RWE Renewables UK Dogger Bank South (West) Limited

RWE Renewables UK Dogger Bank South (East) Limited

Dogger Bank South Offshore Wind Farms

Environmental Statement

Volume 7

Chapter 13 – Commercial Fisheries (Revision 2) (Clean)

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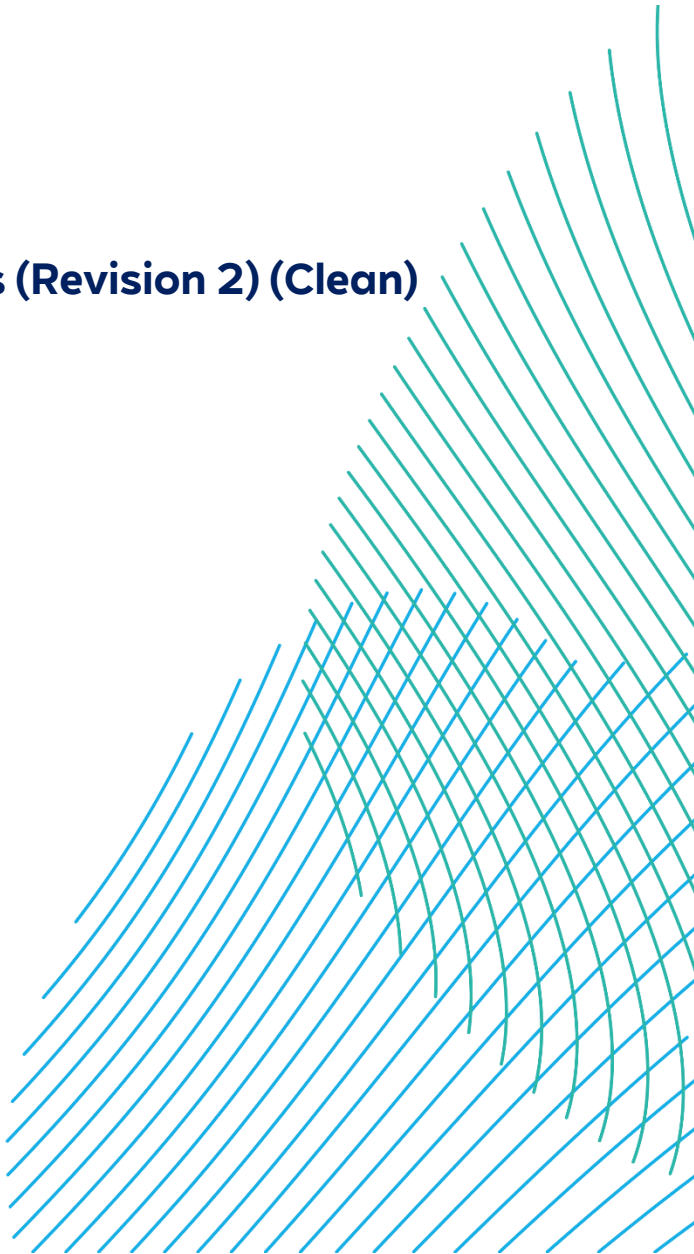

Unrestricted

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Rev	**Page**	**Section**	**Description**
01	N/A	N/A	Final for DCO Application
02	N/A	N/A	This chapter has updated at the request of the Examining Authority within the Rule 17 [PD-018] to accurately reflect the proposed development and contains all the updated information within the chapter as a result of **Project Change Request 1 - Offshore & Intertidal Works (document reference 10.49)** and commitment to bundling of offshore export cables in pairs.
02	N/A	N/A	Updates to reflect responses received from stakeholders and the Examining Authority during Examination up to Deadline 7.

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Glossary

Term	Definition
Accommodation Platform	An offshore platform (situated within either the DBS East or DBS West Array Area) that would provide accommodation and mess facilities for staff when carrying out maintenance activities for the Projects.
Allision	The act of striking or collision of a moving vessel against a stationary object.
Array Areas	The DBS East and DBS West offshore Array Areas, where the wind turbines, offshore platforms and array cables would be located. The Array Areas do not include the Offshore Export Cable Corridor or the Inter-Platform Cable Corridor within which no wind turbines are proposed. Each area is referred to separately as an Array Area.
Array cables	Cables which link the wind turbine generators to the offshore converter/ collector platform(s).
Concurrent Scenario	A potential construction scenario for the Projects where DBS East and DBS West are both constructed at the same time.
Cumulative Effects Assessment (CEA)	The assessment of the combined effect of the Projects in combination with the effects of a number of different (defined cumulative) schemes, on the same single receptor/resource.
Development Scenario	Description of how the DBS East and/or DBS West Projects would be constructed either in-isolation, sequentially or concurrently.
Dogger Bank South (DBS) Offshore Wind Farms	The collective name for the two Projects, DBS East and DBS West.
Fisheries Liaison Officer (FLO)	Primary contact point between the fishing community and the Applicant, with responsibility for disseminating relevant Project information.

Term	Definition
Fishermen's fastener	An unidentified feature on the seabed recorded by fishermen as an obstruction to trawling.
In Isolation Scenario (not In-Isolation)	A potential construction scenario for one Project which includes either the DBS East or DBS West array, associated offshore and onshore cabling and only the eastern Onshore Converter Station within the Onshore Substation Zone and only the northern route of the onward cable route to the proposed Birkhill Wood National Grid Substation.
International Council for the Exploration of the Sea (ICES) Statistical Rectangles	Defined areas of sea used for fisheries statistics (1 degree longitude by 0.5 degree latitude, equalling approximately 30 by 30 nautical miles).
Inter-Platform Cable Corridor	The area where Inter-Platform Cables would route between platforms within the DBS East and DBS West Array Areas, should both Projects be constructed.
Inter-Platform Cables	Buried offshore cables which link offshore platforms.
Landings	Quantitative description of amount of fish returned to port for sale – can be defined in terms of value or weight.
Notices to Mariners (NtM)	The United Kingdom Hydrographic Office's (UKHO) service of publications that contain all of the corrections, alterations and amendments to the UKHO worldwide charts and publications. These are published weekly and are available directly from the UKHO.
Offshore Converter Platforms (OCPs)	The OCPs are fixed structures located within the Array Areas that collect the AC power generated by the wind turbines and convert the power to DC, before transmission through the Offshore Export Cables to the Project's Onshore Grid Connection Points.

Term	Definition
Offshore Development Area	The Offshore Development Area for ES encompasses both the DBS East and West Array Areas, the Inter-Platform Cable Corridor, the Offshore Export Cable Corridor, plus the associated Construction Buffer Zones.
Offshore Export Cable Corridor	This is the area which will contain the Offshore Export Cables between the Offshore Converter Platforms and Transition Joint Bays at the landfall.
Offshore Export Cables	The cables which would bring electricity from the offshore platforms to the Transition Joint Bays (TJBs).
Offshore Fisheries Liaison Officer (OFLO)	Responsible for providing liaison between fishing vessels and offshore Project vessels. Role typically performed by someone with local knowledge and fisheries experience to encourage co-operation between all parties, and to manage any areas of conflict and/or dispute.
Safety zones	Legislated under the Energy Act 2004, safety zones are rolling buffer areas which protect construction activities by preventing unauthorised vessels from entering their boundary.
Scoping opinion	The report adopted by the Planning Inspectorate on behalf of the Secretary of State.
Scoping report	The report that was produced in order to request a Scoping Opinion from the Secretary of State.
Sequential Scenario	A potential construction scenario for the Projects where DBS East and DBS West are constructed with a lag between the commencement of construction activities. Either Project could be built first.
The Applicants	The Applicants for the Projects are RWE Renewables UK Dogger Bank South (East) Limited and RWE Renewables UK Dogger Bank South (West) Limited. The Applicants are themselves jointly owned by the RWE Group of companies (51% stake) and Masdar (49% stake).

Term	Definition
The Projects	DBS East and DBS West (collectively referred to as the Dogger Bank South Offshore Wind Farms).
Vessel Monitoring System (VMS)	Satellite tracking system using a device on a vessel which transmits the location, speed and course of the vessel.

Acronyms

Term	Definition
AIS	Automatic Identification Systems
CEA	Cumulative Effect Assessment
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CFP	Common Fisheries Policy
CFWG	Commercial Fisheries Working Group
CNPMEM	Le Comité national des pêches maritimes et des élevages marins
DBS	Dogger Bank South
DCO	Development Consent Order
EEA	European Economic Area
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EMF	Electromagnetic Fields
ES	Environmental Statement
ESCA	European Subsea Cable Association
EU	European Union
FLO	Fisheries Liaison Officer
FLOWW	Fishing Liaison with Offshore Wind and Wet Renewables Group
FMPs	Fisheries Management Plans
GBS	Gravity Based Structures
HDD	Horizontal Directional Drilling

Term	Definition
HFIG	Holderness Fishing Industry Group
HPMA	Highly Protected Marine Area
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
ICES	International Council for the Exploration of the Sea
ICPC	International Cable Protection Committee
IFCA	Inshore Fisheries and Conservation Authorities
INNS	Invasive Non-native Species
IPMP	In-Principle Monitoring Plan
MCA	Maritime and Coastguard Agency
MMO	Marine Management Organisation
MPA	Marine Protected Area
MPS	Marine Policy Statement
NFFO	National Federation of Fishermen's Organisations
NPS	National Policy Statement
NRA	Navigational Risk Assessment
NtM	Notices to Mariners
OFLO	Offshore Fisheries Liaison Officer
OCP	Offshore Converter Platform
PEIR	Preliminary Environmental Information Report
PLGR	Pre-Lay Grapnel Run

Term	Definition
SAC	Special Area of Conservation
SFF	Scottish Fishermen's Federation
SFPO	Swedish Fisherman's Producers Organisation
SPFPO	Swedish Pelagic Federation Producer Organisation
STECF	EU Scientific, Technical and Economic Committee for Fisheries
SWFPA	Scottish White Fish Producers Association
SWFPO	South West Fisher Producers Organisations
VMS	Vessel Monitoring System

13 Commercial Fisheries

13.1 Introduction

1. This chapter of the Environmental Statement (ES) considers the likely significant effects of the Projects on commercial fisheries. The chapter provides an overview of the existing environment for the proposed Offshore Development Area and wider region, followed by an assessment of likely significant effects for the construction, operation, and decommissioning phases of the Projects.

2. As detailed in **Volume 7, Chapter 1 Introduction (application ref: 7.1)**, Chapter 13 has been updated to incorporate the changes to the Projects Design Parameters resulting from the **Project Change Request 1 – Offshore and Intertidal Works (document reference 10.49)**, commitment to the bundling of Offshore Export Cables, and the incorporation of any associated responses and corrections provided on Commercial Fisheries throughout the Examination process.

