36). As these state that scour protection is not likely to be required for the export cable, NE concluded that the Burbo Bank Extension offshore wind farm is unlikely to have a significant effect on the SAC (see NE's written representations paragraphs 6.12.2–6.12.8). However, they advise that as the applicant intends to complete their Cable Burial Assessment post-consent a condition should be inserted into the Deemed Marine Licence to deal with the situation should the export cable become exposed during operation (see NE's written representations paragraphs 6.12.9-6.12.10). The applicant however, is of the view that this is unnecessary because if it was unable to lay the cables to the required depth using the methodologies in the DCO they would have to apply for a separate Marine Licence (see applicant's written response to Deadline II paragraph 7.3).

Stage 1 Matrix 26: Shell Flat and Lune Deep SAC

Site code: UK0030376

Name of European site: Shell Flat and Lune Deep SAC															
Distance to NSIP: 38 km															
European site features	**Likely Effects of NSIP**														
	Increase in suspended sediment from foundation construction			*Increase in suspended sediment concentration from inter-array cabling*			*Habitat loss*			*Changes to sediment transport*			*Sediment plume interaction*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Sandbanks which are slightly covered by sea water at all times	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Reefs	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa

Evidence supporting conclusions:

a: Due to the distance of the Burbo Bank Extension offshore wind farm site from the SAC (minimum of 38 km) the applicant considers that there is no mechanism by which Burbo Bank Extension offshore wind farm activities could affect the habitat interest features of this SAC (see the applicant's HRA Report Section 4.4, Table 4.2 and paragraph 4.4.5). NE advised that they agree that there will be no direct effect as a result of the development of the Burbo Bank Extension offshore wind farm site, but that consideration should be given to effects when navigational routes are planned (see NE relevant representations paragraph 2.2.2).

Stage 1 Matrix 27a: Skerries and Causeway SAC (Annex II species)

Site code: UK0030383

Name of European site: Skerries and Causeway SAC																		
Distance to NSIP: 300 km																		
European site features **(Annex II species)**	**Likely Effects of NSIP**																	
	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*
Harbour porpoise	Xa	Xa	Xa	Xa		Xa	Xa		Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa

Evidence supporting conclusions:

a: The SAC site is considered too far away from the Burbo Bank Extension offshore wind farm site by the applicant for any population level effect on this species (see the applicant's HRA Report Section 4.5, Table 4.3).

Stage 1 Matrix 27b: Skerries and Causeway SAC (Annex I habitats)

Name of European site: Skerries and Causeway SAC															
Distance to NSIP: 300 km															
European site features **(Annex I habitat features)**	**Likely Effects of NSIP**														
	Increase in SSC foundation			*Increase in SSC inter-array*			*Habitat loss*			*Changes to sediment transport*			*Sediment plume interaction*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Sandbanks slightly covered by sea water all the time	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Reefs	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Partially submerged sea caves	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa

Evidence supporting conclusions:

a: The applicant considers that the SAC site is too distant from Burbo Bank Extension offshore wind farm site for an effect to occur (see the applicant's HRA Report Section 4.5, Table 4.3). NB: the applicant has only considered the marine mammal features of this SAC and has not specifically considered the Annex I habitat features. The applicant defined receptor specific study areas within their HRA Report (see paragraph 3.2.1 and Table 3.1). It is assumed that these features do not fall within those study areas defined in the applicant's HRA Report. It should also be noted that no interested parties have raised any concerns about potential impacts on these features.

Stage 1 Matrix 28: Skokholm and Skomer SPA

Site code: UK9014051

Name of European site: Skokholm and Skomer SPA												
Distance to NSIP: 290 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 (breeding)	Xa	Xc,d	Xa	Xb		Xb		Xe		Xh	Xf	Xh
Chough (breeding)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Short-eared owl (breeding)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Storm petrel (breeding)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Lesser black-backed gull (breeding)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg
Puffin (breeding)	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg

Breeding seabird assemblage > 20,000 birds	Xg	Xg	Xg	Xg		Xg		Xg		Xg	Xg	Xg

Evidence supporting conclusions:

a: Manx shearwater 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 (see the applicant's HRA Report Section 5, Table 5.1).

b: Manx shearwater show flexibility with respect to foraging area and have a varied diet. In the applicant's view, 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 the applicant's HRA Report Section 5, Table 5.1).

c: Maximum numbers of Manx shearwater were recorded during the dispersal period indicating, in the applicant's view, that the site is not important for foraging during the breeding season. This is supported by only 28% of birds observed foraging during surveys. The Irish Sea provides vast alternative habitat for Manx shearwater and, in addition, the species is highly flexible in its habitat use (see the applicant's HRA Report Section 5, Table 5.2). NRW expressed concerns in their relevant representations on the apportionment of birds to different SPA populations (see NRW's relevant representations Annex 1, paragraph 2.1). The applicant undertook additional analysis which was presented in Appendix 9, Paper 1 of the applicant's written response to Deadline I. NRW agree that, as the analysis showed that even at 100% mortality of displaced birds, only 0.1% of the population would be affected, a significant effect was unlikely (see NRW's written representations, Annex E paragraphs 25-27).

d: Low densities present within the Burbo Bank Extension offshore wind farm site and it is expected that birds will continue to pass through the wind farm site during operation, so no predicted barrier effect (see the applicant's HRA Report Section 5, Table 5.2).

e: No collisions of Manx shearwater were predicted to occur at a 98% avoidance rate (see the applicant's HRA Report, Section 5, Table 5.2).

f: Maximum numbers of Manx shearwater were recorded during the dispersal period indicating the Burbo Bank Extension offshore wind farm site is not important for foraging during the breeding season, this is supported by only 28% of birds observed foraging during surveys. The Irish Sea provides vast alternative habitat for Manx shearwater and, in addition, the species is highly flexible in its habitat use (see the applicant's HRA Report Section 5, Table 5.1). Whilst there is potential for in combination effects during operation of the Burbo Bank Extension offshore wind farm with Rhiannon and Walney wind farms due to the large densities of birds present within the Irish Sea Zone, the applicant is of the view that the Burbo Bank Extension offshore wind farm would only make a small contribution to any cumulative displacement effects, due to the low numbers of this species present within the Burbo Bank Extension offshore wind farm site (see the applicant's HRA Report Section 7.2, Table 7.6). NRW expressed concerns in their relevant representations on the adequacy of the in-combination assessment (see NRW's relevant representations Annex 1, paragraph 2.1). The applicant undertook additional analysis (see Appendix 9, Paper 1 of the applicant's written response to Deadline I). NRW agree that, if displacement is considered for the 3 relevant wind farms (the Burbo Bank Extension offshore wind farm, Atlantic Array and Walney), even at 100% displacement and 100% mortality of displaced birds, this would be unlikely to have a significant effect (see NRW's written representations, Annex E paragraphs 25-27). The applicant has also concluded that there is no potential for in-combination likely significant effects due to collision risk due to the low proportion of birds surveyed at risk height (see the applicant's HRA Report Section 7.2, Table 7.6).

g: The Burbo Bank Extension offshore wind farm site does not fall within foraging range of any other breeding features of the Skokholm and Skomer SPA (see the applicant's HRA Report Section 4.6, Table 4.4).

h: Given the available foraging habitat for this species , the low densities within the Burbo Bank Extension offshore wind farm site and the distance between the three projects considered to have a potential construction overlap (the Burbo Bank Extension offshore wind farm, Atlantic Array and Navitus Bay), the applicant has concluded no potential for in-combination displacement during construction of the Burbo Bank Extension offshore wind farm (see the applicant's HRA Report, Section 7.2, Table 7.5).

Stage 1 Matrix 29: South-East Islay Skerries SAC

Site code: UK0030067

Name of European site: South-East Islay Skerries SAC																		
Distance to NSIP: 330 km																		
European site features	**Likely Effects of NSIP**																	
	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*
Common (harbour) seal	Xa	Xa	Xa	Xa		Xa	Xa		Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa

Evidence supporting conclusions:

a: Distribution of common (harbour) seals in the Irish Sea is mainly along the north-east coast of Northern Ireland, where a number of SACs are designated for the species. There are few records of common seals in and around the Liverpool Bay area. At 330 km the Burbo Bank Extension offshore wind farm site is considered by the applicant to be too far from the SAC site for any population level effect on this species (see the applicant's HRA Report Section 4.5, Table 4.3 and paragraph 4.5.6). Scottish Natural Heritage has confirmed they do not feel that there are any outstanding natural

heritage issues that they wish to raise during the examination (see letter from SNH to the Planning Inspectorate dated 16 October 2013).

Stage 1 Matrix 30: Strangford Lough SAC

Site code: UK0016618

Name of European site: Strangford Lough SAC																		
Distance to NSIP: 180 km																		
European site features **(Annex II species)**	**Likely Effects of NSIP**																	
	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*
Common (harbour) seal	Xa	Xa	Xa	Xa		Xa	Xa		Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa
Mudflats and sandflats not covered by seawater at low tide	Xb	Xb	Xb	Xb		Xb	Xb		Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb
Coastal lagoons	Xb	Xb	Xb	Xb		Xb	Xb		Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb

Large shallow inlets and bays	Xb	Xb	Xb	Xb		Xb	Xb		Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb
Reefs	Xb	Xb	Xb	Xb		Xb	Xb		Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb
Annual vegetation of drift lines	Xb	Xb	Xb	Xb		Xb	Xb		Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb
Perennial vegetation of stony banks	Xb	Xb	Xb	Xb		Xb	Xb		Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb
Salicornia and other annuals colonising mud and sand	Xb	Xb	Xb	Xb		Xb	Xb		Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb
Atlantic salt meadows (Glauco-Puccinellietalia maritimae)	Xb	Xb	Xb	Xb		Xb	Xb		Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb

Evidence supporting conclusions:

a: Distribution of common (harbour) seals in the Irish Sea is mainly along the north-east coast of Northern Ireland, where a number of SACs are designated for the species. There a few records of harbour seals in and around the Liverpool Bay area. The SAC site is considered too far away from the Burbo Bank Extension offshore wind farm site for any population level effect on this species (see the applicant's HRA Report Section 4.5, Table 4.3 and paragraph 4.5.6).

b: This feature was not referred to in the applicant's matrices or HRA Report. It is assumed that they are too far from the Burbo Bank Extension offshore wind farm site to be affected. It should be noted that no other interested party, including the SNCBs have made any comments about potential impacts on this feature.

