FOREWIND

DOGGER BANK
TEESSIDE A & B

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Environmental Statement
Chapter 32
Transboundary Effects

Application Reference: 6.32

Cover photograph: Installation of turbine foundations in the North Sea

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1. Introduction

1.1.1. Transboundary effects are considered in relation to the effects that the activities of one European Economic Area (EEA) state may have on the environment or interests of another. The Scoping Opinion issued by the Planning Inspectorate (June 2012) highlighted the need to ensure that transboundary effects were identified and addressed and that developers should enter into a consultation process with other EEA states which may be affected by the proposed development.

1.1.2. This chapter of the Environmental Statement (ES) summarises the potential effects of Dogger Bank Teesside A & B on other EEA states during the construction, operation and decommissioning phases in isolation and cumulatively with other wind farm developments. The relevant preceding technical chapters of this ES (**Chapters 8 – 23**) have each considered the likely transboundary effects which may arise as a result of the development and the impact that these may have on a range of environmental receptors. This summary chapter has been informed by those assessments.

1.1.3. It should be noted that due to the geographical location of Dogger Bank Teesside A & B, all of the transboundary effects identified are related to the offshore assessments.

2. Guidance and Consultation

2.1. Legislation, policy and guidance

2.1.1. Regulation 24 of the Infrastructure Planning (Environmental Impact Assessment (EIA)) Regulations 2009 (as amended) (the EIA Regulations) relates specifically to '*Development with significant transboundary effects'*. This is especially relevant where the Planning Inspectorate is of the view that the development is likely to have significant effects on the environment in another EEA State. Regulation 24 indicates the method by which the EEA state is informed of the development and can participate and enter into consultation if the state so requests.

2.1.2. In July 2012 the Planning Inspectorate issued Forewind a notification under Regulation 24 that:

> *"On the basis of the current information available from the Developer, the Secretary of State is of the view that the proposed development is likely to have a significant effect on the environment in another EEA State."*

2.1.3. This required transboundary issues notification to be provided for the following countries:

- Belgium;
- Denmark;
- France;
- The Netherlands;
- Germany;
- Norway; and
- Sweden.

2.1.4. It is noted that in reaching this view, the Secretary of State has applied the precautionary approach (as explained in the Planning Inspectorate Advice Note 12 Transboundary Impacts Consultation (2012)); and taken into account the information currently supplied by the Developer.

2.1.5. The notification was based on information provided by Forewind in its Scoping Report, which was submitted to the Planning Inspectorate in May 2012 (Forewind 2012).

2.1.6. The following legislation, advice and guidance is also relevant to the assessment of transboundary effects:

- The United Nations Economic Commission for Europe (UNECE) Convention on EIA in a Transboundary Context (the Espoo Convention) – This convention states that any party potentially affected by activities likely to cause '*significant adverse transboundary impact'* are notified as early as possible. In addition, the public in the areas likely to be affected should be

given the opportunity to participate in relevant environmental impact assessment procedures to be undertaken (Espoo 1991). This chapter has been developed under the framework for considering the significance of potentially adverse impacts across borders in relation to the Espoo Convention which has been implemented by the EIA Directive and transposed into UK Law through Regulation 24 of the EIA Regulations;

- The Planning Act 2008, which sets out the timetable for pre-application consultation, including transboundary effects (Part 5, Chapter 2);
- In June 2011 the Planning Inspectorate published advice on the screening of potential transboundary effects for Nationally Significant Infrastructure Projects (NSIP). The Planning Inspectorate Advice Note 12 Transboundary Impacts Consultation (2012) sets out the procedures for consultation in association with an application for a Development Consent Order (DCO) specifically where a development has potential transboundary impacts; and
- European Commission guidance on the application of EIA to large scale transboundary projects (European Union 2013). Although this guidance is predominantly focussed on those projects with infrastructure physically located in more than one country (unlike Dogger Bank Teesside A & B), the guide provides a useful overview of the key terminology, procedural steps and details of when other countries should be informed where transboundary effects are likely.

2.1.7. The assessment of potential transboundary effects has also been made with specific reference to the relevant National Policy Statements (NPS). These are the principal decision making documents for NSIP. Those relevant to Dogger Bank Teesside A & B are:

- Overarching NPS for Energy (EN-1) (Department of Energy and Climate Change (DECC) 2011a);
- NPS for Renewable Energy Infrastructure (EN-3) (DECC 2011b); and
- Electricity Networks Infrastructure (EN-5) (DECC 2011c).

2.1.8. The specific assessment requirements detailed for transboundary effects relate to commercial fisheries. Section 2.6.124 of EN-3 indicates that "*In some circumstances, transboundary issues may be a consideration as fishermen from other countries may fish in waters within which offshore wind farms are sited*". This particular issue is considered in detail in **Chapter 13 Fish and Shellfish Ecology** and **Chapter 15 Commercial Fisheries**.

2.2. Consultation

2.2.1. To inform the ES, Forewind has undertaken a thorough pre-application consultation process, which has included the following key stages:

- Scoping Report submitted to the Planning Inspectorate (May 2012);
- Scoping Opinion received from the Planning Inspectorate (June 2012);

- First stage of statutory consultation (in accordance with sections 42 and 47 of the Planning Act 2008) on Preliminary Environmental Information (PEI) 1 (report published June 2012); and
- Second stage of statutory consultation (in accordance with sections 42, 47 and 48 of the Planning Act 2008) on the draft ES, designed to allow for comments before final application to the Planning Inspectorate.

2.2.2. In between the statutory consultation periods, Forewind consulted specific groups of stakeholders on a non-statutory basis to ensure that they had an opportunity to inform and influence the development proposals. Consultation undertaken throughout the pre-application development phase has informed Forewind's design decision making and the information presented in this document. Further information detailing the consultation process is presented in **Chapter 7 Consultation**. A Consultation Report is also provided alongside this ES, as part of the overall planning submission.

2.2.3. A summary of the consultation carried out at key stages throughout the project, of particular relevance to transboundary effects, is presented in **Table 2.1.** This table only includes the key items of consultation that have defined the assessment. A considerable number of comments, issues and concerns raised during consultation have been addressed in meetings with consultees and hence have not resulted in changes to the content of the ES. In these cases, the issue in question has not been captured in **Table 2.1**. A full explanation of how the consultation process has shaped the ES, as well as tables of all responses received during the statutory consultation periods, is provided in the Consultation Report.

2.2.4. In satisfying the pre-application requirements of the Planning Act 2008 and adhering to information provided in Advice Note 12, Forewind has carried out a comprehensive programme of consultation to specifically target potential transboundary issues in other EEA states (**Table 2.1**).

2.2.5. Transboundary assessment and consultation has also been carried out as a fundamental and routine part of the ongoing EIA process. For example, engaging with commercial fishermen and shipping operators from other EEA states with interests in the Dogger Bank.

2.2.6. **Table 2.1** summarises those bodies from other EEA states which have been consulted, the method of consultation and the responses received. The consultation focused on specific groups known to have an interest in Dogger Bank Teesside A & B which was based on surveys, expert knowledge of the EIA team and available data. This approach was considered sound in providing a well-informed judgement of any transboundary impacts through undertaking the EIA. The assessment process is detailed further in Section 3.

2.2.7. The consultation was also focused on sectors with an interest in Dogger Bank Teesside A & B or those who would potentially be affected by the project. For example, most of the fisheries organisations with interests in the area were identified through official landings and surveillance data. Shipping interests were identified through those operators known to regularly use routes which may be affected by the development and through the knowledge and judgement

of the shipping and navigation technical consultant (Anatec Limited). Those countries with ecological interests were identified through distance from, and likely impact of the development, and a consultation letter with details of the development was sent to relevant Government Departments in Belgium, the Netherlands, Denmark, Norway, Germany, Sweden and France (e.g. fisheries, ornithology, shipping, and cable routes). Details of the consultees, the method of contact and the responses are described in **Table 2.1**.

