

# East Anglia TWO Offshore Windfarm

## Chapter 13 Commercial Fisheries

Preliminary Environmental Information  
Volume 1

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13.1	Commercial Fisheries Technical Report

## Glossary of Acronyms

BMM	Brown and May Marine Limited
BWEA	British Wind Energy Association
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CFP	Common Fisheries Policy
COLREGS	International Regulations for Preventing Collisions at Sea
CPA	Coastal Protection Act
CRPMEM	Comité Régional des Pêches Maritimes et des Élevages Marins
DCO	Development Consent Order
DECC	Department of Energy and Climate Change
DEFRA	Department for Environment, Food and Rural Affairs
DTI	Department of Trade and Industry
EC	European Commission
EEZ	Exclusive Economic Zone
EIFCA	Eastern Inshore Fisheries Conservation Authority
EIA	Environmental Impact Assessment
ES	Environmental Statement
EU	European Union
FEPA	Food and Environmental Protection Act
FLO	Fisheries Liaison Officer
FLOWW	Fishing Liaison with Offshore Wind and Wet Renewables Group
HFA	Harwich Fishermen Association
HP	Horsepower
ICES	International Council for the Exploration of the Seas
IFCA	Inshore Fisheries and Conservation Authority
IFREMER	L'Institut Français de Recherche pour l'Exploitation de la Mer
IMARES	Institute for Marine Resources and Ecosystem Studies
ILVO	Institute for Agricultural and Fisheries Research
LEI	Landbouw Economisch Instituut
MCEU	Marine Consents and Environment Unit
MCA	Maritime Coastguard Agency
MCZ	Marine Conservation Zone
MMO	Marine Management Organisation
MPA	Marine Protected Area
NFFO	National Federation of Fishermen's Organisations
NPS	National Policy Statement
NtM	Notice to Mariners
OFLO	Offshore Fisheries Liaison Officer
PO	Producer Organisation
PEI	Preliminary Environmental Information
SAC	Special Area of Conservation
SCI	Site of Community Importance
SPA	Special Protection Area
UKFEN	UK Fisheries Economic Network
UKHO	UK Hydrographic Office
VisNED	Dutch Fisherman's Federation
VMS	Vessel Monitoring System

## Glossary of Terminology

Applicant	East Anglia TWO Limited.
Beam Trawl	A trawl net whose lateral spread is maintained by a beam across its mouth
Beam trawl -Pulse Wing Trawling	Advanced adaptation of conventional beam trawling where the tickler chains and chain mat of the beam trawl are removed and replaced with trailing electrodes.
Construction, operation and maintenance platform	A fixed structure required for construction, operation and maintenance personnel and activities.
Demersal fish	Fish living on or near the sea bed.
East Anglia TWO project	The proposed project consisting of up to 75 wind turbines, up to four offshore electrical platforms, up to one construction operation, and maintenance platform, inter-array cables, platform link cables, up to one operational meteorological mast, up to two offshore export cables, fibre optic cables, landfall infrastructure, onshore cables and ducts, onshore substation, and National Grid infrastructure.
East Anglia TWO windfarm site	The offshore area within which wind turbines and offshore platforms will be located.
Flatfish	Fish of the order Heterosomata of marine typically bottom-dwelling bony fishes such as soles, plaice and turbot, that as adults swim on one side of the laterally compressed body and have both eyes on the upper side.
ICES rectangle	Spatial unit used for the collection of fisheries statistics which covers an area of approximately 900nm <sup>2</sup> , aligned to 30' latitude by 1° longitude.
Inter-array cables	Offshore cables which link the wind turbines to each other and the offshore electrical platforms, these cables will include fibre optic cables.
Landfall	The area (from Mean Low Water Springs) where the offshore export cables would make contact with land, and connect to the onshore cables.
Longlining	Fishing method that involves setting out short lines carrying hooks, which are attached to a longer main line at regular intervals. The short lines are suspended horizontally at a predetermined depth with the help of surface floats.
Monitoring buoys	Buoys to monitor <i>in situ</i> condition within the windfarm, for example wave and metocean conditions.
Offshore cable corridor	This is the area which will contain the offshore export cable between offshore electrical platforms and landfall jointing bay, these cables will include fibre optic cables.
Offshore development area	The East Anglia TWO windfarm site and offshore cable corridor (up to Mean High Water Springs).
Offshore electrical infrastructure	The transmission assets required to export generated electricity to shore. This includes inter-array cables from the wind turbines to the offshore electrical platforms, offshore electrical platforms, platform link cables and export cables from the offshore electrical platforms to the landfall.
Offshore electrical platform	A fixed structure located within the windfarm area, containing electrical equipment to aggregate the power from the wind turbines and convert it into a more suitable form for export to shore.
Offshore export cable	The cables which would bring electricity from the offshore electrical platforms to the landfall, these cables will include fibre optic cables.
Offshore infrastructure	All of the offshore infrastructure including wind turbines, platforms, and cables.
Offshore platform	A collective term for the offshore construction, operation and maintenance platform and the offshore electrical platforms.

Otter trawl	Nets which have otter boards fastened to the sides. When in motion under water, the boards pull away from each other resulting in the net opening up in a horizontal direction. Demersal fisheries as well as pelagic fisheries can apply this technique.
Pelagic fish	The term pelagic fish covers species found mainly in shoals in midwater or near the surface of the sea.
Platform link cable	An electrical cable which links one or more offshore platforms, these cables will include fibre optic cables.
Potting	Fishing method which uses baited traps (posts) to target shellfish species, most commonly lobsters and crabs. Pots have a tapered entrance that makes it easy for shellfish to enter, but very difficult for them to find the way out.
Safety Zones	A marine area declared for the purposes of safety around a renewable energy installation or works / construction area under the Energy Act 2004.
Seine netting	A method of fishing that employs a Seine or dragnet. The net hangs vertically in the water with the bottom edge held down by weights and the top edge buoyed by floats.



# 13 Commercial Fisheries

## 13.1 Introduction

1. This chapter of the Preliminary Environmental Information Report (PEIR) describes the current commercial fisheries baseline and provides an assessment of the potential impacts of the proposed East Anglia TWO project on commercial fishing. The areas of the proposed East Anglia TWO project that are of relevance to this assessment include the East Anglia TWO windfarm site and the offshore cable corridor. Collectively these are referred to as the offshore development area.
2. For the purposes of this assessment commercial fishing is defined as fishing activity undertaken by licenced fishing vessels for the legitimate capture and sale of fish and shellfish. This chapter is focused on fishing fleets that are active in areas relevant to the offshore development area. These include local inshore vessels and larger vessels that operate further offshore and have homeports in the UK and other European countries.
3. This chapter is supported by **Appendix 13.1 Commercial Fisheries Technical Report**, where detailed information on the commercial fisheries baseline is provided.
4. Other chapters of the PEIR which cover impacts that are related to those addressed in this chapter include:
  - **Chapter 10 Fish and Shellfish Ecology** and
  - **Chapter 14 Shipping and Navigation.**
5. This chapter has been produced by Brown and May Marine Limited (BMM).

## 13.2 Consultation

6. Consultation is a key driver of the Environmental Impact Assessment (EIA) process, and continues throughout the lifecycle of a project, from its initial stages through to consent and post-consent. To date, consultation regarding commercial fisheries has been conducted through the East Anglia TWO Scoping Report (ScottishPower Renewables (SPR) 2017) and direct consultation with fisheries stakeholders. Feedback received through this process has been considered in preparing incorporated into the PEIR where appropriate and this chapter will be updated following the next stage of consultation for the final assessment submitted with the Development Consent Order (DCO) application. The key issues raised by consultees in relation to commercial fisheries in the Scoping Opinion (Planning Inspectorate 2017) and how these have been addressed in this chapter are described in **Table 13.1**.
7. Direct consultation carried out to date with fisheries stakeholders through face to face meetings, telephone calls and email correspondence is summarised in **Table 13.2**.
8. Consultation with fisheries stakeholders is on-going and will continue after submission of the PEIR.

**Table 13.1 Consultation Responses**

Consultee	Date/ Document	Comment	Response / where addressed in the PEIR
The Planning Inspectorate	20/12/2017 Scoping Response	The Scoping Report notes the loss or restricted access to traditional fishing grounds during construction and operation. This may have subsequent effects on alternative fishing grounds such as those which are fished by smaller vessels. The Inspectorate considers that an assessment on the impacts on commercial fisheries interests should be included within the ES.	Consideration has been given in this chapter to the potential impacts of loss or restricted access to fishing grounds and potential for associated displacement in respect of all fishing fleets active in the study area, including local small vessels ( <b>section 13.6</b> ).
The Planning Inspectorate	20/12/2017 Scoping Response	The Scoping Report identified the potential need for safety zones around the offshore infrastructure. The Inspectorate considers that the EIA should ensure that a worst case of the extent of such zones should be assessed.	The worst case scenario parameters included in this assessment take account of the implications of the introduction of safety zones during construction/decommissioning and operation ( <b>Table 13.4</b> ).

Consultee	Date/ Document	Comment	Response / where addressed in the PEIR
The Planning Inspectorate	20/12/2017 Scoping Response	<p>The EIA should acknowledge that the exclusion of certain types of fishing may make an area more productive for other types of fishing.</p> <p>Accordingly, the assessment of impacts associated with changes in fishing practice during the operational phase of the Proposed Development should include an assessment of potential impacts on fish stocks of commercial interest and the potential reduction or increase in such stocks that will result from the presence of the windfarm development and of any safety or buffer zones.</p>	Potential impacts on fish and shellfish species, including those of commercial importance, are addressed in <b>Chapter 10 Fish and Shellfish Ecology</b> .
The Planning Inspectorate	20/12/2017 Scoping Response	The cumulative impacts assessment in the ES should be undertaken in line with Advice Note 17 particularly in terms of determining those other developments to be included.	Consideration has been given to Advice Note 17, for identification of projects included in the cumulative assessment.
Marine Management Organisation (MMO)	08/12/2017 Scoping Response	The MMO advised that the EA2 area does not support any nationally significant shellfisheries, although there is some potting for crabs, lobsters and whelks as well as some trawling for shrimps in the area.	Noted.
Marine Management Organisation	08/12/2017 Scoping Response	The MMO recognises that the developer has highlighted the likely underrepresentation of smaller vessels within official datasets and the importance of consultation with fishers as a result. Commercial shellfish in the EA2 project area will mostly be targeted by <10m shellfish vessels operating in the inshore area, including the inshore section of the cable corridor. The MMO advises that such vessels are likely to be more sensitive to	<p>Noted.</p> <p>Consultation has been undertaken with a wide range of fisheries stakeholders including skippers of local small vessels (see <b>Table 13.2</b>).</p>

Consultee	Date/ Document	Comment	Response / where addressed in the PEIR
		impacts from construction activities owing to their limited range and ability to relocate to alternative fishing grounds.	
Marine Management Organisation	08/12/2017 Scoping Response	The site will be 31km from Lowestoft and 32km from Southwold. The MMO recommends that consideration is given in the ES to the cables being installed and the potential for cables to become exposed, which may impact upon trawling and other fishing activities.	<p>The potential impacts associated with the installation and operational phase of the cables have been taken account of in this chapter (<b>Table 13.4 and section 13.6</b>).</p> <p>As noted in <b>section 13.3.3</b> Post-lay and burial inspection surveys will be undertaken after the cables are installed into the sea bed to assess the sea bed status. In addition to burial status, these will identify the presence of construction related sea bed obstacles and, where appropriate and practicable, rectification works would be undertaken.</p>
Marine Management Organisation	08/12/2017 Scoping Response	Good practice has been outlined to ensure the fishing industry is well informed of the survey and construction works. The continuation of the Commercial Fisheries Working Group is commended and the MMO encourages ongoing engagement with the fishing industry. The MMO welcomes the appointment of a Fisheries Liaison Officer to facilitate ongoing communication with the fishing industry.	Noted.
Norfolk County Council	01/11/2017 Scoping Response	The EIA/PEIR should consider the potential impact of the offshore scheme, including any underwater cable routes and other ancillary development on Norfolk's commercial fishing interests. The EIA will need to consider the wider cumulative impacts taking into account existing operational windfarms;	<p>Consideration has been given in this chapter to all relevant offshore infrastructure associated with the proposed East Anglia TWO project for assessment of potential impacts on commercial fisheries, including offshore cables (<b>Table 13.4</b>).</p> <p>A wide range of projects and activities have been included in the cumulative impact</p>

Consultee	Date/ Document	Comment	Response / where addressed in the PEIR
		those under constructions; those consented and those in planning.	assessment, including those under construction, consented and/or planned ( <b>section 13.7</b> ).  Currently operational offshore windfarms are considered to form part of the existing baseline and therefore have not been included in the cumulative assessment ( <b>section 13.7</b> ).
Norfolk County Council	01/11/2017 Scoping Response	The EIA should set out appropriate mitigation, and where necessary indicate what compensation, will be given to those commercial fishing interests in Norfolk adversely impacted by the operation of the windfarm and/or ancillary development. In addition, the EIA should provide an indication of the likely impact on the local fishing industry particularly when other proposals are taken into account.	Consideration has been given throughout the assessments presented in this chapter (including the cumulative assessment) to potential impacts on all fleets known to be active in the study area, including the local inshore fleet ( <b>section 13.6 and section 13.7</b> ).  A number of mitigation measures have been incorporated as part of the proposed East Anglia TWO project (embedded mitigation) to minimise potential impacts on commercial fisheries receptors, including local vessels. These are described in <b>section 13.3.3</b> .  Subject to the findings of the impact assessment, cooperation mechanisms (where required) will be implemented with reference to the following FLOWW Guidelines (FLOWW 2014; 2015).

**Table 13.2 Fisheries Stakeholders Consulted to Inform the Commercial Fisheries PEI**

Consultee	Role; Organisation, Country	Consultation Date
Pim Visser	Chief Executive; VisNed, the Netherlands	19/10/2017
Sander Meyns	Project Coordinator; Rederscentrale, Belgium	31/10/2017
Dale Rodmell	Assistant Chief Executive; NFFO, UK	13/11/2017; 01/11/2018
Niels Hintzen	Fisheries Scientist, IMARES	18/5/2018

Consultee	Role; Organisation, Country	Consultation Date
Anthony Viera	General Secretary; CRPMEM, France	12/01/2018
Fisherman 1	Sizewell fisherman, UK	7/2/2018; 16/3/2018
Fisherman 2	Aldeburgh fisherman, UK	7/2/2018; 16/3/2018
Fisherman 3	Aldeburgh fisherman, UK	6/4/2018
Fisherman 4	Aldeburgh fisherman, UK	6/4/2018
Fisherman 5	Orford fisherman, UK	6/4/2018
Fisherman 6	Southwold fisherman, UK	6/4/2018
Fisherman 7	Southwold fisherman, UK	6/4/2018
Fisherman 8	Southwold fisherman, UK	6/4/2018
Fisherman 9	Southwold fisherman, UK	6/4/2018
Fisherman 10	Southwold fisherman, UK	6/4/2018
Fisherman 11	Southwold fisherman, UK	6/4/2018
Fisherman 12	Felixstowe fisherman, UK	12/4/2018
Fisherman 13	Felixstowe fisherman, UK	12/4/2018
Fisherman 14	Felixstowe fisherman, UK	12/4/2018
Fisherman 15	Felixstowe fisherman, UK	12/4/2018
Fisherman 16	Felixstowe fisherman, UK	12/4/2018
Fisherman 17	Felixstowe fisherman, UK	12/4/2018
Fisherman 18	Felixstowe fisherman, UK	12/4/2018
Fisherman 19	Felixstowe fisherman, UK	12/4/2018
Fisherman 20	Felixstowe fisherman, UK	12/4/2018
Fisherman 21	Felixstowe fisherman, UK	12/4/2018
Samantha Hormbrey	Marine Science Officer; UK Eastern Inshore Fisheries Conservation Authority (IFCA), UK	16/4/2018
Alan Garnham	Enforcement Officer; Eastern IFCA, UK	16/4/2018

9. Ongoing public consultation has been conducted through a series of Public Information Days (PIDs) and Public Meetings. PIDs have been held throughout Suffolk in November 2017, March 2018, and June / July 2018 with further events planned in 2019. A series of stakeholder engagement events were also undertaken in October 2018 as part of consultation phase 3.5. These events were held to inform the public of potential changes to the onshore substation location. This consultation aims to ensure that community concerns are well understood and that site specific issues can be taken into account, where practicable. Consultation phases are explained further in **Chapter 5 EIA Methodology**.
10. **13.3** shows public consultation feedback pertaining to commercial fisheries. Consultation phases are explained further in **Chapter 4 Site Selection and Assessment of Alternatives**. Full details of the proposed East Anglia TWO project consultation process will be presented in the Consultation Report, which will be submitted as part of the DCO application.

### 13.3 Consultation Responses relevant to Commercial Fisheries

Topic	Response / where addressed in the PEI
<b>Phase 1</b>	
<ul style="list-style-type: none"> <li>Effects on commercial fisheries</li> <li>Rock dumping interfering with trawling activities</li> </ul>	Potential impacts on commercial fisheries are assessed in <b>section 13.6</b>
<b>Phase 2</b>	
<ul style="list-style-type: none"> <li>Fishing activity affected by piling</li> <li>Construction of offshore cable corridor in fishermen's pulling grounds</li> </ul>	Potential impacts on fishing activity during the construction phase are assessed in <b>section 13.6.1</b> .
<b>Phase 3</b>	
None	n/a
<b>Phase 3.5</b>	
<ul style="list-style-type: none"> <li>Impact on fishing industry – compensation necessary</li> </ul>	The requirement for any compensatory agreements between the Applicant and fishermen will be determined post consent through the established Commercial Fisheries Working Group.



## 13.3 Scope

### 13.3.1 Study Area

11. The offshore development area is located in International Council for the Exploration of the Sea (ICES) Division IVc (Southern North Sea). Fisheries data and information within each ICES Division are collected and analysed by ICES statistical rectangle. The study area used for assessment of commercial fisheries activity has therefore been defined with reference to the ICES rectangles within which the offshore development area falls (**Figure 13.1**). These are as follows:

- ICES rectangle 33F1, where the inshore section of the offshore cable corridor is located; and
- ICES rectangle 33F2, where the offshore section of the offshore cable corridor and the East Anglia TWO windfarm site are located.

12. The study area defined above has been used to identify fisheries active in areas relevant to the proposed East Anglia TWO project and the levels of fishing that the offshore development area sustains. Where relevant, however, data and information have been analysed from wider areas to provide context and describe the full extent of the fishing activity of the fleets identified.

### 13.3.2 Worst Case

13. The design of the proposed East Anglia TWO project (including number of wind turbines, layout configuration, requirement for scour protection, electrical design, etc.) is not yet fully determined, and may not be known until sometime after the DCO has been granted. Therefore, in accordance with the requirements of the Project Design Envelope (also known as the Rochdale Envelope) approach to EIA (Planning Inspectorate 2018) (as discussed in **Chapter 5 EIA Methodology**), realistic worst case scenarios in terms of potential effects upon commercial fisheries are adopted to undertake a precautionary and robust impact assessment.

14. The worst case scenarios with regard to commercial fisheries are presented by impact in **Table 13.4**. The worst case assumptions take into account the project design options described in **Chapter 6 Project Description** and the embedded mitigation measures identified in respect of commercial fisheries (see **section 13.3.3**).