Stage 1 Matrix 29a: The Maidens SAC (Annex II species)

Site code: UK0030384

Name of European site: The Maidens SAC																		
Distance to NSIP: 260 km																		
European site features **(Annex II species)**	**Likely Effects of NSIP**																	
	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*
Grey seal	Xa	Xa	Xa	Xa		Xa	Xa		Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa	Xa

Evidence supporting conclusions:

a: Low numbers of grey seal were surveyed during 2006 and 2008. The SAC site is considered too far away from the Burbo Bank Extension offshore wind farm site by the applicant for any population level effect on this species (see the applicant's HRA Report Section 4.5, Table 4.3 and paragraph 4.5.6).

Stage 1 Matrix 31b: The Maidens SAC (Annex I habitats)

Name of European site: The Maidens SAC															
Distance to NSIP: 260 km															
European site features **(Annex I habitat features)**	**Likely Effects of NSIP**														
	Increase in suspended sediment concentration from foundation construction			*Increase in suspended sediment concentration from inter-array cabling*			*Habitat loss*			*Changes to sediment transport*			*Sediment plume interaction*		
	C	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*	*C*	*O*	*D*
Sandbanks slightly covered by sea water all the time	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa
Reefs	Xa		Xa	Xa			Xa	Xa			Xa		Xa		Xa

Evidence supporting conclusions:

a: Due to the distance of the SAC from the Burbo Bank Extension offshore wind farm site (a minimum of 260 km) the applicant considers that there is no mechanism for an effect to occur on this feature at this SAC. NB: the applicant has only considered the marine mammal features of this SAC and has not specifically considered the Annex I habitat features. However, it is assumed that the justification provided by the applicant for concluding no likely significant effect on the marine mammal features of this SAC (see screening matrix 31a above) also applies to the conclusion of no likely significant effect on the Annex I habitat features of this SAC.

Stage 1 Matrix 32: Upper Solway Flats and Marshes SPA

Site code: UK9005012

Name of European site: Upper Solway Flats and Marshes SPA												
Distance to NSIP: 150 km												
European site bird 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*
Bar-tailed godwit (over wintering)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Barnacle goose (over wintering)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Golden plover (over wintering)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Whooper swan (over wintering)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Ringed plover (on passage)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa

Curlew (over wintering)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Dunlin (over wintering)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Knot (over wintering)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Oystercatcher (over wintering)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Pink-footed goose (over wintering)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Pintail (over wintering)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Redshank (over wintering)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Overwintering waterfowl assemblage >20,000 birds. Includes scaup, great crested grebe, cormorant, shelduck, mallard, golden eye, ringed plover and the species listed above.	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa

Red-throated diver	Xb	Xb	Xb	Xb		Xb		Xb		Xb	Xb	Xb

Evidence supporting conclusions:

a: This SPA is located 150 km from the Burbo Bank Extension offshore wind farm site and is considered by the applicant to be too distant to result in an effect on this site (see the applicant's HRA Report Section 4.6, Table 4.4 (footnote 4)). No wildfowl or wader species were recorded on site and consequently no likely significant effect is anticipated for the wader and wildfowl assemblage species that are a feature of the coastal and estuarine sites in the vicinity of the proposed Burbo Bank Extension offshore wind farm (see the applicant's HRA Report Section 4.6, paragraphs 4.6.5 - 4.6.10 and Table 4.5). No geese were recorded at the Burbo Bank Extension offshore wind farm site. Over wintering pink-footed goose is a feature of Morecambe Bay SPA, Martin Mere SPA, and the Ribble and Alt Estuaries SPA as well as The Wash SPA, North Norfolk Coast SPA, and Broadland SPA on the East coast. These birds are not features of SPAs on the West Coast further south than Martin Mere SPA (NB: the distance of this site from the Burbo Bank Extension offshore wind farm is not stated in the applicant's HRA Report) and the Burbo Bank Extension offshore wind farm site is not considered to lie on the migration route for these birds (Niras, 2012). NB: The applicant's matrices only referred generically to waterfowl and geese so it has been assumed that the footnote applies to all features.

b: The applicant states in their HRA Report that they are aware that wintering red-throated diver is a proposed interest feature but consider that the Burbo Bank Extension offshore wind farm site is too far away for there to be a mechanism for an effect (see the applicant's HRA Report, footnote 4 of Table 4.4). NE agreed in their relevant representations that it is unlikely that an effect would occur (see NE's relevant representations, paragraph 2.2.1).

Stage 1 Matrix 33: Upper Solway Flats and Marshes Ramsar

Site code: UK11079

Name of European site: Upper Solway Flats and Marshes Ramsar												
Distance to NSIP: 150 km												
Ramsar 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*
Ramsar criterion 2: natterjack toad	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb	Xb
Ramsar criterion 5: Peak mean count of 135720 waterfowl in winter	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Whooper swan, (over wintering)	Xc	Xc	Xc	Xc		Xc		Xc		Xc	Xc	Xc

Pink-footed goose (over-wintering)	Xc	Xc	Xc	Xc		Xc		Xc		Xc	Xc	Xc
Barnacle goose (over-wintering)	Xc	Xc	Xc	Xc		Xc		Xc		Xc	Xc	Xc
Internationally important counts of spring/autumn oystercatcher	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Pintail (wintering)	Xd	Xd	Xd	Xd		Xd		Xd		Xd	Xd	Xd
Scaup (wintering)	Xa	Xa	Xa	Xa		Xa		Xa		Xa	Xa	Xa
Knot (wintering)	Xd	Xd	Xd	Xd		Xd		Xd		Xd	Xd	Xd
Bar-tailed godwit (wintering)	Xd	Xd	Xd	Xd		Xd		Xd		Xd	Xd	Xd
Curlew (breeding)	Xd	Xd	Xd	Xd		Xd		Xd		Xd	Xd	Xd
Redshank (wintering)	Xd	Xd	Xd	Xd		Xd		Xd		Xd	Xd	Xd

Evidence supporting conclusions:

a: This Ramsar is located 150 km from the Burbo Bank Extension offshore wind farm site and is considered too distant by the applicant to result in an effect on these species (see the applicant's HRA Report Section 4.6, Table 4.4 (including footnote 4)). NB: The applicant's statement at footnote 4 in Table 4.4 relates to Upper Solway Flats and Marshes SPA

site. However, it seems reasonable to assume that the justification provided by the applicant for concluding no likely significant effect on the features of the Upper Solway Flats and Marshes SPA site (see screening matrix 32 above) also applies to the conclusion of no likely significant effect on the features of this Ramsar site.

b: This feature is not covered in the applicant's matrices (see Stage 1, Matrix 33 of the revised matrices in the applicant's Written response to Deadline I, Appendix 7) or the applicant's HRA Report. It is assumed that the applicant considers it to be too far from the offshore and onshore components of the Burbo Bank Extension offshore wind farm to be affected. It should be noted that no other interested party, including the SNCBs have made any comments about potential impacts on this feature.

c: No geese were recorded at the Burbo Bank Extension offshore wind farm site. Over wintering pink-footed goose is a feature of Morecambe Bay SPA, Martin Mere SPA, and the Ribble and Alt Estuaries SPA as well as The Wash SPA, North Norfolk Coast SPA, and Broadland SPA on the East coast. These birds are not features of SPAs on the West Coast further south than Martin Mere SPA (NB: the distance of this site from the Burbo Bank Extension offshore wind farm is not stated in the applicant's HRA Report) and the Burbo Bank Extension offshore wind farm site is not considered to lie on the migration route for these birds (Niras, 2012).

d: No wildfowl or wader species were recorded on site and consequently no likely significant effect is expected for the wader and wildfowl assemblage species that are a feature of the coastal and estuarine sites in the vicinity of the proposed Burbo Bank Extension offshore wind farm (see the applicant's HRA Report Section 4.6, paragraphs 4.6.5 - 4.6.10 and Table 4.5).

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 the European sites, in the context of their conservation objectives. The conservation objectives are provided in Section 6 of this report.

4.2 Stage 2 matrices are numbered using the same numbering system as that employed in the applicant's matrices. Where evidence suggests that there is no effect on integrity, a Stage 2 matrix is not included in this report. It follows that matrices in this report are not numbered in sequence.