3. This chapter should be read in conjunction with the following linked chapters in **Volume 7**:

   - **Chapter 5 Project Description (application ref: 7.5)**;
   - **Chapter 6 EIA Methodology (application ref: 7.6)**;
   - **Chapter 9 Benthic Habitats (application ref: 7.9)**;
   - **Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)**; and
   - **Chapter 14 Shipping and Navigation (application ref: 7.14)**.

4. Additional information to support the Commercial Fisheries assessment includes:

   - **Volume 7, Chapter 13 - Commercial Fisheries Figure 13-1 to Figure 13-2 (Revision 2) (document ref: 7.13.1);** and
   - **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**.

5. **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)** has not been updated as a result of the above changes. Any reference to the Electrical Switching Platform Search Area within Figure 2.1.1 and Figure 2.1.2 of this report should be disregarded.

6. The primary purpose of this Chapter is to inform the ES in support of the Development Consent Order (DCO) application for the Dogger Bank South (DBS) East and DBS West Projects under the Planning Act 2008.

13.2 Consultation

7. Consultation with regard to commercial fisheries has been undertaken in line with the general process described in **Volume 7, Chapter 6 EIA Methodology (application ref: 7.6)**. The key elements of consultation to date have included issue of the scoping report, port visits, fisheries specific questionnaires, and meetings of the Projects' Commercial Fisheries Working Group (CFWG). The feedback received has been considered in preparing the ES, and **Volume 7, Appendix 13-1 (application ref: 7.13.13.1)**; provides a summary of how the consultation responses received to date have influenced the approach that has been taken.

8. Commercial fisheries stakeholders consulted with include:

- Andy Wheeler Consulting;
- Anglo Dutch fishing industry;
- Coastal Shellfish Ltd;
- Danish Pelagic Fishermen's Association;
- Danmarks Fiskeriforening (Danish Fishing Association);
- Deep Wind Offshore;
- Deutscher Fischerei-Verband (German Fisheries Association);
- Fiskerbåt (Norwegian Fishing Vessel Owners Association);
- Holderness Fishing Industry Group (HFIG);
- Independent United Kingdom (UK) fishers (e.g. beach netter, potter,);
- Independent Scottish sandeel fishers (Sunbeam Fishing);
- Le Comité national des pêches maritimes et des élevages marins (CNPMEM) (Normandie and Boulogne);
- National Federation of Fishermen's Organisations (NFFO);
- Nederlandse Vissersbond;
- Norwegian Fishing Industry Representative;
- Rederscentrale (Belgium);
- Scottish Fishermen's Federation (SFF);
- Scottish White Fish Producers Association (SWFPA);
- Sør-Norges Trålerlag (Norwegian Fishermen's Association);
- South West Fish Producer Organisation (SWFPO);
- Swedish Fishermen's Producer Organisation (SFPO);
- Swedish Pelagic Federation Producer Organisation (SPFPO);
- Visafslag; and

- VisNed (North West Dutch Fisheries Producer Organisation).

9. In addition to fisheries stakeholder meetings focused on the Preliminary Environmental Information Report (PEIR) and ES process, as outlined in **Volume 7, Appendix 13-1 (application ref: 7.13.13.1)**, fisheries stakeholders have also been engaged prior to, and during the DBS offshore surveys.

10. Full details of the consultation process will also be presented in the **Volume 5, Consultation Report (application ref: 5.1)**, submitted alongside the DCO application.

13.3 Scope

13.3.1 Study Area

11. The Projects are located within the International Council for the Exploration of the Sea (ICES) Division IVb (North Sea) statistical area, which is divided into statistical rectangles for the purpose of recording fisheries landings. The Array Areas (**Volume 7, Figure 13-1 (application ref: 7.13.1)** would be located within ICES rectangles 37F1, 37F2, 38F1 and 38F2; and the Offshore Export Cable Corridor (**Volume 7, Figure 13-1 (application ref: 7.13.1)** would be located within 36E9, 37E9, 37F0, 37F1, 38F0 and 38F1.

12. A broad Commercial Fisheries Study Area has been defined which will provide wider regional context to the various fisheries, whilst also providing coverage for any effects that may occur both within and outside of the Offshore Development Area. Therefore, the Commercial Fisheries Study Area has been defined as ICES rectangles 36E9, 36F0, 37E9, 37F0, 37F1, 37F2, 38F0, 38F1 and 38F2 (**Volume 7, Figure 13-1 (application ref: 7.13.1)**; as was outlined within the scoping report.

13.3.2 Realistic Worst Case Scenario

13.3.2.1 General Approach

13. The realistic worst case design parameters for likely significant effects scoped into the ES for the Commercial Fisheries assessment are summarised in **Table 13-1**. These are based on the project parameters described in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**, which provides further details regarding specific activities and their durations.

14. In addition to the design parameters set out in **Table 13-1**, consideration is also given to the different Development Scenarios still under consideration and the possible phasing of the construction as set out in sections 13.3.2.2 to 13.3.2.4.

Table 13-1 Realistic Worst Case Design Parameters

	Parameter			
	DBS East In Isolation	**DBS West In Isolation**	**DBS West and DBS East Concurrent or Sequential**	**Notes and Rationale**
Construction In the instance of sequential development of the two Projects, up to a 2 year lag between construction activities is possible, final overall footprint would be identical to the concurrent design scenario.				
Loss or restricted access to fishing grounds	**Construction duration** Up to 5 years of offshore construction Maximum 21 months for the Offshore Export Cable installation	**Construction duration** Up to 5 years of offshore construction Maximum 21 months for the Offshore Export Cable installation	**Construction duration** Up to 5 years of offshore construction if built Concurrently and up to 7 years if built sequentially. Maximum 21 months for the Offshore Export Cable installation	This represents the maximum duration and extent of fishing exclusion throughout the construction phase and hence the greatest potential for displacement. Maximum offshore cable trench length assumes worst case that Offshore Export Cables will be buried in pairs in a single trench per Project.
	Safety zones Up to 500m radius from any construction activity (to be applied for)	**Safety zones** Up to 500m radius from any construction activity (to be applied for)	**Safety zones** Up to 500m radius from any construction activity (to be applied for)	
	Array Area Total Array Area assessed for ES: 349km² Inter-platform cable trench area: 0.46km²	**Array Area** Total Array Area assessed for ES: 355km² Inter-platform cable trench area: 0.46km²	**Array Areas** Total Array Area assessed for ES: 704km² Inter-platform cable trench area: 3.22km²	
	Offshore Export Cable Corridor • Total offshore cable length per cable: 188km • Maximum number of cables required: Two • Max. offshore cable trench length: 188km • Cable corridor width: 2km (including construction buffers)	**Offshore Export Cable Corridor** • Total offshore cable length per cable: 153km • Maximum number of cables required: Two • Max. offshore cable trench length: 153km • Cable corridor width: 2km (including construction buffers)	**Offshore Export Cable Corridors** • Total offshore cable length per cable: 188km for DBS East, 153km for DBS West • Maximum number of cables required: Four • Max. offshore cable trench length: 188km + 153km = 341km *Note: Assumes a worst-case of a single cable trench for each Project, spaced 50m apart.* • Cable corridor width: 2km (including construction buffers)	
Displacement from the Array Area and Offshore Export Cable	As per the Realistic Worst Case Scenario for Construction phase loss or restricted access to fishing grounds.			This represents the maximum duration and extent of fishing exclusion

	Parameter			
	DBS East In Isolation	**DBS West In Isolation**	**DBS West and DBS East Concurrent or Sequential**	**Notes and Rationale**
Corridor leading to gear conflict and increased pressure on adjacent fishing grounds				throughout the construction phase and hence the greatest potential for displacement.
Temporary increase in steaming times	As per the Realistic Worst Case Scenario for Construction phase loss or restricted access to fishing grounds.			This represents the maximum duration and extent of fishing exclusion throughout the construction phase and hence the greatest potential for additional steaming routes to alternative grounds.
Loss or damage to fishing gear due to snagging	As per the Realistic Worst Case Scenario for Construction phase loss or restricted access to fishing grounds.			This represents the maximum scenario for Projects' infrastructure present during the construction phase and hence the greatest potential for gear snagging.
Supply chain opportunities for local fishing vessels	• Construction phase duration: up to 5 years • Guard vessels: up to five (indicative peak number) • Potential provision of fishing vessel for scouting surveys • Potential for Offshore Fisheries Liaison Officer (OFLO) duties	• Construction phase duration: up to 5 years • Guard vessels: up to five (indicative peak number) • Potential provision of fishing vessel for scouting surveys • Potential for OFLO duties	• Construction phase duration: up to 7 years Sequential construction • Guard vessels: up to ten (Indicative peak number) • Potential provision of fishing vessel for scouting surveys • Potential for OFLO duties	Likely opportunities for local fishing vessels (potential beneficial impact for commercial fishing vessels).
Potential impacts on commercially important fish and shellfish resources	See **Volume 7, Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)**; Realistic Worst Case Scenario, Table 10-1.			The scenarios presented in Fish and Shellfish Ecology provide for the greatest disturbance to fish and shellfish species and therefore the resulting

	Parameter			
	DBS East In Isolation	**DBS West In Isolation**	**DBS West and DBS East Concurrent or Sequential**	**Notes and Rationale**
				greatest potential effect to commercial fisheries.
Navigational safety	See **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)**; Realistic Worst Case Scenario**,** Table 14-1.			The scenarios presented in Shipping and Navigation provide for the greatest disturbance to shipping and navigation and therefore the resulting greatest potential effect to commercial fisheries.
Operation				
Loss or restricted access to fishing grounds	**Duration:** • Operational design life of 30 years **Array Area:** Total footprint of infrastructure within the Array Area: **0.74km²** Up to 100 small wind turbines on monopile foundations. Up to two platforms with topside dimensions of 125x100m. Minimum spacing of 830m between array structures. Up to 350km of array cables. Inter-Platform Cables with combined 23km length. Indicative target burial depth for array and inter-platform cables of between 0.5m and 1.5m. Indicative maximum proportion of array and inter platform cable protection requirement of 10%. Up to 21 total array and inter-platform cable and pipeline crossings.	**Duration:** • Operational design life of 30 years **Array Area:** Total footprint of infrastructure within the Array Area: **0.74km²** Up to 100 small wind turbines on monopile foundations. Up to two platforms with topside dimensions of 125x100m. Minimum spacing of 830m between array structures. Up to 350km of array cables. Inter-Platform Cables with combined 23km length. Indicative target burial depth for array and inter-platform cables of between 0.5m and 1.5m. Indicative maximum proportion of array and inter platform cable protection requirement of 10%. Up to 21 total array and inter-platform cable and pipeline crossings.	**Duration:** • Operational design life of 32 years if built Sequentially **Array Area:** Total footprint of infrastructure within the Array Area: **1.7km²** Up to 200 small wind turbines on monopile foundations. Up to three platforms with topside dimensions of 125x100m. Minimum spacing of 830m between array structures. Up to 700km of array cables. Inter-Platform Cables with combined 161km length. Inter-platform cable trench area (342,000m x 20m disturbance width): 6.8km² Indicative target burial depth for array and inter-platform cables of between 0.5m and 1.5m. Indicative maximum proportion of array and inter platform cable protection requirement of 10%.	This represents the maximum duration and extent of fishing exclusion throughout the operation phase and hence the greatest potential to restrict access to fishing grounds. **Assumption:** Assessment assumes that fishing would resume around and between infrastructure within the Projects where possible, with the exception of an assumed 50m operating distance from infrastructure, areas of cable protection, and safety zones around infrastructure undergoing major maintenance or replacement. Furthermore, the individual decisions made by skippers with their own perception of risk