**Table 13.4 Realistic Worst Case Scenarios in Relation to the Proposed East Anglia TWO Project Design**

Impact	Parameter	Rationale
<b>Construction</b>		
Potential impacts on commercially exploited fish and shellfish species	Worst case scenario parameters in respect of fish and shellfish species during construction, including those of commercial importance, are provided in <b>Chapter 10 Fish and Shellfish Ecology</b> .	
Temporary loss or restricted access to traditional fishing grounds	<p>Rolling 500m safety zones around construction works, 50m safety zones around installed or partially installed infrastructure and 500m advisory safety zones along exposed sections of cables (i.e. cables awaiting burial or protection). This would lead to a theoretical worst case under which all fishing activities would be excluded from the entirety of the East Anglia TWO windfarm site and the offshore cable corridor towards the latter stages of construction.</p> <p>Offshore construction works occurring over an approximate 27-month window.</p>	This represents the maximum duration and extent of potential fishing exclusion throughout the construction phase and hence the greatest potential to restrict access to fishing grounds.
Displacement of fishing activity into other areas	As described above for temporary loss or restricted access to traditional fishing grounds.	Represents the maximum duration and extent of fishing exclusion throughout the construction phase and hence the greatest potential for displacement of fishing activity into other areas.
Increased steaming times to fishing grounds	Presence of 500m safety zones around construction works and 50m safety zones around installed or partially installed infrastructure over the course of the 27-month construction period.	Represents the maximum potential disruption to established steaming routes.
Interference with fishing activity (navigational conflict)	<p>Maximum of 74 construction vessels simultaneously operating on site</p> <p>Maximum number of vessel trips during the construction phase: 3,672</p>	The maximum duration of offshore construction activity, maximum number of vessels on site at any

Impact	Parameter	Rationale
	<p>Assumes that construction vessel transit routes overlap with fishing grounds</p> <p>Maximum overall duration of offshore construction activity of 27 months</p>	<p>one time and maximum number of vessel transits during construction would result in the greatest potential for interference with towed / static fishing gear.</p>
Safety issues for fishing vessels	<p>Safety issues as a result of potential interactions between fishing vessels, fishing gear and cables:</p> <p>Maximum length of cables:</p> <p>Inter-array cables: 200km;</p> <p>Platform link cables: 75km; and</p> <p>Export cables: 160km.</p> <p>Assumes cables will be surface laid before being buried/protected;</p> <p>Maximum length of cables requiring cable protection:</p> <p>Inter-array cables: 24km (cable crossings, entry to substation/turbine and unburied due to soil uncertainties);</p> <p>Platform link cables: 10% of their length (7.5km) due to ground conditions and protection at up to 30 crossings (160m per crossing); and</p> <p>Export cables: 10% of their length (16km) due to ground conditions and protection at up to 30 crossings (160m per crossing).</p> <p>Safety risks as a result of potential Interactions between fishing vessels and gear and project infrastructure:</p>	<p>Given the large number of cables, crossings, wind turbines, platforms etc covering much of the site and export cable route, the worst case assumes the potential for safety issues (e.g. snagging and manoeuvrability risks) across the offshore development area.</p>

Impact	Parameter	Rationale
	<p>Manoeuvrability and snagging risk issues associated with the presence of installed and partially installed infrastructure as a result of the installation of:</p> <p>Up to 75 wind turbines (minimum spacing between turbines: 800m in-row and 1,200m inter-row);</p> <p>Up to 4 offshore electrical platforms;</p> <p>Up to 1 construction, operation and maintenance platform; and</p> <p>Up to 1 met mast.</p> <p>Safety issues for fishing vessels associated with the potential for collision with construction vessels and allision with infrastructure are described and assessed in <b>Chapter 14 Shipping and Navigation</b>.</p>	
Seabed obstacles	<p>Offshore works such as construction anchoring, jack up legs or cable trenching can produce sea bed obstructions which can represent a potential fastening risk and damage to fishing gears.</p> <p>Potential for objects to be dropped on the sea bed during construction related activities.</p>	The presence of sea bed obstacles may result in potentially unacceptable safety risks to fishing vessels
<b>Operation</b>		
Potential impacts on commercially exploited fish and shellfish species	Worst case scenario parameters in respect of fish and shellfish species during operation, including those of commercial importance, are provided in <b>Chapter 10 Fish and Shellfish Ecology</b> .	
Complete loss or restricted access to traditional fishing grounds	<p>Maximum area lost / restriction to fishing as a result of the following:</p> <p>Up to 75 wind turbines;</p> <p>Up to 4 offshore platforms;</p> <p>Up to 1 construction, operation and maintenance platform; and</p>	This represents the greatest extent of potential fishing exclusion throughout the operation phase and hence the greatest potential to restrict access to fishing grounds.

Impact	Parameter	Rationale
	<p>Up to 1 met mast.</p> <p>Safety zones of 500m around major operation and maintenance works;</p> <p>Maximum length of cables:</p> <p>Inter-Array cables: 200km;</p> <p>Platform link cables: 75km; and</p> <p>Export cables: 160km.</p> <p>Minimum spacing between turbines: 800m in-row and 1,200m inter-row</p> <p>Cables will be buried to a minimum of depth of 0.5m where possible and protected where burial is not possible (i.e. due to hard ground or at cable crossings);</p> <p>Maximum length of cables requiring protection:</p> <p>Inter-array cables: 24km (cable crossings, entry to substation/turbine and unburied due to soil uncertainties);</p> <p>Platform link cables: 10% of their length (7.5km) due to ground conditions and protection at up to 30 crossings (160m per crossing); and</p> <p>Export cables: 10% of their length (16km) due to ground conditions and protection at up to 30 crossings (160m per crossing).</p>	
Displacement of fishing activity into other areas	As above for impact of complete loss or restricted access to traditional fishing grounds.	This represents the greatest extent of potential fishing exclusion throughout the operation phase hence the greatest potential for displacement of fishing activity into other areas.
Increased steaming times to fishing grounds	<p>Presence of the following:</p> <p>Up to 75 wind turbines ;</p>	Results in the maximum potential disruption to established steaming routes.

Impact	Parameter	Rationale
	<p>Up to 4 offshore platforms;</p> <p>Up to 1 construction, operation and maintenance platform; and</p> <p>Up to 1 met mast.</p> <p>Safety zones of 500m around major operation and maintenance works;</p> <p>Minimum spacing between turbines: 800m in-row and 1,200m inter-row</p>	
Interference with fishing activity (navigational conflict)	<p>Up to 687 vessel round trips per year.</p> <p>Assumes transit routes cross mobile and static gear fishing grounds.</p>	The maximum number of vessel transits during operation and maintenance results in the greatest potential for conflict between operation and maintenance vessels and fishing gear.
Safety issues for fishing vessels	<p>Safety risks as a result of potential interactions between fishing vessels and gear and cables:</p> <p>Maximum length of cables (as above for complete loss or restricted access to fishing grounds);</p> <p>Cables buried to a minimum depth of 0.5m where possible and protected where burial is not possible (i.e. due to hard ground or at cable crossings);</p> <p>Maximum extent of cables requiring protection (as above for complete loss or restricted access to fishing grounds)</p> <p>Safety risks as a result of potential Interactions between fishing vessels and gear and project infrastructure:</p> <p>Manoeuvrability and snagging risk issues associated with the presence of installed infrastructure (as above for Safety issues for fishing vessels in the construction phase).</p>	The maximum scenario for potential causes of fishing vessel collision and gear snagging which could lead to safety risks.

Impact	Parameter	Rationale
	Safety issues for fishing vessels associated with the potential for collision with operation vessels and infrastructure are detailed and assessed in <b>Chapter 14 Shipping and Navigation</b> .	
Seabed obstacles	Presence of obstacles on the sea bed that may represent a fastening/safety risk to fishing vessels	Presence of obstacles on the sea bed with potential to result in unacceptable risks to fishing vessels
<b>Decommissioning</b>		
As decommissioning schedules and methodologies are not available, decommissioning works and implications for commercial fisheries are considered analogous with those assessed for construction		
<b>Cumulative</b>		
Potential impacts on commercially exploited fish and shellfish species	See <b>Chapter 10: Fish and Shellfish Ecology</b>	
Complete loss or restricted access to traditional fishing grounds	Full development of relevant proposed marine developments ( <b>section 13.7</b> )	This could result in the maximum restriction to the resumption of normal fishing activities
Displacement of fishing activity in other areas	Full development of relevant proposed marine developments	This has the highest potential to confine the continuation of normal fishing activities within the region
Increased steaming times to fishing grounds	Full development of relevant proposed marine developments	This could potentially cause the maximum increase to steaming times to fishing grounds
Interference with fishing activity (navigational conflict)	Full development of relevant proposed marine developments	This represents the highest potential risk of conflict for fishing vessels
Safety issues for fishing vessels	It is considered that the same obligations discussed for the proposed East Anglia TWO project alone to ensure that safety issues are kept within acceptable limits would apply to other projects / activities, therefore negating the	

Impact	Parameter	Rationale
		potential for cumulative impacts to occur in this respect. As such safety issues for fishing vessels are not discussed further in the cumulative assessment.
Seabed obstacles		It is considered that the same obligations discussed for the proposed East Anglia TWO project alone to ensure safety issues associated with sea bed obstacles are kept within acceptable limits would apply to other projects / activities, therefore negating the potential for cumulative impacts to occur in this respect. As such safety issues for fishing vessels are not discussed further in the cumulative assessment.

### 13.3.3 Embedded Mitigation

15. Where applicable, relevant mitigation measures are incorporated as part of the proposed East Anglia TWO project design process and are referred to as embedded mitigation. The embedded mitigation measures relevant to commercial fisheries are considered when assessing potential impacts to receptors and are described below.
16. The Applicant is committed to working closely with commercial fisheries stakeholders. The appropriate liaison will be undertaken with all relevant fishing interests to ensure they are fully informed of all construction, maintenance and decommissioning activities. In order to ensure and maintain regular communication, a Commercial Fisheries Working Group (CFWG) has been established to cover liaison in respect to East Anglia ONE, East Anglia THREE, East Anglia TWO and East Anglia ONE North. The CFWG has a representative from each local port which could potentially be impacted by the proposed East Anglia TWO project (Orford, Aldeburgh, Harwich, Felixstowe, Lowestoft and Southwold). Based on the available fisheries statistics and information provided during consultation, it is considered that vessels fishing from areas further north of Lowestoft do not regularly fish in the study area, therefore these ports are not represented on the CFWG.
17. The CFWG aims to identify and develop co-existence strategies during a project's lifecycle. A Co-existence and Fisheries Liaison Plan will be produced for the proposed East Anglia TWO project, post-consent. It is expected that the CFWG will also be used to discuss any mitigation necessary for the proposed East Anglia TWO project where appropriate.
18. The Applicant has appointed a Fisheries Liaison Officer (FLO) to work with the fishing industry across all East Anglia projects including the proposed East Anglia TWO project. This ensures consistency in the approach to consultation and liaison between SPR projects, and the continuation of the productive working relationship established with commercial fisheries stakeholders to date.
19. In order to assess the sea bed status, post-lay and burial inspection surveys may be undertaken after cable installation. It is anticipated that a cable burial plan will be required as part of the Deemed Marine Licence. Within this plan there will be an agreed protocol for monitoring of post-installation cable burial if required. Additionally, the construction of the project will be undertaken against an agreed 'dropped objects procedure' that will require the Applicant to notify the MMO of any dropped objects and agreement over their recovery, where required. The Co-existence and Fisheries Liaison Plan, discussed above, will also include protocols for the 'snagging' or loss/damage of fishing gear associated with the project infrastructure.



20. Timely and efficient Notices to Mariners (NtMs), Kingfisher and other navigational warnings will be issued to the fishing industry prior to all survey and construction works through a project specific marine co-ordination system.
21. The UK Hydrographic Office (UKHO) will be informed of both the progress and completion of the proposed windfarm.

#### 13.3.4 Monitoring

22. Post-consent, the final detailed design of the proposed East Anglia TWO project and the development of the relevant management plan(s) will refine the worst-case parameters assessed in the EIA. It is recognised that monitoring is an important element in the management and verification of the impacts of the proposed East Anglia TWO project. Outline management plans, across a number of environmental topics, will be submitted with the DCO application. These outline management plans will contain key principles that provide the framework for any monitoring that could be required. The requirement for and final appropriate design and scope of monitoring will be agreed with the relevant stakeholders and included within the relevant management plan(s), submitted for approval, prior to construction works commencing.

### 13.4 Assessment Methodology

#### 13.4.1 Guidance and Legislation

23. The assessment of potential impacts on commercial fisheries as a result of the proposed East Anglia TWO project has been undertaken with specific reference to the relevant National Policy Statement (NPS) (**Table 13.5**).

**Table 13.5 National Policy Statement Guidance Relevant to the Proposed East Anglia TWO project. NPS for Renewable Energy Infrastructure (EN3) (DECC, July 2011)**

NPS Guidance	NPS Reference	Reference
The construction and operation of offshore windfarms can have both positive and negative effects on fish and shellfish stocks.	EN-3 section 2.6.122	The potential impacts of the proposed East Anglia TWO project on fish and shellfish species, including those of commercial importance, is presented in <b>Chapter 10 Fish and Shellfish Ecology</b> .  In order to inform this chapter, reference has been made to the findings of <b>Chapter 10 Fish and Shellfish Ecology</b> where relevant.
Whilst the footprint of the offshore windfarm and any associated infrastructure may be a hindrance to certain types of commercial fishing activity such as trawling	EN-3 section 2.6.123	Consideration has been given within this chapter to the potential for the presence of project infrastructure to result in loss or restricted access to fishing grounds and potential for

NPS Guidance	NPS Reference	Reference
and longlining, other fishing activities may be able to take place within operational windfarms without unduly disrupting or compromising navigational safety. Consequently, the establishment of a windfarm can increase the potential for some fishing activities, such as potting, where this would not compromise any safety zone in place. The Planning Inspectorate should consider adverse or beneficial impacts on different types of commercial fishing on a case by case basis.		displacement on a fleet by fleet basis ( <b>Section 13.6.2.3 and section 13.7.2.3</b> ).
In some circumstances, transboundary issues may be a consideration as fishermen from other countries may fish in waters within which offshore windfarms are sited.	EN-3 section 2.6.124	Consideration has been given to the potential impacts of the proposed East Anglia TWO project on both UK and non-UK fleets ( <b>section 13.6 and section 13.7</b> ).
Early consultation should be undertaken with statutory advisors and with representatives of the fishing industry which could include discussion of impact assessment methodologies. Where any part of the proposal involves a grid connection to shore, appropriate inshore fisheries groups should be consulted.	EN-3 section 2.6.127	To date consultation with regards to commercial fishing has been carried out through the Scoping exercise and via direct consultation with statutory and non-statutory fisheries stakeholders, including individual local fishermen that target inshore areas relevant to the offshore cable corridor ( <b>Table 13.2</b> ).
Where a number of offshore windfarms have been proposed within an identified zone, it may be beneficial to undertake such consultation at a zonal, rather than a site specific, level.	EN-3 section 2.6.128	A zonal approach to consultation was taken as part of the East Anglia Round 3 Zonal Appraisal and Planning (ZAP) process. <b>Section 13.2</b> describes stakeholder consultation which has been undertaken to inform this chapter.
The assessment by the Applicant should include surveys of the effects on fish stocks of commercial interest and any potential reduction in such stocks, as well as any likely constraints on fishing activity within the project	EN-3 section 2.6.129	A detailed assessment of the impacts of the proposed East Anglia TWO project on fish and shellfish receptors is provided in <i>Chapter 10 Fish and Shellfish Ecology</i> . This takes account

NPS Guidance	NPS Reference	Reference
boundaries. Robust baseline data should have been collected and studies conducted as part of the assessment.		of the results of surveys carried out in the area.  The likely constraints on fishing associated with the proposed East Anglia TWO project are considered in the assessment presented in <b>section 13.6</b> .
Where there is a possibility that safety zones will be sought around offshore infrastructure, potential effects should be included in the assessment on commercial fishing.	EN-3 section 2.6.130	Consideration has been given in the assessment presented in <b>section 13.6</b> to the implication of the implementation of safety zones.
Where the precise extents of potential safety zones are unknown, a realistic worst case scenario should be assessed. Applicants should consult the MCA. Exclusion of certain types of fishing may make an area more productive for other types of fishing. The assessment by the Applicant should include surveys of the effects on fish stocks of commercial interest and the potential reduction or increase in such stocks that will result from the presence of the windfarm development and of any safety zones.	EN-3 section 2.6.131	Consideration has been given to the implementation of safety zones for definition of the worst-case scenario and assessment of potential impacts on commercial fisheries ( <b>section 13.6</b> ).  Consideration is given in this assessment to the potential impacts of the proposed East Anglia TWO project on commercially exploited fish and shellfish populations ( <b>section 13.6</b> ). A detailed assessment of the impacts of the proposed East Anglia TWO project on fish and shellfish species, including those of commercial importance, is provided in <b>Chapter 10 Fish and Shellfish Ecology</b> .

24. In addition to the NPS guidance, the following guidance documents have been used to inform the assessment of potential impacts on commercial fisheries:

- Centre for Environment, Fisheries and Aquaculture Science (Cefas) (2012) Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects. Contract report: ME5403, May 2012;
- Cefas, Marine Consents and Environment Unit (MCEU), Department for Environment, Food and Rural Affairs (DEFRA) and Department of Trade and Industry (DTI) (2004) Offshore Wind Farms - Guidance note for Environmental Impact Assessment In respect of FEPA and CPA requirements, Version 2;
- RenewableUK (2013) Cumulative impact assessment guidelines, guiding principles for cumulative impacts assessments in offshore windfarms;

- Sea Fish Industry Authority and UK Fisheries Economic Network (UKFEN) (2012) Best practise guidance for fishing industry financial and economic impact assessments;
- Blyth-Skyrme, R.E. (2010) Options and opportunities for marine fisheries mitigation associated with windfarms. Final report for Collaborative Offshore Wind Research into the Environment contract FISHMITIG09. COWRIE Ltd, London;
- FLOWW Best Practice Guidance for Offshore Renewables Developments. Recommendations for Fisheries Liaison. FLOWW (2014);
- FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds. FLOWW ,(2015);
- UK Oil and Gas (2015) Fisheries Liaison Guidelines - Issue 6; and
- International Cable Protection Committee (2009) Fishing and Submarine Cables - Working Together

### 13.4.2 Data Sources

25. The principal sources of data and information used to inform this chapter are outlined in **Table 13.6**. A detailed description of these can be found in **Appendix 13.1 Commercial Fisheries Technical Report**.

**Table 13.6 Data Sources**

Data type	Source	Year	Description
Fisheries Statistics (landings values and fishing effort)	MMO	2007 to 2016 <sup>1</sup>	Landings value and effort data for UK vessels landing into UK and European ports and non-UK vessels landing into UK ports.
Surveillance Sightings	MMO	2011 to 2015 <sup>2</sup>	Sightings of vessels recorded in UK waters, providing location, nationality and fishing method information. Data is collected by weekly surveillance fly overs during daylight hours.
Vessel Monitoring System (VMS) Data	MMO	2012 to 2016	Satellite tracking of all UK fishing vessels over 15m in European waters. Data are cross-referenced with landings information to provide data at 0.05° by 0.05° scale.

<sup>1</sup> Data for 2017 are not yet available for public/private release by the MMO and will not be available until Autumn 2018.

<sup>2</sup> Given the limitations of the MMO 2016 surveillance sightings dataset (no sightings recorded in the study area for that year) surveillance sightings data have been analysed only up to 2015 (see Appendix 13.1, Annex 3 for further detail)

Data type	Source	Year	Description
Fisheries Statistics (landings value and effort data)	Belgian Institute for Agricultural and Fisheries Research (ILVO)	2010 to 2014	Landings values (€) and effort of all over-10m Belgian fishing vessels.
VMS Data	Belgian ILVO	2010 to 2014	Satellite tracking for over-15m Belgian vessels. The data has been filtered by speed to eliminate transiting vessels.
VMS and Integrated Landings Data	Netherlands, Institute for Marine Resources and Ecosystem Studies (IMARES) and LEI	2012 to 2016	Satellite tracking of Dutch fishing vessels combined with logbook data of values, effort for Dutch fishing vessels in the North Sea. A grid is defined based on 1/16 <sup>th</sup> of an ICES rectangle. The data is filtered by speed.
Fisheries Statistics (landings value and effort data)	IMARES	2012 to 2016	Landings value and effort data for over 10m Dutch vessels landing into European ports.
VMS data	Comité National des Pêches Maritimes et des Elevages Marin (CNPMM)	2008 to 2009	VMS charts provided by effort (days fished)
Fishing Effort Data	French L'Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER)	2014	VMS charts provided by effort for Central (IVb) and Southern North Sea (IVc).
VMS data	German Federation of Agriculture and Food	2007 to 2012	Satellite tracking by vessel density in the North Sea.
VMS data	Danish Ministeriet for Fødevarer, Landbrug og Fiskeri (MFLF)	2011 to 2015	VMS effort data for over 15m Danish fishing vessels.

26. Further to analysis of the fisheries datasets described in **Table 13.6**, information gathered through consultation with fisheries stakeholders (**Table 13.2**) has also been used to inform this chapter, including information on fishing grounds, operating practices, vessel and gear specifications as well as key concerns in relation to the proposed East Anglia TWO project.