Stage 2 Matrices Key

4.3 ✓ = Applicant has concluded that adverse effect on integrity cannot be excluded

× = Applicant has concluded that adverse effect on integrity can be excluded

? = Applicant's conclusions disputed by an interested party

C = construction

O = operation

D = decommissioning

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

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

Stage 2 Matrix 1: Bowland Fells SPA

Name of European site: Bowland Fells SPA						
Distance to NSIP: 55 km						
European site features	**Adverse effect on integrity**					
	Collision risk			*In-combination collision*		
	C	*O*	*D*	*C*	*O*	*D*
Lesser black-backed gull		Xa			Xb	

Evidence supporting conclusions:

NB: NE advised in their written representations that the Joint Nature Conservation Committee SPA review in 2001 identified the breeding lesser black-backed gull breeding population of the Bowland Fells SPA as being large enough to quality as a designated feature. The SPA citation has not yet been updated as at 19 February 2014 so lesser black-backed gull are not yet legally one of the reasons for which the SPA is classified. As public consultation has not yet been undertaken on this feature the SPA does not qualify as a potential SPA as defined in the National Planning Policy Framework (which requires potential SPAs to be treated in the same way as designated European sites). However, NE advise that as a matter of best practice the lesser black-backed gull population should be subject to the same assessment and decision-making process as any designated features of European sites (see NE's written representations, paragraphs 5.1.1-5.1.4).

a: The applicant undertook collision risk modelling using the Band Model (2012) (see the applicant's Environmental Statement, Chapter 15, paragraph 15.10.5). The collisions were apportioned between the SPAs within foraging range for which lesser black-backed gull was a designated feature. At a 98% avoidance rate, 4 collisions per annum are predicted for the SPA which equates to 0.038% of the SPA population. The outcome of the collision risk modelling was then compared with the Potential Biological Removal (PBR) threshold for the Bowland Fells SPA population. The applicant was

of the view that there would not be an adverse effect on integrity from the Burbo Bank Extension offshore wind farm (see the applicant's HRA Report Section 6.8, paragraphs 6.8.1 to 6.8.6 and Annex 2).

NE highlighted potential impacts on the breeding lesser black-backed gull population of the SPA (see NE's relevant representations, paragraph 2.2.1). The applicant updated their collision risk modelling using Band Model options 2 and 3, apportionment of collisions to SPAs and also updated their PBR calculations (see applicant's written response to Deadline I, Appendix 14, Paper 6 and Appendix 16, Paper 8). The conclusion of no adverse effect on integrity was maintained. NE in their written representations, state that they do not agree with the applicant's choice of Band Model options. They advise however that they accept the approach to apportionment that the applicant has used which is based on the distance of the colony from the Burbo Bank Extension offshore wind farm site, rather than the distance of the SPA boundary from the Burbo Bank Extension offshore wind farm site. They also agreed the N_{min} parameter (population size) used within the applicant's PBR. Although NE disputed the values generated by the applicant's collision risk modelling, they pointed out that if the applicant's figures were accepted then the *F* factor (which is described as the 'recovery factor', related to the conservation status of the population) for the PBR is less than 0.1 which allows a conclusion of no adverse effect on integrity (see NE's written representations, Annex B, paragraphs 131-138).

Following further discussions between the applicant and NE, both parties confirmed at the Issue Specific Hearing (ISH) held on 19-21 November 2013 that they had agreed on the use of Band Model option 2, because NE was satisfied that as there were concerns about the site specific data available to the applicant, use of option 2 was appropriate in this case (see NE's written summary of submissions, paragraph 5). Although the applicant maintains their position that option 3 is valid they were willing to accept the compromise position (see the applicant's written response to Deadline III, paragraph 5.4).

b: The applicant's initial assessment of in combination effects considered West of Duddon Sands, Walney I and II, Walney Extension, Ormonde and Rhiannon wind farms using the same methods as for assessing the effect of the Burbo Bank Extension offshore wind farm alone (see the applicant's HRA Report Section 7.5, paragraphs 7.5.13-7.5.19 and Annex 2). The assessment was updated in the applicant's written response to Deadline I, Appendix 16, Paper 8 and Appendix 17, Paper 9). The assessment was further updated and amended in a paper submitted in the ISH hearing 19-21 November 2013 (see applicant's written response to Deadline III, clarification note on lesser black-backed gull Morecambe Bay SPA, which also includes consideration of lesser black-backed gull at Bowland Fells SPA). The updated assessment used updated population data and added refinements for foraging range and definition and colony size. It also adjusted the

predicted level of impact to account for the 'built out' size of the wind farms rather than the scenarios assessed in the environmental statements for the individual projects. A tiered approach was used to reflect which stage individual wind farms had reached (operational, under construction, going through the consenting process or about to enter the consenting process). NE raised concerns about the wind farms which could have an effect in combination with the Burbo Bank Extension offshore wind farm but for which the applicant was unable to find data (Gwynt y Môr, the existing Burbo Bank wind farm, Rhyl Flats, North Hoyle and Barrow). In response to a request from the ExA, NE provided a brief outlining the approach they wanted the applicant to take in assessing incombination effects (see NE's written summary of submissions and evidence provided during the ISH 19-21 November 2013, Annex A). They also advised that NE was giving further consideration to the choice of *F* factor; for Bowland Fells SPA, where the lesser black-backed gull population has declined, and therefore an *F* value of 0.1 might be appropriate (see NE's written summary of submissions from ISH 19-21 November 2013).

The applicant submitted an updated assessment based on the approach recommended by NE (see applicant's written response to Deadline V, Appendix 9). NE agreed that, as the applicant's PBR calculations gave an *F* factor of less than 0.1 it could be agreed that there would be no adverse effect on integrity from the Burbo Bank Extension offshore wind farm in combination with the other wind farms (see NE's written summary of oral submissions made at the ISH 28-30 January 2014, paragraphs 2-7).

During the ISH of 28-30 January 2014, the ExA noted that the applicant's in combination analysis was adjusted to take into account the fact that several of the wind farms were smaller than originally consented. He asked the applicant to establish what the implications were for their analysis if any of the wind farms subsequently built up to the limits within their consent. The applicant submitted an analysis which stated that there was no capacity for additional development within existing wind farms (see applicant's Post Hearing submission, Appendix 7).

During the ISH 28-30 January 2014, the ExA queried how 'Tier 5' wind farms (wind farms for which consenting bodies are expecting an application but which has not yet been submitted) should be dealt with. The applicant advised that there is a great deal of uncertainty about the data used for calculating the effects from Rhiannon (the only relevant 'Tier 5' project) and that it might be sensible to exclude the effects of 'Tier 5' projects from consideration (audio recording ISH 28-30 January 2014, session 1) . NE stated that the impact of the Rhiannon scheme would have to be subjected to the same level of scrutiny as had been applied to the present proposal, and therefore that a fresh view would have to be taken as to

the impact of a refined Rhiannon scheme on the relevant European protected sites at that stage (see NE's written summary of oral representations given at ISH 28-30 January 2014).

Stage 2 Matrix 4: Liverpool Bay SPA

Name of European site: Liverpool Bay SPA						
Distance to NSIP: 0 km (Burbo Bank Extension offshore wind farm located within SPA boundaries)						
European site features	**Adverse effect on integrity**					
	Displacement			*In-combination collision*		
	C	*O*	*D*	*C*	*O*	*D*
Red-throated diver	?Xa	?Xa	?Xa	?Xb	?Xb	?Xb
Common scoter	Xc	Xc	Xc	Xc	Xc	Xc

Evidence supporting conclusions:

a: The applicant undertook analysis of potential bird displacement using different scenarios. Bird displacement was considered for the Burbo Bank Extension offshore wind farm area plus a 2km buffer. The change in density outside the Burbo Bank Extension offshore wind farm area as a result of birds being displaced was predicted to be less than 1 bird per $1km^2$, which was not predicted to lead to an adverse effect on integrity. For the purposes of the assessment it was assumed by the applicant that there was no difference in the magnitude of any displacement effect from the construction, operation and decommissioning phases of the Burbo Bank Extension offshore wind farm (see the applicant's HRA Report Section 6.3, paragraphs 6.3.1-6.3.39). Concerns were raised by interested parties over whether: the applicant should have considered displacement beyond 2km; the use of only one year's baseline data; the nature of the scenarios used to analyse displacement; and whether the magnitude of displacement predicted by the applicant actually constitutes an adverse effect on the integrity (see NE's relevant representations, paragraphs 4.2.1-4.2.5; NRW's relevant representations, paragraphs 1.2.1-1.2.5; and the RSPB's written representations paragraphs 4.1-

4.11).The applicant undertook further analysis, following advice from the SNCBs, using JNCC aerial survey data. The displacement scenario used was taken from the HRA of the Kentish Flats Extension wind farm carried out by the Secretary of State, consent for which was granted on 19 February 2013. The applicant considers that assuming 100% mortality (as has happened with previous wind farm assessment) is unrealistic. The applicant estimated the density dependent mortality for displaced birds on the basis of an oystercatcher study as no equivalent study exists for red-throated diver (see the applicant's written response to Deadline I, Appendix 15, Paper 7). The conclusion of no adverse effect on integrity was maintained.

Baseline data: Following further discussions with the applicant over their use of historic data the SNCBs confirmed that they were no longer concerned about reliance on one year's baseline data (see the applicant's written response to Deadline I, Appendix 11, Paper 3; NE's written representations, paragraph 114; and NRW's written representations, Annex A, paragraphs 2.2.1-2.2.2).

The RSPB raised a query about an apparent discrepancy in the data presented in the applicant's ES (see RSPB's written representations, paragraphs 4.5-4.6). In response to a question from the ExA during the ISH 19-21 November 2013, the applicant provided a clarification (see applicant's written response to Deadline III, paragraph 5.17).