Table 2.1 Summary of consultation and issues raised by consultees

Date	Country	Authority	Consultee	Summary of issue/response
Shipping				
12 June 2013 (Dogger Bank Creyke Beck A and B – S42 comment on draft ES)	Norway	Government	Royal Norwegian Ministry of the Environment	Safety Zones – It is the Coastal Administration's understanding that 500m safety zones can be established around wind farm installations in accordance with Article 60 in the UN Convention on the Law of the Sea. Further there are measures such as 'Area to be Avoided' that can be implemented in accordance with the IMO general provisions on shipping routes. The concept proposed for use within the Dogger Bank Zone, "Charted Advisory Safety Areas" is probably less known to mariners than measures in the IMO provisions and their legal basis may be unclear. An advantage by having a measure adopted by IMO may be that these are promulgated by an IMO circular and binding for all nations. Shipping Routes - It follows from the consultation that vessels will have a high tolerance and adaptability to the impact of the Dogger Bank Creyke Beck wind development. We find this to be credible, but would like to point out that a further development of wind farms on part of or on the whole of Dogger Bank will have an adverse effect on vessel traffic unless there are established 'shipping routes' that are broadly acceptable (cfr. Maritime and Coastguard Agency – Marine Guidance Note 371). See **Appendix 16A Navigational Risk Assessment Report**
21 June 2012, PEI 1 response	The Netherlands	Government	Dutch Ministry for Infrastructure and Environment (Rijkswaterstaat Waterdienst)	The main comments included: A request to be consulted on a regular basis; *Safety* Search and rescue arrangements are required; *Shipping* Forewind should be aware of Southern North Sea Offshore Wind Forum (SNSOWF) with regard to navigation. See **Chapter 16 Shipping and Navigation**
16 February 2012	The Netherlands	Government	Dutch Ministry for Infrastructure and Environment (Rijkswaterstaat Waterdienst)	The main issues were as follows: Concerns were raised over shipping and ecological interests; European-wide Government co-operation is required as UK developments could impact on Dutch potential development; Shipping changes are being represented to the International Maritime

Date	Country	Authority	Consultee	Summary of issue/response
				Organisation (IMO); and Most of the issues relating to the SNSOWF study concentrated on Hornsea and East Anglia developments. See **Chapter 16 Shipping and Navigation**
13 February 2012	The Netherlands	Government	Dutch Ministry for Infrastructure and Environment (Rijkswaterstaat Waterdienst)	Response to SNSOWF Proposal sent out on 06/01/2012 included the following statement: "*The Dutch Government are planning to change IMO routes to enable their own offshore wind. The Dutch Government also suggested that no sharp angles were applied to shipping lanes and that in the Netherlands they operate 'Obstacle Free Zones' with a 2nm separation between wind turbines and shipping lanes*". See **Chapter 16 Shipping and Navigation** and **Chapter 5 Project Description**
01 February 2012	Norway	Shipowners	Norwegian Shipowners Association (Norges Rederiforbund) (NR)	Norges Rederiforbund sent the SNSOWF's proposal to all members without any negative feedback. NR administration have reviewed the proposed offshore wind farm zones and believe the minor deviation of routing is of less concern compared to the environmental gain in renewable energy it will provide. NR do not see any safety concerns regarding the development of wind farm zones and routing channels but it should be clearly marked in the charts as a prohibited area for mariners. See **Chapter 16 Shipping and Navigation**
27 January 2012	Denmark	Government	Danish Maritime Authority (DMA)	The response which was coordinated by the Danish Shipowners Association included the following comments: Dogger Bank looks reasonably unproblematic; As regards United Nations Convention of the Law of the Sea (UNCLOS) articles 60.7 and 147.2 (c), it is stated that artificial islands, installations and structures and the safety zones around them may not be established where interference may be caused to the use of recognized sea lanes essential to international navigation. DMA see that this issue should be investigated thoroughly in relation to the possible influence on existing shipping routes and lanes in the project areas and their surroundings; When considering any possible implications of UNCLOS the UK should officially undertake an international hearing according to the Espoo Convention;

Date	Country	Authority	Consultee	Summary of issue/response
				Cables should be laid perpendicular to shipping routes and channels and laid close and parallel if more cables are laid down in the same area; and The DMA ask to be informed about the status of the projects on an ongoing basis when they pass essential milestones and to be informed of the official approval process in the UK as regards the approving authorities, the navigational studies to be carried out and the mitigation outcomes to be decided. See **Chapter 16 Shipping and Navigation** and **Chapter 5 Project Description**
23 November 2011	The Netherlands	Government	Dutch Ministry for Infrastructure and Environment (Rijkswaterstaat Waterdienst)	At a meeting held between SNSOWF and Dutch Rijkswaterstaat to discuss the proposals the following comments were raised: The Dutch Rijkswaterstaat plan to go to IMO with revised routing plan in 2012 to enable offshore wind development in Dutch waters. This may affect how traffic is directed towards the UK. See **Chapter 16 Shipping and Navigation**
18 November 2011	Belgium	Government	Federal Public Service Mobility and Transport	Two key concerns (to all three of the following Round 3 zones - Dogger Bank, Hornsea and East Anglia) were raised: With regard to safety of navigation, the consultee believes it will be difficult to navigate through the long narrow channels and that it will eventually be necessary to implement a share-based control system (like aviation (Air Traffic Control)) for shipping and navigation in the North Sea. Sharp navigation angles to be avoided; and The impact on pollution (spill and increased CO_2). See **Chapter 16 Shipping and Navigation**
25 August 2011	The Netherlands	Shipowners	Royal association of Dutch Shipowners	KVNR and Dutch shipping industry do not oppose the wind farm development but had the following comments: Such developments should be regulated EU-wide regarding the North Sea; As several countries implement the demand for energy by appointing several areas to wind farming, no one seems to have the overall picture anymore in North Sea spatial planning; Shipping routes should be visualized to secure safe shipping and preventing costs arising from the rerouting of shipping; No remark has been made by Forewind regarding the changing of shipping routes, safety of navigation. Regarding the immense surface you tend to reserve

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				for wind farming, rerouting of shipping seems unavoidable, increasing the danger for shipping as traffic is concentrated in smaller areas; CO_2 emissions for shipping may significantly increase; What would be the changes regarding fishing; and There cannot be agreement on such a proposal without all questions being addressed. See **Chapter 16 Shipping and Navigation**
17 July 2011	Denmark	Shipowners	Danish Shipowners Association	The following points were raised: The overall project could require some deviation to routes taken by vessels, although until the final design is known, this is difficult to predict; Predictions on the overall shape may be difficult for shipping and there was a request for symmetry of overall design throughout the tranches; With a clearer picture of shipping in the region and an assessment for the potential of establishing shipping clearways and/or proposals for rerouting measures, the overall proposal may be acceptable; For the safety of the ships and the wind farms, the wind farms should be situated in such a way that corridors are not necessary; Concerns were raised over creating lengthy routing options with turbines present on either side (Tranche A was noted in this respect); and Any proposed rerouting should not increase overall voyage times unreasonably. See **Chapter 16 Shipping & Navigation**
Nature Conservation				
21 June 2012	The Netherlands	Government	Dutch Ministry for Infrastructure and Environment (Rijkswaterstaat Waterdienst)	The main comments included: *Ecology* Harbour porpoise - A link to Dutch plan and reports was provided. Forewind needs to understand the density in distribution and mitigate the negative effects on harbour porpoises. Recommend monitoring the produced sound levels regardless of the used method. *Birds* Onshore bird colonies in the Netherlands are all situated more than 100km from the Dutch-UK border, so no effects are to be expected there. Large east-west

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				fluxes of migrating birds however can be impacted by the presence of hundreds of rotors there. Dogger Bank can form immense barrier for migrating (both swimming and flying) seabirds (especially the guillemots and razorbills) - this should be addressed. Dutch N2000 areas - the impact assessment should contain information on whether or not these sites and appointed species will be impacted by the Dogger Bank Teesside A & B wind farm: *Designated sites* Doggerbank (Dutch: Doggersbank) - this will become Special Area of Conservation (SAC) Cleaverbank (Dutch: Klaverbank) - this will become SAC Frisian Front (Dutch: Friese Front) - this will become SAC Dutch windfarms - There are no Dutch OWFs (present or planned) within the possible impact area of Dogger Bank Teesside A & B. *Fisheries* Forewind should understand the significant cumulative impacts and make a decision balancing ecology and fisheries (Natura 2000); Interested in the Fisheries Liaison Plan and in what will be done in response to the consultation process. Stressed the importance of connecting with Natura 2000 and fisheries. Interested in how the layout of wind farms will be made suitable for fisheries and navigation of small vessels and a risk analysis of the possibility of accidents.
30 May 2012	Germany	Government	German Federal Maritime and Hydrographic Agency (Bundesamt fur Seeschifffahrt und Hydrographie)	Forewind was sent the link where to find the Standard on Environmental Impact Assessment published by BSH Germany. Would like to be kept informed and receive EIA information especially on transboundary effects.
Commercial Fishing				
06 January 2014	The Netherlands	IMARES	Neils Hintzen	Meeting at IMARES requesting higher resolution dataset to determine impacts on individual vessels. 'Stress level analysis' data for Dutch vessels could be