### 13.4.3 Impact Assessment Methodology

27. The assessment of the potential impacts of the proposed East Anglia TWO project on commercial fisheries receptors considers relevant aspects specified in the Cefas and MCEU (2004) guidelines for offshore wind developments and takes account of the feedback received during consultation with fisheries stakeholders.
28. The impact assessment is presented separately for the construction, operation and decommissioning phase for each potential impact. In addition, it considers potential cumulative and transboundary impacts.
29. The assessment is undertaken on a fleet by fleet basis, taking account of the nationalities and fishing methods identified in the study area from consultation and analysis of fisheries data and information.
30. Where inter-relations with other topics may occur, the outcomes of the assessments carried out in other chapters are cross referenced as required. As previously mentioned, other PEIR chapters that provide information and assessments of relevance to commercial fisheries are **Chapter 10 Fish and Shellfish Ecology** and **Chapter 14 Shipping and Navigation**.

#### 13.4.3.1 Sensitivity

31. The criteria used to define the sensitivity of commercial fisheries receptors are provided in **Table 13.7**.

**Table 13.7 Definitions of Sensitivity Levels for Commercial Fisheries Receptors**

Sensitivity	Definition
High	Limited operational range and ability to deploy only one gear type. High dependence upon a single fishing ground.
Medium	Moderate extent of operational range and / or ability to deploy an alternative gear type. Dependence upon a limited number of fishing grounds.
Low	Extensive operational range and / or ability to deploy a number of gear types or to modify gears. Ability to fish a number of fishing grounds.

Sensitivity	Definition
Negligible	Extensive operational range and very high method versatility in terms of gear types.  Vessels are able to exploit a large number of fishing grounds.

#### 13.4.3.2 Magnitude

32. The criteria used to define impact magnitude on commercial fisheries are provided in **Table 13.8**.
33. The magnitude of an effect is considered for each predicted impact on an individual fleet basis and is defined taking account of the spatial and temporal extent of the impact. This is considered in the context of the relative level of importance to each fleet of the area affected by the potential impact (i.e. the level of fishing in the area with reference to the extent of alternative grounds that the fleet is able to exploit).
34. With respect to the duration of potential impacts, those which relate to construction are considered to be short to medium term; with the overall offshore construction programme for the proposed East Anglia TWO project anticipated to be 27 months (see **section 13.3.2**). Impacts associated with operation are longer term, throughout the operational life of the proposed East Anglia TWO project.

**Table 13.8 Definitions of Magnitude for Commercial Fisheries Receptors**

Magnitude	Definition
High	The area affected by the impact sustains high levels of activity by the fleet and covers a large or moderate extent of its grounds; and/or  The effect is permanent.
Medium	The area affected by the impact sustains moderate/high levels of activity by the fleet and covers a small/moderate extent of its grounds; and/or  The effect is long term.
Low	The area affected by the impact sustains low/moderate levels of activity by the fleet and covers a small extent of its grounds; and/or  The effect is short to medium term.
Negligible	The area affected by the impact sustains low/ negligible activity by the fleet and covers a small/negligible extent of its grounds; and/or  The effect is short term.



### 13.4.3.3 Impact Significance

35. The significance of an impact is identified taking account of the magnitude of effect and the sensitivity of the receptor following the impact significance matrix shown in **Table 13.9**. On this basis potential impacts are assessed as of negligible, minor, moderate or major significance. Those impacts which are of moderate or major significance are considered significant in Environmental Impact Assessment (EIA) terms. Impact significance definitions are provided in **Table 13.10**.
36. It should be noted that the definition of impact significance, whilst guided by the significance criteria matrix (**Table 13.9**), is largely qualitative and based on professional judgement.

**Table 13.9 Impact Significance Matrix**

		Negative Magnitude				Beneficial Magnitude			
		High	Medium	Low	Negligible	Negligible	Low	Medium	High
Sensitivity	High	Major	Major	Moderate	Minor	Minor	Moderate	Major	Major
	Medium	Major	Moderate	Minor	Minor	Minor	Minor	Moderate	Major
	Low	Moderate	Minor	Minor	Negligible	Negligible	Minor	Minor	Moderate
	Negligible	Minor	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Minor

**Table 13.10 Impact Significance Definitions**

Value	Definition
Major	Very large or large change to fishing activity and/or fishing opportunities for a given receptor.
Moderate	Intermediate change to fishing activity and/or fishing opportunities for a given receptor.
Minor	Small change to fishing activity and/or fishing opportunities for a given receptor.
Negligible	No discernible change to fishing activity and/or fishing opportunities for a given receptor.

### 13.4.3.4 Safety risks

37. Where the proposed East Anglia TWO project poses a potential safety risk to fishing vessels and crews, the significance criteria outlined previously are not considered appropriate. In these instances, impacts are assessed in terms of potential risks in line with the parameters used in **Chapter 14 Shipping and Navigation (Table 13.11)**.



**Table 13.11 Risk Matrix (Source: Chapter 14 Shipping and Navigation)**

Frequency					
Frequent	Tolerable	Tolerable	Unacceptable	Unacceptable	Unacceptable
Reasonably Probable	Broadly Acceptable	Tolerable	Tolerable	Unacceptable	Unacceptable
Remote	Broadly Acceptable	Broadly Acceptable	Tolerable	Tolerable	Unacceptable
Extremely Unlikely	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Tolerable	Tolerable
Negligible	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Broadly Acceptable	Tolerable
	Negligible	Minor	Moderate	Serious	Major
Severity					

#### 13.4.4 Cumulative Impact Assessment

38. Projects / activities which have been considered in the cumulative assessment have been selected on the basis of the level of available information and their proximity to the proposed East Anglia TWO project. Given the extent of the operational range of some of the fleets active in areas relevant to the proposed East Anglia TWO project, projects/activities located in the North Sea and the English Channel have been included for assessment of cumulative impacts (see **section 13.7**).

#### 13.4.5 Transboundary Impact Assessment

39. The potential impacts on both UK and foreign fleets are taken into account in this impact assessment. Transboundary impacts are therefore integrated within the impact assessment.

### 13.5 Existing Environment

#### 13.5.1 Overview

40. An overview of the principal fishing fleets and methods operating in the study area is given in this section based on analysis of MMO surveillance sightings from 2011 to 2015 by method and nationality (**Table 13.12.**, **Figure 13.2.** and **Figure 13.3**).

41. In rectangle 33F1, where the inshore section of the offshore cable corridor is located, most surveillance sightings are of UK vessels, principally potters/whelkers, followed by trawlers, long liners and netters. French trawlers and Belgian beam trawlers have also been observed in this inshore rectangle in some numbers with vessels from other nationalities showing negligible records. In this context it is important to note that both French and Belgian vessels hold historic fishing rights within this rectangle, being allowed to fish within the UK's 6 and 12nm limit in this area (**Figure 13.4**).
42. In rectangle 33F2, where the offshore section of the offshore cable corridor and the East Anglia TWO windfarm site are located, the majority of surveillance sightings are of Dutch and Belgian vessels, primarily beam trawlers and trawlers (unspecified).
43. Albeit at comparatively lower levels, sightings of vessels from various other nationalities have also been recorded in the study area in areas beyond the UK's 12nm limit, particularly German beam trawlers and Danish trawlers (**Table 13.12**).

**Table 13.12 Surveillance Sightings from 2011 to 2015 (MMO, 2018) by Vessel Nationality and Method in the Study Area**

ICES Rectangle	Nationality	Fishing method	Number of sightings	Percentage of sightings for ICES rectangle
33F1	United Kingdom	Potter/whelker	59	24.6
		Trawler (all)	37	15.4
		Stern trawler	24	10.0
		Beam Trawler	17	7.1
		Long liner	13	5.4
		Gill netter	11	4.6
		Demersal stern trawler	8	3.3
		Scallop dredger	4	1.7
		Trio Trawler	2	0.8
		Rod and line	1	0.4
		Unspecified	13	5.4
		All methods	189	78.8

ICES Rectangle	Nationality	Fishing method	Number of sightings	Percentage of sightings for ICES rectangle
	France	Stern trawler	4	1.7
		Trawler (all)	19	7.9
		All methods	23	9.6
	Belgium	Beam trawler	22	9.2
	Netherlands	Beam trawler	4	1.7
	Denmark	Beam trawler	1	0.4
		Suction dredger	1	0.4
		All methods	2	0.8
33F2	Netherlands	Beam trawler	86	40.8
		Trawler (all)	1	0.5
		All methods	87	41.2
	Belgium	Beam trawler	70	33.2
		Unspecified	2	0.9
		Trawler (all)	3	1.4
		All methods	75	35.5
	United Kingdom	Beam trawler	5	2.4
		Potter/whelker	9	4.3
		Scallop dredger	2	0.9
		Stern trawler	2	0.9
		Trawler (all)	3	1.4
		All methods	21	10.0
	Germany	Beam trawler	12	5.7
		Gill netter	6	2.8
		All methods	18	8.5
	Denmark	Gill netter	1	0.5
		Pair trawler (all)	2	0.9

ICES Rectangle	Nationality	Fishing method	Number of sightings	Percentage of sightings for ICES rectangle
		Trawler (all)	4	1.9
		All methods	7	3.3
	Norway	Trawler (all)	2	0.9
	France	Trawler (all)	1	0.5

### 13.5.2 Dutch Fishing Vessels

#### 13.5.2.1 Overview

44. The principal fishing activity undertaken by Dutch vessels in the study area is beam trawling for flatfish species such as sole *Solea solea* and plaice *Pleuronectes platessa*. Dutch seine netters are also active, however to a much lesser extent (**Figure 13.5** and **Figure 13.6**). As described in **Appendix 13.1f**, other fishing methods used by the Dutch fleet in the Southern North Sea are recorded at very low levels in the study area.
45. Dutch fishing vessels have no historic fishing rights within the 6 and 12nm limit off the East Anglian coast. Therefore, the areas of the offshore development area of relevance to the Dutch fleet are the sections of the offshore cable corridor located beyond the 12nm limit and the East Anglia TWO windfarm site.

#### 13.5.2.2 Dutch Beam Trawling

46. There has been a progressive conversion from the use of traditional beam trawls to the use of pulse wing trawls over the last ten years amongst the Dutch beam trawl fleet. The majority of Dutch beam trawlers operating in the study area use pulse wing gear and are of the larger size category (approx. 40m in length). From consultation with VisNED it is understood that between 10 and 15 beam trawlers operate in areas relevant to the proposed East Anglia TWO project, many of which are based in Texel or part of the Lowestoft Producers Organisation (PO). It should be noted that the latter, whilst UK registered, are Dutch owned and operated.
47. Fishing using pulse wing trawls is permitted over a wide area of the North Sea, including ICES Division IVc (Southern North Sea) and ICES Division IVb (Central North Sea) to the south of 55°N.

48. VMS data (2012 -2016) indicate that Dutch beam trawling occurs at moderate to high levels across wide sections of the Southern North Sea. However, within the offshore development area, activity occurs at comparatively lower levels. The highest levels of activity by this fleet are recorded along the coasts of the Netherlands and Belgium. Some fishing activity also occurs further north, over large areas of the Central North Sea, albeit at relatively low levels (**Figure 13.7** and **Figure 13.8**).
49. It should be noted that Dutch fishermen have agreed to avoid fishing using pulse wing gear within three discrete areas off the east coast of England through a voluntary Interim Spatial Separation Agreement with UK East coast fishermen. As shown in **Figure 13.9**, one of these areas is located immediately to the north of the East Anglia TWO windfarm site.

#### 13.5.2.3 Dutch Seine Netting

50. Fishing activity by Dutch seine netters occurs at considerably lower levels than beam trawling and for the most part concentrates in the English Channel and to a lesser extent in parts of the Central North Sea and the Southern North Sea. Activity by this method in the offshore development area occurs at low levels (**Figure 13.10** and **Figure 13.11**).
51. As shown in **Figure 13.5**, landings by this method make a very small contribution to the overall landing values from Dutch vessels in the study area.

#### 13.5.2.4 Other Dutch Fishing Methods

52. Fishing activity by other Dutch fishing methods, including pelagic trawlers, demersal otter trawlers, purse seiners, nets, traps and dredgers, occurs at very low / negligible levels within the study area (**Figure 13.12** to **Figure 13.19**).

### 13.5.3 Belgian Fishing Vessels

#### 13.5.3.1 Overview

53. The principal methods used by the Belgian fleet in the study area are beam trawling and to a lesser extent demersal otter trawling (**Figure 13.20**). It is understood that some vessels are able to operate both gears (**Appendix 14.1 Commercial Fisheries Technical Report**). Belgian vessels in this area target a range of species, primarily sole, but also other flatfish species such as plaice, turbot *Scophthalmus maximus* and brill *Scophthalmus rhombus*, as well as skates and rays (**Figure 13.21**).
54. Belgian vessels have historic fishing rights in the study area between the UK's 6 and 12nm limits (**Figure 13.4**).

#### 13.5.3.2 Belgian Beam Trawling

55. Belgian beam trawlers have wide operational ranges, targeting grounds in the Southern North Sea, the English Channel, the Celtic Sea and the Irish Sea (**Figure 13.22 and Figure 13.23**).
56. The highest levels of activity by these vessels concentrate off the coast of Belgium and in the English Channel. Fishing activity in the study area occurs at low to medium levels. Within the offshore development area for the most part activity is focused around the East Anglia TWO windfarm site and the section of the offshore cable corridor immediately to its west.

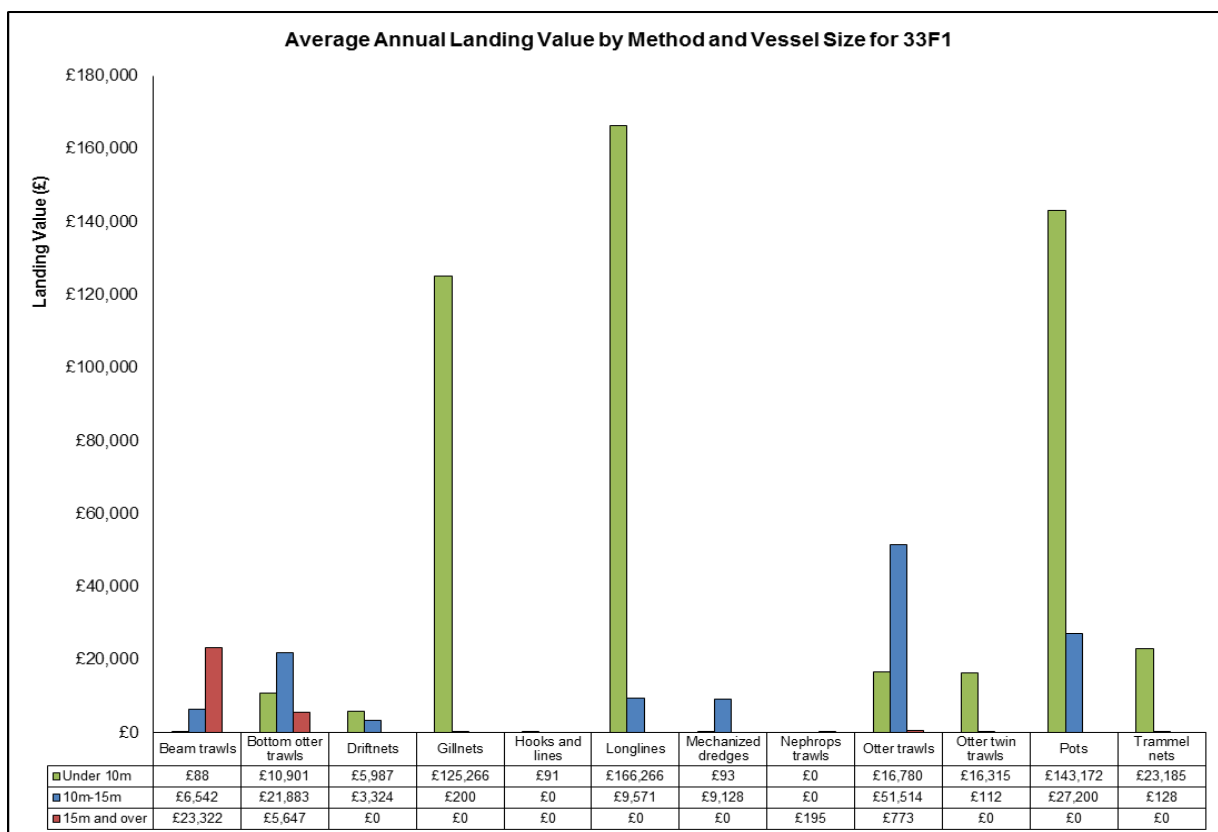
#### 13.5.3.3 Belgian Demersal Otter Trawling

57. Activity by Belgian demersal otter trawlers occurs at lower levels than beam trawling, and takes place over wide areas of the Central and Southern North Sea, the English Channel, the Celtic Sea and the Irish Sea. Fishing activity by these vessels in the offshore development area occurs at very low levels both across the offshore cable corridor and the East Anglia TWO offshore windfarm site (**Figure 13.24 and Figure 13.25**).

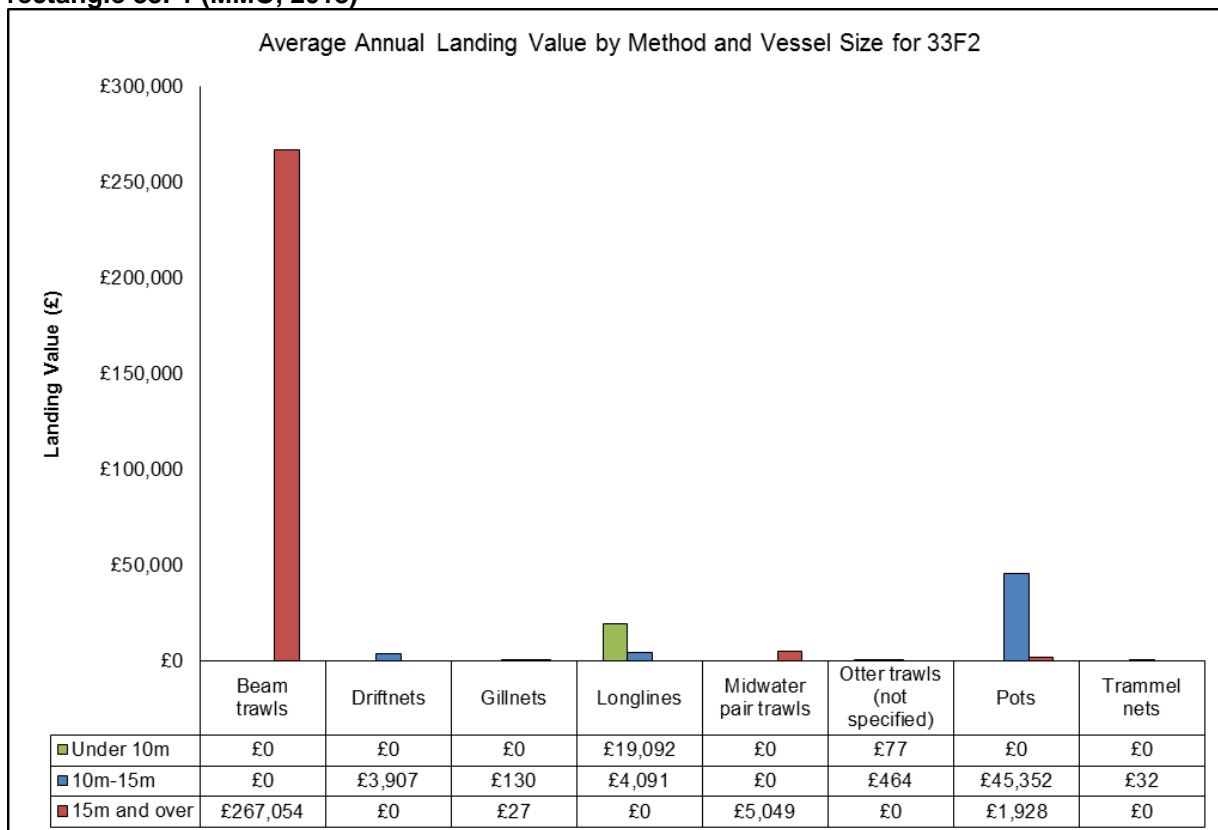
### 13.5.4 United Kingdom Fishing Vessels

#### 13.5.4.1 Overview

58. The majority of local UK vessels active in the vicinity of the offshore development area are of under 10m in length. Many of these are multipurpose having the ability to deploy multiple gears. The principal methods used by these vessels include potting, netting, long lining and trawling and target shellfish species (lobster *Homarus gammarus*, edible crab *Cancer pagurus* and whelk *Buccinum undatum*) as well as fish species such as sole, plaice, rays, cod *Gadus morhua* and bass. By virtue of their small size and associated limited operational range, these vessels primarily operate within the 12nm limit (and mostly within the 6nm limit) and therefore in areas relevant to of the inshore section of the offshore cable corridor (within rectangle 33F1) (**Figure 13.26, Figure 13.27 and Diagram 13.1**).
59. Various vessels are however known to target areas further offshore, including areas as far out as the East Anglia TWO windfarm site. However, in offshore areas within the study area (rectangle 33F2), the majority of landings are from larger vessels (over 15m), mainly beam trawlers targeting flatfish species such as sole and plaice (**Figure 13.26, Figure 13.27 and Diagram 13.2**).