	Parameter			
	DBS East In Isolation	**DBS West In Isolation**	**DBS West and DBS East Concurrent or Sequential**	**Notes and Rationale**
	Indicative height of protection for array cables (including crossings) of 1.0m. Indicative height of protection for inter-platform cables (including crossings) of 1.4m.	Indicative height of protection for array cables (including crossings) of 1.0m. Indicative height of protection for Inter-Platform Cables (including crossings) of 1.4m.	Up to 53 total array and inter-platform cable and pipeline crossings. Indicative height of protection for array cables (including crossings) of 1.0m. Indicative height of protection for Inter-Platform Cables (including crossings) of 1.4m.	would determine the likelihood of whether their fishing would resume within DBS East and / or DBS West. Inclement weather would be a significant contributor to this risk perception. Disturbance is shown over the Projects' lifetime.
	Offshore Export Cable Corridor: Total footprint of infrastructure within the Offshore Export Cable Corridor: **0.58km²** Maximum number of cables required: Two Max. offshore cable trench length: 188km Indicative length of Offshore Export Cable requiring protection: 32.8km Total footprint of pipeline and / or cable crossing protection material: 0.07km² Indicative height of protection for Offshore Export Cables (including crossings) of 1.4m.	**Offshore Export Cable Corridor:** Total footprint of infrastructure within the Offshore Export Cable Corridor: **0.47km²** Maximum number of cables required: Two Max. offshore cable trench length: 153km Indicative length of Offshore Export Cable requiring protection: 25.8km Total footprint of pipeline / cable crossing protection material: 0.07km² Indicative height of protection for Offshore Export Cables (including crossings) of 1.4m.	**Offshore Export Cable Corridor:** Total footprint of infrastructure within the Offshore Export Cable Corridor: **1.05km²** Maximum number of cables required: Four Max. offshore cable trench length for all cables: 188km + 153km =341km Indicative length of Offshore Export Cable requiring protection: 58.6km Total footprint of pipeline and / or cable crossing protection material: 0.147km² Indicative height of protection for Offshore Export Cables (including crossings) of 1.4m.	
	Safety Zones: Up to 500m when major maintenance is in progress (use of jack-up vessel or similar).	**Safety Zones:** Up to 500m when major maintenance is in progress (use of jack-up vessel or similar).	**Safety Zones:** Up to 500m when major maintenance is in progress (use of jack-up vessel or similar).	
Displacement from the Array Area and Offshore Export Cable Corridor leading to	As per the Realistic Worst Case Scenario for operational phase loss or restricted access to fishing grounds.			This represents the maximum duration and extent of fishing exclusion throughout the operation

	Parameter			
	DBS East In Isolation	**DBS West In Isolation**	**DBS West and DBS East Concurrent or Sequential**	**Notes and Rationale**
gear conflict and increased pressure on adjacent fishing grounds				phase and hence the greatest potential for displacement.
Increased steaming times	As per the Realistic Worst Case Scenario for operational phase loss or restricted access to fishing grounds.			This represents the maximum duration and extent of fishing exclusion throughout the operation phase and hence the greatest potential for additional steaming routes to alternative grounds.
Loss or damage to fishing gear due to snagging	As per the Realistic Worst Case Scenario for operational phase loss or restricted access to fishing grounds.			This represents the maximum scenario for project infrastructure present during operation and maintenance phase and hence the greatest potential for gear snagging.
Supply chain opportunities for local fishing vessels	There may be opportunities for commercial fishing vessels to provide marine operation support during the operations and maintenance phase (up to 32 years under Sequential Scenario) of the Projects, such as OFLO duties during period of major maintenance and guard vessel requirements.			Likely opportunities for local fishing vessels (potential beneficial impact for commercial fishing vessels).
Potential impacts on commercially important fish and shellfish resources	See **Volume 7, Chapter 10 Fish and Shellfish Ecology (application ref: 7.10);** Realistic Worst Case Scenario**,** Table 10-1.			The scenarios presented in Fish and Shellfish Ecology provide for the greatest disturbance to fish and shellfish species and therefore the resulting greatest potential effect to commercial fisheries.

	Parameter			
	DBS East In Isolation	**DBS West In Isolation**	**DBS West and DBS East Concurrent or Sequential**	**Notes and Rationale**
Navigational safety	See **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14);** Realistic Worst Case Scenario, Table 14-1.			The scenarios presented in Shipping and Navigation provide for the greatest disturbance to shipping and navigation and therefore the resulting greatest potential effect to commercial fisheries.
Decommissioning				
No final decision regarding the final decommissioning policy for the offshore project infrastructure has yet been made. It is also recognised that legislation and industry best practice change over time. However, it is likely that offshore project infrastructure would be removed above the seabed and reused or recycled where practicable. The detail and scope of the decommissioning works would be determined by the relevant legislation and guidance at the time of decommissioning and would be agreed with the regulator. It is anticipated that for the worst case scenario, the impacts would be no greater than those identified for the construction phase. A decommissioning plan for the offshore works would be submitted prior to any decommissioning commencing.				

13.3.2.2 Development Scenarios

15. Following Statutory Consultation high voltage alternating current (HVAC) technology (previously assessed in PEIR) was removed from the Projects' Design Envelope (see **Volume 7, Chapter 4 Site Selection and Assessment of Alternatives (application ref: 7.4)** for further information). As a result, only high voltage direct current (HVDC) technology has been taken forward for assessment purposes. The ES considers the following Development Scenarios:

    - Either DBS East or DBS West is built In Isolation; or
    - DBS East and DBS West are both built either Sequentially or Concurrently.

16. An In-isolation scenario has been assessed within the ES on the basis that theoretically one Project could be taken forward without the other being built out. If an In Isolation project is taken forward, either DBS East or DBS West may be constructed. As such the offshore assessment considers both DBS East and DBS West In Isolation.

17. In order to ensure that a robust assessment has been undertaken, all Development Scenarios have been considered to ensure the realistic worst-case scenario for each topic has been assessed. A summary is provided here, and further details are provided in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**.

18. The three Development Scenarios to be considered for assessment purposes are outlined in **Table 13-2**.

Table 13-2 Development Scenarios and Construction Durations

Development scenario	Description	Total Maximum Construction Duration (Years)	Maximum construction Duration Offshore (Years)	Maximum construction Duration Onshore (Years)
In Isolation	Either DBS East or DBS West is built In Isolation	Five	Five	Four
Sequential	DBS East and DBS West are both built sequentially, either Project could commence construction first with staggered / overlapping construction	Seven	A five year period of construction for each project with a lag of up to two years in the start of construction of the second project (excluding landfall duct installation) – reflecting the maximum duration of effects of seven years.	Construction works (i.e. onshore cable civil works, including duct installation) to be completed for both Projects simultaneously in the first four years, with additional works at the landfall, substation zone and cable joint bays in the following two years. Maximum duration of effects of six years.
Concurrent	DBS East and DBS West are both built concurrently reflecting the maximum peak effects	Five	Five	Four

19. The In Isolation, Concurrent and Sequential Development Scenarios all allow for flexibility to build out either or both Projects using a phased approach offshore. Under a phased approach the maximum timescales for individual elements of the construction are assessed.

20. Any differences between the Projects, or differences that could result from the manner in which the first and the second Projects are built (Concurrent or Sequential and the length of any lag) are identified and discussed where relevant in section 13.3.2. For each potential impact, the worst case construction scenario for the In-isolation scenario and the Concurrent or Sequential Scenario is presented. The worst case scenario presented for the Concurrent or Sequential Scenario will depend on which of these is the worst case for the potential impact being considered. The justification for what constitutes the worst case is provided, where necessary, in section 13.3.2.

13.3.2.3 Operation Scenarios

21. Operation scenarios are described in detail in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**. The assessment considers the following scenarios:

- Only DBS East in operation;
- Only DBS West in operation; and
- DBS East and DBS West operating Concurrently, with or without a lag of up to two years between each Project commencing operation.

22. If the Projects are built using a phased approach, there would also be a phased approach to starting the operational stage. The worst case scenario for the operational phases for the Projects have been assessed. See section 5.1.1 of **Volume 7, Chapter 5 Project Description (application ref: 7.5)**; for further information on phasing scenarios for the Projects.

23. The operational lifetime of each Project is expected to be 30 years.

13.3.2.4 Decommissioning Scenarios

24. Decommissioning scenarios are described in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**. Decommissioning arrangements will be agreed through the submission of a Decommissioning Plan to be submitted and approved following cessation of commercial operation prior to decommissioning commencing. For the purpose of this assessment it is assumed that decommissioning of the Projects could be conducted separately, or at the same time.

13.3.3 Embedded Mitigation

25. This section outlines the embedded mitigation relevant to the Commercial Fisheries assessment, which has been incorporated into the design of the Projects or constitutes standard mitigation for this topic (**Table 13-3**). Mitigation measures required to meet legislative requirements, or actions that are considered to be standard practice used to manage commonly occurring environmental effects are also included within **Table 13-3**. Where additional mitigation measures are proposed, these are detailed in the impact assessment (section 13.6).