Date	Country	Authority	Consultee	Summary of issue/response
		VisNed	Pim Visser	produced for Dogger Bank Creyke Beck A & B and Dogger Bank Teesside A & B should this be considered of value. See **Chapter 15 Commercial Fisheries**
20 December 2013 Section 42 consultation on the draft ES	Denmark; The Netherlands; France; and Norway	North Sea Regional Advisory Council (NSRAC)	NSRAC	Measures to minimise or mitigate for the potential loss of access to the project areas are not sufficiently well defined. An appropriate scheme of mitigation for seine netting should be defined. NFFO want to work towards achieving coexistence. The ability of fisheries to continue within the sites during construction, operation and decommissioning should be assessed. We acknowledge that publically available data sources do not allow assessments to take into account the degree to which the individual fishing grounds of particular fishing businesses are affected. The ES should clearly acknowledge at relevant points in the document that individual fishing businesses may be affected to greater levels than are possible to be assessed due to data limitations. See **Chapter 15 Commercial Fisheries**
20 December 2013 Section 42 consultation on the draft ES	France	Nord-Pas de Calis/Picardie Regional Fisheries Committee	Comité Régional des Pêches Maritimes at des Elevages Marins Nord-Pas de Calais Picarde (CRPMEM)	Although the activity of the French fishing industry is higher in the Eastern part of the Channel, fishing grounds within the vicinity of the Dogger Bank Teesside A & B Export Cable Corridor is very important to French fishermen. Approval of the intention to bury the cable and reference the need for effective consultation during the construction phase. This concern was noted and Forewind will continue liaison with CRPMEM. See **Chapter 15 Commercial Fisheries**
20 December 2013 Section 42 consultation on the draft	Sweden	Swedish Fishermen	Swedish Fishermen	Email stating issues with Dogger Bank Teesside A & B were the same as discussed in the meeting on 6th February 2013 (see below). See **Chapter 15 Commercial Fisheries**

Date	Country	Authority	Consultee	Summary of issue/response
ES				
16 December 2013	The Netherlands	VisNed NFFO	Pim Visser Dale Rodmell	Dogger Bank Creyke Beck SoCG meeting Key concerns discussed were: • Overall cumulative impact including MCZs and aggregate dredging and other offshore wind farm developments; • Turbine spacing, alignment and feasibility of resuming fishing within the operational wind farm sites; and • The need for higher resolution VMS to be provided to Forewind whilst the overall impact on the Dutch beam trawl fleet may be minor, it may be greater for individual vessels. See **Chapter 15 Commercial Fisheries**
11 December 2013 Section 42 consultation on the draft ES	Germany	Deutscher Fischerei Verband	Deutscher Fischerei Verband	PMSL email to Deutscher Fischerei Verband. Enquiring whether there were any PEI3 comments or a meeting required. No comments received.
04 December 2013	The Netherlands	VisNed	Pim Visser	Dogger Bank Creyke Beck SoCG meeting Key concerns discussed were: • Overall cumulative impact including MCZs and aggregate dredging and other offshore wind farm developments; • Turbine spacing, alignment and feasibility of resuming fishing within the operational wind farm sites; and • The need for higher resolution VMS to be provided to Forewind. Whilst the overall impact on the Dutch beam trawl fleet may be minor, it may be greater for individual vessels.

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03 December 2013	Norway	Norwegian Fishermen's Association Fiskebåt	Harald Østensjø	SoCG meeting for Dogger Bank Creyke Beck A & B. Zonal aspects of SoCG applied to Dogger Bank Teesside A & B where applicable. Few concerns with the Dogger Bank Teesside A & B developments as the majority of Norwegian sandeel trawling takes place on the western boundary of the Dogger Bank Zone. NFA and Fiskebåt are impressed with the project and the amount of work being undertaken to inform the impact assessments. See **Chapter 15 Commercial Fisheries**
03 December 2013	Norway	Norwegian Fishermen's Association Fiskebåt	Harald Østensjø	PEI3 meeting Norwegian fishermens representative. Concerns were expressed in respect to burial depths and cable protection. The Norwegians are reliant on information from the Danish fishermen as this is a significant fishery for them. The representatives considered that Norwegians may not wish to fish inside the turbine array, even if there were no restrictions. See **Chapter 15 Commercial Fisheries**
18 November 2013	Denmark	Danish Fishermen's Association	Henrik Lund & Jesper Juul Larsen	Statement of Common Ground (SoCG) meeting for Dogger Bank Creyke Beck. Zonal aspects of SoCG applied to Dogger Bank Teesside A & B where applicable. See **Chapter 15 Commercial Fisheries**
05 November 2013	The Netherlands; Denmark; and the UK	VisNed Danish Fishermens Association NFFO	Pim Visser Henrik Lund Dale Rodmell	Concerns were raised that although on a national scale an impact may be low, to certain individuals/vessels it may be higher. See **Chapter 15 Commercial Fisheries**
04 July 2013	Germany	Deutscher Fischerei Verband	Deutscher Fischerei Verband	The DFV appreciated consultation at such an early stage in the development and welcomed future updates; • The German fishing effort used in the assessment is a good reflection of

Date	Country	Authority	Consultee	Summary of issue/response
				actual German effort and as such no more data is required; • The German fishing industry does not want to lose fishing grounds to offshore wind developments; and • German flag sandeel trawlers are most likely Danish owned and operated.
June 2013 to December 2013	Belgium	Institute for Agricultural and Fisheries Research	Sophie Vandendriessche Bart Vanelslander	Series of emails exchanged regarding GIS Data requested for Belgian VMS, Landings and Effort data.
11 May 2013	The Netherlands	The Netherlands Fishermen's Federation (VisNed)	Pim Visser Andries de Boer Pieter de Boer Louwe de Boer M de Boer Jacob Kramer Jan de BoerRendr Johannes de Boer	Fishermen concerned that the data available is only up to 2010. Pim Visser suggested that Institute for Marine Resources and Ecosystem Studies (IMARES) can send VMS data that includes value for areas within the Dogger Bank coordinates. The fishermen present expressed concern that there may be fishing restrictions if collisions occur within the wind farm. They stated that they would prefer large turbines with greater spacing so that fishing can continue within the wind farm; however, they are concerned that if they agree to this and collisions do occur, the wind farm may be closed to fishing. If this happens they will lose a greater fishing area than if the wind farm is built with minimum spacing and fishing could not occur from the beginning.
01 May 2013	The Netherlands	Dutch Fisherman	Andries de Boer	Andries suggested that rather than having the necklace layout (i.e. the turbines around the outside close together and less turbines inside the area) it would be more beneficial to fishermen to have all turbines with minimum spacing (750m) so that a smaller area is lost.
16 April 2013	Denmark	Danish gill netter	Henrik Lund Thomas Sørensen	Thomas fishes Dogger Bank for three months of the year, catching almost his whole quota for turbot *Scophthalmus maximus* within this period. He is more concerned about Dogger Bank Teesside A & B than Dogger Bank Creyke Beck A & B, as the majority of his fishing is to the east of the Dogger Bank zone.
15 April 2013	Denmark	Danish seine netters	Henrik Lund Peter Lasson Schmidt	Peter Lasson is the principle Danish seine netter fishing the Dogger Bank; he mainly fishes in the Dogger Bank Creyke Beck A & B project areas but also fishes within the Dogger Bank Teesside A & B boundaries. He is concerned that seine netting will not be able to continue once the wind farm is built. Peter Lasson suggested that if turbines were positioned in areas comprising of seine net fasteners (i.e. rocky ground), then co-existence would be easier.

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18 March 2013	France	CRPM Nord	Antony Viera Patrick Francois	For the French fisheries the export cables are the areas they would be concerned about. It was stated that Marine Conservation Zones (MCZs) were of more concern to the French fishing industry than offshore wind farms.
07 March 2013	Belgium	Department of Agriculture & Fisheries Jean Rederscentrale Belgian fishermen	Sanders Meyns Jean-Francois Verheggen Geert Luickx Dany Vlietinck Rudy Neyts Dirk Degrendele Geert De Groote Emiel Utterwulghe	Concerns were raised regarding the effect of underwater noise on fish. None of the fishermen present were involved in the lemon sole *Microstomus kitt* fishery, but suspected it was a Dutch vessel under Belgian flag and quota. It was advised that rock placement should be avoided wherever possible, with particular reference to the potential of snagging nets.
22 February 2013	Denmark	Danmarks Fiskeriforening Danmarks Fiskeriforening Vice President Danish Trawlermen Pelagic trawler Pelagic trawler	Henrik Lund Lars Gammelgård Jesper Juul Larsen Mogens Ørts Jensen Magni Magnussen	Henrik Lund advised that there were about 5 to 10 Danish seine fishing vessels on Dogger Bank around the Dogger Bank Teesside A & B boundaries. Henrik Lund pointed out an area north of Dogger Bank Teesside B as an important sandeel fishing site.
20 February 2013	Norway	Sør-Norges Trålerlag Håflu Fiskarlaget Vest Østanger Skude Senior Lønningen Trygvason Sør-Norges Trålerlag Magnarson Cetus	Harald Østensjø Finn Magnus Alvestad Brit Sæle Instebø Knut Klepsvik Jostein Knutsvik Erlend Lønning Svein Atle Lønning Valter Rasmussen Nils Magnar Taranger	The Norwegian fishery has been operational on the Dogger Bank for the past 50 to 60 years and vessels mainly target the sandeel fishery; however it is considered that there is no conflict of interest from Norwegian fishermen for Dogger Bank Teesside A & B.