**Diagram 13.1 Average UK landings values (2012 to 2016) by method and vessel length in ICES rectangle 33F1 (MMO, 2018)**



**Diagram 13.2 Average UK landings values (2012 to 2016) by method and vessel length in ICES rectangle 33F2 (MMO, 2018)**

#### 13.5.4.2 Local UK Inshore Fleet

60. The extent of the fishing grounds used by local vessels is illustrated in **Figure 13.28** to **Figure 13.31**, based on information gathered during consultation.
61. Local potting, trawling and longlining grounds are located primarily inshore, including in areas relevant to the offshore cable corridor, however some vessels are known to target grounds as far out as the East Anglia TWO windfarm site (**Figure 13.28**, **Figure 13.29** and **Figure 13.30**).
62. Netting grounds (**Figure 13.31**) extend over a relatively extensive area, including the offshore cable corridor and the East Anglia TWO windfarm site and the wider area to its north and south.

#### 13.5.4.3 Other UK Vessels

63. In areas relevant to the proposed East Anglia TWO project, activity by UK vessels other than those part of the local inshore fleets, is primarily by beam trawlers (**Appendix 13.1 Commercial Fisheries Technical Report**). It is understood that the majority of these whilst UK registered are actually Dutch owned and operated (see **Section 13.5.2**). These are referred to as “Anglo-Dutch” beam trawlers.
64. In addition to activity by Anglo-Dutch vessels, UK owned and operated beam trawlers from ports in the south west of the UK such as Brixham, Penzance and Newlyn, may also fish occasionally in the study area. However, these vessels for the most part target grounds in the Celtic Sea, Western Approaches and English Channel rather than in areas relevant to the proposed East Anglia TWO project.
65. Analysis of VMS data (**Figure 13.32** and **Figure 13.33**) suggests that beam trawling activity by UK registered beam trawlers occurs at relatively low levels across the study area, including areas along the offshore cable corridor and within the East Anglia TWO windfarm site.

### 13.5.5 French Fishing Vessels

#### 13.5.5.1 Overview

66. In the study area, French vessels have fishing rights to fish between the UK’s 6 and 12nm limit (**Figure 13.4**).



67. During consultation with the Comité Régional des Pêches Maritimes et des Elevages Marins (CRPMEM) Hauts de France (**Table 13.2**), it was noted that French fishing activity levels in the offshore development area are relatively low, with between 1 and 10 vessels operating in the area, mainly in areas relevant to the offshore cable corridor. All vessels coming from the Haut de France area are demersal otter trawlers, a proportion of which also carry pelagic gear to target mackerel. These vessels are primarily based in Boulogne and Etaples and fish in this area in spring for one or two months, targeting mainly whiting *Merlangius merlangus* and squid *Loligo sp.* There are also pelagic freezer trawlers based in Fecamp (Normandie), which target grounds in the area.
68. It was also noted during consultation that some vessels steam through the area to target grounds further north.
69. In line with the above, analysis of available VMS data for demersal and pelagic French trawlers (**Figure 13.34** to **Figure 13.37**) suggest that the offshore development area sustains relatively low levels of French fishing, with the majority of activity concentrating in areas south of the proposed East Anglia TWO project towards the English Channel.

### 13.5.6 Danish Fishing Vessels

#### 13.5.6.1 Overview

70. In the vicinity of the proposed East Anglia TWO project, Danish fishing activity is primarily by trawlers, including industrial sandeel trawlers and pelagic trawlers.
71. Analysis of VMS data for the sandeel fleet (**Figure 13.38**) suggests that activity by sandeel industrial trawlers is mainly concentrated in areas such as the Dogger Bank (Central North Sea) and the Norwegian coast (Northern North Sea). Although not restricted to these areas activity is considerably lower in the Southern North Sea. In the offshore development area activity by these vessels occurs at negligible levels.
72. Similarly, activity by pelagic trawlers also concentrates north of the offshore development area in the Central North Sea, particularly off the coast of Denmark. As for industrial sandeel trawlers, activity by pelagic trawlers in the offshore development area occurs at negligible levels (**Figure 13.39**).

### 13.5.7 German Fishing Vessels

#### 13.5.7.1 Overview

73. In areas in the vicinity of the proposed East Anglia TWO project, sightings of German vessels are primarily of beam trawlers (**Table 13.12**). It is understood, that a number of these, whilst German registered, are Dutch owned and operated (**Appendix 13.1 Commercial Fisheries Technical Report**).

74. Analysis of available VMS data for the German fleet (**Figure 13.40**) suggests that activity by these vessels occurs at low levels in the offshore development area with fishing activity by this fleet for the most part concentrating in the Central North Sea off the German, Danish and Dutch coasts.

### 13.5.8 Climate Change and Natural Trends

75. Over time, it is anticipated that global climate change will result in changes to the marine environment, including on fish and shellfish populations of commercial importance (Tripathi et al. 2016; Cheung et al. 2012). This may in turn result in modifications to commercial fisheries practices in order to respond to potential changes in species distribution abundance and/or seasonal trends.
76. In addition, changes in other factors such as fisheries legislation and regulations (i.e. quota and effort allocation, closed areas, gear restrictions) may also influence the future fisheries baseline. In this context, the potential effects of “Brexit” on the existing fishing baseline should be recognised, including the potential changes to fishing access to non-UK fleets within UK waters.

## 13.6 Potential Impacts

77. The assessment of the potential impacts on commercial fishing activities as a result of the construction, operation and decommissioning of the proposed East Anglia TWO project are described in this section. The guidance outlined in **section 13.4.3** provides the basis for impacts taken forward for assessment. The opinions of regulators and stakeholders identified from scoping and direct consultation (see **section 13.2**) have also been considered within the assessment.

### 13.6.1 Potential Impacts during Construction

#### 13.6.1.1 Impact 1: Potential Impacts on Commercially Exploited Fish and Shellfish Populations

78. There may be potential for the construction of the proposed East Anglia TWO project to result in impacts on commercially exploited fish and shellfish species. This could in turn indirectly affect the productivity of the fisheries that target them.
79. The potential impacts of the proposed East Anglia TWO project on fish and shellfish species, including those of commercial importance are assessed in **Chapter 10 Fish and Shellfish Ecology** and are not expected to exceed minor adverse significance. Consequently, any impacts associated with this on the commercial fisheries that target them are also not expected to exceed **minor adverse** significance.

#### 13.6.1.2 Impact 2: Temporary Loss or Restricted Access to Traditional Fishing Grounds

80. The assessment of temporary loss or restricted access to traditional fishing grounds is discussed below on a fleet by fleet basis. Due to data limitations, it is beyond the scope of this assessment to assess the impacts on individual vessels. It is however recognised that the level and distribution of fishing activity and dependence on fishing grounds within the offshore development area will vary between individual vessels within the same fleets.
81. During construction, restricted access or loss of traditional fishing grounds would be a consequence of the implementation of temporary safety zones around:
- Construction activities;
  - Partially installed infrastructure; and
  - Vulnerable sections of cables.
82. As construction progresses, this would lead to a theoretical worst case under which all fishing activities would be excluded from the entirety of East Anglia TWO windfarm site and the offshore cable corridor. Offshore construction works, and therefore potential for fishing to be excluded, would last over a period of 27 months, within which export cable installation would occur over two six month periods (**Table 13.4**).
83. It should be noted, however, that the total area from which fishing may be excluded may change depending on the level of works being carried out and the level of infrastructure installed or partially installed at a given time. With regards to installation of offshore cables, the actual area and duration of potential exclusion may change depending on the installation method used. For example, simultaneous lay and burial techniques, as used on many previous windfarm projects, could shorten the period of exclusion.

##### 13.6.1.2.1 Dutch Fishing Vessels

###### *Dutch beam trawlers*

84. The majority of Dutch beam trawlers active in the study area are of the larger class of vessels (i.e. up to 43m in length and main engines of up to 2,000hp). Given their size and engine power these vessels have wide operational ranges and fishing opportunities. In addition, they have the ability to operate in weather conditions which would prevent other fishing vessels from operating. Based on the above, Dutch beam trawlers are considered of low sensitivity to loss of fishing grounds.

85. VMS data (2012 - 2016) indicate that Dutch beam trawling activity occurs at moderate to high levels across wide sections of the Southern North Sea with the highest levels of activity recorded along the coasts of the Netherlands and Belgium (**Figure 13.7 and Figure 13.8**).
86. However, within the offshore development area, beam trawling by Dutch vessels takes place at comparatively low levels. In addition, the offshore cable corridor and the East Anglia TWO windfarm site represent a small area in the context of the extent of grounds available to these vessels.
87. With this in mind and taking account of the temporary nature of the construction phase, the magnitude of the effect is considered to be low.
88. Taking the low receptor sensitivity and the low magnitude of effect, the significance of the impact of temporary loss or restricted access to fishing grounds during construction is considered to be **minor adverse**.

*Dutch seine netters*

89. Dutch seine netters have wide operational ranges with their fishing opportunities extending over a large area, from the north of Denmark, south to the English Channel towards the Western Approaches. Taking account of their operational range and availability of grounds, they are considered receptors of low sensitivity.
90. Fishing activity by Dutch seine netters in the Southern and Central North Sea occurs at considerably lower levels than beam trawling. The highest levels of activity concentrate south of the offshore development area, around the English Channel.
91. Activity by this method in the offshore development area occurs at low levels (**Figure 13.10 and Figure 13.11**). In addition, the offshore cable corridor and the East Anglia TWO windfarm site represent a small area in the context of the extent of grounds available to these vessels. With this in mind and taking account of the temporary nature of the construction phase, the magnitude of the effect is considered to be low.
92. This combined with the low sensitivity of the receptor, results in an impact of **minor adverse** significance.

*Other Dutch fishing methods*

93. Other fishing methods deployed by Dutch vessels include pelagic trawls, demersal otter trawls, purse seines, nets, traps and dredges. Vessels operating pelagic trawls and demersal otter trawls have wide operational ranges whilst those operating purse seines, nets, traps and dredges have a more restricted operational range. In view of the more limited areas that purse seines, nets, traps and dredges may be able to exploit they are considered of medium sensitivity to loss of fishing grounds, whilst vessels deploying pelagic trawls and demersal otter trawls are considered to be of low sensitivity.
94. It should be noted that fishing within the offshore development area occurs at very low/negligible levels by all these methods (**Figure 13.12 to Figure 13.19**). Taking this into account together with the temporary nature of the construction phase the magnitude of the effect is considered to be negligible.
95. This, in combination with the sensitivity of the receptors identified above results in an impact of **negligible** significance.

13.6.1.2.2 Belgian Fishing Vessels

*Belgian beam trawlers*

96. The fishing grounds of Belgian beam trawlers cover substantial areas of the Southern North Sea, English Channel, Celtic Sea and parts of the Central North Sea and the Irish Sea. Given their wide operational range and fishing opportunities their sensitivity to loss of fishing grounds is considered to be low.
97. The highest levels of activity by these vessels concentrate off the coast of Belgium and in the English Channel. Fishing activity in the study area occurs at low to medium levels. Within the offshore development area for the most part activity is focused around the East Anglia TWO windfarm site and the section of the offshore cable corridor immediately to its west (**Figure 13.22 and Figure 13.23**). Considering this, together with the small proportion of the overall grounds available to these vessels that the offshore development area represents and the temporary and short nature of construction activities, the magnitude of the effect is assessed as low.
98. Taking the low sensitivity of the receptor and low magnitude of the effect, the impact of temporary loss or restricted access to fishing grounds for the Belgian beam trawl fleet is assessed to be of **minor adverse** significance.

*Belgian demersal otter trawlers*

99. The operational range and associated fishing opportunities of the Belgian demersal otter trawl fleet is similar to that described above for beam trawlers. On this basis they are also considered of low sensitivity to temporary loss of restricted access to fishing grounds.
100. Analysis of VMS data for demersal otter trawlers (**Figure 13.23 and Figure 13.24**) indicates that activity by these vessels in the offshore development area occurs at very low levels, with activity for the majority concentrating south of the proposed East Anglia TWO project and in discrete areas of the Central North Sea. Considering the large operational range of these vessels, the relatively small area occupied by the offshore development area and the temporary nature of the construction phase, the magnitude of the effect is assessed as negligible.
101. Taking the low sensitivity of the receptors and the negligible magnitude of effect the impact of loss or restricted access to fishing grounds for the Belgian demersal otter trawl fleet during construction is considered to be of **negligible** significance.

13.6.1.2.3 United Kingdom Fishing Vessels

*Local inshore vessels*

102. The majority of local UK vessels active in the vicinity of the offshore development area are less than 10m. Whilst a number of the vessels have multipurpose capabilities, being able to deploy pots, trawls nets and/or lines, given their small size and associated limited operational ranges, their sensitivity to loss of fishing grounds is considered to be medium.
103. The available data and information obtained during consultation in respect of the location of fishing grounds of local UK vessels suggest that the majority of activity in areas relevant to the offshore development area occurs across the offshore cable corridor (**Figure 13.28 to Figure 13.31**). Potential loss of fishing grounds to the UK local inshore fleet during construction would therefore for the most part be a result of export cable installation activities. It is however recognised that some vessels may also target grounds within the East Anglia TWO windfarm site and therefore may also be affected by construction works undertaken in the windfarm site.
104. Considering the short term and temporary nature of construction activities and the relatively small extent of the offshore development area in the context of the grounds available to this fleet overall, the magnitude of the impact is assessed to be low. It is however recognised, that depending on their degree of dependence on grounds in the offshore development area, for some individual vessels the magnitude of the impact may be proven to be medium.



105. In general terms, taking the medium sensitivity of the local fleets and the low magnitude of the effect, for the overall fleet, the impact significance is considered **minor adverse**.
106. In respect of the potential impact on individual vessels for which the magnitude of the effect may be medium, the significance of the impact is moderate adverse and therefore significant in EIA terms. It should be noted, however, that in instances when fishing gear may need to be temporarily relocated due to construction activities, appropriate evidence-based mitigation, as specified in the FLOWW Guidelines will be applied. With the implementation of the above, the residual impact on these vessels would be reduced to **minor adverse**.

*Other UK vessels*

107. With regards to UK vessels other than those that form part of the local inshore fleet, as mentioned in **section 13.5.4.3** in areas relevant to the proposed East Anglia TWO project, activity is primarily by beam trawlers. It is understood that the majority of these, whilst UK registered, are Dutch owned and operated (Anglo Dutch). As such, these vessels are effectively Dutch beam trawlers and therefore are assigned the same sensitivity as described above for the Dutch beam trawl fleet (**section 13.6.1.2.1**), namely low.
108. In the case of UK owned beam trawlers operating from south-west ports, these predominantly target grounds in the Celtic Sea, Western Approaches and English Channel. In view of their wide operational range and associated fishing opportunities, they are also considered of low sensitivity to loss or restricted access to fishing grounds.
109. Analysis of VMS data (**Figure 13.32 and Figure 13.33**) suggests that beam trawling activity by UK registered beam trawlers occurs at relatively low levels across the study area, with low levels of activity recorded along the offshore cable corridor and the East Anglia TWO windfarm site. Considering this together with the small proportion of the overall grounds available to these vessels that the offshore development area represents and the temporary nature of the construction phase, the magnitude of the effect is assessed as low. This is considered to be the case in respect of Anglo-Dutch vessels.
110. In the particular case of UK owned and operated beam trawlers for south-west ports, it is understood that only a limited number of these vessels may occasionally target sole off the coast of East Anglia on a seasonal basis. Considering the comparatively low levels of activity by these vessels in areas relevant to the project, the magnitude of the effect is assessed as negligible.

111. Taking the above into account the impact of temporary loss or restricted access to fishing grounds during construction is considered to be of **minor adverse** significance in the case of Anglo-Dutch beam trawlers and of **negligible** significance in the case of UK beam trawlers from south-west ports.

#### 13.6.1.2.4 French Fishing Vessels

112. French demersal and pelagic trawlers target a variety of species and have wide operational ranges, exploiting grounds from the Central North Sea to the English Channel and on occasions to the Western approaches. Taking account of their wide operational range and fishing opportunities they are considered of low sensitivity to temporary loss or restricted access to fishing grounds.
113. From consultation and the data that has been made available (**Appendix 13.1 Commercial Fisheries Technical Report**) it is apparent that French fishing activity levels in the offshore development area are relatively low, with the majority of activity concentrating in areas south of the proposed East Anglia TWO project towards the English Channel (**Figure 13.34, Figure 13.35, Figure 13.36 and Figure 13.37**).
114. Considering this, together with the small proportion of the overall grounds available to French vessels that the offshore development area represents and the temporary nature of the construction phase, the magnitude of the effect is assessed as low.
115. Taking the above into account the impact of temporary loss or restricted access to fishing grounds during construction is considered to be of **minor adverse** significance.

#### 13.6.1.2.5 Danish Fishing Vessels

116. Danish sandeel and pelagic trawlers have wide operational ranges and fishing opportunities being active over wide areas of the Central North Sea and therefore their sensitivity to loss of fishing grounds is considered to be low.
117. Analysis of VMS data for the sandeel and pelagic fisheries (**Figure 13.38 and Figure 13.39**) indicates that fishing activity by these vessels occurs at negligible levels in the offshore development area.
118. Considering this and the temporary nature of the construction phase, the magnitude of the effect is assessed as negligible.
119. This, combined with the low sensitivity of both fleets results in an impact of **negligible** significance.



#### 13.6.1.2.6 German Fishing Vessels

120. It is understood that German fishing activity in the vicinity of the offshore development area is mainly by beam trawlers. Some of these are German registered fishing German quotas but Dutch owned and operated. These vessels have wide operational ranges and therefore, as previously described for other beam trawl fleets, they are considered of low sensitivity to loss of fishing grounds.
121. Analysis of available VMS data for German vessels (**Figure 13.40**) suggests low levels of fishing activity in areas relevant to the offshore development area, with activity concentrating for the most part in the Dutch and Danish Sector of the Central North Sea. Considering this together with the temporary nature of the construction phase, the magnitude of the effect is assessed as low.
122. Taking the low sensitivity of the receptor and low magnitude of the effect, the impact of temporary loss or restricted access to fishing grounds during construction is considered to be of **minor adverse** significance.

#### 13.6.1.3 Impact 3: Displacement of Fishing Activity into other Areas

123. There is the potential for temporary loss of access to fishing grounds during construction to lead to a temporary relocation of fishing activity which in turn could result in increased competition for fishing grounds in other areas.
124. It is possible that static gears operated by local inshore vessels could be displaced during the construction phase whereby gears are required to be relocated, particularly during installation of export cables. This, in turn could result in competition for grounds elsewhere between local inshore vessels. However, considering the number of static gear that a relatively small area such as the cable corridor can viably support, the number of static gear units capable of causing a displacement effect would be limited. Furthermore, as stated above in respect of loss of fishing area, in instances where static gear needs to be relocated appropriate procedures as specified in FLOWW Guidelines would be implemented.