Choice of red-throated diver displacement scenarios: The SNCBs and the RSPB advised that there is empirical evidence that suggests that a wider buffer zone should be used (see NE's written representations Annex B, paragraph 112; NRW's written representations Annex E, paragraph 31; and RSPB's written representations, paragraphs 4.7-4.9). They also disagree with the applicant's choice of displacement scenario. NE and NRW advised that the scenario drawn from the Percival study is the most appropriate (see NE's written representations Annex B, paragraph 113; and NRW's written representations Annex E, paragraphs 31-32). The applicant states that the buffer and displacement scenario used are based on the approach accepted by the Secretary of State in the Kentish Flats Extension decision (see applicant's written response to Deadline I, response to question 1.13, paragraphs 1.13.1-1.13.4; and the applicant's written response to Deadline III, Appendix 1, speaking notes for Dr T. Norman). The applicant is also of the view that NE accepted the Kentish Flats Extension approach (the applicant's written response to Deadline III, paragraphs 5.12-5.13; and Hearing Document 7 Kentish Flats Extension SoCG with NE) although NE contest this (see NE's written summary of submissions provided during the ISH 19-21 November 2013, paragraphs 15-16). The applicant advises that the executive summary of the Percival study advises caution in applying the results of the report to other wind farm sites (see the applicant's written response to Deadline III, paragraph 5.12; and Hearing Document 6: Diver

surveys 2009-10). NE and the applicant maintained their respective positions at the ISH 28-30 January 2014 (see NE's written summary of oral representation made at ISH paragraph 11 and the applicant's written response to Deadline V, paragraph 6.4). NRW concurred with NE's position (see NRW's summary of submissions provided at ISH 28-30 January 2014, paragraph 5.1).

In response to a request from the ExA during the ISH 28-30 January 2014, the applicant has provided a further analysis of the potential impacts on red-throated diver which applies a displacement figure for the 2-3 km buffer area (see the applicant's 'Further Submissions in Advance of Issue Specific Hearing' dated 24 January 2014, Appendix 11).

Use of density-dependent mortality estimates: The applicant's approach estimates how many birds will be displaced and how that changes bird density in the remaining area of the SPA. The SNCBs recognise that this approach has been used in the Outer Thames Estuary SPA but is concerned in Liverpool Bay that the figures for density-dependent mortality have derived from studies of oystercatcher. Similarities between the two species cannot be tested so there is significant uncertainty about applying the results for oystercatcher to red-throated diver (see NE's written representations Annex B, paragraphs 116-119 and NRW's written representations Annex E, paragraphs 35-37). During the ISH 19-21 November 2013, NE agreed that in the absence of any alternative data the oystercatcher study could be used but it should be approached with caution because the feeding behaviour of oystercatcher is different from that of red-throated diver (see NE's written summary of submissions provided during the ISH 19-21 November 2013, paragraph 17). NRW concur with the representations made by NE during the ISH 19-21 November 2013 (see NRW's summary of submissions and evidence provided at the ISH 19-21 November 2013, paragraph 7.1).

The applicant is of the view that displaced birds will relocate to other areas of suitable habitat and that it is unrealistic to assume that all displaced birds will die (see the applicant's written response to Deadline I, Appendix 15, Paper 7).

The applicant provided a futher analysis of density-dependence in red-throated divers (see the applicant's 'Further Submissions in Advance of Issue Specific Hearing' dated 24 January 2014, Appendix 11). The applicant calculated an 'interaction' figure to establish the proportion of the SPA population that would be lost, with one of the parameters being 'P', the propoertion of birds unable to redistribute within the SPA population. The applicant argues that the oystercatcher model supports a 'P' value of less than 0.75 (with a 2km buffer) and less than 0.77 with a 3km buffer.

NE agreed that it was unrealistic that all birds displaced from the Burbo Bank Extension offshore wind farm site and buffer would die. They agreed that there was no evidence that the density dependence of red-throated diver was less than that of oystercatcher so the using the oystercatcher model was a reasonably precautionary approach. However, they advised that there was no scientific basis for using a 'P' value lower than 0.75 (see NE's written summary of oral representation made at ISH 28-30 January, paragraph 10). NRW concurred with NE's position (see NRW summary of submissions provided at ISH 28-30 January 2014, paragraph 5.1).

Mitigation: In response to a question from the ExA during the ISH 19-21 November 2013, NE stated that they had not been able to identify mitigation measures during discussions with the applicant (see NE's written summary of submissions provided during the ISH 19-21 November 2013, paragraph 21). This was confirmed during the ISH 28-30 January 2014 (see NE's written summary of oral representation made at the ISH 28-30 January 2014, paragraph 11). The applicant has also stated that they do not feel that there are any viable mitigation options (see applicant's written response to Deadline V, paragraphs 6.5-6.6).

Adverse effects on the integrity of the SPA: The applicant is of the view that an adverse effect on integrity can be excluded because the predicted change in the population is not greater than that consented in other similar cases and a recent estimate of the SPA population indicates that the red-throated diver population currently exceeds the conservation objective population (see applicant's Written Response to Deadline V, Appendix 9, paragraph 29). NE and NRW are of the view that an adverse effect on integrity cannot be excluded beyond reasonable scientific doubt for the reasons described above (see NE's written summary of oral representation made at the ISH 28-30 January 2014, paragraph 10 and see NRW's summary of submissions provided at the ISH 28-30 January 2014, paragraph 5.1.)

b: The applicant undertook an analysis of displacement effects in combination with other wind farms in the area. 9.36% of the SPA population is predicted to be displaced, with 1.73% of that displacement being caused by the Burbo Bank Extension offshore wind farm (see the applicant's HRA Report, paragraphs 7.5.3-7.5.12). The SNCBs raised concerns about the data set used for the assessment (see NE's relevant representations, paragraph 4.24 and NRW's relevant representations, Annex 1, paragraph 1.2.4). Following further discussions with the SNCBs the applicant carried out another in combination assessment based on a JNCC aerial dataset (see the applicant's written response to Deadline I, Appendix 15, Paper 7). The conclusion of no adverse effect on integrity was maintained.

The SNCBs advised that this new analysis underestimated the cumulative effect because of the displacement buffers being set at 2km and the exclusion of the North Hoyle wind farm, which became operational after the JNCC data was collected (see NE's written representations, Annex E, paragraphs 120-122 and NRW's written representations, paragraphs 38-40). The RSPB advised that the JNCC method produces a population estimate for the Burbo Bank Extension offshore wind farm site which is lower than the site-specific data and this discrepancy should be explored. The RSPB also notes that the projects other than wind farms (such as oil exploration) generate boat traffic which might lead to disturbance and these projects should be screened for incombination effects (see RSPB's written representations, paragraphs 4.12-4.14). The applicant disputes that it is possible or within the scope of the HRA for the Burbo Bank Extension offshore wind farm to deal with the effects of existing commercial shipping (see the applicant's written response to Deadline II, paragraph 3.6).

The SNCBs agreed with the use of the JNCC data (see the applicant's written response to Deadline I, Appendix 55, paragraphs 5.24-5.36 and Appendix 57, paragraph 5.22). At the ISH 19-21 November 2013 the SNCBs agreed that North Hoyle wind farm could be excluded from the analysis (see NE's written summary of submissions provided during the ISH, paragraph 14 and NRW's written summary of submissions provided during the ISH, paragraph 7.1).

c: In the applicant's view there is no potential for a likely significant effect on the population during any of the wind farm phases (see the applicant's HRA Report Section 5, Tables 5.1 and 5.2 and Section 7.2, Table 7.8). The applicant's conclusion was disputed by NE and NRW in relation to the potential effects of disturbance on this species (see NE's relevant representations paragraphs 5.2.1-5.2.2 and NRW's relevant representations Annex 1 paragraph 2.3).

Following further consultations with the applicant NE advised that if the ports of Belfast or Liverpool are used significant effects can be excluded because the shipping routes would not overlap with areas of high common scoter density. If the port of Barrow-in-Furness is used then the SPA population could be affected. The applicant and the SNCBs have agreed that a licence condition can be added which restricts vessel movements to areas not likely to affect common scoter (see NE's written representations Annex B, paragraphs 172-176). NRW confirmed that if the Port of Mostyn is being used, then shipping associated with the Burbo Bank Extension offshore wind farm will not have a significant effect as the vessels would be using an already busy shipping lane (see NRW written representations, Annex E, paragraph 9).

Stage 2 Matrix 5A: Mersey Narrows and North Wirral Foreshore SPA

Name of European site: Mersey Narrows and North Wirral Foreshore SPA						
Distance to NSIP: 6 km						
European site features	**Adverse effect on integrity**					
	Collision risk			*In-combination collision*		
	C	*O*	*D*	*C*	*O*	*D*
Common tern breeding and passage		Xa			Xb	

Evidence supporting conclusions:

a: The applicant undertook collision risk modelling for common tern using the Band Model (2012) (see the applicant's Environmental Statement, Chapter 15, paragraph 15.10.5). Separate calculations were undertaken for the passage and breeding populations. The collisions were apportioned between the SPAs within foraging range for which common tern was a designated feature. The outcome of the applicant's collision risk modelling was then compared with the Potential Biological Removal (PBR) threshold for the breeding and passage populations. The applicant was of the view that there would not be an adverse effect on integrity from the Burbo Bank Extension offshore wind farm (see the applicant's HRA Report Section 6.7, paragraphs 6.7.1 and 6.7.12 and Annex 2).