Date	Country	Authority	Consultee	Summary of issue/response
			Aleksander Vedø	
06 February 2013	Sweden	Swedish Pelagic Producers Organisation (PO)	Fredrik Lindberg Björn Lindblad Karl Johnson	Overview of Dogger Bank Teesside A & B was provided and concerns were raised over the effects of electromagnetic fields (EMF) on sandeel *Ammodytidae spp*. population and health, although it was agreed the areas of concern were mainly in the western boundary of the developable zone rather than in Dogger Bank Teesside A & B. Forewind advised that it would be addressed in the EIA.
02 February 2013	The Netherlands	The Netherlands Fishermen's Federation (VisNed)	Pim Visser Cor Daalder Maarten Drijver Andries Vonk Cornelius De Boer Andries De Boer Melle Kakvoort Jelle Romkes Willem Noek	Advised that Vessel Monitoring System (VMS) (2006-2010) was not representative of the actual fishing effort in the area and that, since 2010, the plaice *Pleuronectes platessa* fishery effort and value had doubled and were expected to keep increasing. Advised Dogger Bank Teesside A was the most important of the four project areas shown (Dogger Bank Creyke Beck A & B and Dogger Bank Teesside A & B), but that Dogger Bank Teesside B was also an important fishing ground for them.
15 January 2013	UK/ The Netherlands	National Federation of Fishermen's Organisation (NFFO)	Dale Rodmell Ian Rowe	NFFO advised that the Dogger Bank Teesside A & B locations were worse than Dogger Bank Creyke Beck A & B in terms of impacts on Anglo-Dutch beam trawl fishing.
31 January 2012	Denmark The Netherlands	VisNed	Pim Visser	Dutch and Danish fishing interests have signed up to a 22% closure on the Dogger Bank to bottom towed fishing gear as part of a MPA. There are up to 31 Dutch vessels (including UK flagged) operational on the Dogger Bank. A large number of Dutch vessels have modified their gear from the traditional beam trawl to pulse and sum wings.
06 December 2011	France	Comité Régional des Pêches Maritimes et des Élevages Marins (CRPMEM)	Antony Viera	General discussion about wind farm and analysing French fishing effort in the vicinity of the Dogger Bank Zone.
14 November 2011	Belgium	Belgian skippers	Tom Craeynest, Emiel Utterwilphe, Johan Hennaert, Steve Savels,	Belgian fishing interests consider it dangerous to trawl between turbines and would prefer turbines to be placed close together to minimise loss of fishing area. Belgian fishing effort is concentrated to the north of the zone. Concerns raised that fishing is not high priority in the siting of turbines.

Date	Country	Authority	Consultee	Summary of issue/response
			Eddy Cattoor	
20-21 July 2011	The Netherlands	Dogger Bank Focus Group (DBFG) NFFO DFA Dutch fishing industry	NSRAC – SPWG Dale Rodmell Henrik Lund Pim Visser & Andries de Boer	Workshop to define key components of the Dogger Bank fisheries management proposal. Discussion centred on available science and data and when data generated by Forewind may be available Discussion on how the Forewind projects may interact with conservation zones Follow up workshop tasks and responsibilities were allocated.
04 May 2011	The Netherlands France Sweden	CRPMEM Nederlandse Vissersbond Dutch Fishing Industry NFFO Stichting van de Nederlandse Visserij Swedish Fishermen's Federation DFA	NSRAC –SPWG Antony Viera Derk Jan Berends Willem de Boer Dale Rodmell, Barrie Deas & Arnold Locker Pim Visser Fredrik Linberg & Peter Olsson Henrik Lund	The main concerns were: How fishing interests compare to those of other marine users; Fishing industry was being consulted, but would the real concerns of the industry be acted upon; Increasing the spacing between turbines would inevitably lead to an increased footprint of the development; Displacement of fishing as a result of the Dogger Bank wind farms, SAC sites and UK Marine Conservation Zones would concentrate fishing on other areas Information needed to be shared and made publically available, fishermen would be willing to leave AIS systems on to provide information within the zone; If fishing was to continue, access and exit corridors would have to be maintained; Up to date information on the Dogger Bank fisheries must be utilised in the assessment, as the fleets are dynamic and patterns of fishing change over time; The routing, burial and arrangement of cables is critical if fishing (i.e. trawling) is to continue within wind farms; Forewind must build a trusting relationship with the industry, as it is individual fishermen who hold the best data on their activities; and The loss of the key Dogger Bank fishing grounds would lead to displacement and that in itself would likely lead to increased discarding, as the Dogger Bank fishery is a clean fishery comprising minimal discards.
01 April 2011	Belgium	Rederscentrale Ostend	Emiel Brouckaert, Van Billemont Pascal, Van Torre Louis	Concerns were raised regarding the safety of fishing within wind farms and the noise emitted from operational wind farms scaring fish away. Concerns were also raised about the cumulative effect of wind farms and MPAs. The Dogger Bank zone is not considered to be of major concern to the Belgian fishing fleet.
04 March 2011	The Netherlands	Dutch Fishermen's Association	Pim Visser (VisNed), Andries de Boer	Dutch activity has significantly reduced due to quota restrictions. Seven Dutch vessels regularly fish the Dogger Bank Zone and a number of these are UK registered vessels acquired by Dutch interests from Lowestoft.

Date	Country	Authority	Consultee	Summary of issue/response
			(Anglo-Dutch), R. de Boer (Anglo-Dutch), Geert Meun (North Sea Fishermens Organisation), W de Boer (DFA), M Brucker, B Dalder, Jan de Boer, Jan F de Boer	Concerns were raised given that plaice stocks are currently improving and therefore Dutch fishing activity may increase in the next few years as quota allocations increase. The main concern expressed by the Dutch representatives was the cumulative loss of fishing grounds, many of which are key to the long term success of the Dutch fisheries.
04 March 2011	The Netherlands	Nederlandse Vissersbond	Derk Jan T Berends	Stated that it would be preferred if the wind farm overlapped with proposed MPAs and encouraging fishing in UK wind farms may set a precedent for opening closed wind farm areas to fishing in Dutch waters.
21 February 2011	The Netherlands	NFFO and Anglo-Dutch Fishermen's Association	Kevin Caffrey, Andrew Allard, Fred Normandale, Alan Piggott, Dale Rodmell, Andries de Boer & Ned Clark	The main concerns were: The placement of the Dogger Bank Zone and the impact on the fishing industry particularly as the whole site is fished; Questions were raised over: how the proposed Dogger Bank SAC will interact with the wind farm and whether this designation would prevent fishing within the wind farm; and how fishermen who will lose access to grounds, and who have limited opportunities to fish elsewhere, will be compensated.
20 December 2010	Norway	NFA	Harald Østensjø	The main concerns were: Dogger Bank and surrounding waters are important to Norwegian fishermen; Modification of tidal flows around turbines which may impact habitat, sediments, faunal communities and fish populations; Would the UK government refuse to consent the development if it was shown to be deleterious to fish and commercial fishing; The development would, even if co-existence were feasible, increase steaming times, competition for reduced access and result in displacement to adjacent fishing grounds; That Forewind should contact WWF Norway; Whether the wind farms could co-exist in the Dogger Bank SAC and whether Forewind had discussed this with the JNCC; Would fishermen be included in mitigation in the event that fishing activity is significantly displaced.

Date	Country	Authority	Consultee	Summary of issue/response
28 April 2010	The Netherlands	Dutch Fishing Industry	Willem de Boer	The main concerns were: Uncertainty regarding exclusion zones within the SAC and wind farms/cables; Displacement from existing fishing grounds; Willingness to cooperate and engage; Number of projects, turbines, cable length etc.; Assessment not able to pick up long term variations in fishing activities; and Mitigation in case of fishing activities being displaced.
28 April 2010	Norway	Southern Norway Trawler Association	Harald Østensjø	The main concerns were: Uncertainty regarding exclusion zones within the SAC and wind farms/cables; Displacement from existing fishing grounds; Willingness to cooperate and engage; Number of projects, turbines, cable length etc.; Assessment not able to pick up long term variations in fishing activities; and Mitigation in case of fishing activities being displaced.
11 March 2010	Denmark The Netherlands France Norway	NSRAC – Spatial Planning Working Group (SPWG) Scottish White Fish Producers Association (SWFPA) NFFO Scottish Fishermen's Federation (SFF) Danish Fishermen's Association (DFA) Comité National des Pêches (CNPMEM) VisNed (the Netherlands Fishermen's Federations) Dutch Fishing Industry Norwegian Fishermen's Association (NFA)	Mike Park Barrie Deas & Dale Rodmell Rory Campbell Henrik Lund Perrine Ducloy Pim Visser Willem d Boer Harald Østensjø	Introduction of the Forewind consortium and the Dogger Bank Project. The main comments from industry were: Vitally important fishing grounds particularly to UK, Danish and Dutch interests; Environmental Impact Assessment must be evidence based, although it was acknowledged that there are data limitations; ICES (International Council for the Exploration of the Sea) square spatial scale is an adequate level of resolution to define fishing activity, particularly in relation to turbine siting; Previous engagement between industry and developers (Rounds 1 and 2) has not been good, a more collaborative approach is required; NSRAC can act as a forum to direct information, however Forewind should undertake independent consultation with all Member State fishermen affected; Potential for the collaboration with the UK sector on the spatial and temporal scale of fishing activity in the North Sea; and Cumulative effects of the Dogger Bank development must take into account the effects of other offshore wind farms within the North Sea.
Other Marine Users				
16 April 2013	Denmark and Germany	BT Subsea	BT Subsea	Meeting to discuss interaction with UK-Denmark-4 which crosses both sets of Dogger Bank Teesside Export Cable Corridors (A & B and C & D) and is 324.3m from the north west extent of Creyke Beck B and BT's Cantat cable which is crossed and paralleled by the Dogger Bank Teesside C & D Export Cable