125. There may also be potential for larger trawlers to be displaced into areas where static gears are deployed. As described in **section 13.5.4.2**, the majority of the static gear vessels operate within the 12nm limit (and mostly within the 6nm limit). Activity in areas relevant to the proposed East Anglia TWO project beyond the 12nm is predominantly by Dutch and Anglo Dutch beam trawlers. By virtue of their main engine power and gear sizes these vessels are not permitted to fish within the UK's 12nm. In the case of Belgian and French vessels, the larger class of these vessels are also prohibited from fishing within the UK's 12nm limit. However, it is acknowledged that the small class with engines of less than 300hp can fish between the 6 and 12nm limits due to historic fishing rights. Activity by the remaining towed gear fleets in the offshore development area is relatively low and occurs beyond the 12nm limit (i.e. Danish, German vessels).
126. From the information provided above, it is apparent that there is little potential for competition for fishing grounds to occur between local inshore vessels. Similarly, it is apparent that there is little potential for conflicts between local inshore and larger towed gear vessels to occur. Therefore the magnitude of the effect of displacement on the local inshore fishing fleet is considered to be low. In view of the limited operational range of local inshore vessels, as for the assessment of temporary loss or restricted access to fishing grounds, their sensitivity to displacement is considered to be medium.
127. Taking into account the medium sensitivity of the local inshore fleet and the negligible magnitude of the effect, the impact of displacement is assessed to be of **minor adverse** significance.
128. In addition to the above, it is recognised that there could be potential for displacement of fishing vessels into other areas to result in competition for grounds between different fleets that operate towed gear.
129. For the most part these fleets have wide operational ranges relative to the potential loss of grounds associated with the construction phase. Therefore, any increased competition between these vessels arising from displacement would be expected to be minimal. Whilst it is difficult to predict where fishing activity may be displaced to and how this may affect individual vessels, in all cases, the level of displacement would be a function of the temporary loss or restricted access to fishing grounds. It is therefore considered that the sensitivity of receptors, magnitude of effect and resulting impact significance in respect of displacement would, at worst, be as identified in relation to temporary loss or restricted access to fishing grounds for towed gear fleets. As shown in **Table 13.13** below, this would result in an impact of **negligible to minor adverse** significance depending on the towed gear fleet under consideration.

**Table 13.13 Impact Significance of Displacement of Fishing Activity into Other Areas for Towed Gear Fleets**

Receptor Group		Receptor sensitivity	Magnitude of Effect	Impact Significance
Dutch Beam Trawlers		Low	Low	Minor adverse
Dutch Seine Netters		Low	Low	Minor adverse
Other Dutch Methods	Demersal (otter) trawls	Low	Negligible	Negligible
	Nets, purse seines, traps and dredges	Medium	Negligible	Negligible
Belgian Beam Trawlers		Low	Low	Minor adverse
Belgian Demersal Otter Trawlers		Low	Negligible	Negligible
UK Beam Trawlers (Anglo-Dutch)		Low	Low	Minor adverse
UK Beam Trawlers (Southwest ports)		Low	Negligible	Negligible
French demersal and pelagic trawlers		Low	Low	Minor adverse
Danish sandeel industrial trawlers and pelagic trawlers		Low	Negligible	Negligible
German fishing vessels		Low	Low	Minor adverse

#### 13.6.1.4 Impact 4: Increased Steaming Times to Fishing Grounds

130. During construction, the implementation of safety zones could result in increased steaming distances and times and therefore increased operational costs for some fishing vessels.
131. The majority of steaming routes of towed gear vessels from the Netherlands, Belgium, UK, France and other nations between primary fishing grounds and home ports do not go through the offshore development area. Therefore, there would be little potential for changes to steaming routes caused by temporary safety zones associated with the construction of the proposed East Anglia TWO project. Therefore, the sensitivity of these receptors is considered to be negligible.

132. In the case of local inshore vessels, fishing activity for the most part does not extend to areas offshore of the East Anglia TWO windfarm site and mainly concentrates in areas along the offshore cable corridor. In general terms, it is therefore expected that there would be few occasions when there would be a requirement to change existing steaming routes to avoid safety zones. It is recognised however that in the case of inshore vessels operating from ports in the immediate vicinity of the landfall site, the degree of potential interaction with safety zones may be higher. Therefore, the sensitivity of this fleet is considered to be low.
133. Given the relatively small footprint of the safety zones that may be applied during construction and their short term and temporary nature, the magnitude of the effect is considered to be low (for both the local inshore fleet and the rest of the fleets).
134. Considering the sensitivities identified above (low for the local inshore fleet and negligible for the remaining fleets) and the low magnitude of the effect, the impact of increased steaming times to fishing grounds is considered to be of **minor adverse** significance for the local inshore fleet and of **negligible** significance for the rest of the fleets.

#### 13.6.1.5 Impact 5: Interference with Fishing Activity

135. During construction, there may be potential for the transit of construction vessels to result in interference with fishing activities in the study area.
136. In relation to the local UK inshore vessels operating static gear, interference with fishing activity would mainly result from fouling of static gear markers by construction vessels such as crew transfer vessels which would be transiting through the offshore development area. The majority of gear markers used by fishermen operating gear within 12nm of the coast are unlit, without radar reflectors and often simple markers such as plastic bottles or footballs. Thus, these markers are not visible in all conditions. With this in mind and taking account of the non-mobile nature of the gear used by the local static gear fleet the sensitivity to interference of UK vessels operating static gear is considered medium.
137. As described in **section 13.3.3**, appropriate fisheries liaison will be undertaken with relevant fishing interests to ensure they are fully informed of construction activities. This will include provisions for enabling awareness of construction vessels crews of the locations of static gears and fishermen's awareness of construction vessel transit routes. In addition, a Marine Coordinator will provide up to date information to onshore Fisheries Liaison Officers that can be relayed to local fishermen. With the implementation of the above, the magnitude of the effect for the local static gear fleet is considered low, and the impact significance is assessed as **minor adverse**.

138. In the case of fleets operating towed gears, taking account of their mobility, the sensitivity to interference is considered to be low. Transiting construction vessels will fully comply as required under the International Regulations for Preventing Collisions at Sea (COLREGS). Such compliance would negate the requirement for fishing vessels engaged in fishing to alter course or pose any risk to fishing gears being towed. With the above in mind the magnitude of the impact in respect of fleets operating towed gear is considered to be negligible, resulting in an impact of **negligible** significance.

#### 13.6.1.6 Impact 6: Safety Issues for Fishing Vessels

139. With regard to safety issues for fishing vessels, as outlined in **section 13.4.3.4**, the use of the standard impact assessment matrix is not considered appropriate. Safety risks are therefore discussed in terms of being within or outside of acceptable limits in line with the approach adopted in **Chapter 14 Shipping and Navigation**.
140. The potential risk of fishing gear snagging and the manoeuvrability of vessels specifically in relation to safety issues is assessed below.
141. The progressive installation of wind turbine foundations during the construction phase would result in increasing potential for manoeuvrability risks to fishing vessels. In addition snagging risks may arise as a result of sections of cables remaining exposed on the sea bed whilst awaiting burial or protection measures.
142. Safety zones will be in place around construction works and partially installed and installed infrastructure. In addition, in areas where cables are awaiting burial or protection, localised advisory safety zones would be implemented to prevent fishing gear snagging and the subsequent risks to both the cables and fishing vessels and their gears
143. Potential risks to fishing vessels would be minimised by the required levels of communication through the specific channels of the Kingfisher Information System, Notices to Mariners, as well as direct liaison with fishermen and their representatives. This would ensure the required level of awareness of potential construction related risks and the locations and periods of safety exclusion zones amongst fishing vessel owners and crews. Guard vessels and Offshore Fishing Liaison Officers (OFLOs) would be employed where necessary to further aid liaison.
144. In conclusion, with the application of the liaison and information distribution discussed above and the required compliance by fishermen, safety issues for fishing vessels should remain **broadly acceptable**.

145. A separate assessment of potential safety issues associated with sea bed obstacles is provided in **section 13.6.1.7**. Safety risks associated with potential for collisions with construction vessels and allision with project infrastructure are addressed in **Chapter 14 Shipping and Navigation**.

#### 13.6.1.7 Impact 7: Seabed Obstacles

146. Obstacles on the sea bed during construction could potentially cause damage to, or complete loss of fishing gears. In addition, activities associated with construction works such as construction vessel anchoring, jack up legs or cable trenching could produce spoil or mounds onto which fishing gears could fasten.
147. It should be noted, that offshore policy (IMO 1996) prohibits the discarding of objects or waste at sea. The reporting and recovery of any accidentally dropped object is also required.
148. A cable burial risk assessment will be undertaken post consent, in consultation with the MMO and their advisors.
149. In order to assess the sea bed status, post-lay and burial inspection surveys may be undertaken after installation of cables, as discussed in **section 13.3.3**.
150. With the above procedures in place, safety issues to fishing vessels associated with obstacles on the sea bed would be **broadly acceptable**.

#### 13.6.2 Potential Impacts during Operation

151. The potential impacts during operation should be considered in the context of the design life of the proposed East Anglia TWO project..
152. The same receptor sensitivities identified for the construction phase apply for assessment of impacts during operation. Therefore, where relevant, reference is made to relevant sections within the impact assessment presented for the construction phase (**section 13.6.1**).

##### 13.6.2.1 Impact 1: Potential Impacts on Commercially Exploited Fish and Shellfish Populations

153. There may be potential for the operational phase of the proposed East Anglia TWO project to result in impacts on commercially exploited fish and shellfish species. This could in turn indirectly affect the productivity of the fisheries that target them.



154. The potential impacts of the proposed East Anglia TWO project on fish and shellfish species, including those of commercial importance are assessed in **Chapter 10 Fish and Shellfish Ecology** and are not expected to exceed minor adverse significance. Consequently, any impacts associated with this on the commercial fisheries that target them are also not expected to exceed **minor adverse** significance.

#### 13.6.2.2 Impact 2: Complete Loss or Restricted Access to Traditional Fishing Grounds

155. Existing UK legislation does not prevent fishing from occurring in operational windfarms. It is therefore expected that for the most part, fishing would be able to resume within the East Anglia TWO windfarm site during the operational phase.
156. As described in **Table 13.4**, the worst case scenario in respect of loss or restricted access to traditional fishing grounds during operation takes account of the installation of 75 wind turbines with a minimum in-row spacing of 800m and a minimum inter-row spacing of 1,200m offshore.
157. In view of the worst case parameters noted above in respect of minimum spacing, it is anticipated that the majority of vessels deploying towed and static gear would be able to operate within the East Anglia TWO windfarm site. It is however recognised that some methods such as longlining or netting may need to adapt their operating practices to resume fishing in the operational site and that in the case of seine netting, fishing may not be possible.
158. Offshore cables (inter-array, platform link and export cables) will be buried where possible to at least 0.5m. Where burial is not possible (i.e. due to hard ground or at cable crossings) cables would be protected. In line with standard practice in the North Sea oil and gas industry, measures would be undertaken to ensure that where cable protection is required, the protection methods used are compatible with fishing activities where practically possible. Therefore, it is assumed that during the operational phase, the presence of offshore cables would for the most part not result in a material loss of fishing grounds as normal fishing activity would occur in areas where cables are installed except in instances when temporary maintenance works are required.
159. As such, the focus of the assessment of loss or restricted access to fishing grounds presented below is focused on impacts associated with the presence of infrastructure other than cables (i.e. wind turbines, offshore and accommodation platforms) all of which are to be located within the East Anglia TWO windfarm site.

#### 13.6.2.2.1 Dutch Fishing Vessels

##### *Beam trawlers*

160. As previously mentioned, Dutch beam trawling activity occurs at moderate to high levels across a wide section of the Southern North Sea, however, the highest levels of activity are recorded along the coasts of the Netherlands and Belgium and activity within the East Anglia TWO windfarm site is comparatively low.
161. Loss or restricted access to fishing grounds during operation would be long term, however, Dutch beam trawlers would be able regain access for fishing to most of the East Anglia TWO windfarm site. Therefore the magnitude of the effect is considered to be low.
162. As discussed before for the construction phase (**section 13.6.1.2.1**) the sensitivity of Dutch beam trawlers to loss of fishing grounds is considered to be low. This combined with the low magnitude of the effect described above results in an impact of **minor adverse** significance.

##### *Seine netting*

163. As previously mentioned it may not be possible for Dutch seine netters to resume fishing within the operational East Anglia TWO windfarm site. However, fishing activity by Dutch seine netters in the in the East Anglia TWO windfarm site occurs at very low levels. The majority of activity is concentrated in other areas of the Southern North Sea and the English Channel. In addition, the area that the East Anglia TWO windfarm site occupies relative to the fishing grounds available to this fleet is small. Considering the above whilst acknowledging the long term duration of the operational phase, the magnitude of the effect is considered to be low.
164. As discussed for the construction phase (**section 13.6.1.2.1**) the sensitivity of Dutch seine netters to loss of fishing grounds is low. This, in combination with the low magnitude of the effect results in an impact of **minor adverse** significance.

##### *Other Dutch fishing methods*

165. Fishing within the East Anglia TWO windfarm site by Dutch fishing vessels, other than beam trawlers and seine netters (pelagic trawlers, demersal otter trawlers, purse seines, nets, traps and dredges) occurs at very low/negligible levels (**Figure 13.10 and Figure 13.11**). Considering the limited levels of activity of these vessels in the site, the magnitude of the effect is assessed as negligible.
166. As discussed for the construction phase (**section 13.6.1.2.1**), the sensitivity of pelagic trawlers and demersal otter trawlers to loss of fishing grounds is considered to be low, whilst for purse seines, nets, traps and dredges the sensitivity is considered medium. This, in combination with the negligible magnitude of the effect results in an impact of **negligible** significance.



#### 13.6.2.2.2 Belgian Fishing Vessels

##### *Beam trawling*

167. The highest levels of activity by Belgian beam trawlers concentrate off the coast of Belgium and in the English Channel. Fishing activity in the study area occurs at low to medium levels including in the area of the East Anglia TWO windfarm site (**Figure 13.22 and Figure 13.23**).
168. Loss or restricted access to fishing grounds during operation would be long term, however, Belgian beam trawlers would be able to regain access for fishing to most of the East Anglia TWO windfarm site. Therefore the magnitude of the effect is considered to be low.
169. As discussed before for the construction phase (**section 13.6.1.2.2**) the sensitivity of Belgian beam trawlers to loss of fishing grounds is considered to be low. This combined with the low magnitude of the effect described above results in an impact of **minor adverse** significance.

##### *Demersal (otter) trawling*

170. Activity by Belgian demersal otter trawlers occurs at very low levels in the East Anglia TWO windfarm site (**Figure 13.23, Figure 13.24, Figure 13.25 and Figure 13.26**).
171. Whilst the long term duration of the operational phase is recognised, considering the limited level of activity of these vessels in the site and the fact that they would be able to regain access for fishing to most of the East Anglia TWO windfarm site, the magnitude of the effect is assessed as negligible.
172. As discussed for the construction phase (**section 13.6.1.2.2**), the sensitivity of demersal trawlers to loss of fishing grounds is considered to be low. This, in combination with the negligible magnitude of the effect results in an impact of **negligible** significance.

#### 13.6.2.2.3 United Kingdom Fishing Vessels

##### *Local inshore vessels*

173. The available data and the information obtained during consultation in respect of the location of fishing grounds of local inshore UK vessels, suggest that the majority of activity in areas relevant to the offshore development area occurs across the offshore cable corridor (**Figure 13.27 to Figure 13.30**). The local inshore fleet would be able to resume fishing activity along the export cables during the operational phase as prior to their installation and therefore in general terms the magnitude of the impact on local inshore fishing vessels is considered to be negligible.

174. It is recognised, however, that a portion of the inshore fleet in addition to targeting areas relevant to the offshore cable corridor may also target grounds further offshore, including the area where the East Anglia TWO windfarm site is located (**Figure 13.27, Figure 13.29 and Figure 13.30**). It is anticipated that for the most part, these vessels would be able to resume fishing within the operational site, although it is recognised that some changes to their mode of operation may be required in the case of vessels operating longlines and nets. Whilst the long term nature of the operational phase is recognised, considering the above, the magnitude of the effect on the local vessels that operate in areas relevant to the East Anglia TWO windfarm site is considered to be low.
175. As discussed before for the construction phase (**section 13.6.1.2.3**) the sensitivity of local inshore UK vessels to loss of grounds is considered to be medium. This, in combination with the magnitude of effect identified above would result in an impact of **negligible** significance for the local inshore fleet in general and of **minor adverse** significance for those vessels that may be active in areas relevant to the East Anglia TWO windfarm site.

#### *Other UK vessels*

176. Analysis of VMS data (**Figure 13.31 and Figure 13.32**) suggests that beam trawling activity by UK registered beam trawlers occurs at relatively low levels across the study area, with relatively low levels of activity recorded within the East Anglia TWO windfarm site. In addition, UK registered beam trawlers would be able to regain access for fishing to most of the East Anglia TWO windfarm site. Whilst the long term nature of the operational phase is recognised, considering the above, the magnitude of the effect is assessed to be low. This is considered to be the case in respect of Anglo-Dutch beam trawlers.
177. In the particular case of UK owned and operated beam trawlers from south-west ports, it is understood that only a limited number of these vessels may occasionally target sole off the coast of East Anglia on a seasonal basis. Considering the comparatively low levels of activity by these vessels in areas relevant to the East Anglia TWO windfarm site, the magnitude of the effect is assessed as negligible.
178. As discussed before for the construction phase (**section 13.6.1.2.3**) the sensitivity of UK registered beam trawlers (both Anglo Dutch and south-west ports vessels) to loss of fishing grounds is low.
179. The impact of temporary loss or restricted access to fishing grounds during operation is therefore considered to be of **minor adverse** significance in the case of Anglo-Dutch beam trawlers and of **negligible** significance in the case of UK owned and operated beam trawlers.

#### 13.6.2.2.4 French Fishing Vessels

180. Fishing activity levels by French demersal and pelagic trawlers in the East Anglia TWO windfarm site is low with the majority of activity concentrating in areas to the south towards the English Channel (**Figure 13.34, Figure 13.35, Figure 13.36 and Figure 13.37**).
181. Loss or restricted access to fishing grounds during operation would be long term, however, French demersal and pelagic trawlers would be able regain access for fishing to most of the East Anglia TWO windfarm site. Therefore the magnitude of the effect is considered to be low.
182. As discussed before for the construction phase (**section 13.6.1.2.4**) the sensitivity of French demersal and pelagic trawlers to loss of fishing grounds is low. This, combined with the low magnitude of the effect identified above results in an impact of **minor adverse** significance.

#### 13.6.2.2.5 Danish Fishing Vessels

183. Activity by sandeel and pelagic Danish trawlers occurs at negligible levels within the East Anglia TWO windfarm site (**Figure 13.38 and Figure 13.39**). Whilst the long term nature of the operational phase is recognised, in view of the above, the magnitude of the effect is considered to be negligible.
184. As discussed before for the construction phase (**section 13.6.1.2.5**) the sensitivity of sandeel and pelagic Dutch trawlers to loss of fishing grounds is low. This, combined with the negligible magnitude of the effect identified above results in an impact of **negligible** significance

#### 13.6.2.2.6 German Fishing Vessels

185. Analysis of available VMS data for German vessels (**Figure 13.40**) suggests low levels of fishing activity occur in areas relevant to the East Anglia TWO windfarm site, with activity concentrating for the most part in the Dutch and Danish Sector of the Central North Sea.
186. Loss or restricted access to fishing grounds during operation would be long term, however, German vessels would be able regain access for fishing to most of the East Anglia TWO windfarm site. Therefore the magnitude of the effect is considered to be low.
187. As discussed before for the construction phase (**section 13.6.1.2.6**) the sensitivity of German beam trawlers to loss of fishing grounds is low. This, combined with the low magnitude of the effect identified above results in an impact of **minor adverse** significance.

### 13.6.2.3 Impact 3: Displacement of Fishing Activity into Other Areas

188. The majority of activity by local UK inshore vessels around the offshore development area occurs within the 12nm limit, and therefore in areas relevant to the offshore cable corridor. As export cables would be buried, with the exception of some vessels that operate in areas further offshore including in areas relevant to the East Anglia TWO windfarm site, for the most part fishing by local inshore vessels would be able to continue as it occurred prior to cable installation. The potential for conflicts between these vessels associated with displacement would therefore be limited. Similarly, the potential for conflicts between local inshore vessels and larger towed gear vessels would be limited as the latter would be able to regain access to most of the East Anglia TWO windfarm site and would be able to fish along the offshore cable corridor. With this in mind the magnitude of the effect is considered to be low.
189. As discussed for the construction phase (**section 13.6.1.3**), the sensitivity of the local inshore fleet to displacement is considered to be medium. Taking this and the low magnitude of the effect identified above, the significance of the impact is considered to be **minor adverse**.
190. In respect of vessels operating towed gear, as outlined for the construction phase (**section 13.6.1.3**), it is considered that the sensitivity of the receptors, magnitude of the effect and resulting impact significance would, at worst, be as identified in relation to complete loss or restricted access to fishing grounds. As summarised in **Table 13.14** this would result in an impact of **negligible** to **minor adverse** significance, depending on the fleet under consideration.