Table 13-3 Embedded Mitigation Measures

Parameter	Embedded Mitigation Measures	Where Commitment is Secured?
Project Design	The Applicants have reduced the Project Design in order to reduce potential impacts as far as practicable. The DBS West and DBS East Array Areas in which the turbines are proposed to be installed have been reduced from a combined 989km^2 to 704km^2, a reduction of approximately 30% when compared to the design put forward for consultation in the PEIR.	DCO Schedule 1

Parameter	Embedded Mitigation Measures	Where Commitment is Secured?
Fisheries Liaison	Ongoing liaison with the fishing industry through the Fisheries Liaison Officer (FLO) and adhere to good practice guidance with regards to fisheries liaison. Advance warning and accurate location details will be provided to fishing fleets of construction, maintenance and decommissioning activities, associated safety zones and advisory passing distances; communication will be via timely and efficient Notices to Mariners (NtMs) and Kingfisher Bulletins. This is to ensure that the fishing industry is fully informed in advance of any offshore activities. This will be committed to within **Volume 8, Fisheries Liaison and Coexistence Plan(s) (application ref: 8.28)**.	Outline Fisheries Liaison and Coexistence Plan Deemed Marine Licence (DML) 1 & 2 - Condition 18 DML 3 & 4-Condition 20 DML 5 - Condition 14
Cable Burial Risk Assessment (CBRA)	Final Cable Burial Risk Assessments and Cable Protection Plans will be produced in line with the detail provided in **Volume 8, Outline Cable Statement (application ref: 8.20)** that has been submitted with the DCO application, and in accordance with conditions attached to the DMLs in the **Volume 3, Draft DCO (application ref: 3.1)**. This will ensure navigational safety and minimise risk of gear snagging.	DML 1 & 2 - Condition 15 DML 3 & 4-Condition 13 DML 5 - Condition 11

Parameter	Embedded Mitigation Measures	Where Commitment is Secured?
Cable protection and maintenance	To ensure safety of fishing activity and to minimise the amount of fishing grounds lost, cable protection in areas where the minimum target burial depth (0.5 - 1.5m depending on the cable in question) of cable cannot be achieved would be designed to minimise snagging hazards as far as possible, for example by minimising height above seabed, smooth and shallower profiles, grade used for rock placement, type of rock (e.g. smoother edges). Final Cable Burial Risk Assessments and Cable Protection Plans will be produced in line with the detail provided in **Volume 8, Outline Cable Statement (application ref: 8.20)** that has been submitted with the DCO application, and in accordance with conditions attached to the DMLs in **Volume 3, Draft DCO (application ref: 3.1)**.	DML 1 &2 – Condition 15 DML 3 & 4-Condition 13 DML 5 - Condition 11
Navigation	One or more Aids to Navigation Management Plans (including marking and lighting) for the Projects would be agreed with the MMO following consultation with MCA, UKHO and Trinity House post-consent.	Aids to Navigation Management Plan DML 1 & 2 - Condition 10 DML 3 & 4 - Condition 8 DML 5 - Condition 6

Parameter	Embedded Mitigation Measures	Where Commitment is Secured?
	Aids to navigation (marking and lighting) will be deployed in accordance with the latest relevant available standard industry guidance. The United Kingdom Hydrographic Office (UKHO) will be notified of both the commencement, progress, and completion of offshore construction works, to allow marking of installed infrastructure on nautical charts.	DML 1 & 2 - Condition 10 DML 3 & 4 - Condition 8 DML 5 - Condition
Safety zones	One or more applications would be made to DESNZ for Safety Zones post consent including up to 500m around ongoing activities during construction, major maintenance, and decommissioning and up to 50m for installed structures pre commissioning. The application will be made in compliance with MGN654. This would ensure navigational safety and minimise risk of snagging.	Safety Zone Statement DML 1 & 2 - Condition 18 DML 3 & 4 - Condition 16 DML 5 - Condition 12
Guard vessels	Where appropriate, guard vessels will also be used to ensure navigational safety to mitigate impacts which pose a risk to surface navigation during construction and maintenance. This will be committed to within **Volume 8, Fisheries Liaison and Coexistence Plan(s) (application ref: 8.28)**.	DML 1 &2 - Condition 15 DML 3 & 4-Condition 13 DML 5 - Condition 11

13.4 Assessment Methodology

13.4.1 Policy, Legislation and Guidance

13.4.1.1 National Policy Statements

26. The assessment of potential impacts upon Commercial Fisheries has been made with specific reference to the relevant National Policy Statements (NPS), including the Overarching NPS for Energy (EN-1), the NPS for Renewable Energy Infrastructure (EN-3) and the NPS for Electricity Networks Infrastructure (EN-5) ((DESNZ, 2023a; DESNZ, 2023b; DESNZ, 2023c). These were published in November 2023 and were designated in January 2024. The specific assessment requirements for Commercial Fisheries (, as detailed in the NPS, are summarised in **Table 13-4** together with an indication of the section of this chapter where each is addressed.

Table 13-4 Summary of NPS Provisions Relevant to Commercial Fisheries

NPS Requirement	NPS Reference	ES Section Reference
EN-3 NPS for Renewable Energy Infrastructure (DESNZ, 2023c)		
Consultation		
Early consultation should be undertaken with statutory advisors and with representatives of the fishing industry which could include discussions of impact assessment methodologies. Where any part of a proposal involves a grid connection to shore, appropriate inshore fisheries groups should also be consulted.	Paragraph 2.6.127 of NPS EN-3	Consultation has been undertaken with relevant commercial fisheries stakeholders (see section 13.2 and **Volume 7, Appendix 13-1 (application ref: 7.13.13.1**).
Applicants should undertake early consultation with a cross section of the fishing industry, as well as MMO, SNCBs, relevant Inshore Fisheries and Conservation Authorities (IFCAs), Defra and Welsh	2023 NPS EN-3 paragraph 2.8.144-2.8.148.	Consultation has been undertaken with a wide range of local, regional, UK and non-UK fisheries stakeholders that are active in the wider region (see section 13.2). One of the CFWG meetings was held jointly with the Sofia Offshore Wind Project.

NPS Requirement	NPS Reference	ES Section Reference
Government, to identify impacts, and actively encourage input from active fishers to provide evidence of their use of the area to support the impact assessments. Where any part of a proposal involves a grid connection or transmission to shore or in the inshore area, appropriate inshore fisheries groups should also be consulted. Applicants will be expected to undertake dialogue with the fishing industry during the planning and design of individual offshore wind farm and transmission proposals to maximise the potential for co-existence/co-location and reduce potential displacement.		
Applicants should consider guidance on best practice for fisheries liaison, which has been jointly agreed by the renewables industry and fishing community.	2023 NPS EN-3 paragraph 2.8.149.	Liaison with the fishing industry, via the FLO (**Table 13-3**), is being adhered to in accordance with good practice guidance outlined in paragraph 32.
Baseline Data		
Applicant assessments should include robust baseline data and detailed surveys of the effects on fish stocks of commercial interest, and any potential reduction or increase in	2023 NPS EN-3 paragraph 2.8.147.	Robust baseline datasets analysed include official datasets (e.g. European Union (EU) and UK fisheries statistics), site-specific data (e.g. vessel traffic surveys, scouting surveys and guard vessel observations), consultation with

NPS Requirement	NPS Reference	ES Section Reference
such stocks that will result from the presence of the wind farm development and of any safety zones (see paragraph 2.8.151). The assessments should also provide evidence regarding any likely benefits or constraints on fishing activity within the project's boundaries.		fisheries stakeholders and published reports (see section 13.5 and **Volume 7, Appendix 13-1 (application ref : 7.13.13.1**).
Safety Zones		
In some circumstances, applicants may seek declaration of safety zones around wind turbines and other infrastructure. Although these might not be applied until after consent to the wind farm has been granted. The declaration of a safety zone excludes or restricts activities within the defined sea areas including commercial fishing. Where there is a possibility that safety zones will be sought, applicant assessments should include potential effects on commercial fishing.	Paragraph 2.8.151-2.8.153 of NPS EN-3	The need for safety zones has been considered by the Navigational Risk Assessment (NRA) completed for the Projects. Implications from the implementation of safety zones has been presented in section 13.6. Consultation has also been undertaken with the MCA (see **Volume 7, Chapter 14: Shipping and Navigation (application ref: 7.14)**). Safety zones are outlined in **Table 13-1**.
Where the precise extents of potential safety zones are unknown, a realistic worst-case scenario should be assessed. Applicants should consult	Paragraph 2.8.154 of NPS EN-3	

NPS Requirement	NPS Reference	ES Section Reference
the Maritime and Coastguard Agency (MCA) as part of this process.		
The Secretary of State will need to consider the extent to which disruption to the fishing industry, whether short term during preconstruction (e.g. surveying) or construction or long term over the operational period, including that caused by the future implementation of any safety zones, has been mitigated where reasonably possible.	Paragraph 2.8.313 of NPS EN-3	Implications from the disruptions to commercial fisheries during construction and operation has been presented in section 13.6.
Fish Stocks		
There is the potential for the construction and decommissioning phases, including activities occurring both above and below the seabed, to impact fish communities, migration routes, spawning activities and nursery areas of particular species. There are potential impacts associated with energy emissions into the environment (e.g. noise or electromagnetic fields (EMF)), as well as potential interaction with seabed sediments.	Paragraph 2.8.138-2.8.139 of NPS EN-3	Potential impacts to fish stocks have been assessed in **Volume 7**, **Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)**. Impacts on commercial fisheries as a result of impacts to fish stocks, have been assessed in section 13.6.
Offshore wind farms can have a negative impact on	2023 NPS EN-3 paragraph	Potential impacts to fish stocks have been assessed in **Volume 7, Chapter 10**

NPS Requirement	NPS Reference	ES Section Reference
some fish stocks and fishing activity, and/or a positive impact on other fish stocks and/or other types of commercial fishing. Whilst the footprint of an offshore wind farm and any associated infrastructure may be a hindrance to certain types of commercial fishing activity such as trawling, other fishing activities, such as potting, may be able to take place within operational wind farms without unduly disrupting or compromising navigational safety. Applicant assessments should include robust baseline data and detailed surveys of the effects on fish stocks of commercial interest, and any potential reduction or increase in such stocks that will result from the presence of the wind farm development and of any safety zones (see paragraph 2.8.151). The assessments should also provide evidence regarding any likely benefits or constraints on fishing activity within the project's boundaries.	2.8.146-2.8.147.	**Fish and Shellfish Ecology (application ref: 7.10).** Impacts on commercial fisheries as a result of impacts to fish stocks, have been assessed in section 13.6.
Case by case basis		
Whilst the footprint of an offshore wind farm and any associated	2023 NPS EN-3 paragraph	Impacts on commercial fisheries have been assessed in section 13.6.