Date	Country	Authority	Consultee	Summary of issue/response
				Corridor (closest point is 0.08km). At the landfall there is a manhole, BT Subsea would prefer if Forewind kept clear of this area. BT Subsea confirmed that Forewind's successors can remove a cable where they need to – as long as they do this in an agreed form with BT. A document that describes the approach to removing cables has been sent to Forewind for review.
17 August 2012	Norway	Gassco (Langeled Pipeline)	Gassco (Langeled Pipeline)	A map was requested to show location of Langeled vs Forewind's offshore cable routes on the back of the Dogger Bank Teesside A & B consultation. A map was sent 20/8/2012.
04 September 2012	Denmark	Alcatel - Lucent Voyager Place	Alcatel - Lucent Voyager Place	A meeting was held with Alcatel - Lucent to discuss cable crossings for the Dogger Bank Teesside A & B Export Cable Corridor.
23 April 2012	Northern Europe	Tata Communications	Tata Communications	Meeting to discuss the proximity and operation of TATA's cables.
Other				
November 2013 (section 42 consultation on the draft ES)	United Kingdom	JNCC/Natural England	JNCC/Natural England	Natural England and JNCC note that in **Chapter 9 Marine Physical Processes** section 11.1.1.5 the cumulative operational footprint is considered. Forewind has not considered the cumulative impact of suspended sediment plumes, in a transboundary context. Furthermore the time series points used for the Teesside projects are all located away from the inter-continental boundary. JNCC advise that this omission is addressed. The time series points are used to describe the development of deposition over the 30-day simulation period. Figure 10.9 in **Chapter 9 Marine Physical Processes** shows that there is very little deposition of sediment from the cumulative plume across the international boundary (maximum of 0.1mm to 0.5mm). In terms of the suspended sediment concentrations, the exceedance data shows that the vast majority of the cumulative plume that crosses the international boundary only exceeds the baseline up to 10% of the time.

3. Methodology

3.1. Identification of potential transboundary effects

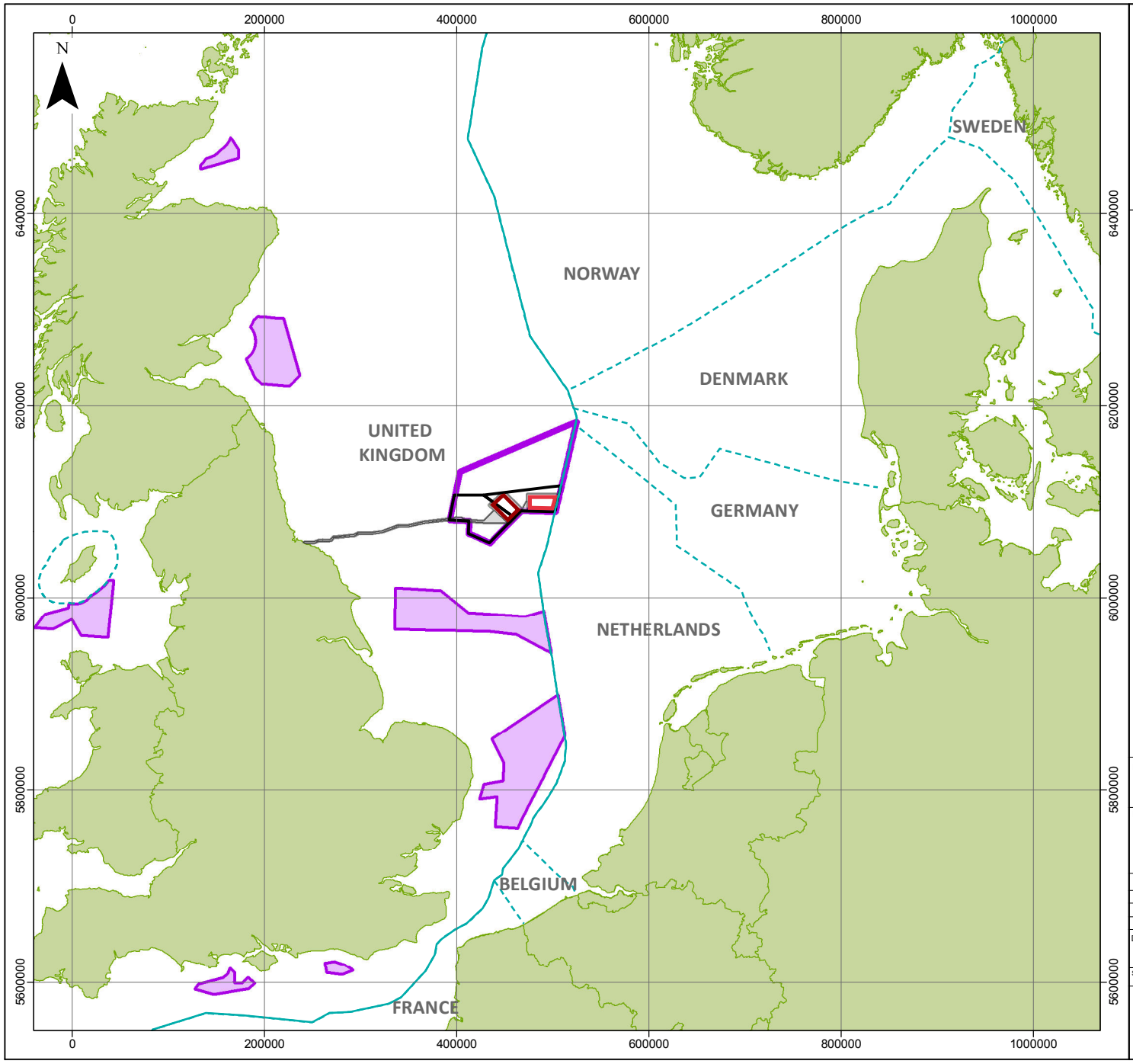
3.1.1. Relevant EEA states were identified through their proximity to the boundary of Dogger Bank Teesside A & B. The approximate distance of Dogger Bank Teesside A & B to the closest boundary of the territorial waters of each relevant EEA state is given in **Table 3.1**. The position of Dogger Bank Teesside A & B in relation to these boundaries is illustrated in **Figure 3.1**.

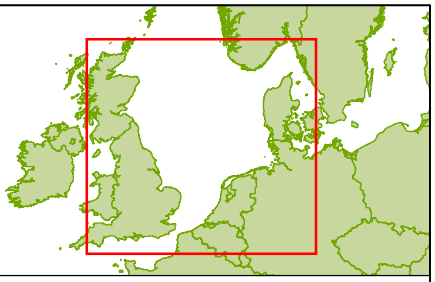
3.1.2. The location of Dogger Bank Teesside A & B is an important consideration with respect to potential transboundary effects. Although Dogger Bank Teesside A & B does not lie in international waters, the eastern boundary of the Dogger Bank Zone is synonymous with the international boundary bordering Dutch and German waters. The eastern boundary of Dogger Bank Teesside A shares an international boundary with the Netherlands.

3.1.3. Consultation with the relevant EEA states and the outcomes of the assessment work undertaken and presented in the relevant preceding technical chapters of this ES helped to identify the particular transboundary effects taken forward for assessment.

Table 3.1 Distance from the closest boundary of Dogger Bank Teesside A & B to other EEA states

EEA state	Closest distance from the EEA state boundary (km)	
	Dogger Bank Teesside A	Dogger Bank Teesside B
The Netherlands	0.2	33.6
Germany	73.8	101.4
Denmark	90.4	113.1
Norway	108.1	124.6
Belgium	343.3	331.9
France	386.2	371.6
Sweden	551.1	590.9





LEGEND

- Dogger Bank Zone
- Tranche boundary
- Dogger Bank Teesside A
- Dogger Bank Teesside B
- Dogger Bank Teesside A & B Export Cable Corridor
- Temporary works area
- Other UK Round 3 Offshore wind farm sites
- UK Continental Shelf
- International boundary

0 100 200
Kilometres

Data Source:
International Boundaries © UKDeal, 2013,
Offshore wind farm boundaries © Crown Copyright, 2013.