**Table 13.14 Impact Significance of Displacement of Fishing Activity into Other Areas for Vessels Operating Towed Gears**

Receptor Group		Receptor sensitivity	Magnitude of Effect	Impact Significance
Dutch Beam Trawling		Low	Low	Minor adverse
Dutch Seine Netting		Low	Low	Minor adverse
Other Dutch Methods	Demersal (otter) trawls	Low	Negligible	Negligible
	Nets, purse seines, traps and dredges	Medium	Negligible	Negligible
Belgian Beam Trawling		Low	Low	Minor adverse
Belgian Demersal Otter Trawling		Low	Negligible	Negligible
UK Beam Trawling (Anglo-Dutch)		Low	Medium	Minor adverse
UK Beam Trawling (Southwest ports)		Low	Negligible	Negligible

Receptor Group	Receptor sensitivity	Magnitude of Effect	Impact Significance
French demersal and pelagic trawlers	Low	Low	Minor adverse
Danish sandeel industrial trawling and pelagic trawlers	Low	Negligible	Negligible
German fishing vessels	Low	Low	Minor adverse

#### 13.6.2.4 Impact 4: Increased Steaming Times to Fishing Grounds

191. During operation, the presence of installed infrastructure could potentially result in increases in steaming times for some fishing vessels, in turn causing higher operational costs.
192. As described in **Chapter 14 Shipping and Navigation**, it is anticipated that fishing vessels will be able to steam through the operational East Anglia TWO windfarm site. Therefore, the magnitude of the effect is considered to be negligible.
193. As discussed for the construction phase (**section 13.6.1.4**), for local inshore vessels, the sensitivity to increased steaming times is considered to be low and for the remaining fleets is considered to be negligible. This, in combination with the negligible magnitude of the effect identified above results in an impact of **negligible** significance for both the local inshore fleet and the remainder fleets.

#### 13.6.2.5 Impact 5: Interference with Fishing Activity

194. During the operational phase there may be potential for transiting operation and maintenance vessels to result in interference with fishing activities through navigational conflict.
195. As discussed for the construction phase (**section 13.6.1.5**), the sensitivity to interference is considered to be medium for local vessels operating static gear and low for towed gear vessels.
196. The appropriate two-way liaison with local fishermen described for the construction phase would continue during the operational phase to minimise risks of interference with static gears.
197. In the case of towed gear vessels, the same obligations in respect of COLREGS as specified for the construction phase (**section 13.6.1.5**) will apply to operation and maintenance vessels.

198. Considering the above the magnitude of the effect is assessed to be low in respect of static gear vessels and negligible in respect of both vessels operating towed gear. This combined with the sensitivity of the receptors results in an impact of **minor adverse** significance for static gear vessels and of **negligible** significance in the case of towed gear vessels.

#### 13.6.2.6 Impact 6: Safety Issues for Fishing Vessels

199. During operation, the presence of infrastructure would result in increased potential for snagging and manoeuvrability risks for fishing vessels. In addition snagging risks may arise as a result of sections of inter-array, platform link and export cables becoming exposed or as a result of interactions between fishing gear and protected sections of cables.
200. In order to assess the sea bed status, post-lay and burial inspection surveys may be undertaken after installation of cables. A cable burial plan will be required as part of the Deemed Marine Licence, as discussed in **section 13.3.3**.
201. In addition, the location of cable protection and crossings would be made available to fishing stakeholders and in line with standard oil and gas industry practice, in instances where cable protection is required, procedures would be carried out to ensure that the protection methods used are compatible with fishing activities where feasible and practical.
202. Furthermore, as described in **section 13.3.3** the required levels of information distribution would be undertaken through the channels of the Kingfisher Information System, Notices to Mariners, along with direct liaison with fishermen and their representatives. This would primarily be carried out to ensure the appropriate awareness of potential risks amongst fishing vessel owners and crews (**section 13.3.3**).
203. In conclusion with the implementation of the measures and on-going liaison with fishermen and information distribution as discussed above, safety issues for fishing vessels are considered to be **broadly acceptable**.
204. Safety risks arising from the potential for collisions with operation and maintenance vessels and allision with project infrastructure are addressed in **Chapter 14 Shipping and Navigation**. A separate assessment of potential safety issues associated with sea bed obstacles is provided in **section 194**.



#### 13.6.2.7 Impact 7: Seabed Obstacles

205. As discussed for the construction phase (**section 13.6.1.7**), providing the obligations, monitoring and policies are complied with, risks associated with obstacles on the sea bed should remain **broadly acceptable**. In instances of objects accidentally dropped overboard the standard requirements of reposition recording and recovery will apply. In addition, snagging and loss of gear protocols will be developed by the Applicant, as discussed in **section 13.3.3**.

#### 13.6.3 Potential Impacts during Decommissioning

206. The scope of the decommissioning works would be determined by the relevant legislation and guidance at the time of decommissioning and would most likely involve the accessible installed components. Offshore this is likely to include; all of the wind turbine components, part of the foundations (those above sea bed level) and the sections of the inter-array cables close to the offshore structures, as well as sections of the export cables.

207. With regards to offshore cabling, general UK practice would be followed i.e. buried cables would simply be cut at the ends and left in-situ.

208. It is therefore anticipated that the impacts during decommissioning will be temporary and similar as those identified for the construction phase, that is

- Impact 1: Potential impacts on commercially exploited fish and shellfish populations;
- Impact 2: Temporary loss or restricted access to traditional fishing grounds;
- Impact 3: Displacement of fishing activity into other areas;
- Impact 4: Increased steaming times to fishing grounds;
- Impact 5: Interference with fishing activity;
- Impact 6: Safety issues for fishing vessels; and
- Impact 7: Obstacles on the sea bed.

209. Throughout decommissioning the sensitivity of receptors is assumed to be the same as for the construction phase. The magnitude of effect is considered to be the same as, and in all likelihood less, than that assigned for the construction phase. Consequently, potential impacts to fishing fleets during decommissioning are expected to be no greater, and probably less than those assessed for the construction phase.

### 13.7 Cumulative Impacts

210. The following section provides an assessment of the potential cumulative impacts of the operation, construction and decommissioning phase of the proposed East Anglia TWO project with other marine developments.
211. The potential impacts considered for cumulative assessment are in line with those described above for assessment of the proposed East Anglia TWO project alone and include the following:
- Impact 1: Potential impacts of commercially exploited fish and shellfish species;
  - Impact 2: Loss or restricted access to traditional fishing grounds;
  - Impact 3: Displacement of fishing activity into other areas.
  - Impact 4: Increased steaming times to fishing grounds; and
  - Impact 5: Interference with fishing activities;
212. In the case of safety issues for fishing vessels (Impact 6) and obstacles on the sea bed (Impact 7), it is considered that the same obligations discussed for the proposed East Anglia TWO project alone would apply to other projects / activities, negating the potential for cumulative impacts to occur. As such, these potential impacts are not discussed further in this section.
213. The sensitivity for all fleets is as described for the assessment of the proposed East Anglia TWO project alone.
214. The potential for cumulative impacts to occur would depend on the operating patterns of and the location of preferred fishing grounds of each fleet in relation to other marine developments. Given the large operational range of some fishing fleets, this assessment considers other marine developments over a wide area, including the wider North Sea and English Channel.
215. Marine projects/activities with potential to result in cumulative impacts on commercial fisheries include other offshore windfarms, aggregate dredging, oil and gas activity and fishing restrictions associated with the introduction of Marine Protected Areas (MPAs).



216. For the purposes of this assessment it is taken that currently operational offshore windfarms, active licenced activities and implemented measures are part of the existing environment, as commercial fishing activity would already be adapted to them. This follows the approach outlined in the Planning Inspectorate Advice Note seventeen (the Planning Inspectorate 2015) and in **Chapter 5 EIA Methodology**. In addition, any effect they might have had would be reflected in the baseline characterisation used to inform this chapter (**Appendix 13.1**).
217. With regards to oil and gas activity it should be noted that whilst new areas are being licenced there is currently no information on if or when these blocks will be developed. In addition, a significant amount of oil and gas infrastructure is entering decommissioning and removal phases which, once complete, may lead to some increase in fishable areas. Given the limitations noted above, oil and gas activities have not been included in the cumulative assessment.
218. Offshore windfarms, aggregate dredging areas and MPAs considered in the cumulative assessment are outlined in **Table 13.15** and illustrated in **Figure 13.41 and Figure 13.42**.
219. In respect of MPAs, it should be noted that the final boundaries of some of these have not been finalised and therefore in some cases the published boundaries are only indicative of their maximum possible extent. In addition, the nature and specific areas within MPAs where potential restrictions on fishing activity may be applied are in most cases also yet to be defined or finalised.
220. In the case of aggregate dredging areas, it should be recognised that only a small percentage of these areas would be actively dredged at any one time.
221. The same receptor sensitivities identified for assessment of the proposed East Anglia TWO project alone apply for assessment of cumulative impacts. Therefore, reference is made to the sensitivity levels identified for assessment of East Anglia TWO alone (**section 13.6**) across the cumulative assessment as appropriate.

**Table 13.15 Summary of Projects Considered for the CIA**

Project	Project status	Distance from site (km)
<b>UK Offshore Windfarms</b>		
East Anglia ONE North	In Planning (scoped)**	10
Beatrice	Under Construction	727
Galloper	Under Construction	7
Rampion	Under Construction	221

Project	Project status	Distance from site (km)
East Anglia One	Under Construction	10
Hornsea Project One	Under Construction	167
Hywind 2 Demonstration	Under Construction	615
Aberdeen Offshore Wind Farm	Under Construction	605
East Anglia THREE	Consented	45
Hornsea Project Two	Consented	172
Dogger Bank Teeside A	Consented	295
Sophia (Formerly Dogger Bank Teeside B)	Consented	280
Dogger Bank Creyke Beck A	Consented	261
Dogger Bank Creyke Beck B	Consented	283
Triton Knoll	Consented	144
Inch Cape	Consented	522
Seagreen Alpha-Bravo	Consented	525
Neart na Gaoithe	Consented	516
Moray East (MORL Stevenson, Telford and MacColl)	Consented	667
Blyth Array 3A and 4	Consented	386
Hornsea Project Three	Application submitted	158
Norfolk Boreas	In planning (scoped)	73
Norfolk Vanguard	Application submitted	56
Thanet Extension	Application submitted	70
Moray West	In planning (scoped),	716
Hornsea Project Four	In planning (scoped)	175
<b>German Offshore Windfarms</b>		
OWP (Demonstrations projekt) Albatros I	Under Construction	361
Deutsche Bucht	Consented	323
OWP West	Consented	323
Gode Wind 03	Consented	375

Project	Project status	Distance from site (km)
Gode Wind 04	Consented	375
Borkum Riffgrund West I	Consented	341
Borkum Riffgrund II	Consented	337
Nördlicher Grund	Consented	432
<b>Danish Offshore Windfarms</b>		
Horns rev 3	Under Construction	516
Vesterhavet Syd/Nord	Consented	558
Horns Rev Reserved Area	Pre planning	504
Ringkøbing Reserved Area	Pre planning	526
<b>Belgian Offshore Windfarms</b>		
Rentel	Under Construction	63
Norther	Consented	71
Seastar	Consented	57
Mermaid	Consented	44
Northwester 2	Consented	48
<b>Dutch Offshore Windfarms</b>		
Borssele Site I and II	Consented	57
Borssele Site III and IV	Consented	45
Borssele Site V -Leeghwater	Consented	45
Hollandse Kust Zuid Holland I and II – Chinook	Consented	114
Holland Kust Zuid Holland III and IV	In planning (scoped),	116
<b>French Offshore Windfarms</b>		
Parc éolien en mer de Fecamp	Application submitted	263
Parc Éolien en mer de du Calvados	Application submitted	337
Parc Éolien en mer de Dieppe – le treport	In planning (scoped),	213
<b>Aggregate Dredging Areas</b>		
Outer OTE	Exploration and Option Area	54

Project	Project status	Distance from site (km)
Thames D	Exploration and Option Area	34
Goodwin Sands	Exploration and Option Area	101
Colbart	Exploration and Option Area	129
EEC 1 (former 503)	Exploration and Option Area	198
West Wight	Exploration and Option Area	298
New 495	Exploration and Option Area	22
Bassurelle Sandbank SAC	N/A	169
<b>Offshore Marine Protected Areas (MPAs)</b>		
Dogger Bank SAC	N/A	214
Inner Dowsing, Race Bank and North Ridge SAC	N/A	118
Haisborough, Hammond and Winterton SAC	N/A	36
North Norfolk Sandbanks and Saturn Reef SAC	N/A	75
Scanner Pockmark SAC	N/A	666
Wight-Barfleur Reef SAC	N/A	290
Southern North Sea SAC	N/A	0
Central Fladen MPA	N/A	736
Turbot Bank NCMPE	N/A	589
Norwegian Boundary Sediment Plain NCMPE	N/A	632
Firth of Forth Banks Complex NCMPE	N/A	473
East of Gannet and Montrose Fields NCMPE	N/A	512
South Dorset NCMPE	N/A	342
Offshore Overfalls NCMPE	N/A	247
Farnes East MCZ	N/A	416

Project	Project status	Distance from site (km)
Fulmar MCZ	N/A	420
Offshore Brighton MCZ	N/A	252
Western Channel MCZ	N/A	525
North East of Farnes Deep MCZ	N/A	408
Swallow Sand MCZ	N/A	358
Outer Thames Estuary SPA	N/A	0
Greater Wash SPA	N/A	29

\*Application submitted and not yet accepted \*\*application not yet been submitted \*\*\* Identified but not yet in planning

### 13.7.1 Cumulative Impacts during Construction

222. The assessment of cumulative impacts during the construction phase takes account of the potential increase in the spatial extent of the impact (where construction at various projects occurs concurrently) but also of the potential increase in the duration of the impact (where construction at different projects occurs sequentially).

#### 13.7.1.1 Impact 1: Potential Impacts on Commercially Exploited Fish and Shellfish Populations

223. There may be potential for the construction of the proposed East Anglia TWO project in conjunction with construction activities at other projects to result in cumulative impacts on fish and shellfish populations. This could in turn indirectly affect the productivity of the fisheries that target them. The potential cumulative impacts of construction of the proposed East Anglia TWO project on fish and shellfish species, including those of commercial importance, are assessed in **Chapter 10 Fish and Shellfish Ecology** and are not expected to exceed minor adverse significance. Consequently, any cumulative impacts on the commercial fisheries that target them are also not expected to exceed **minor adverse** significance.

#### 13.7.1.2 Impact 2: Loss or Restricted Access to Traditional Fishing Grounds

##### 13.7.1.2.1 Dutch Fishing Vessels

##### *Dutch beam trawling*

224. Fishing activity by Dutch beam trawlers occurs at relatively high intensity across the majority of the Southern North Sea with the highest levels of activity recorded along the Dutch and Belgian coasts. Some activity also occurs in the Central North Sea, however at lower levels (**Figure 13.7 and Figure 13.8**).

225. Construction activities in other offshore windfarm projects, aggregate dredging activity and fishing restrictions associated with MPAs, particularly in the Southern North Sea (**Figure 13.40**), would therefore have the greatest potential to add to cumulative impacts with regards to loss of fishing grounds on this fleet. Recognising the increased area potentially affected /duration of the impact and taking account of the wide extent of fishing grounds available to this fleet, the magnitude of the cumulative effect is considered medium.
226. As discussed for the proposed East Anglia TWO project alone, the sensitivity of Dutch beam trawlers to loss of fishing grounds is low (**section 13.6**). This, combined with the medium magnitude of effect results in a cumulative impact of **minor adverse** significance.

#### *Dutch seine netting*

227. Dutch seine netting activity is widespread throughout the North Sea from the northern coast of Denmark and is highest in the English Channel (**Figure 13.10 and Figure 13.11**). Construction activities in other offshore windfarm projects, aggregate dredging activity and fishing restrictions associated with MPAs in these areas (**Figure 13.40**) would have the greatest potential to add to cumulative impacts in respect of loss of fishing grounds to this fleet.
228. Acknowledging the increase in the area of grounds potentially lost and/or in the duration of exclusion and recognising the wide operational range and extent of grounds of this fleet, the magnitude of the effect is considered to be medium.
229. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of the Dutch seine netting fleet to loss of fishing grounds is low. This combined with the medium magnitude of effect identified above results in a cumulative impact of **minor adverse** significance.

#### *Other Dutch fishing methods*

230. Activity by Dutch vessels operating demersal otter trawls, pelagic trawls, purse seine nets, dredges, nets and traps is very low/absent in the vicinity of the offshore development area (**Figure 14.12 to Figure 13.19**). Consequently, the potential contribution of construction works in the proposed East Anglia TWO project to any cumulative impact on this fleet would be minimal. With this in mind the magnitude of the effect is considered to be negligible.
231. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of vessels operating demersal and pelagic trawls is considered to be low. In the case of vessels operating dredges, purse seines, nets and traps, the sensitivity is considered medium.

232. Taking this together with the negligible magnitude of the effect identified above, the cumulative impact of loss of grounds is considered to be of **negligible** significance.

#### 13.7.1.2.2 Belgian Fishing Vessels

##### *Belgian beam trawling*

233. The fishing grounds of Belgian beam trawlers cover substantial areas of the Southern North Sea, English Channel and Celtic Sea and parts of the Central North Sea and the Irish Sea (**Figure 13.22 to Figure 13.23**).

234. Construction activities in other windfarm projects, aggregate dredging activity and fishing restrictions associated with MPAs, particularly in areas of high fishing intensity, would have the greatest potential to contribute to cumulative impacts in respect of loss of fishing grounds on this fleet. Acknowledging the increase in the area of grounds potentially lost and/or in the duration of exclusion, when taking account of other projects/activities (**Figure 13.40**), but recognising the wide operational range and extent of grounds of this fleet, the magnitude of the effect is considered to be medium.

235. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of the Belgian beam trawlers to loss of fishing grounds is low. This combined with the medium magnitude of effect identified above results in a cumulative impact of **minor adverse** significance.

##### *Belgian demersal otter trawling*

236. Activity by Belgian otter trawlers takes place over wide areas of the Central and Southern North Sea, the English Channel, the Celtic Sea and the Irish Sea and occurs at very low levels in the offshore development area (**Figure 13.23 and Figure 13.24**). Consequently, the potential contribution of construction works in the proposed East Anglia TWO project to any cumulative impact on this fleet would be minimal. With this in mind the magnitude of the effect is considered to be negligible.
237. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of Belgian otter trawlers to loss of fishing grounds is low. This combined with the negligible magnitude of effect identified above results in a cumulative impact of **negligible** significance.



#### 13.7.1.2.3 United Kingdom Fishing Vessels

##### *Local inshore fleet*

238. The majority of local UK vessels active in the vicinity of the offshore development area are of under 10m in length and primarily exploit grounds within the 12nm (and mostly within the 6nm limit). Therefore, construction activities at other offshore windfarms located in the proximity of the proposed East Anglia TWO project (i.e. East Anglia THREE and East Anglia ONE North), particularly export cable installation, would have the greatest potential to result in cumulative impacts on this fleet (**Figure 13.42**) (both whether construction occurs concurrently or sequentially).
239. In this context it is important to note, however, that in line with the approach taken for the proposed East Anglia TWO project, it would be assumed that where relocation of gear during construction is required for other projects, evidence-based mitigation following FLOWW guidelines would also be applied.
240. In addition to works at other offshore windfarms, there may be potential for aggregate dredging activity in areas in the proximity of the offshore development area (**Figure 13.42** and **Table 13.15**) to add to cumulative impacts on this fleet. Any loss of grounds associated with aggregate dredging would however be expected to be short term and localised as discussed in paragraph 220.. Given the static nature of the gear used by the majority of the inshore fleet, it is unlikely that restrictions to fishing associated with MPAs would add significantly to cumulative impacts, as the focus of these restrictions tends to be on vessels operating towed rather than static gear. Furthermore, restrictions associated with this are expected to be implemented in discrete areas (i.e. where sensitive features are present), rather than across the totality of the MPAs.
241. With the above considerations in mind the magnitude of the cumulative effect on the local inshore fleet is considered to be low.
242. As discussed for the proposed East Anglia TWO project alone (**section 13.6**) the sensitivity of local inshore vessels to loss of fishing grounds is considered to be medium. This, combined with the low magnitude of the effect identified above, results in a cumulative impact of **minor adverse** significance.