NE raised concerns about the parameters used by the applicant in calculating the PBR, specifically the N_{min} (estimate of population size) and the *F* factor (which is described as the 'recovery factor', related to the conservation status of the population). They also advised that as there were no longer breeding colonies at any of the other SPAs considered in the applicant's collision risk modelling, all collisions should be attributed to the breeding colony at Mersey Narrows and North Wirral Foreshore SPA (see NE's relevant representations, paragraphs 5.1.1-5.1.3). The applicant updated their collision

risk modelling using Band Model options 2 and 3, and also updated their PBR calculations (see applicant's written response to Deadline I, Appendix 14, Paper 6 and Appendix 16, Paper 8). The updated PBR calculations in Appendix 16 addressed the issues raised by NE in relation to estimating population size (see applicant's written response to Deadline I, Appendix 16, paragraph 7.1.2). The conclusion of no adverse on the integrity of the site was maintained. NE advised in their written representations that they did not agree with the use of Band Model options 2 and 3. In their view, the applicant had site-specific data available to them that would allow the use of Band Model option 1; NE advised as a consequence that this version of the model should be preferred over options 2 and 3 (see NE's written representation paragraphs 39-42).

Following further discussions between the applicant and NE both parties confirmed at the ISH held on 19-21 November 2013, that they had agreed on the use of Band Model option 2, as NE was satisfied that as there were concerns about the site specific data available to the applicant, use of option 2 was appropriate in this case (see NE's written summary of submissions, paragraph 5). This allowed NE to advise that they agreed with the conclusion of no adverse effect on integrity through the effects of the Burbo Bank Extension offshore wind farm on the common tern population of the SPA (see NE's written summary of submissions, paragraph 19 and the applicant's written response to Deadline III, paragraph 5.19).

b: NE raised concerns about the lack of an in combination assessment, as four other offshore wind farms were identified within foraging range of the Burbo Bank Extension offshore wind farm (see NE's relevant representations paragraph 5.1.3). They subsequently agreed with the applicant that the only wind farms within foraging range of the common tern colony at the SPA were the existing Burbo Bank wind farm and the Burbo Bank Extension offshore wind farm. NE advised that as the applicant's collision risk values were based on surveys, three of which pre-dated the existing Burbo Bank wind farm coming into operation, the effects of the existing Burbo Bank wind farm should not be considered as part of the baseline (see NE's written representation, paragraph 103). The applicant and NE did not reach agreement on this point; however following further discussion with the applicant, NE were able to conclude that there would be no adverse effect on the integrity of the site. They concluded that the collision risk model is likely to represent a precautionary worst case estimate of collision and the north-west corner of the Burbo Bank Extension offshore wind farm site is beyond the theoretical mean maximum foraging range of common terns from this SPA. They also calculated the per MW collision rate, at the Burbo Bank Extension offshore wind farm and then extrapolated to give a likely collision rate for the existing Burbo Bank wind farm. When used in a PBR calculation, this translates into an *F* value close to 0.3 which is NE's advised value for this colony (see NE's written summary of submissions, paragraph 19).

Stage 2 Matrix 5B: Mersey Narrows and North Wirral Foreshore Ramsar

Name of European site: Mersey Narrows and North Wirral Foreshore Ramsar						
Distance to NSIP: 6 km						
European site features	**Adverse effect on integrity**					
	Collision risk			*In-combination collision*		
	C	*O*	*D*	*C*	*O*	*D*
Common tern breeding and passage		Xa			Xb	

Evidence supporting conclusions:

a: This feature is a feature of the Mersey Narrows and North Wirral Foreshore SPA and relevant evidence has been identified and summarised in footnote (a) to Stage 2 Matrix 5A. Readers of that footnote should substitute the term Ramsar for the term SPA when making reference to Stage 2 Matrix 5B.

b: This feature is a feature of the Mersey Narrows and North Wirral Foreshore SPA and relevant evidence has been identified and summarised in footnote (b) to Stage 2 Matrix 5A. Readers of that footnote should substitute the term Ramsar for the term SPA when making reference to Stage 2 Matrix 5B.

Stage 2 Matrix 6A: Morecambe Bay SPA

Name of European site: Morecambe Bay SPA						
Distance to NSIP: 42 km						
European site features	**Adverse effect on integrity**					
	Collision risk			*In-combination collision*		
	C	*O*	*D*	*C*	*O*	*D*
Lesser black-backed gull		Xa			Xb	
Herring gull		Xc			Xd	

Evidence supporting conclusions:

NB: NE advised in their written representations that the JNCC SPA review in 2001 identified the herring gull population, which is part of the assemblage feature of the Morecambe Bay SPA, as being large enough to quality as a designated feature. The SPA citation has not yet been updated, so herring gull are not yet legally one of the reasons for which the SPA is classified. As public consultation has not yet been undertaken on this feature the SPA does not qualify as a potential SPA as defined in the National Planning Policy Framework (which requires potential SPAs to be treated in the same way as designated European sites). However, NE advised that as a matter of best practice the herring gull population should be subject to the same assessment and decision-making process as any designated features of European sites (see NE's written representations, paragraphs 5.1.1-5.1.4).

a: The applicant undertook collision risk modelling using the Band Model (2012) (see the applicant's Environmental Statement, Chapter 15, paragraph 15.10.5). The collisions were apportioned between the SPAs within foraging range for which lesser black-backed gull was a designated feature. At a 98% avoidance rate 6 collisions per annum are predicted for the SPA which equates to 0.037% of the SPA population. The outcome of the applicant's collision risk modelling was then used to calculate the Potential Biological Removal (PBR) threshold for the Morecambe Bay SPA population. The applicant was of the view that there would not be an adverse effect on integrity from the Burbo Bank Extension offshore wind farm (see the applicant's HRA Report Section 6.8, paragraphs 6.5.1 to 6.5.12 and Annex 2).

NE highlighted potential impacts on the breeding lesser black-backed gull population of the SPA (see NE's relevant representations, paragraph 2.2.1). The applicant updated their collision risk modelling using Band Model options 2 and 3, apportionment of collisions to SPAs and also updated their PBR calculations (see applicant's written response to Deadline I, Appendix 14, Paper 6 and Appendix 16, Paper 8). The conclusion of no adverse effect on integrity was maintained. NE in their written representations, state that they do not agree with the applicant's choice of Band Model options. They advise however, that they accept the approach to apportionment that the applicant has used which is based on the distance of the colony from the Burbo Bank Extension offshore wind farm site, rather than the distance of the SPA boundary from the Burbo Bank Extension offshore wind farm site. They also agreed the N_{min} parameter (population size) used within the applicant's PBR. Although NE disputed the values generated by the applicant's collision risk modelling, they pointed out that if the applicant's figures were accepted then the *F* factor (which is described as the 'recovery factor', related to the conservation status of the population) for the PBR is less than 0.1 which allows a conclusion of no adverse effect on integrity (see NE's written representations, Annex B, paragraphs 131-137, 139).

Following further discussions between the applicant and NE both parties confirmed at the ISH held on 19-21 November 2013, that they had agreed on the use of Band Model option 2, as NE was satisfied that as there were concerns about the site specific data available to the applicant, use of option 2 was appropriate in this case (see NE's written summary of submissions, paragraph 5). Although the applicant maintains their position that option 3 is valid they were willing to accept the compromise position (see the applicant's written response to Deadline III, paragraph 5.4).

b: The applicant's initial assessment of in combination effects considered the combined effects of West of Duddon Sands, Walney I and II, Walney Extension, Ormonde and Rhiannon wind farms using the same methods as for assessing the effect of the Burbo Bank Extension offshore wind farm alone (see the applicant's HRA Report Section 7.5, paragraphs 7.5.13-7.5.19 and Annex 2). The assessment was updated in the applicant's written response to Deadline I, Appendix 16,

Paper 8 and Appendix 17, Paper 9). The applicant's assessment was further updated and amended in a paper submitted in the ISH hearing 19-21 November 2013 (see applicant's written response to Deadline III, clarification note on lesser black-backed gull Morecambe Bay SPA). The updated assessment used updated population data and added refinements for foraging range and definition and colony size. It also adjusted the predicted level of impact to account for the 'built out' size of the wind farms rather than the scenarios assessed in the environmental statements for the individual projects. A tiered approach was used corresponding with the stage individual wind farms had reached (operational, under construction, going through the consenting process or about to enter the consenting process). NE raised concerns about the wind farms which could have an effect in combination with the Burbo Bank Extension offshore wind farm but for which the applicant was unable to find data (Gwynt y Môr, the existing Burbo Bank wind farm, Rhyl Flats, North Hoyle and Barrow). In response to a request from the ExA, NE provided a brief outlining the approach they wanted the applicant to take in assessing in combination effects (see NE's written summary of submissions and evidence provided during the ISH 19-21 November 2013, Annex A). NE also advised that they were giving further consideration to the choice of *F* factor; for Morecambe Bay SPA, where the lesser black-backed gull population has declined and therefore an *F* value of 0.1, might be appropriate (see NE's written summary of submissions from the ISH 19-21 November 2013).

The applicant submitted an updated assessment based on the approach recommended by NE (see applicant's written response to Deadline V, Appendix 9). NE agreed that, as the applicant's PBR calculations gave an *F* factor of less than 0.1, it could be agreed that there would be no adverse effect on integrity from the Burbo Bank Extension offshore wind farm in combination with the other wind farms (see NE's written summary of oral submissions made at the ISH 28-30 January 2014, paragraphs 2-7).

During the ISH of 28-30 January 2014, the ExA noted that the applicant's in combination analysis was adjusted to take into account the fact that several of the wind farms were smaller than originally consented. He asked the applicant to establish what the implications were for their analysis if any of the wind farms subsequently built up to the limits within their consent. The applicant submitted an analysis which stated that there was no capacity for additional development within existing wind farms such that they would build out to their consented capacity (see applicant's Post Hearing, Appendix 7).