NPS Requirement	NPS Reference	ES Section Reference
infrastructure may be a hindrance to certain types of commercial fishing activity such as trawling, other fishing activities, such as potting, may be able to take place within operational wind farms without unduly disrupting or compromising navigational safety. The Secretary of State should consider adverse or beneficial impacts on different types of commercial fishing on a case-by-case-basis.	2.8.146 and 2.8.311.	
Transboundary		
In some circumstances, transboundary issues may be a consideration as fishing vessels from other coastal States may fish in waters within which offshore wind farms are sited. Applicants should seek advice from Defra in such circumstances.	Paragraph 2.8.150 of NPS EN-3	Impacts on fishing fleets from the UK and non-UK countries have been assessed in section 13.6. Transboundary issues are outlined in section 13.9.Engagement of non-UK commercial fisheries stakeholders has been undertaken (see section 13.2).

27. NPS EN-3 also highlights several factors relating to the determination of an application and in relation to mitigation. These are summarised in **Table 13-5**.

Table 13-5 Summary of NPS policy on decision making relevant to Commercial Fisheries

NPS Requirement	NPS Reference	ES Section Reference
EN-3 NPS for Renewable Energy Infrastructure		
Commercial Fisheries		
The Secretary of State should be satisfied that the site selection process has been undertaken in a way that reasonably minimises adverse effects on fish stocks, including during peak spawning periods and the activity of fishing itself.	Paragraph 2.8.308 of NPS EN-3	The effects arising from the Projects have been, and will be discussed with statutory bodies during pre and post application consultation. The Applicants are, and will continue to, take steps to minimise the effects upon the fishing industry in the area through appropriate mitigation where required. Commitments related to Commercial Fisheries and updates to the Project Design are outlined in section 13.3.3. The boundary of the Array Areas has been refined to reduce the Array Area by 30% from the PEIR and a minimum distance of 4.4nm has been established between the Array Areas to account for high levels of observed fishing activity within this area.
The Secretary of State should consider the extent to which the Project occupies any recognised important fishing grounds and whether the project would prevent or significantly impede protection of sustainable Commercial Fisheries or fishing activities.	Paragraph 2.8.309 of NPS EN-3	The impacts of the Projects on recognised fishing grounds have been considered (section 13.6), and consultation with fishing stakeholders has been undertaken in order to fully understand any potential impacts (section 13.2). The Applicants have sought to design the proposal with the intention of minimising the loss of fishing opportunity. The Commitments related to

NPS Requirement	NPS Reference	ES Section Reference
Where the Secretary of State considers the wind farm or offshore transmission would significantly impede protection of sustainable fisheries or fishing activity at recognised important fishing grounds, this should be attributed a correspondingly significant weight. The Secretary of State should consider adverse or beneficial impacts on different types of commercial fishing on a case-by-case basis.	Paragraph 2.8.310-2.8.311 of NPS EN-3	Commercial Fisheries and updates to the Project Design are outlined in section 13.3.3.
The Secretary of State should be satisfied that the applicant has sought to design the proposal having consulted the MMO or NRW in Wales, Defra or Welsh Government in Wales and representatives of the fishing industry with the intention of minimising the loss of fishing opportunity taking into account effects on other marine interests. Guidance has been jointly agreed by the renewables and fishing industries on how they should liaise with the intention of allowing the two industries to successfully co-exist.	Paragraph 2.8.312 of NPS EN-3	Consultation with relevant fisheries stakeholders and published reports are outlined in see section 13.5 and **Volume 7, Appendix 13-1, (application ref: 7.13.13.1**).

NPS Requirement	NPS Reference	ES Section Reference
Mitigation for Commercial Fisheries		
Any mitigation proposals should result from the applicant having detailed consultation with relevant representatives of the fishing industry, IFCAs, the MMO and the relevant Defra policy team in England and NRW and the relevant Welsh Government policy team in Wales.	Paragraph 2.8.240 of NPS EN-3	Proposed mitigation measures are outlined in section 13.3.3. Consultation has been undertaken with relevant commercial fisheries stakeholders (see section 13.2, **Volume 5, Consultation Report (application ref: 5.1)** and **Volume 7, Appendix 13-1 (application ref: 7.13.13.1**).
Mitigation should be designed to enhance where reasonably possible any potential medium and long-term positive benefits to the fishing industry, commercial fish stocks and the marine environment.	Paragraph 2.8.241 of NPS EN-3	Embedded mitigation measures are outlined in section 13.3.3 and additional mitigation measures are outlined in section 13.6.

13.4.1.2 Other

28. In addition to the NPS, there are a number of pieces of policy applicable to the assessment of Commercial Fisheries. These include:

- The UK Marine Policy Statement (MPS; HM Government, 2011) explicitly expresses support for the fishing sector, for example with regard to displacement, the MPS advocates *"seeking solutions such as co-location of activity wherever possible"*. Specifically, paragraph 3.8.10 outlines that opportunities for co-existence between fishing and other activities should be encouraged were possible (Defra, 2014);
- A summary of the East Inshore and East Offshore Marine Plans (Defra, 2014) policies relevant to commercial fisheries is provided in **Table 13-6**;
- A summary of the North East Inshore and North East Offshore Marine Plans (Defra, 2021) policies relevant to commercial fisheries is provided in **Table 13-7**; and

- The UK Joint Fisheries Statement (Defra *et al.*, 2022) includes a policy to address fisheries displacement (section 4.2.9): "facilitating co-location of activities at sea; and when impacts are unavoidable seeking to support appropriate adaption in the fishing sector for the national benefit".

Table 13-6 Summary of East Inshore and East Offshore Marine Plans and Policies Relevant to Commercial Fisheries

East Inshore and East Offshore Marine Plan policies	ES Section Reference
Commercial Fisheries	
Policy FISH1: "*Within areas of fishing activity, proposals should demonstrate in order of preference: a) that they will not prevent fishing activities on, or access to, fishing grounds; b) how, if there are adverse impacts on the ability to undertake fishing activities or access to fishing grounds, they will minimise them; c) how, if the adverse impacts cannot be minimised, they will be mitigated; d) the case for proceeding with their proposal if it is not possible to minimise or mitigate the adverse impacts.*"	a) Impacts on commercial fisheries have been assessed in section 13.6. b) Proposed mitigation measures are outlined in section 13.3.3. c) As above. d) Potential monitoring requirements are outlined in section 13.7.
Policy FISH2: "*Proposals should demonstrate, in order of preference: a) that they will not have an adverse impact upon spawning and nursery areas and any associated habitat; b) how, if there are adverse impacts upon the spawning and nursery areas and any associated habitat, they will minimise them; c) how, if the adverse impacts cannot be minimised they will be mitigated; d) the case for proceeding with their proposals if it is not possible to minimise or mitigate the adverse impacts*"	Impacts on fish stocks have been assessed in **Volume 7, Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)**.
Coexistence and displacement	
Policy GOV2: "*Opportunities for co-existence should be maximised wherever possible.*"	a) Impacts on commercial fisheries

East Inshore and East Offshore Marine Plan policies	ES Section Reference
Policy GOV3: "*Proposals should demonstrate in order of preference: a) that they will avoid displacement of other existing or authorised (but yet to be implemented) activities; b) how, if there are adverse impacts resulting in displacement by the proposal, they will minimise them; c) how, if the adverse impacts resulting in displacement by the proposal, cannot be minimised, they will be mitigated against or; d) the case for proceeding with the proposal if it is not possible to minimise or mitigate the adverse impacts of displacement.*"	have been assessed in section 13.6. b) Proposed mitigation measures are outlined in section 13.3.3. c) As above. d) Potential monitoring requirements are outlined in section 13.7.

Table 13-7 Summary of North East Inshore and North East Offshore Marine Plans and Policies Relevant to Commercial Fisheries

North East Inshore and North East Offshore Marine Plan policies	ES Section Reference
Commercial Fisheries	
Policy NE-FISH-1: "*Proposals that support a sustainable fishing industry, including the industry's diversification, should be supported.*"	The Applicant is taking and will continue to take steps to support the sustainable fishing industry and minimise the potential impacts upon them through appropriate mitigation where required. Embedded mitigation measures are outlined in section 13.3.3.
Policy NE-FISH-2: "*Proposals that enhance access for fishing activities should be supported.* *Proposals that may have significant adverse impacts on access for fishing activities must demonstrate that they will, in order of preference: a) avoid, b) minimise, c) mitigate – adverse impacts so they are no longer significant.* *If it is not possible to mitigate significant adverse impacts, proposals should state the case for proceeding.*"	The Applicants are taking and will continue to take steps to support the sustainable fishing industry and minimise the potential impacts upon them through appropriate mitigation where required. Embedded mitigation measures relevant to the Commercial Fisheries assessment, which has been

North East Inshore and North East Offshore Marine Plan policies	ES Section Reference
	incorporated into the design of the Projects, and measures required to meet legislative requirements, or actions that are considered to be standard practice used to manage commonly occurring environmental effects are outlined in section 13.3.3. Potential impacts on commercial fisheries have been assessed in section 13.6. Proposed mitigation measures are outlined in section 13.3.3. Where additional mitigation measures are proposed, these are detailed in the impact assessment (section 13.6).
Policy NE-FISH-3: *"Proposals that enhance essential fish habitat, including spawning, nursery and feeding grounds, and migratory routes, should be supported.* *Proposals that may have significant adverse impacts on essential fish habitat, including spawning, nursery and feeding grounds, and migratory routes, must demonstrate that they will, in order of preference: a) avoid, b) minimise, c) mitigate – adverse impacts so they are no longer significant.*	Impacts on fish stocks have been assessed in section 10.6 of **Volume 7, Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)** and proposed mitigation measures have been outlined in order to minimise as far as possible impact to fish and shellfish receptors.

29. In addition to the planning policy guidance listed above, the following guidance documents have been used to inform the assessment of potential impacts on commercial fisheries:

- Options and opportunities for marine fisheries mitigation associated with wind farms (Blyth-Skyrme, 2010);

- Best Practice Guidance for Fishing Industry Financial and Economic Impact Assessment (United Kingdom Fisheries Economic Network [UKFEN] and Seafish, 2012);
- Fisheries Liaison with Offshore Wind and Wet Renewables group (FLOWW) Recommendations for Fisheries Liaison: Best Practice guidance for offshore renewable developers (FLOWW, 2014);
- FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds (FLOWW, 2015);
- Fishing and Submarine Cables – Working Together (International Cable Protection Committee (ICPC), 2009)
- Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects. Contract report: ME5403 (Cefas, 2012);
- Cumulative impact assessment guidelines, guiding principles for cumulative impacts assessments in offshore wind farms (RenewableUK, 2013); and
- Position statement on vessels operating in the vicinity of sub-sea cables (European Subsea Cable Association (ESCA), 2018).