#### *Other UK Vessels*

243. With regards to UK vessels other than those that form part of the local inshore fleet, as mentioned in **section 13.5.4.3**, in areas relevant to the proposed East Anglia TWO project activity is primarily by beam trawlers. The majority of these are Anglo-Dutch vessels which operate over wide areas in the Southern and Central North Sea (**Figure 13.32 and Figure 13.33**). Construction activities in other projects, aggregate dredging activity and fishing restrictions associated with MPAs in these areas (**Figure 13.41**) would therefore have the greatest potential to contribute to cumulative impacts.
244. Acknowledging the potential increase in the area of grounds potentially lost and/or in the duration of exclusion, when taking account of other projects/activities, but recognising the wide operational range and extent of grounds of the Anglo-Dutch fleet, the magnitude of the effect is considered to be medium.
245. In the case of beam trawlers operating from south-west ports, given the minimal activity of these vessels in the study area, the potential contribution of construction works in the proposed East Anglia TWO project to any cumulative impact on this fleet would be minimal. With this in mind the magnitude of the effect is considered to be negligible for these vessels.
246. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of the UK beam trawlers (both Anglo-Dutch and south-west ports vessels) to loss of fishing grounds is low. This combined with the magnitude of effect identified above results in a cumulative impact of **minor adverse** significance in the case of Anglo-Dutch vessels and of **negligible** significance in the case of beam trawlers from south-west ports.

#### **13.7.1.2.4 French Fishing vessels**

247. From consultation and available data (**Appendix 13.1 Commercial Fisheries Technical Report**) it is apparent that French fishing activity levels in the offshore development area are relatively low with the majority of activity concentrating in areas south of the proposed East Anglia TWO project towards the English Channel. Construction activities in other windfarm projects, aggregate dredging activity and fishing restrictions associated with MPAs in these areas would therefore have the greatest potential to contribute to cumulative impacts on this fleet (**Figure 13.41**).
248. Recognising the increase in the area of grounds potentially lost and/or in the duration of exclusion when taking account of other projects/activities, but recognising the wide operational range and extent of grounds of this fleet, the magnitude of the effect is considered to be medium.

249. As discussed for the proposed East Anglia TWO project alone (**section 13.6**) the sensitivity of French pelagic and demersal trawlers to loss of fishing grounds is considered to be low. This, combined with the medium magnitude of the effect identified above, results in a cumulative impact of **minor adverse** significance.

#### 13.7.1.2.5 Danish Fishing Vessels

250. Activity by both Danish pelagic trawlers and sandeel trawlers is widespread throughout the North Sea with high areas of activity on the Danish coast and Central North Sea. By comparison (**Figure 13.38** and **Figure 13.39**), activity levels by these fleets is very low in the study area.

251. Consequently, the potential contribution of construction works in the proposed East Anglia TWO project to any cumulative impact on this fleet would be minimal. With this in mind the magnitude of the effect is considered to be negligible.

252. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of the Danish sandeel and pelagic trawlers to loss of fishing grounds is low. This combined with the negligible magnitude of effect identified above results in a cumulative impact of **negligible** significance.

#### 13.7.1.2.6 German Fishing Vessels

253. Analysis of available VMS data for German vessels (**Figure 13.40**) suggests low levels of fishing activity occur in areas relevant to the East Anglia TWO windfarm site, with activity concentrating for the most part in the Dutch and Danish Sector of the Central North Sea. Construction activities in other windfarm projects, aggregate dredging activity and fishing restrictions associated with MPAs in in these areas would therefore have the greatest potential to contribute to cumulative impacts on this fleet (**Figure 13.41**).

254. Recognising the increase in the area of grounds potentially lost and/or in the duration of exclusion when taking account of other projects/activities, but recognising the wide operational range and extent of grounds of this fleet, the magnitude of the effect is considered to be medium.

255. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of the German beam trawlers to loss of fishing grounds is low. This combined with the medium magnitude of effect identified above results in a cumulative impact of **minor adverse** significance

#### 13.7.1.3 Impact 3: Displacement of Fishing Activity into Other Areas

256. During construction, loss of fishing grounds to local inshore vessels could result in displacement of fishing activity into other areas. This in turn, could cause an increase in competition between local inshore vessels for fishing grounds.

257. Given that the activity of local UK vessels is predominately focussed inshore and their operational range is relatively small, for the most part construction activities at other offshore windfarms located in the proximity of the proposed East Anglia TWO project (i.e. East Anglia THREE and East Anglia ONE North), particularly export cable installation, would have the greatest potential to result in cumulative impacts on this fleet (**Figure 13.42**) (both whether construction occurs concurrently or sequentially).
258. As mentioned above in respect of loss of grounds, however, it should be noted that in line with the approach taken for the East Anglia TWO project, it would be expected that where relocation of gear during construction is required for other projects, evidence-based mitigation following FLOWW Guidelines would be applied.
259. In addition to works at other offshore windfarms, there may be potential for aggregate dredging activity in areas in the proximity of the offshore development area (**Figure 13.42**) to add to cumulative impacts on this fleet. Any loss of grounds and associated displacement as a result of aggregate dredging activity would however be expected to be short term and localised. Given the static nature of the gear used by the majority of the inshore fleet, it is unlikely that restrictions to fishing associated with MPAs would add significantly to cumulative impacts in respect of displacement, as the focus of these restrictions tends to be on vessels operating towed rather than static gear. Furthermore, restrictions associated with this would be expected to be only implemented in discrete areas (i.e. where sensitive features are present), rather than across the totality of the MPAs.
260. With the above considerations in mind the magnitude of the cumulative effect on the local inshore fleet is considered to be low.
261. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of local inshore vessels to displacement is considered to be medium. This combined with the low magnitude of the effect identified above results in a cumulative impact of **minor adverse** significance.
262. In respect of vessels operating towed gear, as outlined for the proposed East Anglia TWO project alone (**section 13.6**), it is considered that the sensitivity of the receptors, magnitude of the effect and resulting impact significance would, at worst, be as identified in relation to cumulative loss or restricted access to fishing grounds (**section 13.7.1.2**). As summarised in **Table 13.16**, this would result in an impact of **negligible to minor adverse** significance, depending on the fleet under consideration.

**Table 13.16 Impact Significance of Cumulative Displacement of Fishing Activity into Other Areas for Towed Gear Fleets During Construction**

Receptor Group		Receptor sensitivity	Magnitude of Effect	Impact Significance
Dutch Beam Trawling		Low	Medium	Minor adverse
Dutch Seine Netting		Low	Medium	Minor adverse
Other Dutch Methods	Demersal (otter) trawls	Low	Negligible	Negligible
	Nets, purse seines, traps and dredges	Medium	Negligible	Negligible
Belgian Beam Trawling		Low	Medium	Minor adverse
Belgian Demersal Otter Trawling		Low	Negligible	Negligible
UK Beam Trawling (Anglo-Dutch)		Low	Medium	Minor adverse
UK Beam Trawling (Southwest ports)		Low	Negligible	Negligible
French demersal and pelagic trawlers		Low	Medium	Minor adverse
Danish sandeel industrial trawlers and pelagic trawlers		Low	Negligible	Negligible
German fishing vessels		Low	Medium	Minor adverse

#### 13.7.1.4 Impact 4: Increased Steaming times to Fishing Grounds

263. There is potential for the safety zones applied during construction of the proposed East Anglia TWO project together with those associated with other projects included in the cumulative assessment (**Table 13.15**, **Figure 13.40** and **Figure 13.41**) to result in increased steaming times for fishing vessels.
264. Whilst the potential increase in areas with safety zones in place at any given time due to construction activities at other projects is recognised, considering the relatively small footprint of these zones the magnitude of the impact is considered to be low.
265. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of local inshore vessels to increased steaming times is considered to be low, whilst for the remaining fleets it is considered to be negligible. This, combined with the magnitude of effect identified above, results in an impact of **minor adverse** significance for the local inshore fleet and of **negligible** significance for the remaining of the fleets.

#### 13.7.1.5 Impact 5: Interference with Fishing Activities

266. The increase in vessel movements associated with the construction phase of the proposed East Anglia TWO project together with other projects could result in cumulative impacts in terms of interference with fishing activities.
267. It should be noted, however, that it is in line with the approach proposed for the proposed East Anglia TWO project, it would be expected that appropriate liaison enabling awareness to vessels in transit on the location of static gear and fishermen's awareness of vessel transit routes, would be undertaken at the other projects included in the assessment to minimise potential interference. In the case of towed gears, the same obligations in respect of COLREGS outlined in **section 13.6**, would also apply to other projects. Whilst the relative increase in the level of vessel transits resulting from the proposed East Anglia TWO project in conjunction with other projects is recognised, with the appropriate two way liaison with fishermen and adherence to COLREGs obligations as outlined above, the magnitude of the effect is considered to be low.
268. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of vessels operating static gear is considered to be medium and that of vessels operating towed gear is considered to be low. This, in combination with the magnitude of effect identified above results in a cumulative impact of **minor adverse** significance.

### 13.7.2 Cumulative Impacts during Operation

#### 13.7.2.1 Impact 1: Potential Impacts on Commercially Exploited Fish and Shellfish Populations

269. There may be potential for the operational phase of the proposed East Anglia TWO project in conjunction with other projects to result in cumulative impacts on fish and shellfish populations. This could in turn indirectly affect the productivity of the fisheries that target them. The potential cumulative impacts of the operational phase of the proposed East Anglia TWO project on fish and shellfish species, including those of commercial importance, are assessed in **Chapter 10 Fish and Shellfish Ecology** and are not expected to exceed minor adverse significance. Consequently, any impacts on the commercial fisheries that target them are also not expected to exceed **minor adverse** significance.

### 13.7.2.2 Impact 2: Loss or Restricted Access to Traditional Fishing Grounds

#### 13.7.2.2.1 Dutch Fishing Vessels

##### *Dutch beam trawling*

270. Given the location of preferred fishing grounds for the Dutch beam trawling fleet (**Figure 13.7 and Figure 13.8**), windfarm projects, aggregate dredging activity and fishing restrictions associated with MPAs, particularly in the Southern North Sea (**Figure 13.41**), would have the greatest potential to add to cumulative impacts with regards to loss of fishing grounds during the operation phase of the proposed East Anglia TWO project.
271. With the exception of windfarms in countries where fishing in operational sites is not permitted (i.e. Holland and Belgium) or where restrictions on towed gear fishing inside operational sites may be applied, Dutch beam trawlers would be expected to have access to offshore windfarms once operational. With regards to restrictions associated with MPAs, the localised nature of likely restrictions on fishing should be recognised. In the case of aggregate dredging activity, its temporary and localised nature should be acknowledged.
272. Recognising the increased area potentially affected and considering the extent of fishing grounds available to this fleet (**Figure 13.7 and Figure 13.8**) the magnitude of the cumulative effect is considered medium.
273. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of Dutch beam trawlers to loss of fishing grounds is considered to be low. This, together with the medium magnitude of the effect identified above results in an impact of **minor adverse** significance.

##### *Dutch seine netting*

274. Fishing activity by Dutch seine netters in the Southern and Central North Sea occurs at considerably lower levels than beam trawling. The highest levels of activity concentrate south of the offshore development area, around the English Channel. Other windfarm projects, aggregate dredging activity and fishing restrictions associated with MPAs, particularly in these areas would therefore have the greatest potential to add to cumulative impacts with regards to loss of fishing grounds (**Figure 13.41**).
275. As previously mentioned, seine netters are not expected to be able to deploy gear within operational windfarms. As described above for Dutch beam trawlers, with regards to restrictions associated with MPAs, the localised nature of likely restrictions on fishing should be recognised. In the case of aggregate dredging activity, its temporary and localised nature should also be acknowledged.



276. Considering the above and taking account of the extent of the grounds available to this fleet, the magnitude of the effect is considered to be medium.
277. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of Dutch seine netters to loss of fishing grounds is considered to be low. This, together with the medium magnitude of the effect identified above results in a cumulative impact of **minor adverse** significance

#### *Other Dutch fishing methods*

278. Activity by Dutch vessels operating demersal otter trawls, pelagic trawls, purse seine nets, dredges, nets and traps is very low/absent in the vicinity of the offshore development area (**Figure 13.12 to Figure 13.19**). Consequently, the potential contribution of the operational phase of the proposed East Anglia TWO project to any cumulative impact on this fleet would be minimal. With this in mind the magnitude of the effect is considered to be negligible.
279. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of vessels operating demersal and pelagic trawls is considered to be low. In the case of vessels operating dredges, purse seines, nets and traps, the sensitivity is considered medium.
280. Taking this together with the negligible magnitude of the effect identified above, the cumulative impact of loss of grounds is considered to be of **negligible** significance.

#### 13.7.2.2.2 Belgian Fishing Vessels

##### *Belgian beam trawling*

281. The fishing grounds of Belgian beam trawlers cover substantial areas of the Southern North Sea, English Channel and Celtic Sea and parts of the Central North Sea and the Irish Sea (**Figure 13.22 to Figure 13.23**). Other windfarm projects, aggregate dredging activity and fishing restrictions associated with MPAs in these areas would therefore have the greatest potential to add to cumulative impacts with regards to loss of fishing grounds (**Figure 13.41**).
282. With the exception of windfarms in countries where fishing in operational sites is not permitted (i.e. Holland and Belgium) or where restrictions on towed gear fishing inside operational sites may be applied, Belgian beam trawlers would be expected to have access to offshore windfarms once operational. With regards to restrictions of MPAs, as previously mentioned, the localised nature of likely restrictions on fishing should be recognised. In the case of aggregate dredging activity, its temporary and localised nature should also be acknowledged.

283. Taking the increased area potentially affected and considering the extent of fishing grounds available to this fleet (The fishing grounds of Belgian beam trawlers cover substantial areas of the Southern North Sea, English Channel and Celtic Sea and parts of the Central North Sea and the Irish Sea (**Figure 13.22 to Figure 13.23**). Other windfarm projects, aggregate dredging activity and fishing restrictions associated with MPAs in these areas would therefore have the greatest potential to add to cumulative impacts with regards to loss of fishing grounds (**Figure 13.41**).
284. With the exception of windfarms in countries where fishing in operational sites is not permitted (i.e. Holland and Belgium) or where restrictions on towed gear fishing inside operational sites may be applied, Belgian beam trawlers would be expected to have access to offshore windfarms once operational. With regards to restrictions of MPAs, as previously mentioned, the localised nature of likely restrictions on fishing should be recognised. In the case of aggregate dredging activity, its temporary and localised nature should also be acknowledged.
285. Taking the increased area potentially affected and considering the extent of fishing grounds available to this fleet (**Figure 13.7 and Figure 13.8**) the magnitude of the cumulative effect is considered medium.
286. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of the Belgian beam trawlers to loss of fishing grounds is low. This combined with the medium magnitude of effect identified above results in a cumulative impact of **minor adverse** significance.

*Belgian demersal otter trawling*

287. Activity by Belgian otter trawlers takes place over wide areas of the Central and Southern North Sea, the English Channel, the Celtic Sea and the Irish Sea and occurs at very low levels in the offshore development area (**Figure 13.23 and Figure 13.24**). Consequently, the potential contribution of the operational phase of the proposed East Anglia TWO project to any cumulative impact on this fleet would be minimal. With this in mind the magnitude of the effect is considered to be negligible.
288. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of the Belgian otter trawlers to loss of fishing grounds is low. This combined with the negligible magnitude of effect identified above results in a cumulative impact of **negligible** significance.

13.7.2.2.3 United Kingdom Fishing Vessels

*Local inshore fleet*



289. The majority of activity by local inshore vessels is within 12nm of the UK coast (and mostly within 6nm). Offshore windfarms, aggregate dredging activity and MPAs in these areas, would therefore have the greatest potential to contribute to cumulative loss of fishing grounds to this fleet.
290. In respect of other offshore windfarms, key projects with potential to result in cumulative impacts on the local inshore fleet are those in the vicinity of the proposed East Anglia TWO project, namely East Anglia ONE, East Anglia TWO and East Anglia THREE (**Figure 13.42**). It should be noted, however, that once operational, fishing by local inshore vessels would be expected to be able to resume over the export cables of these windfarms as prior to their installation. Similarly, fishing would be able to resume within the windfarm arrays, although it is recognised that some methods, such as longlining and netting, may need to modify their mode of operation.
291. With regards to aggregate dredging activity, whilst it could contribute to cumulative impacts, as previously mentioned, its temporary and localised nature should be acknowledged.
292. Given the static nature of the gear used by the majority of the inshore fleet, it is unlikely that restrictions to fishing associated with MPAs would add significantly to cumulative impacts, as the focus of these restrictions tends to be on vessels operating towed rather than static gear. Furthermore, restrictions associated with this are expected to be implemented in discrete areas (i.e. where sensitive features are present), rather than across the totality of a given MPA.
293. With the above considerations in mind, the magnitude of the cumulative impact is considered to be low.
294. As discussed for the proposed East Anglia TWO project alone (**section 4.6**), the sensitivity of the local inshore fleet to loss of fishing grounds is medium. This, in combination with the low magnitude of effect identified above, results in a cumulative impact of **minor adverse** significance.

#### *Other UK Vessels*

295. With regards to UK vessels other than those that form part of the local inshore fleet, as mentioned in **section 13.5.4** in areas relevant to the proposed East Anglia TWO project activity is primarily by beam trawlers. The majority of these are Anglo-Dutch vessels which operate over wide areas in the Southern and Central North Sea (**Figure 13.32 and Figure 13.33**). Offshore windfarms, aggregate dredging activity and MPAs in these areas, would therefore have the greatest potential to contribute to cumulative loss of fishing grounds to this fleet (**Figure 13.41**).

296. With the exception of windfarms in countries where fishing in operational sites is not permitted (i.e. Holland and Belgium) or where restrictions on towed gear fishing inside operational sites may be applied, Anglo-Dutch beam trawlers would be expected to have access to offshore windfarms once operational. With regards to restrictions of MPAs, as previously mentioned, the localised nature of likely restrictions on fishing should be recognised. In the case of aggregate dredging activity, its temporary and localised nature should also be acknowledged.
297. Taking the increased area potentially affected and considering the extent of fishing grounds available to this fleet (**Figure 13.32 and Figure 13.33**) the magnitude of the cumulative effect is considered medium.
298. In the case of beam trawlers operating from south-west ports, given the minimal activity of these vessels in the study area, the potential contribution of the operational phase of the proposed East Anglia TWO project to any cumulative impact on this fleet would be minimal. With this in mind the magnitude of the effect is considered to be negligible for these vessels.
299. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of the UK beam trawlers (both Anglo-Dutch and south-west ports vessels) to loss of fishing grounds is low. This combined with the magnitude of effect identified above results in a cumulative impact of **minor adverse** significance in the case of Anglo-Dutch vessels and of **negligible** significance in the case of beam trawlers from south-west ports.

#### 13.7.2.2.4 French Fishing Vessels

300. From consultation and available data (**Appendix 13.1 Commercial Fisheries Technical Report**) it is apparent that French fishing activity levels in the offshore development area are relatively low with the majority of activity concentrating in areas south of the proposed East Anglia TWO project towards the English Channel. Offshore windfarms, aggregate dredging activity and MPAs in these areas, would therefore have the greatest potential to contribute to cumulative loss of fishing grounds to this fleet (**Figure 13.41**).
301. With the exception of windfarms in countries where fishing in operational sites is not permitted (i.e. Holland and Belgium) or where restrictions on towed gear fishing inside operational sites may be applied, French trawlers would be expected to have access to offshore windfarms once operational. With regards to restrictions of MPAs, as previously mentioned, the localised nature of likely restrictions on fishing should be recognised. In the case of aggregate dredging activity, its temporary and localised nature should also be acknowledged.

302. Taking the increased area potentially affected and considering the extent of fishing grounds available to this fleet (**Figure 13.33 and Figure 13.36**) the magnitude of the cumulative effect is considered medium.
303. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of the French demersal and pelagic trawlers to loss of fishing grounds is low. This combined with the magnitude of effect identified above results in a cumulative impact of **minor adverse** significance

#### 13.7.2.2.5 Danish fishing vessels

304. Activity by both Danish pelagic trawlers and sandeel trawlers is widespread throughout the North Sea with high areas of activity on the Danish coast and Central North Sea. By comparison (**Figure 13.37 and Figure 13.38**), activity levels by these fleets is very low in the study area.
305. Consequently, the potential contribution of the operational phase of proposed East Anglia TWO project to any cumulative impact on this fleet would be minimal. With this in mind the magnitude of the effect is considered to be negligible.
306. As discussed for the proposed East Anglia TWO project alone (**section 13.6**) the sensitivity of the Danish sandeel and pelagic trawlers to loss of fishing grounds is low. This combined with the negligible magnitude of effect identified above results in a cumulative impact of **negligible** significance.