PROJECT TITLE

DOGGER BANK TEESSIDE A & B

DRAWING TITLE

Figure 3.1 Position of Dogger Bank Teesside A & B in relation to other EEA States

VER	DATE	REMARKS	Drawn	Checked
1	09/09/2013	Draft	GC	TR
2	04/10/2013	PEI3	GC	TR
3	06/03/2014	DCO Submission	GC	TR

DRAWING NUMBER: **F-OFL-MA-606**

SCALE	1:6,000,000	PLOT SIZE	A4	DATUM	WGS84	PROJECTION	UTM31N

FOREWIND

3.2. Assessment of transboundary effects – methodology

3.2.1. The responses received from consultation with relevant EEA states were used to inform the assessment of transboundary effects carried out for each receptor group. These assessments are presented in detail within **Chapters 8 – 23** of the ES.

3.2.2. The assessment methodology used was in line with the general EIA process outlined in **Chapter 4 EIA Process** and each of the contributing chapters. The assessment considered the effects of Dogger Bank Teesside A & B during construction, operation and decommissioning phases, both in isolation and cumulatively with other relevant plans, projects and activities. Key considerations in relation to transboundary effects included whether the receptor is mobile and the proximity of the EEA state boundary to the spatial extent of the effect.

3.2.3. The following assessment considers the potential for transboundary effects on the environment as well as on the interests of other EEA states. **Table 4.1** therefore identifies transboundary effects in relation to the following categories:

- Those which may occur on the *environment* of other EEA states; and
- Those which might occur on the *interests* of other EEA states within the UK Renewable Energy Zone (REZ).

4. Summary of Transboundary Effects

4.1.1. The following sections present a summary of potential transboundary effects as identified in the relevant chapters of the ES. As described above (paragraph 3.2.3), **Table 4.1** identifies whether the effect might occur on the environment or the interests of another EEA state.

4.1.2. The majority of transboundary effects refer to those which may occur on the environment within another EEA state. Effects which may occur on the interests of another EEA state within the UK REZ relate only to commercial fishing, shipping and navigation, and other marine users, although it is noted that certain receptors (namely seabirds and marine mammals) and the associated designated sites may also come under the latter category due to the mobile nature of some species.

Table 4.1 Summary of potential transboundary effects arising from Dogger Bank Teesside A & B

Chapter	Summary of potential impacts on each receptor group	Type		Potential for transboundary effects
		Environment	Interests	
Chapter 8 - Designated sites	Transboundary effects on protected sites and associated receptors in Germany, the Netherlands, Belgium, Denmark, Sweden, France and Norway have been assessed. Receptors included in the assessment are: birds (breeding, wintering and on-passage migratory species); marine mammals; fish; and marine ecology.	*		The assessment has considered the potential for effects to occur on sites and species due to effects that extend outside of UK territorial waters, or on species that are: • Part of European populations which are designated (i.e. the Natura 2000 network); or • Threatened (i.e. the Oslo and Paris Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) list of threatened species). These are referred to as transboundary sites or species. The detailed assessment of the impacts and their effects on transboundary sites (and their features) and species as a result of Dogger Bank Teesside A & B is presented in the relevant receptor assessments. The assessment of impacts on transboundary European sites (i.e. those designated under the Habitats Directive (92/43/EEC) and Council Directive (2009/147/EC) on the conservation of wild birds (the 'Birds Directive') has been informed by a Habitats Regulations Assessment (HRA) process as detailed in the **HRA Report**, which has been submitted alongside the ES. Other than the European sites, the only transboundary effects predicted are on a small number of OSPAR threatened species (see **Chapter 8 Designated sites** for further details).
Chapter 9 - Marine physical processes	Potential effects related to marine physical processes as a result of construction, operation and decommissioning include:	*		Modelling studies undertaken to inform the marine physical processes assessment predicted that the only potential for transboundary effects due to suspended sediment concentration and deposition would be as a result of cumulative sediment plumes from the operation of Dogger

Chapter	Summary of potential impacts on each receptor group	Type		Potential for transboundary effects
		Environment	Interests	
	• Increased suspended sediment concentrations and sediment deposition; • Effects of scour processes; and • Changes to wave and tidal current regimes (during operation), as well as interruption to longshore sediment transport during construction.			Bank Teesside A & B, Dogger Bank Teesside C & D and Dogger Bank Creyke Beck. Cumulative plumes would potentially extend 15km into Dutch waters but **no effect** is predicted on German, Danish or Norwegian waters. Scour of the seabed is limited to the immediate vicinity of the wind farm foundations and therefore **no effects** from scour processes are predicted to cross international boundaries. Cumulative changes to wave and tidal current regimes were modelled using layouts of foundations across each of the six projects. The effects on tidal currents using these layouts do cross over the international boundary into Dutch waters. The effects on waves enter all adjacent international waters. However, the results show that predicted changes to waves would be of small magnitude in international waters with limited secondary effects on sediment transport or seabed morphology. Note that the potential impacts resulting from changes to marine physical processes, including from sediment plumes and sediment deposition, are assessed in the receptor specific chapters, such as marine water and sediment quality.
Chapter 10 - Marine water and sediment quality	Potential impacts on marine water and sediment quality as a result of construction, operation and decommissioning include: • Deterioration in water quality due to increases in turbidity or the re-suspension of contaminants; and • Deterioration in sediment and water quality as a result	*		Dogger Bank Teesside A has a common boundary with the Netherlands therefore any movement of sediment (or any other material) over this boundary would affect another EEA state. As discussed above, modelling studies undertaken to inform **Chapter 9 Marine Physical Processes** indicate that sediment plumes from operational activities would extend approximately 15km

Chapter	Summary of potential impacts on each receptor group	Type		Potential for transboundary effects
		Environment	Interests	
	of the use of hazardous materials in relation to the risk of accidental pollution.			into Dutch waters but would not cross into the waters of Germany, Denmark or Norway. Sediment plumes, and any contaminants that may be present, are expected to be quickly dispersed. All other potential impacts were anticipated to be localised or, in the case of accidental spillage, having a low risk of significant impact. As a result, **no transboundary impacts** are anticipated on marine water and sediment quality.
Chapter 11 - Marine and coastal ornithology	Potential impacts on marine and coastal ornithology as a result of construction, operation and decommissioning include: • Displacement – when a species of bird changes its flight routes, home range or territory and is no longer found within the wind farm but the magnitude of effects are governed by various issues such as distance and duration of disturbance, availability of alternative feeding grounds; • Collision risk - (assumed mortality) with above surface structures; • Barrier effects - an indirect loss of habitat and a form of disturbance where the wind farm structures disrupt the normal flight line of the bird species; • Disturbance - The main effects during construction and decommissioning are noise from wind turbine	*		The assessment of transboundary effects has been undertaken for seabirds and migrant birds which may form features of transboundary designated sites. The impacts described below are in relation to biogeographic or European site populations of seabird species. **Construction** As a result of displacement, collision risk, barrier effects and disturbance there will be a negligible to minor adverse impact on the biogeographic populations of all seabird species and all transboundary sites for which seabird species are a feature as a result of the construction phase for Dogger Bank Teesside A & B alone and cumulatively with the Dogger Bank Creyke Beck A & B and Dogger Bank Teesside C & D, and all other projects. **Operation** As a result of displacement, collision risk, barrier effects and disturbance there will be a **negligible** to **minor adverse** impact on the biogeographic populations of all seabird species and all transboundary sites for which seabird species are a feature as a result of the operation phase for Dogger Bank Teesside A & B alone and

Chapter	Summary of potential impacts on each receptor group	Type		Potential for transboundary effects
		Environment	Interests	
	generators and increased boat traffic for operation, construction, maintenance and decommissioning. Different species react to disturbance in a variety of ways but a reaction could include behavioural displacement; and			cumulatively with the Dogger Bank Creyke Beck A & B and Dogger Bank Teesside C & D, and all other projects. Whilst apportionment of birds impacted by barrier effect and collisions to transboundary sites could not be undertaken for the operation phase, given the negligible numbers of migratory birds predicted to be affected during the operation phase as a result of barrier effect and collision. **Negligible** impacts are therefore predicted on the transboundary sites for which the wide range of migratory birds are a feature, as a result of Dogger Bank Teesside A & B alone and cumulatively with the Dogger Bank Creyke Beck A & B and Dogger Bank Teesside C & D, and all other projects. **Decommissioning** As a result of displacement, collision risk, barrier effects and disturbance there will be a **negligible** to **minor adverse** impact on the biogeographic populations of all seabird species and all transboundary sites for which seabird species are a feature as a result of the decommissioning phase for Dogger Bank Teesside A & B alone and cumulatively with the Dogger Bank Creyke Beck A & B and Dogger Bank Teesside C & D, and all other projects.