During the ISH 28-30 January 2014, the ExA queried how 'Tier 5' wind farms (wind farms for which consenting bodies are expecting an application but which has not yet been submitted) should be dealt with. The applicant advised that there is a great deal of uncertainty about the data used for calculating the effects from Rhiannon (the only relevant 'Tier 5' project)

and that it might be sensible to exclude the effects of 'Tier 5' projects from consideration (audio hearing of ISH 28-30 January 2014, session 1). NE stated that the impact of the Rhiannon scheme would have to be subjected to the same level of scrutiny as had been applied to the present proposal, and therefore that a fresh view would have to be taken as to the impact of a refined Rhiannon scheme on the relevant European protected sites at that stage (see NE's written summary of oral representations, given at the ISH 28-30 January 2014).

c: The applicant undertook collision risk modelling using the Band Model (2012) (see the applicant's Environmental Statement, Chapter 15, paragraph 15.10.5). At a 98% avoidance rate, 95 collisions per annum are predicted for the SPA which equates to 0.09% of the SPA population. The outcome of the collision risk modelling was then compared with the Potential Biological Removal (PBR) threshold for the Morecambe Bay SPA population. The applicant was of the view that there would not be an adverse effect on integrity from the Burbo Bank Extension offshore wind farm (see the applicant's HRA Report Section 6.8, paragraphs 6.5.1 to 6.5.12 and Annex 2).

NE raised concerns about the assessment of effects on the herring gull populations of the SPA (see NE's relevant representations, paragraph 5.5.1). The applicant updated their collision risk modelling using Band Model options 2 and 3, apportionment of collisions to SPAs and also updated their PBR calculations (see applicant's Written Response to Deadline I, Appendix 14, Paper 6 and Appendix 16, Paper 8). The conclusion of no adverse effect on integrity was maintained. NE in their written representations, state that they do not agree with the applicant's choice of Band Model options. NE also raised concerns about some of the data used being out of date; the applicant dealt with this by applying a correction factor which was agreed with NE. NE advised that if the applicant's CRM and PBR values were accepted then none of the presented CRM values are above the most conservative PBR value (where the 'recovery factor' $F = 0.1$). NE agreed that it would be possible to conclude there would be no adverse effect on integrity (see NE's written representations, Annex B, paragraphs 178-184).

The applicant submitted a clarification note during the ISH 19-21 November 2013 (see applicant's written response to Deadline III clarification note on herring gull foraging range). NE accepted that this note demonstrated that the Burbo Bank Extension offshore wind farm is almost entirely beyond the theoretical mean maximum foraging range, when measuring the distance between the South Walney colony and the footprint of the Burbo Bank Extension offshore wind farm, making the likelihood of a linkage between the SPA and the Burbo Bank Extension offshore wind farm site so small, as to be able to conclude that no likely significant effect would result (see NE's written summary of submissions and evidence provided during the ISH 19-21 November 2013).

Following further discussions between the applicant and NE both parties confirmed at the ISH on 19-21 November 2013, that they had agreed on the use of Band Model option 2, as NE was satisfied that as there were concerns about the site specific data available to the applicant, use of option 2 was appropriate in this case (see NE's written summary of submissions, paragraph 5). Although the applicant maintains their position that option 3 is valid, they were willing to accept the compromise position (see the applicant's Written Response to Deadline III, paragraph 5.4).

d: The applicant's initial assessment of in combination effects considered the combined effects of West of Duddon Sands, Walney I and II, Walney Extension, Ormonde and Rhiannon wind farms, using the same methods as for assessing the effect of the Burbo Bank Extension offshore wind farm alone (see the applicant's HRA Report Section 7.5, paragraphs 7.5.13-7.5.19 and Annex 2). The assessment was updated in the applicant's written response to Deadline I, Appendix 16, Paper 8 and Appendix 17, Paper 9). The applicant submitted a clarification note during the ISH on 19-21 November 2013 (see applicant's written response to Deadline III clarification note on herring gull foraging range). NE accepted that this note demonstrated that the Burbo Bank Extension offshore wind farm is almost entirely beyond the theoretical mean maximum foraging range, when measuring the distance between the South Walney colony and the footprint of the Burbo Bank Extension offshore wind farm, making the likelihood of a linkage between the SPA and the Burbo Bank Extension offshore wind farm site so small as to be able to conclude that no likely significant effect would result (see NE's written summary of submissions and evidence provided during the ISH 19-21 November 2013).

Stage 2 Matrix 6B: Morecambe Bay Ramsar

Name of European site: Morecambe Bay Ramsar						
Distance to NSIP: 42 km						
European site features	**Adverse effect on integrity**					
	Collision risk			*In-combination collision*		
	C	*O*	*D*	*C*	*O*	*D*
Lesser black-backed gull		Xa			Xb	
Herring gull		Xc			Xd	

Evidence supporting conclusions:

a: This feature is a feature of the Morecambe Bay SPA and relevant evidence has been identified and summarised in footnote (a) to Stage 2 Matrix 6A. Readers of that footnote should substitute the term Ramsar for the term SPA when making reference to Stage 2 Matrix 6B.

b: This feature is a feature of the Morecambe Bay SPA and relevant evidence has been identified and summarised in footnote (b) to Stage 2 Matrix 6A. Readers of that footnote should substitute the term Ramsar for the term SPA when making reference to Stage 2 Matrix 6B.

c: This feature is a feature of the Morecambe Bay SPA and relevant evidence has been identified and summarised in footnote (c) to Stage 2 Matrix 6A. Readers of that footnote should substitute the term Ramsar for the term SPA when making reference to Stage 2 Matrix 6B.

d: This feature is a feature of the Morecambe Bay SPA and relevant evidence has been identified and summarised in footnote (d) to Stage 2 Matrix 6A. Readers of that footnote should substitute the term Ramsar for the term SPA when making reference to Stage 2 Matrix 6B.

Stage 2 Matrix 7A: Ribble and Alt Estuaries SPA

Name of European site: Ribble and Alt Estuaries SPA						
Distance to NSIP: 6 km						
European site features	**Adverse effect on integrity**					
	Collision risk			*In-combination collision*		
	C	*O*	*D*	*C*	*O*	*D*
Lesser black-backed gull		Xa			Xb	

Evidence supporting conclusions:

a: The applicant undertook collision risk modelling using the Band Model (2012) (see the applicant's Environmental Statement, Chapter 15, paragraph 15.10.5). The collisions were apportioned between the SPAs within foraging range for which lesser black-backed gull was a designated feature. At a 98% avoidance rate, 164 collisions per annum are predicted for the SPA, which equates to 2% of the SPA population. The outcome of the collision risk modelling was then compared with the Potential Biological Removal (PBR) threshold for the Ribble and Alt Estuaries SPA population. The applicant was of the view that there would not be an adverse effect on integrity from the Burbo Bank Extension offshore wind farm (see the applicant's HRA Report Section 6.8, paragraphs 6.4.1 to 6.4.13 and Annex 2).

NE highlighted potential impacts on assessment the breeding lesser black-backed gull population of the SPA (see NE's relevant representations, paragraph 4.1.1-4.1.2). The RSPB advised that they felt that there would be an adverse effect from the Burbo Bank Extension offshore wind farm alone on this feature of the SPA (see the RSPB's written representations, paragraph 5.5). The applicant updated their collision risk modelling using Band Model options 2 and 3, apportionment of collisions to SPAs and also updated their PBR calculations (see applicant's written response to Deadline I,

Appendix 14, Paper 6 and Appendix 16, Paper 8). The conclusion of no adverse effect on integrity was maintained. NE in their written representations, state that they do not agree with the applicant's choice of Band Model options. They advise however, that they accept the approach to apportionment that the applicant has used, which is based on the distance of the colony from the Burbo Bank Extension offshore wind farm site, rather than the distance of the SPA boundary from the Burbo Bank Extension offshore wind farm site. They also agreed the N_{min} parameter (population size) used within the applicant's PBR. Although NE disputed the values generated by the applicant's collision risk modelling, they pointed out that if the applicant's figures were accepted then the level of collision related mortality only exceeded the PBR value if the 'recovery factor' *F* is less than 0.1. As NE advise that an *F* value on 0.3 is appropriate in this case (because the population is largely stable), they were able to agree with the applicant that there would not be any adverse effect on the integrity of the SPA.

The RSPB also state that they do not agree with the applicant's choice of Band Model options and advised the use of option 2 with a 98% avoidance rate, or option 3 with a 95% avoidance rate. They also raise concerns about various aspects of the applicant's methodological approach and inputs to the PBR (see RSPB's written representations Annex A, paragraphs 1-6). They advise that the *F* factor should be 0.3 (see RSPB written represenations Annex B, response to question 1.19)

Following further discussions between the applicant and NE both parties confirmed at the ISH held on 19-21 November 2013, that they had agreed on the use of Band Model option 2, as NE was satisfied that as there were concerns about the site specific data available to the applicant, use of option 2 was appropriate in this case (see NE's written summary of submissions, paragraph 5). Although the applicant maintains their position that option 3 is valid, they were willing to accept the compromise position (see the applicant's written response to Deadline III, paragraph 5.4).

b: The applicant's initial assessment of in combination effects considered the combined effects of West of Duddon Sands, Walney I and II, Walney Extension, Ormonde and Rhiannon wind farms, using the same methods as for assessing the effect of the Burbo Bank Extension offshore wind farm alone (see the applicant's HRA Report Section 7.5, paragraphs 7.5.13-7.5.19 and Annex 2). NE and the RSPB advised that the effects of several other wind farms should be taken into account (see NE's relevant representations paragraph 4.1.3 and RSPB's written representations, paragraph 5.6). The assessment was updated in the applicant's written response to Deadline I, Appendix 16, Paper 8 and Appendix 17, Paper 9. The assessment was further updated and amended in a paper submitted in the ISH hearing on 19-21 November 2013 (see applicant's written response to Deadline III, clarification note on lesser black-backed gull Morecambe Bay SPA, which

also includes consideration of lesser black-backed gull at Ribble and Alt Estuaries SPA). The updated assessment used updated population data and added refinements for foraging range and definition and colony size. It also adjusted the predicted level of impact to account for the 'built out' size of the wind farms rather than the scenarios assessed in the environmental statements for the individual projects. A tiered approach was used corresponding to the stage individual wind farms had reached (operational, under construction, going through the consenting process or about to enter the consenting process). NE raised concerns about the wind farms which could have an effect in combination with the Burbo Bank Extension offshore wind farm, but for which the applicant was unable to find data (Gwynt y Môr, the existing Burbo Bank wind farm, Rhyl Flats, North Hoyle and Barrow). In response to a request from the ExA, NE provided a brief outlining the approach they wanted the applicant to take in assessing in combination effects (see NE's written summary of submissions and evidence provided during the ISH on 19-21 November 2013, Annex A). NE also advised that they were giving further consideration to the choice of *F* factor; for Ribble and Alt Estuaries SPA, where the lesser black-backed gull population is largely stable and therefore an *F* value of 0.3 would be appropriate (see NE written summary of submissions from ISH on 19-21 November 2013).