13.4.2 Data and Information Sources

13.4.2.1 Site Specific Surveys

30. In order to provide site specific and up to date information which could be used to characterise the existing environment and inform the impact assessment, project specific marine traffic surveys were conducted covering the Array Areas, as well as scouting (potting effort) surveys which covered the Offshore Export Cable Corridor and Array Areas, and recorded surface marker buoy observations from survey and guard vessels in 2022. Additional winter and summer surveys were also undertaken of the Export Cable Platform Search Area. These are summarised in **Table 13-8**. Limitations and assumptions of the data are discussed in more detail in **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**.

Table 13-8 Site Specific Surveys

Data Set	Spatial Coverage	Year	Notes
Scouting survey: Spring	Array Areas + 2km buffer	April and March 2022	PMSL, 2022a
Scouting survey: Summer	Array Areas + 2km buffer	August 2022	PMSL, 2022b
Scouting survey: Summer	Offshore Export Cable Corridor + 500m (nearshore) / 850m (offshore) buffers	May and June 2022	PMSL, 2022c
Scouting survey: Summer	Nearshore part of the Offshore Export Cable Corridor + buffer	August 2022	PMSL, 2022b
Guard vessel observations	Array Areas and Offshore Export Cable Corridor	July, August and September 2022	PMSL, 2022d
Scouting survey: Winter	Offshore Export Cable Corridor and Array Areas + buffers	October, November & December 2022	PMSL, 2022e
Vessel traffic survey: Winter	Array Areas + 10nm buffer	January and February 2022	Anatec, 2022a
Vessel traffic survey: Summer	Array Areas + 10nm buffer	July 2022	Anatec, 2022b
Vessel traffic survey: Autumn	Array Areas + 10nm buffer	October and November 2022	Anatec, 2022c
Vessel traffic survey: Winter	Export Cable Platform Search Area	January and February 2023	Anatec, 2023a
Vessel traffic survey: Summer	Export Cable Platform Search Area	June and July 2023	Anatec, 2023b

13.4.2.2 Other Available Sources

31. Other sources that have been used to inform the assessment are listed in **Table 13-9**. Limitations and assumptions of the data are discussed in more detail in **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**.

32. Additional VMS data has been obtained from non-UK organisations, including Dutch, Danish and German sandeel fisheries data to further inform the Environmental Statement. Automatic identification system (AIS) data collected between May 2020 – December 2022 has been obtained and analysed for the summer and winter periods; this data has been included within **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**.

Table 13-9 Other Available Data and Information Sources

Data Set	Spatial Coverage	Year	Notes
MMO fleet landings by ICES Rectangles	Commercial Fisheries Study Area	2012 -2022	MMO, 2023a
MMO UK and foreign fleet landings into the UK by port	Commercial Fisheries Study Area	2012 -2022	MMO, 2023b
EU Scientific, Technical and Economic Committee for Fisheries (STECF) non-UK landings by ICES Rectangle	Commercial Fisheries Study Area	2006 – 2016	EU STECF, 2017
MMO fishing activity data for UK vessels (≥15m) – VMS data	Commercial Fisheries Study Area	2010 -2020	MMO, 2021
MMO fish landings to UK ports – spatial data	Commercial Fisheries Study Area	2023	MMO, 2023c
MMO fishing vessel lists	Ports within the Commercial Fisheries Study Area	2010-2022	MMO, 2023d
ICES fishing activity data for mobile bottom contacting gear vessels (>12m) – VMS data	Commercial Fisheries Study Area	2010 -2020	ICES, 2020

Data Set	Spatial Coverage	Year	Notes
Centre for Environment, Fisheries and Aquaculture Science (Cefas) inshore fishing activity	Commercial Fisheries Study Area out to 12 nm	2010 and 2012	Cefas, 2014
Commercial fisheries specific questionnaire responses and information provided via port visits and project CFWGs	Receptors active within the Commercial fisheries Study Area	2022 - 2023	Section 13.2
Fishing activity data for Dutch beam trawl vessels by year – VMS data	Commercial Fisheries Study Area	2018 - 2022	**Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**
Fishing activity data for Danish and German vessels targeting sandeel – VMS data	Commercial Fisheries Study Area	2018 - 2021	

13.4.3 Impact Assessment Methodology

33. **Volume 7, Chapter 6 EIA Methodology (application ref: 7.6)** provides a summary of the general impact assessment methodology applied throughout the entire ES. The following sections describe the specific methodology used to assess the likely significant effects on commercial fisheries.

13.4.3.1 Definitions

34. For each potential impact, the assessment identifies receptors sensitive to that impact and implements a systematic approach to understanding the impact pathways and the level of impacts (i.e. magnitude) on given receptors. The definitions of sensitivity for the purpose of the commercial fisheries assessment are provided in **Table 13-10**.

35. The criteria for defining magnitude of impact in this chapter are outlined in **Table 13-11**. It should be noted that beneficial impacts as a result of the Projects are also possible. In such a case, the same definitions would apply as in **Table 13-11**, albeit in reverse (e.g. the impact would affect an area from which a minor proportion (5-10%) of a commercial fishing receptor's annual value of landings is caught and/or would lead to a minor (5-10%) increase in annual value of landings).

Table 13-10 Definition of Sensitivity of a Commercial Fisheries Receptor

Receptor Sensitivity	Definition
High	Receptor is highly vulnerable to impacts that may arise from the Projects and recoverability is long term or not possible. Receptor has very low spatial adaptability due to limited operational range and/or very low ability to deploy more than one gear type. Receptor has very limited spatial tolerance due to dependence upon a single ground. Receptor has very low recoverability due to inability to mitigate loss of fishing area by operating in alternative areas.
Medium	Receptor is vulnerable to impacts that may arise from the Projects and has limited recoverability, with some ability to mitigate loss of fishing area by operating in alternative areas. Receptor has limited spatial adaptability due to extent of operational range and/or limited ability to deploy an alternative gear type. Receptor has limited spatial tolerance due to dependence upon a limited number of fishing grounds.
Low	Receptor is somewhat vulnerable to impacts that may arise from the Projects and has moderate recoverability due to the ability to mitigate loss of fishing area by operating in a range of alternative areas of the North Sea. Receptor has moderate spatial adaptability due to extensive operational range and/or moderate ability to deploy an alternative gear type. Receptor has moderate spatial tolerance due to the ability to fish numerous fishing grounds.

Receptor Sensitivity	Definition
Negligible	Receptor is not vulnerable to impacts that may arise from the Projects and/or has high recoverability. Receptor has an extensive operational range and high method versatility. Receptor is able to exploit a large number of fisheries.

Table 13-11 Definition of Magnitude of Impact for a Commercial Fisheries Receptor

Impact Magnitude	Definition
High	The impact would be permanent/irreplaceable change and is likely to occur.
	The impact would permanently affect an area from which the majority (>50%) of a commercial fishing receptor's annual value of landings is caught and/or would lead to a majority (>50%) reduction in annual value of landings.
Medium	The impact would be long-term (i.e. less than 30 years) though reversible, and is likely to occur.
	The impact would affect an area from which a 11 – 50% proportion of a commercial fishing receptor's annual value of landings is caught and/or would lead to a 11 – 50% reduction in annual value of landings.
Low	The impact would be short to medium term (i.e. less than 7 years) though reversible and could possibly occur.
	The impact would affect an area from which a small proportion (5 – 10%) of a commercial fishing receptor's annual value of landings is caught and/or would lead to a small (5 – 10%) reduction in annual value of landings.
Negligible	The impact would be short-term (i.e. less than 1 year), intermittent and reversible and unlikely to occur.

Impact Magnitude	Definition
	The impact would affect an area from which a very small proportion (<5%) of a commercial fishing receptor's annual value of landings is caught and/or would lead to a very small (<5%) reduction in annual value of landings.
No change	No loss or alteration of characteristics, features or elements; no observable impact either adverse or beneficial.

13.4.3.2 Significance of Effect

36. The assessment of significance of an effect is informed by the sensitivity of the receptor and the magnitude of the impact. The determination of significance is guided by the use of an impact significance matrix presented in **Volume 7, Chapter 6 EIA Methodology (application ref: 7.6);** and **Table 13-12**. Definitions of each level of significance are provided in **Table 13-13.**

37. For the purposes of this assessment, any effect that is of major or moderate significance is considered to be significant in EIA terms, whether this be adverse or beneficial. Any effect that has a significance of minor or negligible is not significant.

Table 13-12 Commercial Fisheries Significance of Effect Matrix

		Adverse 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 13-13 Definition of Effect Significance

Significance	Definition
Major	Significant in EIA terms. Very large or large change in receptor condition, both adverse or beneficial, which are likely to be important considerations at a regional or district level because they contribute to achieving national, regional or local objectives, or could result in exceedance of statutory objectives and / or breaches of legislation.
Moderate	Significant in EIA terms. Intermediate change in receptor condition, which is likely to be an important consideration at a local level.
Minor	Not significant in EIA terms. Small change in receptor condition, which may be raised as local issues but are unlikely to be important in the decision making process.
Negligible	Not significant in EIA terms. No discernible change in receptor condition.
No change	No impact, therefore, no change in receptor condition.

13.4.4 Cumulative Effects Assessment Methodology

38. The Cumulative Effects Assessment (CEA) considers other schemes, plans, projects and activities that may result in significant effects in cumulation with the Projects. **Volume 7, Chapter 6 EIA Methodology (application ref: 7.6)** (and accompanying **Volume 7, Appendix 6-2 Offshore Cumulative Effects (CEA) Methodology (application ref: 7.6.6.2)**) provides details of the general framework and approach to the CEA which has been undertaken for the Projects.

39. For Commercial Fisheries, cumulative effects may occur where fisheries receptors also have the potential to be impacted by other consented and / or proposed developments or activities. This includes consideration of the extent of influence of changes to commercially exploited fish shellfish resources (see **Volume 7, Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)** arising from the Projects alone and those arising from the Projects cumulatively with other developments.

13.4.5 Transboundary Effect Assessment Methodology

40. Given the prevalence of non-UK registered fishing vessels within the Commercial Fisheries Study Area, impacts that might arise on the interests of European Economic Area (EEA) states, within UK waters, e.g. a non UK fishing vessel, have been considered within the main part of this assessment (section 13.6).

41. The transboundary assessment considers the potential for transboundary effects to occur on commercial fisheries receptors as a result of the Projects that might arise within the Exclusive Economic Zone (EEZ) of EEA states. **Volume 7, Chapter 6 EIA Methodology (application ref: 7.6)** provides further details of the general framework and approach to the assessment of the transboundary effects.

42. For commercial fisheries, the potential for transboundary effects within the EEZ of other EEA states is limited to potential displacement of fishing activity.