Chapter	Summary of potential impacts on each receptor group	Type		Potential for transboundary effects
		Environment	Interests	
Chapter 12 - Marine and intertidal ecology	Potential impacts on marine ecology (intertidal areas within EEA states are scoped out of the assessment on the grounds that they are considered to be too far from the development). Impacts considered as a result of construction, operation and decommissioning include: • Direct loss or disturbance to habitats (for example at the site of foundation installation or cable laying); and • Indirect impacts arising from increased suspended sediment and sediment deposition and as a result of changes to physical processes and scour.	*		Direct loss of or disturbance to marine habitats would occur as a result of structures placed on the seabed, cable corridor excavation and scour during operation. Indirect effects of increased suspended sediment concentration and deposition could also occur. Direct effects are considered to be localised within the wind farm boundaries and indirect effects of sediment suspension and deposition are not expected to have significant impacts (in EIA terms) within other EEA states. The assessment considered that there was no scope for significant direct or indirect impacts on marine ecology within any other EEA state.
Chapter 13 - Fish and shellfish ecology	Potential impacts on fish and shellfish ecology as a result of construction, operation and decommissioning include: • Noise, especially due to impact piling, on sensitive species e.g. herring; • Temporary disturbance to the seabed during construction; • Increased suspended sediments and loss of habitat, and effects on eggs and larval stages of benthic spawners; • The effect of electro-magnetic fields from AC cables; and • Introduction of hard substrates during the operational phase.	*		Transboundary effects have been considered in relation to fish and shellfish species of commercial and conservation status for other EEA states outside the boundary of Dogger Bank Teesside A & B. The boundary of Dogger Bank Teesside A lies on the international boundary of the Netherlands therefore any effects of construction noise which reaches beyond the eastern boundary of Dogger Bank Teesside A would also extend into the waters of another EEA state. Modelling studies for piling noise show that for the maximum hammer blow the startle response is not expected to occur beyond 150m from the source. The impact ranges for disturbance are predicted to be between 9km and16.5km for Dogger Bank Teesside A and 9km and 19km for Dogger Bank Teesside B. However with mitigation measures in place (i.e. soft start) the impact ranges reduce to between 3km and 7.5km for Dogger Bank Teesside A and 4km and 9km for Dogger Bank Teesside B. Therefore, noise effects would extend into the waters of another EEA state albeit for a short distance.

Chapter	Summary of potential impacts on each receptor group	Type		Potential for transboundary effects
		Environment	Interests	
				The assessment identified historic spawning grounds for herring to the east of the Dogger Bank Teesside A boundary, however considering the size of the potential spawning ground (see **Chapter 13 Fish and Shellfish Ecology** Figure 6.5) relative to the sphere of influence, the transboundary impact is considered to be **negligible**. Modelling studies undertaken on hydrodynamic processes showed that the cumulative effect of operation of Dogger Bank Teesside A & B, Dogger Bank Teesside C & D and Dogger Bank Creyke Beck A & B could potentially create a sediment plume which would extend 15km into Dutch waters. Sediment released by scour processes during the operational phase could result in sediment deposition on sensitive habitats, especially those suitable for benthic species such as sandeel. However, the marine physical processes assessment (**Chapter 9 Marine Physical Processes**) indicates that the area over which the effect of scour and subsequent deposition of sediment on the seabed may have an influence is not an area of high density sandeel habitat. In addition, the predicted average deposition reduces to less than 0.1mm approximately 23km south west of Dogger Bank Teesside B and 19km north of Dogger Bank Teesside A. Given that the predominant tidal current directions are north and south, and the predominant wave direction is from the north, any effect to the east and into Dutch waters can be expected to be less. Therefore the transboundary impact is anticipated to be **negligible**. Effects due to EMF are not anticipated to have an impact on sensitive species outside of the Dogger Bank Zone since effects are only seen in close proximity to cable routes (Normandeau *et al.* 2011) (see also **Chapter 13 Fish and Shellfish Ecology**). The use of armoured cabling and burial (where feasible) will further reduce the potential

Chapter	Summary of potential impacts on each receptor group	Type		Potential for transboundary effects
		Environment	Interests	
				impact of EMF. In addition, export cabling will use High Voltage Direct Current (HVDC) cables which, if bundled, will significantly reduce the magnitude of effect. For these reasons, **no transboundary impacts** are anticipated with regard to EMF.
Chapter 14 - Marine mammals	Potential impacts on marine mammals as a result of construction, operation and decommissioning include: • Disturbance from underwater noise from construction (pile driving) and operation (wind turbines, vessel noise). This is an important consideration with respect to European Protected Species (EPS); • Collision risk (hull impacts and ducted propellers); • Changes in prey resource; • EMF; and • Physical barrier.	*		The potential impacts on marine mammals as a result of the various stages of development are not in themselves expected to have a significant effect beyond the international boundaries. However, individuals of each species may range across international boundaries. Therefore, the assessment considered the effects of the development at the population level, encompassing international waters. The results of the marine mammal surveys within the Dogger Bank Zone and within Dogger Bank Teesside A & B indicate that very low numbers of harbour seal are present within or around the Dogger Bank Zone. In addition, given the low numbers present and distance of Dogger Bank Teesside A & B from the foraging range of harbour seals from transboundary sites, no effect is predicted on the populations within the North Sea or individual transboundary sites during the development of Dogger Bank Teesside A & B alone or in-combination with other projects. The assessment of the effect on the integrity of the transboundary European sites as a result of impacts on the designated grey seal and harbour porpoise populations has been undertaken and presented in the Dogger Bank Teesside A & B **HRA Report**, which has been informed by the assessment of impacts on the North Sea populations of grey seal and harbour porpoise presented in **Chapter 14 Marine Mammals**.

Chapter	Summary of potential impacts on each receptor group	Type		Potential for transboundary effects
		Environment	Interests	
				With respect to grey seal and harbour porpoise populations, there would not be an adverse effect on the integrity of the designated populations of transboundary European sites (Sites of Community Importance (SCIs) and potential Sites of Community Importance (pSCIs)), either as a result of Dogger Bank Teesside A & B on its own, or in-combination with other projects. The full results of this assessment are presented in the **HRA Report**.
Chapter 15 - Commercial fisheries	Potential impacts on commercial fishing vessels as a result of construction, operation and decommissioning include: • Temporary/complete loss of, or restricted access to, traditional fishing grounds; • Obstacles on the seabed; • Cable trenching and foundation spoil; • Cable protection measures; • Interference with fishing activity; • Increased steaming time to fishing grounds; • Adverse impacts on exploited commercial fish species; and • Displacement of fishing activity.		*	Throughout the impact assessment of commercial fisheries (**Chapter 15 Commercial Fisheries**) the interests of other EEA states have been considered. The commercial fishing interests of other EEA states have been considered throughout the impact assessment due to the multi-national nature of commercial fisheries in the North Sea. Therefore, the effects of construction, operation and decommissioning of Dogger Bank Teesside A & B on foreign fishing vessels which are addressed **Chapter 15 Commercial Fisheries** can also be considered to be transboundary issues. The assessment anticipated a **moderate adverse** impact on vessels using Danish seine nets during construction and operation phases. Forewind is however committed to the principle of working with any seine net fishermen who may be affected with the objective of exploring potential options to mitigate the impact. For other EEA states, the assessment indicates that the development would have a **minor adverse** or **negligible** impact on all other foreign

Chapter	Summary of potential impacts on each receptor group	Type		Potential for transboundary effects
		Environment	Interests	
				vessels during construction, operation and decommissioning.
Chapter 16 - Shipping and navigation	Potential impacts on shipping and navigation as a result of construction, operation and decommissioning include: • The potential deviation of shipping and recreational routes; • The financial implications of such deviation; and • The potential for the development to have an impact on search and rescue (SAR) operations as well as pollution and salvage control and response.	*	*	The assessment considered the impact of Dogger Bank Teesside A & B on international routes as well as the cumulative impact of other offshore wind farms through a review of current marine traffic for Dogger Bank, Hornsea and East Anglia Zones and the potential requirement for deviations to established routes as a result of the development(s). In the assessment German Shipping Priority Lanes are also considered. It was established that the routes taken by DFDS Seaways vessels around/through the Dogger Bank Zone will depend on the Hornsea project. This impact has recently been reviewed by The Crown Estate (2012). The review indicates that by continuing to work with the SNSOWF members until a clear process is defined from the regulators, the developers had mitigated this impact through consultation with relevant organisations with the EU member states. Transboundary effects are, therefore, considered to result in a **minor adverse** impact. In terms of mitigating the potential impact on SAR and pollution and salvage control operations the next steps for SNSOWF include: • Consultation with European Offshore Wind Developers; and • Consultation with Joint SAR and Counter Pollution Resource.
Chapter 17 - Other marine users	Potential impacts on other marine users as a result of construction, operation and decommissioning include: • Disruption of other offshore wind farm projects; • Disruption of activities in relation to future Carbon Capture and Storage (CCS) projects; • Disruption of oil and gas activity;	*	*	Other offshore wind farms which have been considered in this section include H2-20 and Nord-Ost Passat I, II and III, all of which are in the German section of the North Sea (see **Chapter 17 Other Marine Users**). H2-20 is approximately 90km east- northeast of Dogger Bank Teesside A. The Nord-Ost Passat I, II and III are still in the development phase. It is considered that because of the distance of these developments from Dogger Bank Teesside A & B there would