The applicant submitted an updated assessment based on the approach recommended by NE (see applicant's Written Response to Deadline V, Appendix 9, amended version). During the ISH on 28-30 January 2014, NE confirmed that they agreed with the applicant's approach apart from the adjustment of historic collision risk mortality to account for colony size changes between the time of the baseline surveys and current colony size estimates (see the applicant's response to Deadline V, Appendix 9, amended version, paragraphs 2.44-2.49). As the population at the SPA has not declined NE did not agree with the applicant's proposed adjustment. However, even if this adjustment was not applied to the applicant's calculations the *F* factor was less than 0.1 and so NE could agree that there would be no adverse effect on integrity.

During the ISH on 28-30 January 2014, the ExA queried how 'Tier 5' wind farms (wind farms for which consenting bodies are expecting an application but which has not yet been submitted) should be dealt with. The applicant advised that there is a great deal of uncertainty about the data used for calculating the effects from Rhiannon (the only relevant 'Tier 5' project) and that it might be sensible to exclude the effects of 'Tier 5' projects from consideration (audio of ISH 28-30 January 2014, session 1). NE stated that the impact of the Rhiannon scheme would have to be subjected to the same level of scrutiny as had been applied to the present proposal, and therefore that a fresh view would have to be taken as to the impact of a refined Rhiannon scheme on the relevant European protected sites at that stage (see NE's written summary of oral representations, given at the ISH on 28-30 January 2014).

During the ISH on 28-30 January 2014, the ExA noted that the applicant's in combination analysis was adjusted to take into account the fact that several of the wind farms were smaller than originally consented. He asked the applicant to establish what the implications were for their analysis if any of the wind farms subsequently built up to the limits within their consent. The applicant submitted an analysis which stated that there was no capacity for additional development within existing wind farms such that they would be able to build out to their consented capacity (see applicant's Post Hearing, Appendix 7).

NE's relevant representations advised that the effects of the proposed cull of 552 pairs of lesser black-backed gulls (and 475 pairs of Herring gulls) at the Ribble & Alt Estuaries SPA should be included in an in combination assessment (see NE's relevant representations, paragraph 4.1.4). Following further discussions NE and the applicant agreed that the effect of the cull would be to hold the population level at 3,348 pairs. Any mortality resulting from the Burbo Bank Extension offshore wind farm would be likely to lead to a reduction in the numbers of birds culled (as the population will be monitored as part of the cull programme). The applicant undertook an updated collision assessment to take account of the reduced population size and reduced collision risk (see NE's written representations, Annex B paragraphs 151-154; NE's written summary of submissions provided during the ISH on 19-21 November 2013; and the applicant's written response to Deadline III, Appendix 18, Paper 10). The applicant concluded that no adverse effect on integrity would occur. Although NE advised the use of a smaller *F* factor than the applicant had used (0.3 compared with 0.5), NE still advised that if the applicant's figures were accepted then no adverse effect on integrity was likely (see NE's written representations, Annex B, paragraphs 153-154). At the ExA's request NE supplied a copy of the BAES cull licence issued in July 2013 (see NE's copy of the conditional consent for the cull of lesser black-backed gulls at Warton Aerodrome dated 17 July 2013, accepted at the ISH on 20 November 2013).

The RSPB advised that, in addition to the work the applicant has done in Appendix 18, Paper 10, the applicant should also consider what would happen if the cull ends in 2023, when the current consent ends and what would happen if the cull is extended beyond 2023. This would require a Population Viability Analysis as the PBR does not predict changes in populations. In the RSPB's view if the estimated collision risk mortaility exceeded the PBR it might lead to further suppression of the population, even if culling is halted unless immigration occurred. The RSPB agree that it would be justifiable to re-run the collision risk model for a smaller population size (see RSPB's written representations paragraphs 5.18-5.25). They also advised that the N_{min} value used in the PBR should be 7569 individuals (see RSPB's written representations Annex B, response to question 1.19).

Stage 2 Matrix 7B: Ribble and Alt Estuaries Ramsar

Name of European site: Ribble and Alt Estuaries Ramsar						
Distance to NSIP: 6 km						
European site features	**Adverse effect on integrity**					
	Collision risk			*In-combination collision*		
	C	*O*	*D*	*C*	*O*	*D*
Lesser black-backed gull		Xa			Xb	

Evidence supporting conclusions:

a: This feature is a feature of the Ribble and Alt Estuaries SPA and relevant evidence has been identified and summarised in footnote (a) to Stage 2 Matrix 7A. Readers of that footnote should substitute the term Ramsar for the term SPA when making reference to Stage 2 Matrix 7B.

b: This feature is a feature of the Ribble and Alt Estuaries SPA and relevant evidence has been identified and summarised in footnote (b) to Stage 2 Matrix 7A. Readers of that footnote should substitute the term Ramsar for the term SPA when making reference to Stage 2 Matrix 7B.

Stage 2 Matrix 8: River Dee and Bala Lake SAC

Name of European site: River Dee and Bala Lake SAC			
Distance to NSIP: 8.5 km			
European site features	**Adverse effect on integrity**		
	Disturbance		
	C	*O*	*D*
Atlantic salmon	Xa		

Evidence supporting conclusions

a: The applicant proposed a piling restriction from the 1 April to 31 May during construction to reduce noise effects on migrating salmon smolt. In relation to adult salmon, the worst case scenario would be that the piling duration would last throughout the peak month for adult migration. However, based on the salmon data from Chester weir from 1992-2011, only 34% of the total salmon run will occur during this month, with the rest of the migration period being spread from May to October. The applicant therefore concluded that the effect would lead to delayed migration, rather than mortality or increased predation and there would be no adverse effect on integrity (see applicant's HRA Report Section 6.9, paragraphs 6.9.10-6.9.32).

The SNCBs disputed the conclusion of no adverse effect and required additional clarification from the applicant on the likely effects on migrating adult salmon (NRW's written representations Annex A, paragraphs 3.1.1-3.1.9 and NE's written representations, paragraphs 6.14.1-6.14.8). The applicant provided additional clarification on the relationship between the worst case scenario evaluated in the ES and what was realistically most likely to happen during construction, the likely behaviour of migratory salmon in the River Dee and the metrics used in the underwater noise modelling (see the applicant's Response to written representations and first round of responses to ExA Questions resulting from Deadline I:

Appendix 2). The EA and the MMO agreed that there would be no significant impacts on adult migrating salmon (see paragraph 1.2.3 of Appendix 2).

The applicant's evidence was further explained during the ISH on 19-21 November 2013 (see applicant's written response to Deadline III, Appendix 1, Speaking Note for Mr Stephen Bellew, Dr Jeremy Nedwell and Mr John Webb). The conditions in the draft DCO that would mitigate any impacts were also reviewed by the applicant (see lines 74-82 of the Speaking Notes). The SNCBs agreed with some of the points made by the applicant, but remained concerned about the potential impacts of delaying migration on adult salmon. They advised that although the worst case scenario assessed by the applicant was unlikely to occur, as it was permitted under the DCO, it should be covered in any appropriate assessment. They advised that if further restrictions on piling were introduced in the DCO it would be possible to conclude that there was no adverse effect on integrity (see NRW's summary of submissions and evidence provided at the ISH on 19-21 November 2013, paragraph 9.2 and NE summary of submissions and evidence provided at the ISH on 19-21 Novermber 2013, paragraphs 23-29).

The applicant maintained their view that there would be no adverse effect on the integrity of the SAC, but provided wording for an additional condition in their draft DCO which was agreed with NRW and NE (see the applicant's Further Submission Appendix 13, submitted on 24 January 2014). NE and NRW agreed that the new condition provided sufficient confidence to conclude that adverse effects on integrity could be avoided (see NE's written summary of oral representation made at the ISH held on 28-30 January 2014, paragraphs 8-9 and NRW's written summary of submissions and evidence made at the ISH held on 28-30 January 2014, paragraphs 4.1-4.2).

The applicant requested that the condition in the draft DCO relating to seasonal restrictions on piling be amended so that it did not constrain piling for the offshore substations (see applicant's Further Submission, Appendix 14). It was agreed by the SNCBs that amending the condition would not lead to adverse effects on the integrity of the SAC (see NE's written summary of oral representation made at the ISH held on 28-30 January 2014, paragraph 8; NRW's written summary of submissions and evidence made at the ISH held on 28-30 January 2014, paragraphs 4.2; and the applicant's written response to Deadline V, paragraphs 5.1-5.4).