13.4.6 Assumptions and Limitations

43. It is acknowledged that there are a range of assumptions and limitations of the datasets used within this chapter, as commented throughout this chapter and discussed in detail within **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**. For example, landings data are limited by the data being collected from ICES rectangles, which are relatively large areas in which fishing intensity can vary. VMS data will not capture vessels <12m, so inshore fishing activity is likely to be under-represented in these datasets.

44. Consultation has been held with fisheries stakeholders (see section 13.2) to develop further understanding of fishing activity within the Commercial Fisheries Study Area, particularly where there is a lack of data availability, such as for the inshore fleets and pelagic trawl fleets. Site specific marine traffic and scouting surveys have also been used to inform the existing environment and support official data sources.

45. Efforts have been taken to agree the data sources with relevant fisheries stakeholders, particularly where there are limitations. Data sources were presented to fisheries stakeholders during the CFWG meetings, and discussed during port visits. For example, with regard to the MMO VMS data, it was concluded that official data sources generally align with fisheries stakeholders understanding of fishing patterns, but it was noted and agreed that inshore fishing is likely to be under-represented by these data.

46. The conclusions of this commercial fisheries assessment are constrained by these assumptions and limitations, however, they do not cause significant uncertainty or unreliability within the assessment, due to being supplemented with stakeholder feedback and site specific data.

13.5 Existing Environment

47. This section summarises the commercial fisheries existing environment in the Commercial Fisheries Study Area. Further details are included in **Volume 7**, **Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**.

48. Publicly available datasets presented within this chapter contain data that were collated prior to the implementation of the Dogger Bank Special Area of Conservation (SAC) (Specified Area) Bottom Towed Fishing Gear Byelaw 2022[1]. Therefore, it will not capture changes to fishing activity as a result of the byelaw, nor any potential future changes to fishing activity; this is discussed further in section 13.5.6. The byelaw was introduced by the MMO and came into force on 13th June 2022. This byelaw covers approximately 12,399km^2 of seabed area and overlaps with the entirety of the Array Areas It also overlaps with approximately 20km of the DBS East Offshore Export Cable Corridor and DBS West Offshore Export Cable Corridor. This byelaw prohibits bottom towed[2] fishing across the whole of the Dogger Bank SAC and buffer zone, to protect sensitive shallow water sandbank habitats. Implications of the byelaw on fishing activity are discussed further in section 13.5.6 and the **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**.

[1] *https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1068913/Dogger_Bank_SAC_Byelaw.pdf*

[2] *For the purposes of this byelaw, bottom towed fishing gear refers to any trawls, seines, dredges or similar gear, including trawls towed on, or very close to, the seabed, which are actively moved in the water by one or more fishing vessels, or by any other mechanised system, and in which any part of the gear is designed and rigged to operation on, and be in contact with, the seabed. This includes demersal seines and semi pelagic towed gear.*

13.5.1 Overview of Landings Data in the Study Area

49. Data compiled by both the MMO (MMO, 2023a) and EU STECF[3] (EU STECF, 2017) were reviewed for the most recently available ten year period of landings (2012 to 2022 and 2006 to 2016, respectively). MMO and EU STECF datasets were filtered to show only landings from the Commercial Fisheries Study Area (ICES rectangles 36E9, 36F0, 37E9, 37F0, 37F1, 37F2, 38F0, 38F1 and 38F2). The Array Areas are located within 37F1, 37F2, 38F1 and 38F2 (illustrated on **Volume 7, Figure 13-1 (application ref: 7.13.1**), and the Offshore Export Cable Corridor will be located within ICES rectangles 36E9, 37E9, 37F0, 37F1, 37F2, 38F0 and 38F1 (also illustrated on **Volume 7, Figure 13-1 (application ref: 7.13.1)**).

13.5.1.1 Landings by UK Vessels

50. As expected, for the UK fleet, >10m vessels contributed more than vessels <10m to the overall weight and value of fish landed for each ICES rectangle within the Commercial Fisheries Study Area, with the exception of 36E9 and 37E9, which cover the inshore region (**Plate 13-1** and **Plate 13-2**). The >10m vessels were predominantly from England and Scotland, with a small proportion from Wales (**Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**). The smaller UK vessels were from England[4], reflecting the closer proximity of home ports to this fleet. There were also relatively small recordings of landings for ≤10m Welsh vessels, and no recorded landings for Isle of Man, Jersey and Northern Irish vessels.

[3] EU STECF is a group of experts, appointed by the European Commission, that undertakes scientific work, provides scientific advice on fisheries management and implements a data collection framework.

[4] The data show that some local vessels were registered to Scottish ports due to quota entitlements, however many of these vessels have re-registered as English.

51. The MMO data indicate that throughout the study period (2012 to 2022), in terms of landed weight and value for UK vessels of both the larger (>10m) and smaller (≤10m) size classes, shellfish are the most important species group, with highest landings observed from ICES rectangle 36F0, 37E9 and 37F0 (**Plate 13-1** and **Plate 13-2**). Landings of demersal fish species were relatively high for >10m vessels, particularly from ICES rectangles 37F2, 38F1 and 38F2. Overall, landings of pelagic fish species were considerably lower than that of shellfish and demersal fish species; however, notable landings by the >10m size class were still observed, particularly from ICES rectangle 37F0.

52. Of the ten types of gear identified, approximately 43% of total landings from the Commercial Fisheries Study Area by UK ≤10m and >10m fleets were caught using pots and traps (28% of landings for ≤10m and 72% of landings for >10m) (**Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**). This data further indicates the importance of the shellfish industry in the region, noting pots and traps predominantly target shellfish, such as crab, lobster and whelk. Landings from vessels using demersal trawls and seines, and dredges were also notably high, and were predominantly deployed by vessels >10m in length.

53. Brown crab (*Cancer pagurus* Mixed Sexes) was landed in highest quantities by UK vessels across the Commercial Fisheries Study Area, with a landed weight of approximately 43,000 tonnes across the study period (approximately 4,300 tonnes per annum, 2012 –2022) (**Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**). Lobster was the highest value species landed, with over £9 million per annum (based on a ten year average from 2012-2022), and was targeted primarily by pots and traps. Species of significant landed value and weight caught by UK vessels within the Commercial Fisheries Study Area (2012-2022) also included scallop *Pecten maximus*, plaice *Pleuronectes platessa*, Norway lobster *Nephrops norvegicus*, whelk *Buccinum undatum*, herring *Clupea harengus harengus* and sandeel Ammodytidae.

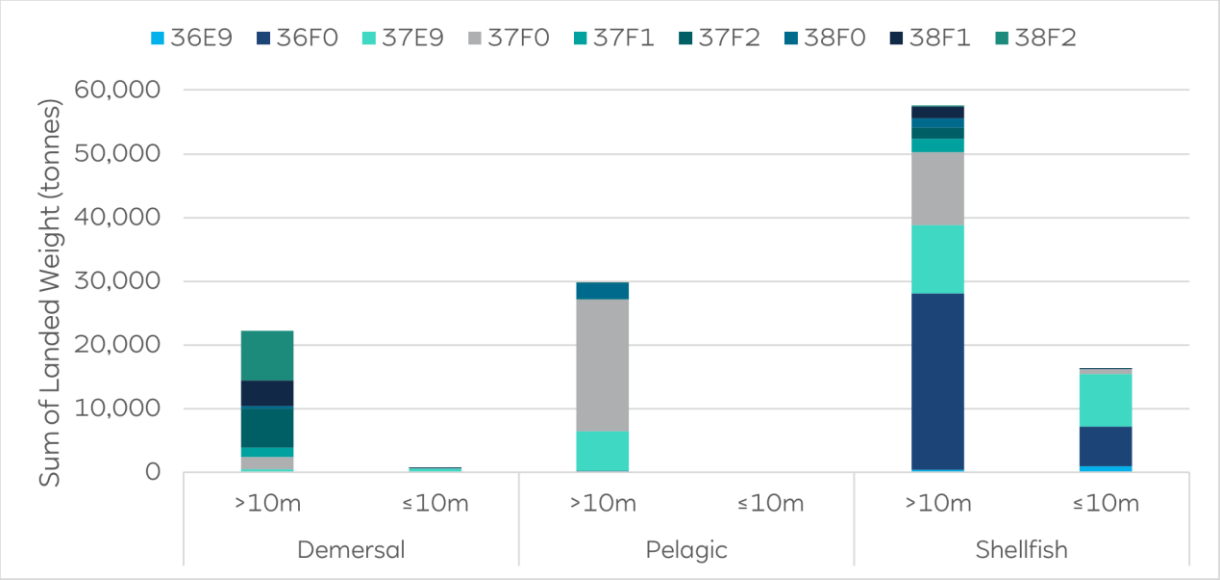

Plate 13-1 Sum of Landings Weight from ICES Rectangles 36E9, 36F0, 37E9, 37F0, 37F1, 37F2, 38F0, 38F1 and 38F2 (2012-2022), Displayed by Vessel Size Class and Species Group (UK Vessels) (Source: MMO, 2023a)

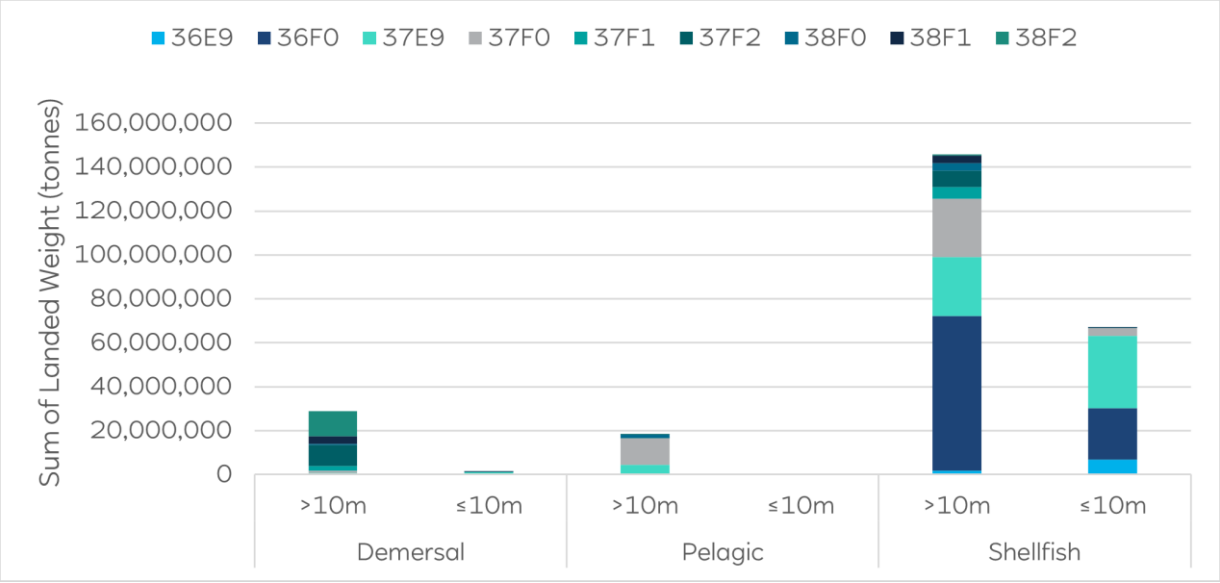

Plate 13-2 Sum of Landings Value from ICES Rectangles 36E9, 36F0, 37E9, 37F0, 37F1, 37F2, 38F0, 38F1 and 38F2 (2012-2022), Displayed by Vessel Size Class and Species Group (UK vessels) (Source: MMO, 2023a)

13.5.1.2 Landings by Non-UK Vessels

54. The EU STECF data (STECF, 2017) from 2006 to 2016 were filtered to show landings and effort data for non-UK nationalities; more recent data are not available to date. These non-UK data are not in a format that allows direct comparison with the data provided by the MMO, but they do provide an informative overview of fishing activity and trends within the Commercial Fisheries Study Area.