#### 13.7.2.2.6 German fishing vessels

307. Analysis of available VMS data for German vessels (**Figure 13.40**) suggests low levels of fishing activity occur in areas relevant to the East Anglia TWO offshore windfarm site, with activity concentrating for the most part in the Dutch and Danish Sector of the Central North Sea. Offshore windfarms, aggregate dredging activity and MPAs in these areas, would therefore have the greatest potential to contribute to cumulative loss of fishing grounds to this fleet (**Figure 13.41**).
308. With the exception of windfarms in countries where fishing in operational sites is not permitted (i.e. Holland and Belgium) or where restrictions on towed gear fishing inside operational sites may be applied, German beam trawlers would be expected to have access to offshore windfarms once operational. With regards to restrictions of MPAs, as previously mentioned, the localised nature of likely restrictions on fishing should be recognised. In the case of aggregate dredging activity, its temporary and localised nature should also be acknowledged.
309. Taking the increased area potentially affected and considering the extent of fishing grounds available to this fleet (**Figure 13.40**) the magnitude of the cumulative effect is considered medium.

310. As discussed for the proposed East Anglia TWO project alone (**section 13.6**) the sensitivity of the German vessels to loss of fishing grounds is low. This combined with the magnitude of effect identified above results in a cumulative impact of **minor adverse** significance

#### 13.7.2.3 Impact 3: Displacement of Fishing Activity into Other Areas

311. During operation, the cumulative loss of fishing grounds to local inshore vessels could result in a displacement of fishing activity into other areas. This in turn, could cause an increase in competition between local inshore vessels for fishing grounds.
312. In respect of other offshore windfarms, key projects with potential to result in displacement impacts on the local inshore fleet are those in the vicinity of the proposed East Anglia TWO project, namely East Anglia ONE, East Anglia ONE North and East Anglia THREE (**Figure 13.42**). It should be noted, however, that as previously mentioned, once operational, fishing by local inshore vessels would be expected to be able to resume over the export cables of these windfarms as prior to their installation. Similarly, fishing would be able to resume within the windfarm arrays, although it is recognised that some methods, such as longlining and netting may need to modify their mode of operation. The potential for displacement effects on local inshore fleet associated with offshore windfarms would therefore be very small.
313. Similarly, with regards to aggregate dredging activity, given its localised and short time nature any displacement effects on this fleet would be limited. In the particular case of displacement associated with loss of grounds as a result of restrictions on fishing implemented on MPAs, given the static nature of the gear used by the majority of the inshore fleet, it is unlikely that this would add significantly to cumulative impacts in respect of displacement, as the focus of these restrictions tends to be on vessels operating towed rather than static gear. Furthermore, restrictions associated with this would be expected to be only implemented in discrete areas (i.e. where sensitive features are present), rather than across the totality of the MPAs.
314. With this in mind the magnitude of the effect of displacement on the local inshore fleet is considered low.
315. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of local inshore vessels to displacement is considered to be medium. This combined with the low magnitude of the effect identified above results in a cumulative impact of **minor adverse** significance.

316. In respect of vessels operating towed gear, as outlined for the proposed East Anglia TWO project alone (**section 13.6**), it is considered that the sensitivity of the receptors, magnitude of the effect and resulting impact significance would, at worst, be as identified in relation to the loss or restricted access to fishing grounds (**section 13.7.2.2**). As summarised in **Table 13.17**, this would result in an impact of negligible to minor adverse significance, depending on the fleet under consideration.

**Table 13.17 Impact Significance of Cumulative Displacement of Fishing Activity into Other Areas for Towed Gear Fleets**

Receptor Group		Receptor sensitivity	Magnitude of Effect	Impact Significance
Dutch Beam Trawling		Low	Low	Minor adverse
Dutch Seine Netting		Low	Medium	Minor adverse
Other Dutch Methods	Demersal (otter) trawls	Low	Negligible	Negligible
	Nets, purse seines, traps and dredges	Medium	Negligible	Minor adverse
Belgian Beam Trawling		Low	Medium	Minor adverse
Belgian Demersal Otter Trawling		Low	Negligible	Negligible
UK Beam Trawling (Anglo-Dutch)		Low	Medium	Minor adverse
UK Beam Trawling (Southwest ports)		Low	Negligible	Negligible
French demersal and pelagic trawlers		Low	Medium	Minor adverse
Danish sandeel industrial trawling and pelagic trawling		Low	Negligible	Negligible
German fishing vessels		Low	Medium	Minor adverse

#### 13.7.2.4 Impact 4: Increased Steaming Times to Fishing Grounds

317. During operation, the presence of installed infrastructure associated with the proposed East Anglia TWO project together with that of other projects included in the cumulative assessment, could potentially result in increases in steaming times for some fishing vessels, in turn causing higher operational costs.

318. As described in **Chapter 14 Shipping and Navigation**, it is anticipated that fishing vessels will be able to steam through the operational East Anglia TWO windfarm. Therefore, the magnitude of the effect is negligible. This would also be expected to be the case for other projects. With, this in mind, the magnitude of the effect is considered to be negligible.
319. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity to increased steaming times of local inshore vessels is considered to be low and for the remaining fleets is considered to be negligible. This, in combination with the negligible magnitude of the effect identified above results in a cumulative impact of **negligible** significance for the local inshore fleet and the remaining of fleets.

#### 13.7.2.5 Impact 5: Interference with Fishing Activities

320. The increase in vessel movements associated with the operation phase of the proposed East Anglia TWO project together with vessels movements at other projects could result in cumulative impacts in terms of interference with fishing activities.
321. It should be noted, however, that as described above in respect of cumulative impacts for the construction phase (**section 13.7.1.5**), it would be expected that appropriate liaison enabling awareness to vessels in transit on the location of static gear and fishermen's awareness of vessel transit routes, would be undertaken at the other projects included in the assessment to minimise potential interference. In the case of towed gears, the same obligations in respect of COLREGS outlined in **section 13.6**, would also apply to other projects. Whilst the relative increase in the level of vessel transits resulting from the proposed East Anglia TWO project in conjunction with other projects is recognised, with the appropriate two way liaison with fishermen and adherence to COLREGs obligations, the magnitude of the effect is considered to be low.
322. As discussed for the proposed East Anglia TWO project alone (**section 13.6**), the sensitivity of vessels operating static gear is considered to be medium and that of vessels operating towed gear is considered to be low. This, in combination with the magnitude of effect identified above results in a cumulative impact of **minor adverse** significance.

#### 13.7.3 Cumulative Impacts during Decommissioning

323. The scope of decommissioning works for other offshore windfarm projects is likely to be similar to that described in **section 13.6.3** for the proposed East Anglia TWO project.



324. It is therefore expected that cumulative impacts during decommissioning would be temporary and short term and similar to those identified in respect of the assessment of cumulative impacts during construction, namely:

- Impact 1: Potential impacts on commercially exploited fish and shellfish populations;
- Impact 2: Temporary loss or restricted access to traditional fishing grounds;
- Impact 3: Displacement of fishing activity into other areas;
- Impact 4: Increased steaming times to fishing grounds; and
- Impact 5: Interference with fishing activity.

325. Throughout the decommissioning phase, the sensitivity of receptors is assumed to be the same as identified for assessment in respect of cumulative impacts during construction. Similarly, the magnitude of effect would be expected to be the same, and in all likelihood less, than that identified in respect of the construction phase. Consequently, cumulative impacts to fishing fleets during decommissioning are expected to be no greater, and probably less than those assessed for the construction phase.

### 13.8 Interactions

326. The impacts identified and assessed in this chapter have the potential to interact with each other, which could give rise to synergistic impacts as a result of that interaction. The worst case impacts assessed within the chapter take these interactions into account and for the impact assessments are considered conservative and robust. For clarity, the areas of interaction between impacts are presented in **Table 13.18** along with an indication as to whether the interaction may give rise to synergistic impacts.



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**Table 13.18 Interactions Between Impacts**

Potential interaction between impacts							
Construction							
	Impact 1: Potential impacts on commercially exploited fish and shellfish populations	Impact 2: Temporary loss or restricted access to traditional grounds	Impact 3: Displacement of fishing activity into other areas	Impact 4: Increased steaming times to fishing grounds	Impact 5: Interference with fishing activities	Impact 6: Safety issues for fishing vessels	Impact 7: Obstacles on the sea bed
Impact 1: Potential impacts on commercially exploited fish and shellfish populations	-	No	No	No	No	No	No
Impact 2: Temporary loss or restricted access to traditional grounds	No	-	Yes	No	No	No	No
Impact 3: Displacement of fishing activity into other areas	No	Yes	-	No	No	No	No
Impact 4: Increased steaming times to fishing grounds	No	No	No	-	No	No	No
Impact 5: Interference with fishing activities	No	No	No	No	-	No	No

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Potential interaction between impacts							
Impact 6: Safety issues for fishing vessels	No	No	No	No	No	-	Yes
<b>Impact 7: Obstacles on the sea bed</b>	No	No	No	No	No	Yes	-
Operation							
	Impact 1: Potential impacts on commercially exploited fish and shellfish populations	Impact 2: Complete loss or restricted access to traditional grounds	Impact 3: Displacement of fishing activity into other areas	Impact 4: Increased steaming times to fishing grounds	Impact 5: Interference with fishing activities	Impact 6: Safety issues for fishing vessels	Impact 7: Obstacles on the sea bed
<b>Impact 1: Potential impacts on commercially exploited fish and shellfish populations</b>	-	No	No	No	No	No	No
<b>Impact 2: Complete loss or restricted access to traditional grounds</b>	No	-	Yes	No	No	No	No
<b>Impact 3: Displacement of</b>	No	Yes	-	No	No	No	No

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Potential interaction between impacts							
<b>fishing activity into other areas</b>							
<b>Impact 4: Increased steaming times to fishing grounds</b>	No	No	No	-	No	No	No
<b>Impact 5: Interference with fishing activities</b>	No	No	No	No	-	No	No
<b>Impact 6: Safety issues for fishing vessels</b>	No	No	No	No	No	-	Yes
<b>Impact 7: Obstacles on the sea bed</b>	No	No	No	No	No	Yes	-
<b>Decommissioning</b>							
It is anticipated that the decommissioning impacts will be similar in nature to those of construction.							

## 13.9 Inter-relationships

327. From the assessment of impacts on commercial fisheries during the construction, operational and decommissioning phases of the proposed East Anglia TWO project, there is the potential for impacts addressed in other PEIR chapters to potentially augment impacts assessed for commercial fisheries and vice versa.

328. These inter-relationships are summarised in **Table 13.19** below. No inter-relationships have been identified where additional mitigation is required due to an accumulation of residual impacts on commercial fisheries.

**Table 13.19 Commercial Fisheries inter-relationships**

Topic and Description	Related Chapter	Where addressed in this Chapter
<p><b>Potential Impacts on Commercially Exploited Fish and Shellfish</b></p> <p>Impacts on fish and shellfish species of commercial importance could indirectly affect the fisheries that target them.</p>	<p><b>Chapter 10 Fish and Shellfish Ecology</b></p>	<p><b>Section 13.6.1.1 and section 152</b></p>
<p><b>Safety Issues for Fishing Vessels</b></p> <p>In addition to safety issues for fishing vessels arising from snagging risks, manoeuvrability hindrances and sea bed obstacles (addressed in this chapter), fishing vessels would also be affected by safety issues associated with potential for collision or allision with project vessels and infrastructure. These are addressed in <b>Chapter 14 Shipping and Navigation</b>.</p>	<p><b>Chapter 14 Shipping and Navigation</b></p>	<p><b>Sections 13.6.1.6</b></p>
<p><b>Increased Steaming Times</b></p> <p>Potential increases in steaming times to fishing grounds would arise depending on the potential for fishing vessels to be able to transit the offshore development area during construction and operation.</p>	<p><b>Chapter 14 Shipping and Navigation</b></p>	<p><b>Section 13.6.1.4 and section 13.6.2.4.</b></p>

## 13.10 Summary

329. A summary of the outcome of the assessment of the impacts of the proposed East Anglia TWO project alone and cumulative with other projects on commercial fisheries receptors is given in **Table 13.20** and **Table 13.21**, respectively.

**Table 13.20 Potential impacts identified for Commercial Fisheries**

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
<b>Construction</b>						
Impact 1: Potential impacts on commercially exploited fish and shellfish species	See <b>Chapter 10 Fish and Shellfish Ecology</b>			Minor adverse	N/A	Minor adverse
Impact 2: Temporary loss or restricted access to fishing grounds	Dutch beam trawlers	Low	Low	Minor adverse	N/A	Minor adverse
	Dutch seine netters	Low	Low	Minor adverse	N/A	Minor adverse
	Other Dutch methods	Low	Negligible	Negligible	N/A	Negligible
	Belgian beam trawlers	Low	Low	Minor adverse	N/A	Minor adverse
	Belgian otter trawlers	Low	Negligible	Negligible	N/A	Negligible
	UK local inshore fleet in general	Medium	Low	Minor adverse	N/A	Minor adverse
	UK local inshore vessels with high dependence on the offshore development area	Medium	Medium	Moderate adverse	Evidence-based mitigation with regard to FLOWW guidance where static gear needs to be relocated	Minor adverse
	Anglo-Dutch beam trawlers	Low	Low	Minor adverse	N/A	Minor adverse

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	UK beam trawlers from south-west ports	Low	Negligible	Negligible	N/A	<b>Negligible</b>
	French pelagic and demersal trawlers	Low	Low	Minor adverse	N/A	<b>Minor adverse</b>
	Danish sandeel and pelagic trawlers	Low	Negligible	Negligible	N/A	<b>Negligible</b>
	German beam trawlers	Low	Low	Minor adverse	N/A	<b>Minor adverse</b>
Impact 3: Displacement of fishing activity into other areas	As above for Impact 2					
Impact 4: Increased steaming times	Local inshore fleet	Low	Low	Minor adverse	N/A	<b>Minor adverse</b>
	Other fleets	Negligible	Low	Negligible	N/A	<b>Negligible</b>
Impact 5: Interference with fishing activities (navigational conflict)	Static gear vessels	Medium	Low	Minor adverse	N/A	<b>Minor adverse</b>
	Towed gear vessels	Low	Negligible	Negligible	N/A	<b>Negligible</b>
Impact 6: Safety issues for fishing vessels	All fleets	N/A		Broadly acceptable	N/A	<b>Broadly acceptable</b>
Impact 7: Seabed obstacles	All fleets	N/A		Broadly acceptable	N/A	<b>Broadly acceptable</b>

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
<b>Operation</b>						
Impact 1: Potential impacts on commercially exploited fish and shellfish species	See <b>Chapter 10 Fish and Shellfish Ecology</b>			Minor adverse	N/A	Minor adverse
Impact 2: Complete loss or restricted access to fishing grounds	Dutch beam trawlers	Low	Low	Minor adverse	N/A	Minor adverse
	Dutch seine netters	Low	Low	Minor adverse	N/A	Minor adverse
	Other Dutch methods	Low/Medium	Negligible	Negligible	N/A	Negligible
	Belgian beam trawlers	Low	Low	Minor adverse	N/A	Minor adverse
	Belgian otter trawlers	Low	Negligible	Negligible		Negligible
	UK local inshore fleet in general	Medium	Negligible	Minor adverse	N/A	Minor adverse
	UK local inshore vessels active in the East Anglia TWO windfarm site	Medium	Low	Minor adverse	N/A	Minor adverse
	Anglo-Dutch beam trawlers	Low	Low	Minor adverse	N/A	Minor adverse
	UK beam trawlers from south-west ports	Low	Negligible	Negligible	N/A	Negligible



Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	French pelagic and demersal trawlers	Low	Low	Minor adverse	N/A	Minor adverse
	Danish sandeel and pelagic trawlers	Low	Negligible	Negligible	N/A	Negligible
	German beam trawlers	Low	Low	Minor adverse	N/A	Minor adverse
Impact 3: Displacement of fishing activity into other areas	As above for Impact 2					
Impact 4: Increased steaming times	Local inshore fleet	Low	Negligible	Negligible	N/A	Minor adverse
	Other fleets	Negligible	Negligible	Negligible	N/A	Negligible
Impact 5: Interference with fishing activities (navigational conflict)	Static gear vessels	Medium	Low	Minor adverse	N/A	Minor adverse
	Towed gear vessels	Low	Negligible	Negligible	N/A	Negligible
Impact 6: Safety issues for fishing vessels	All fleets	N/A		Broadly acceptable	N/A	Broadly acceptable
Impact 7: Seabed obstacles	All fleets	N/A		Broadly acceptable	N/A	Broadly acceptable
Decommissioning						

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
Impacts 1 to 7: As for the construction phase						

**Table 13.21 Potential Cumulative Impacts Identified for Commercial Fisheries Receptors**

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
<b>Construction</b>						
Impact 1: Potential impacts on commercially exploited fish and shellfish species	See <b>Chapter 10 Fish and Shellfish Ecology</b>			Minor adverse	N/A	Minor adverse
Impact 2: Temporary loss or restricted access to fishing grounds	Dutch beam trawlers	Low	Medium	Minor adverse	N/A	Minor adverse
	Dutch seine netters	Low	Medium	Minor adverse	N/A	Minor adverse
	Other Dutch methods	Low/Medium	Negligible	Negligible	N/A	Negligible
	Belgian beam trawlers	Low	Medium	Minor adverse	N/A	Minor adverse
	Belgian otter trawlers	Low	Negligible	Negligible	N/A	Negligible
	UK local inshore fleet	Medium	Low	Minor adverse	Assumes, evidence-based mitigation with regard to FLOWW guidance where static gear needs to be relocated will	Minor adverse

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
					be applied at other projects, in line with the approach taken at the proposed East Anglia TWO project	
	Anglo-Dutch beam trawlers	Low	Medium	Minor adverse	N/A	Minor adverse
	UK beam trawlers from south-west ports	Low	Negligible	Negligible	N/A	Negligible
	French pelagic and demersal trawlers	Low	Medium	Minor adverse	N/A	Minor adverse
	Danish sandeel and pelagic trawlers	Low	Negligible	Negligible	N/A	Negligible
	German beam trawlers	Low	Medium	Minor adverse	N/A	Minor adverse
Impact 3: Displacement of fishing activity into other areas	As above for Impact 2					
Impact 4: Increased steaming times	Local inshore fleet	Low	Low	Minor adverse	N/A	Minor adverse
	Other fleets	Negligible	Low	Negligible	N/A	Negligible
	Static gear vessels	Medium	Low	Minor adverse	N/A	Minor adverse

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
Impact 5: Interference with fishing activities (navigational conflict)	Towed gear vessels	Low	Low	Minor adverse	N/A	Minor adverse
<b>Operation</b>						
Impact 1: Potential impacts on commercially exploited fish and shellfish species	See <b>Chapter 10 Fish and Shellfish Ecology</b>			Minor adverse	N/A	Minor adverse
Impact 2: Complete loss or restricted access to fishing grounds	Dutch beam trawlers	Low	Medium	Minor adverse	N/A	Minor adverse
	Dutch seine netters	Low	Medium	Minor adverse	N/A	Minor adverse
	Other Dutch methods	Low/Medium	Negligible	Negligible	N/A	Negligible
	Belgian beam trawlers	Low	Medium	Minor adverse	N/A	Minor adverse
	Belgian otter trawlers	Low	Negligible	Negligible	N/A	Negligible
	UK local inshore fleet	Medium	Low	Minor adverse	N/A	Minor adverse

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
	Anglo-Dutch beam trawlers	Low	Medium	Minor adverse	N/A	<b>Minor adverse</b>
	UK beam trawlers from south-west ports	Low	Negligible	Negligible	N/A	<b>Negligible</b>
	French pelagic and demersal trawlers	Low	Medium	Minor adverse	N/A	<b>Minor adverse</b>
	Danish sandeel and pelagic trawlers	Low	Negligible	Negligible	N/A	<b>Negligible</b>
	German beam trawlers	Low	Medium	Minor adverse	N/A	<b>Minor adverse</b>
Impact 3: Displacement of fishing activity into other areas	As above for Impact 2					
Impact 4: Increased steaming times	Local inshore fleet	Low	Negligible	Negligible	N/A	<b>Minor adverse</b>
	Other fleets	Negligible	Negligible	Negligible	N/A	<b>Negligible</b>
Impact 5: Interference with fishing activities (navigational conflict)	Static gear vessels	Medium	Low	Minor adverse	N/A	<b>Minor adverse</b>
	Towed gear vessels	Low	Low	Minor adverse	N/A	<b>Minor adverse</b>

Potential Impact	Receptor	Sensitivity	Magnitude	Significance	Mitigation	Residual Impact
<b>Decommissioning</b>						
Impacts 1 to 7: As for the construction phase						

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