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6.0 CONSERVATION OBJECTIVES

Bowland Fells SPA conservation objectives

6.1 Text taken from NE's website (see http://www.naturalengland.org.uk/ourwork/conservation/designations/sac/northwest.aspx) on 18/2/14. The qualifying features are listed in Stage 1 Matrix 2:

With regard to the individual species and/or assemblage of species for which the site has been classified ("the Qualifying Features");

Avoid the deterioration of the habitats of the qualifying features, and the significant disturbance of the qualifying features, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving the aims of the Birds Directive.

Subject to natural change, to maintain or restore:

- *The extent and distribution of the habitats of the qualifying features;*
- *The structure and function of the habitats of the qualifying features;*
- *The supporting processes on which the habitats of the qualifying features rely;*
- *The populations of the qualifying features;*
- *The distribution of the qualifying features within the site.*

Liverpool Bay SPA conservation objectives

6.2 Text taken from NE's website (http://www.naturalengland.org.uk/ourwork/conservation/designations/sac/northwest.aspx) on 18/2/14. The qualifying features are listed in Stage 1 Matrix 11:

Subject to natural change, maintain or enhance the red-throated diver population and its supporting habitats in favourable condition.

The interest feature red-throated diver will be considered to be in favourable condition only when both of the following two conditions are met:

(i) The size of the red-throated diver population is at, or shows only non-significant fluctuation around the mean population at the time of designation of the SPA to account for natural change;

(ii) The extent of the supporting habitat within the site is maintained.

The interest feature common scoter will be considered to be in favourable condition only when each of the following two conditions is met:

(i) The size of the red-throated diver population is at, or shows only non-significant fluctuation around the mean population at the time of designation of the SPA to account for natural change;

(ii) The extent of the supporting habitat within the site is maintained.

Subject to natural change, maintain or enhance the waterbird assemblage and its supporting habitats in favourable condition.

The interest feature waterbird assemblage will be considered to be in favourable condition only when each of the following two conditions is met:

(i) The size of the waterbird assemblage population shows only non-significant fluctuation around the mean at the time of designation to allow for natural change;

(ii)The extent of the waterbird assemblage supporting habitat within the site is maintained.

Mersey Narrows and North Wirral Foreshore SPA and Ramsar conservation objectives

6.3 Conservation objectives have not yet been drafted for these European sites.

Morecambe Bay SPA conservation objectives

6.4 Text taken from NE's website (http://www.naturalengland.org.uk/ourwork/conservation/designations/sac/northwest.aspx) on 18/2/14. The qualifying features are listed in Stage 1 Matrix 18:

With regard to the individual species and/or assemblage of species for which the site has been classified ("the Qualifying Features");

Avoid the deterioration of the habitats of the qualifying features, and the significant disturbance of the qualifying features, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving the aims of the Birds Directive.

Subject to natural change, to maintain or restore:

- *The extent and distribution of the habitats of the qualifying features;*
- *The structure and function of the habitats of the qualifying features;*
- *The supporting processes on which the habitats of the qualifying features rely;*
- *The populations of the qualifying features;*
- *The distribution of the qualifying features within the site*

Ribble and Alt Estuaries SPA conservation objectives

6.5 Text taken from NE's website (http://www.naturalengland.org.uk/ourwork/conservation/designations/sac/northwest.aspx ref) on 18/2/14. The qualifying features are listed in Stage 1 Matrix 22.

With regard to the individual species and/or assemblage of species for which the site has been classified ("the Qualifying Features");

Avoid the deterioration of the habitats of the qualifying features, and the significant disturbance of the qualifying features, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving the aims of the Birds Directive.

Subject to natural change, to maintain or restore:

- *The extent and distribution of the habitats of the qualifying features;*
- *The structure and function of the habitats of the qualifying features;*
- *The supporting processes on which the habitats of the qualifying features rely;*
- *The populations of the qualifying features;*
- *The distribution of the qualifying features within the site.*

River Dee and Bala Lake SAC conservation objectives

6.6 Text taken from NE's website on 18/2/14. The qualifying features are listed in Stage 1 Matrix 24.

With regard to the natural habitats and/or species for which the site has been designated ("the Qualifying Features");

Avoid the deterioration of the qualifying natural habitats and the habitats of qualifying species, and the significant disturbance of those qualifying species, ensuring the integrity of the site is maintained and the site makes a full contribution to achieving Favourable Conservation Status of each of the qualifying features.

Subject to natural change, to maintain or restore:

- *The extent and distribution of qualifying natural habitats and habitats of qualifying species;*
- *The structure and function (including typical species) of qualifying natural habitats and habitats of qualifying species;*
- *The supporting processes on which qualifying natural habitats and habitats of qualifying species rely;*
- *The populations of qualifying species;*
- *The distribution of qualifying species within the site.*

6.7 Extract from Core Management Plan including Conservation Objectives: River Dee and Bala Lake/Agon Ayfrwdy Allyn Tegid SAC (Version 10 dated 13/3/2008)

Conservation Objective for water courses (Rivers):

While not a feature in its own right the ecological status of the water course is a major factor in determining FCS for all of the site features. The vision for the water course is therefore described below. This section is an integral part of the conservation objectives for all features of this SAC

Vision For the Water Course

The vision for the water course is for it to be in favourable conservation status, where all of the following conditions are satisfied:

1. The ecological status of the water environment should be sufficient to maintain a stable or increasing population of each feature. This will include elements of water quantity and quality, physical habitat and community composition and structure (It is anticipated that these limits will concur with the relevant standards used by the Review of Consents process).

2. There will be no deterioration in water quality other than that temporarily generated by natural variations in water flow or by man made variations occurring as a result of operating the River Dee flow control regime within its normal operating parameters.

3. The Dee flow regime should remain within 10% of 'recent actual flow' as described by Bethune (2006).

4. The river planform and profile should be predominantly unmodified. Physical modifications having an adverse effect on the integrity of the SAC will be avoided.

5. Artificial factors impacting on the capability of each feature to occupy the full extent of its potential range should be modified where necessary to allow passage, eg. weirs, bridge sills, or other forms of barrier.

6. Natural limiting factors such as waterfalls, which may limit the natural range of a feature or its dispersal between naturally isolated populations, should not be modified.

7. Flow objectives for assessment points in the Dee Catchment Abstraction Management Strategy will be agreed between EA and CCW as necessary.

8. Levels for nutrients, in particular phosphate, will be agreed between EA and CCW for each Water Framework Directive water body in the River Dee and Bala Lake SAC, and measures taken to maintain nutrients below these levels (It is anticipated that these limits will concur with the standards used by the Review of Consents process).

9. The levels of water quality parameters, in addition to those deemed to be nutrients and including levels of suspended solids, that may affect the distribution and abundance of SAC features will be agreed between EA and CCW for each Water Framework Directive water body in the River Dee and Bala Lake SAC, and measures taken to maintain them below these levels (It is anticipated that these limits will concur with the standards used by the Review of Consents process).

10. Potential sources of pollution, nutrient enrichment and/or suspended solids that have not been addressed in the Review of Consents such as, but not confined to, diffuse pollution or disturbance to sediments, will be considered in assessing plans and projects.

Conservation Objective for Feature: 2

Atlantic salmon Salmo salar (EU Species Code : 1106)

Vision for feature 2

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

1. The parameters defined in the vision for the water course as defined in 4.1 above must be met.

2. The SAC feature populations will be stable or increasing over the long term.
3. The natural range of the features in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future.
4. There will be no reduction in the area or quality of habitat for the feature populations in the SAC on a long-term basis
5. All known, controllable factors, affecting the achievement of these conditions are under control (many factors may be unknown or beyond human control).

Conservation Objective for Feature 3:
Luronium natans / Floating water plantain
Vision for feature 3
The conservation objective for the lake water body as defined in conservation objective number 10 must be met. The vision for this feature is for it be in favourable conservation status, where all of the following conditions are satisfied:
1. There will be no contraction of the current L. natans extent and distribution, and the populations will be viable throughout their current distribution & will be able to maintain themselves on a long-term basis. Each L. natans population must be able to complete sexual and/or vegetative reproduction successfully.
2. The lake will have sufficient habitat to support existing L. natans populations within theircurrent distribution and for future expansion.
3. All factors affecting the achievement of these conditions are under control.

Conservation Objective for Features 4, 5, and 6
Sea lamprey Petromyzon marinus (EU Species Code: 1095)
Brook lamprey Lampetra planeri (EU Species Code: 1096)
River lamprey Lampetra fluviatilis (EU Species Code: 1099)
Vision for features 4, 5, and 6
The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:
1. The parameters defined in the vision for the water course as defined in 4.1 above must be met
2. The SAC feature populations will be stable or increasing over the long term.
3. The natural range of the features in the SAC is neither being reduced nor is likely to be reduced for the foreseeable future.
4. There will be no reduction in the area or quality of habitat for the feature populations in the SAC on a long-term basis.
5. All factors affecting the achievement of these conditions are under control. and Himalayan balsam will not be present. This condition is considered under "factors".
8. Water quality in the lake should be of a standard that will ensure it reaches at Good Ecological Status or better as defined by the Water Framework Directive, and that the River Dee atLlandderfel Bridge? reaches its targets of Biological GQA class A and chemical quality standard of RE1. Eutrophication of the lake from diffuse and point source pollution will be under control and incidences of blue/green algal blooms will have stopped. The nutrient levelsin the lake will be much lower and similar to the levels inferred from the diatom assemblages for the lake prior to 1925.
9. All factors affecting the achievement of these conditions are under control.