Chapter	Summary of potential impacts on each receptor group	Type		Potential for transboundary effects
		Environment	Interests	
	• Disruption of aggregate extraction activity; and • Potential damage to subsea cables and pipelines, or restriction of operation and maintenance activities.			be **no impact** as a result of construction, operation and decommissioning. Dogger Bank Teesside A lies adjacent to the boundary with another EEA state (the Netherlands) and adjacent to Dutch exploration block E01and in close proximity to exploration blocks E02, E03 and E04. It is not anticipated that the potential impacts identified above will occur over a large enough area to affect receptors within the Netherlands or German boundary, with the possible exception of piling noise interacting with seismic surveys within these blocks. Forewind are involved in on-going consultation with the developers of these exploration blocks to ensure there will be minimal interaction between piling noise and seismic survey activity. Although there are no subsea cables or pipelines crossing the project area, the Dogger Bank Teesside A & B Export Cable Corridor is crossed by both cables and pipelines. Some of these are owned by, originate in, or terminate, in another EEA state. Since these are considered to be of international importance and of high sensitivity the financial implications of damage could be large for another EEA state. Forewind are in on-going consultation with potentially affected EEA states to develop a series of mitigation measures such as crossings and proximity agreements. This will reduce the magnitude of the effect to negligible and the resulting residual impact is anticipated to be **minor adverse**.
Chapter 18 - Marine and coastal archaeology	All potential impacts on marine archaeology are expected to be limited to those artefacts found within the development area. Impacts as a result of construction, operation and decommissioning include:	*		Modelling studies on changes to wave and tidal current regimes across the entire developable area have predicted that the effects extend beyond international boundaries into the Dutch and German waters. However these changes would be of small magnitude in

Chapter	Summary of potential impacts on each receptor group	Type		Potential for transboundary effects
		Environment	Interests	
	• Direct disturbance at the site of seabed works, such as foundation installation; • Scour processes; and • Increased levels of sediment deposition.			international waters with limited secondary effects on sediment transport or seabed morphology. The assessment concluded that scour is limited to the immediate vicinity of the Dogger Bank Teesside A and Dogger Bank Teesside B foundations and that sediment plumes generated as a result of construction and operation are not predicted to disperse into international waters. As a result indirect transboundary effects upon archaeological receptors are anticipated to result in **no impact.** Impacts on interests of another EEA member state within the UK REZ may occur if wrecks of non-British, European nationality are subject to impact from development. Such wrecks may fall within the jurisdiction of another country, and may include, for example, foreign warships lost in UK waters. In theory, there is the possibility of remains of vessels from any maritime nation to be present within the study areas which may be of importance to that country. These include a wreck of a German submarine within Dogger Bank Teesside B (WA70535) and within the Dogger Bank Teesside A & B Export Cable Corridor MSA there is a Spanish steamship (WA2114). Wrecks of varying nationalities are also expected to be present within the study areas, including aircraft of German and US origin. All military aircraft wrecks are automatically protected under the Protection of Military Remains Act 1986. The implementation and enforcement of Archaeological Exclusion Zones will prevent direct impacts to known archaeological receptors, therefore there will be **no impact** on known wrecks and aircraft are not expected.

Chapter	Summary of potential impacts on each receptor group	Type		Potential for transboundary effects
		Environment	Interests	
				Undiscovered wrecks and aircraft may be affected, although this is considered to be unlikely and additional mitigation (through the Offshore Renewables Protocol for Archaeological Discoveries, (ORPAD) will address unexpected discoveries. If wrecks or aircraft from another EEA member state are discovered during the course of the development, further advice should be sought regarding the legal status of the remains in their country of origin. Impacts to the palaeolandscapes of the North Sea may also be subject to transboundary effects. Member states bordering the North Sea have a shared interest in the palaeoarchaeology of the seabed representing a former landsurface that connected these states at times of reduced sea level. Collection of data which is accumulated through discovery during the development phases and reported through ORPAD and subsequently published may be considered a beneficial transboundary effect.
Chapter 19 - Military activities and civil aviation	Potential impacts on military activities and civil aviation as a result of construction, operation and decommissioning include: • Disruption of airborne or seaborne military activities, such as those associated with military practice and exercise areas; and • Disruption of civil aviation activity, including search and rescue.	*		The guidance from the Civil Aviation Authority contained in guidance note CAP764 (January 2012) states *"cross-boundary consultation may be required for later rounds of offshore development. Wind turbine developers should contact the CAA for specific guidance in all instances where developments are likely to approach the limits of the UK Flight Information Region".* No 'cross-boundary' issues have been raised in consultation conducted with the CAA (or any other stakeholder) to date (see **Chapter 19 Military Activities and Civil Aviation** Section 2) since the Dogger Bank Zone is not close to the boundary of the UK Flight

Chapter	Summary of potential impacts on each receptor group	Type		Potential for transboundary effects
		Environment	Interests	
				Information Region which is approximately 200km to the east. In all cases, it is concluded that the potential transboundary effects would result in a **negligible** impact on other EEA states.
Chapter 20 - Seascape and landscape visual character	Potential impacts on seascape and landscape visual character as a result of construction, operation and decommissioning include: • Visibility of the development in other EEA states; and • Cumulative sequential visibility of the development for other receptors crossing the North Sea.	N/A	N/A	Dogger Bank Teesside A & B will not be visible during any stage of development beyond the UK continental shelf limit. Therefore there will be **no impact** on receptors in any other EEA states. There may however be sequential views of operational wind farms experienced by those travelling across the North Sea, who may potentially pass a number of offshore wind farms. The view may be considered beneficial or adverse depending on the perspective of the viewer. When considered in the context of the southern North Sea, the magnitude of change will be low and the transboundary cumulative seascape and visual impacts will be **negligible.**
Chapter - 23 Tourism and recreation	Potential impacts on offshore tourism and recreation as a result of construction, operation and decommissioning include: • Disruption to diving, angling and wildlife tours.	N/A	N/A	Tourism and recreation activities from other EEA states are not known to occur in the vicinity of the Dogger Bank Zone, which is a considerable distance from the coastlines where these activities predominate. Therefore, **no transboundary impacts** are anticipated on tourism and recreation.

5. Conclusions

5.1.1. The assessment of transboundary effects on the environment or interests of another EEA state has been based on a review of the detailed EIA as presented in this ES and is summarised in **Table 4.1** above. Transboundary effects have been considered in terms of:

- The environment of another EEA state which is adjacent or in close proximity to Dogger Bank Teesside A & B; and
- The interests of another EEA state operating within the UK REZ.

5.1.2. Consultation has been conducted with other EEA member states that may be affected. The consultation has focussed on commercial fishing interests, commercial shipping operators and nature conservation bodies, although other stakeholder groups, such as oil and gas and subsea cable operators, have also been included in the consultation where appropriate.

5.1.3. The potential adverse impacts on the environment of other EEA states have been considered as being **negligible** to **minor**. In many cases no transboundary impact is anticipated despite the close proximity of Dogger Bank Teesside A to the waters of other EEA states (namely the Netherlands). The impacts on birds and marine mammals, as component features of protected sites in other EEA states, are considered within the relevant chapters and are subject to ongoing assessment under the HRA process.

5.1.4. With regard to the interests of other EEA states, potential adverse impacts include:

- A **minor adverse** potential impact for foreign owned and operated subsea cables and pipelines which cross the Dogger Bank Teesside A & B Export Cable Corridor. Forewind has developed a comprehensive programme of discussions with operators with respect to crossings and proximity agreements as well as buffer zones during construction to avoid or reduce any adverse impact;
- Displacement of foreign fishing vessels through the loss of traditional fishing grounds due to construction and operation phases. There is considered to be a potential **moderate adverse** impact on vessels using Danish seine nets operating within Dogger Bank Teesside A & B. Forewind is however committed to the principle of working with any seine net fishermen who may be affected with the objective of exploring potential options to mitigate the impact; and
- A **minor adverse** transboundary impact is anticipated for shipping interests, SAR and pollution control operations, however this is being proactively managed through the SNSOWF.

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