55. Vessels from non-UK countries were active across the Commercial Fisheries Study Area, with a total of 856,000 tonnes caught by the non-UK fleet between 2006 to 2016, with vessels from Denmark, the Netherlands, Germany, Sweden, France, and Belgium accounting for 89% of the total landed weight. There were also landings from Lithuania and Ireland, but these have not been included in the rest of this chapter, due to the landings being very low between 2006 and 2016 (430 and 23 tonnes, respectively) (**Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**). Landings by non-UK vessels within the Commercial Fisheries Study Area were highest in ICES rectangle 38F1, in which the DBS West Array Area is located in **Plate 13-3** and **Plate 13-4**); landings were also relatively high within 37F0, 37F1 and 37F2.

56. Data for non-UK vessels were categorised into three classes dependent on the length of the fishing vessel (≤10m, 10--15m and ≥15m), to determine the size of vessels active within the Commercial Fisheries Study Area by each non UK- country **Plate 13-3** and **Plate 13-4**). As expected, the largest proportion of vessels was from the ≥15m class, of which the majority of landed weights across each ICES rectangle were made by Danish vessels. Non-UK vessels ≤10m and 10--15m were observed as the least active across the Commercial Fisheries Study Area, as would be expected, with only very minor landings by ≤10m vessels.

57. Of the nine types of gear identified, the majority of landings from the Commercial Fisheries Study Area were recorded as having been caught by vessels utilising otter trawls and pelagic trawls (predominantly from Danish, Dutch, French, German, and Swedish vessels) (**Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**). This is in contrast with UK vessels, which predominately used pots and traps, see section 13.5.1.1. Notably, the highest landed weight by otter trawling (2006-2016) was from ICES rectangle 38F1, whereas the highest landed weight by pelagic trawling was from ICES rectangle 37F0.

58. Sandeels were landed in highest quantities by non-UK vessels throughout the Commercial Fisheries Study Area, with a landed weight of approximately 623,000 tonnes across the study period (approximately 62,000 tonnes per annum, 2006-2016) (**Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**). Species of notable landed weight caught by non-UK vessels within the Commercial Fisheries Study Area (2006 - 2016) also included herring, sprat, and plaice.

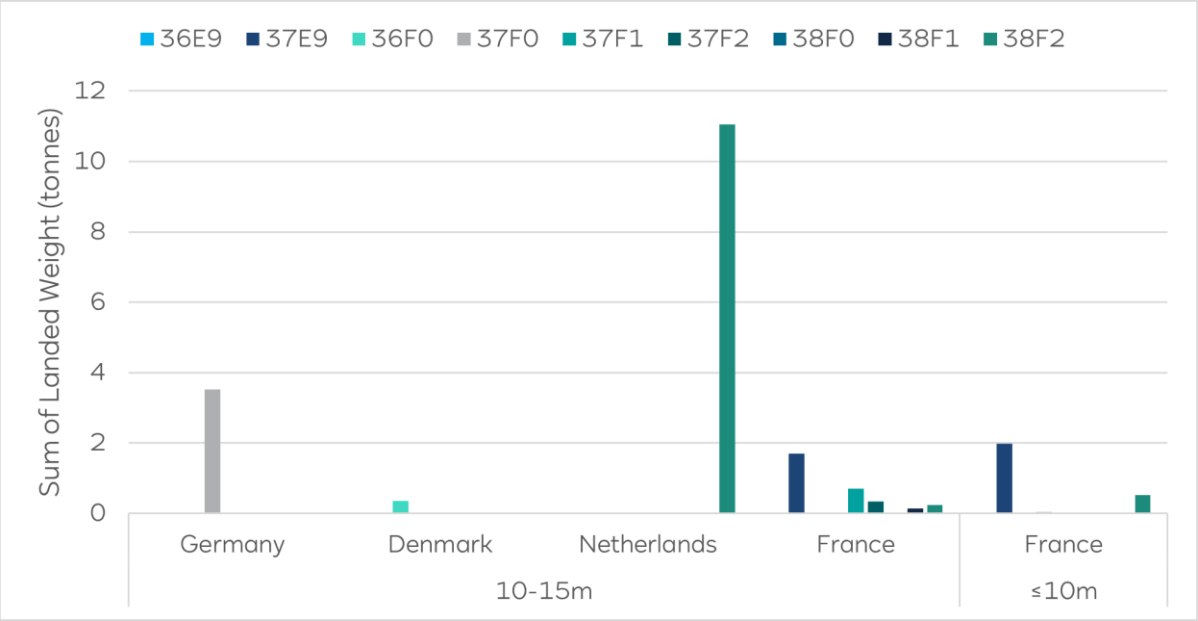

Plate 13-3 Sum of Landed Weight (Tonnes) for Non UK Vessels <15m (2006-2016) (Source: STECF, 2017)

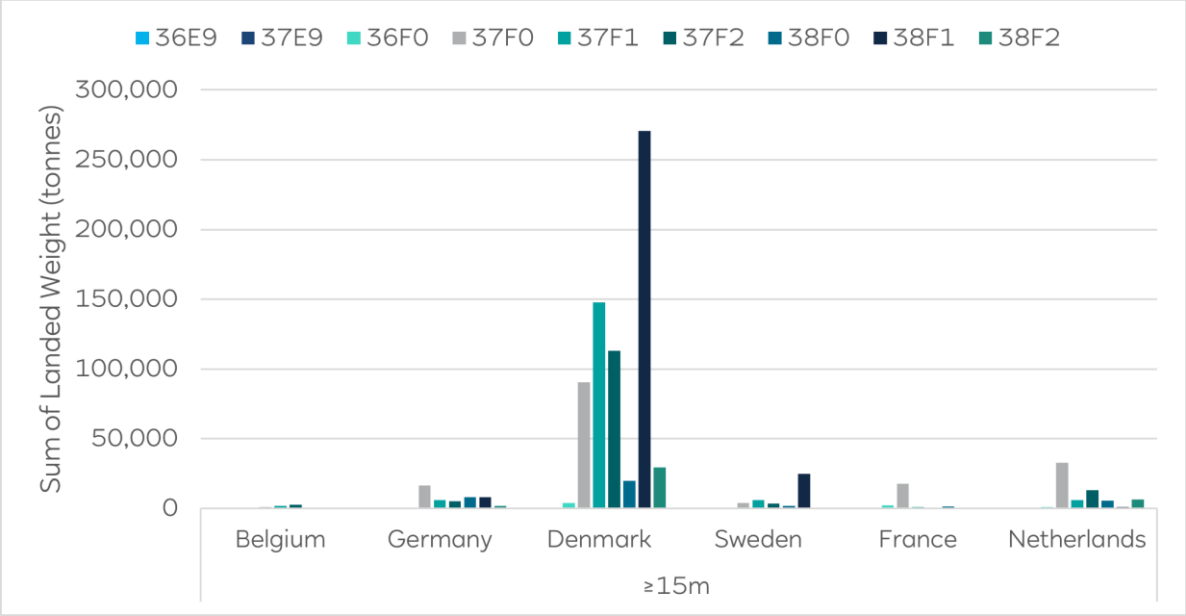

Plate 13-4 Sum of Landed Weight (Tonnes) for Non UK Vessels ≥15m (2006-2016) (Source: STECF, 2017)

13.5.2 Temporal Trends in the Study Area

59. Landings of the top five species caught by UK vessels within the Commercial Fisheries Study Area (2012-2022), were caught all year around, with the exception of sandeel (**Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**). The following months were the key periods for landings by both weight and value:

- Crab (*C. pagurus* Mixed Sexes) – September to October;
- Plaice – June to September;
- Scallop – March to April;
- Lobster – July to September; and
- Sandeel – May to June.

60. The MMO data show that between 2012 and 2022, the sum of landed weight varied annually across the Commercial Fisheries Study Area and within the separate ICES rectangles (**Plate 13-5**). The lowest overall landings were during 2021, whereas 2015 had the highest overall landings. Landings value generally increased over time, with exceptions in 2013 and 2020, 2021 and 2022 (**Plate 13-5**); the lower landings observed from 2020 onwards could be attributed to effects from COVID-19.

61. Across all ICES rectangles within the Commercial Fisheries Study Area, the seasonal (intra-annual) range in landed weight and value by UK vessels varied (2012-2022), with a gradual increase in landings generally from March, to a peak in May to October, and a decrease in landings towards December (**Plate 13-6**). Landed weight by UK vessels varied from a minimum of 3,100 tonnes in February, to a maximum of 11,000 tonnes in July (**Plate 13-6**). The landed value by UK vessels followed a similar trend, with a minimum value of £7.6M in February, and maximum value of £30.08M in August.

62. Landings by the non-UK fleet fluctuated annually between 2006 and 2016, which was mostly attributed to variation in landings of sandeel, herring, and sprat (**Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2**)). Lowest overall landings were during 2012 and 2016 for non-UK vessels, when there were significantly reduced landings of sandeel; this fishery is highly dependent on quotas set annually, which can vary widely. Similarly, the highest overall landings were during 2006 and 2009 when there were higher landings of sandeel.

63. For the non-UK fleet, based on data presented only by quarter, the period April to June appears to be the most important in terms of landed weight; this is mostly attributed to the high landings for sandeel during this time period (**Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**). The January to March quarter was the least productive for most species.

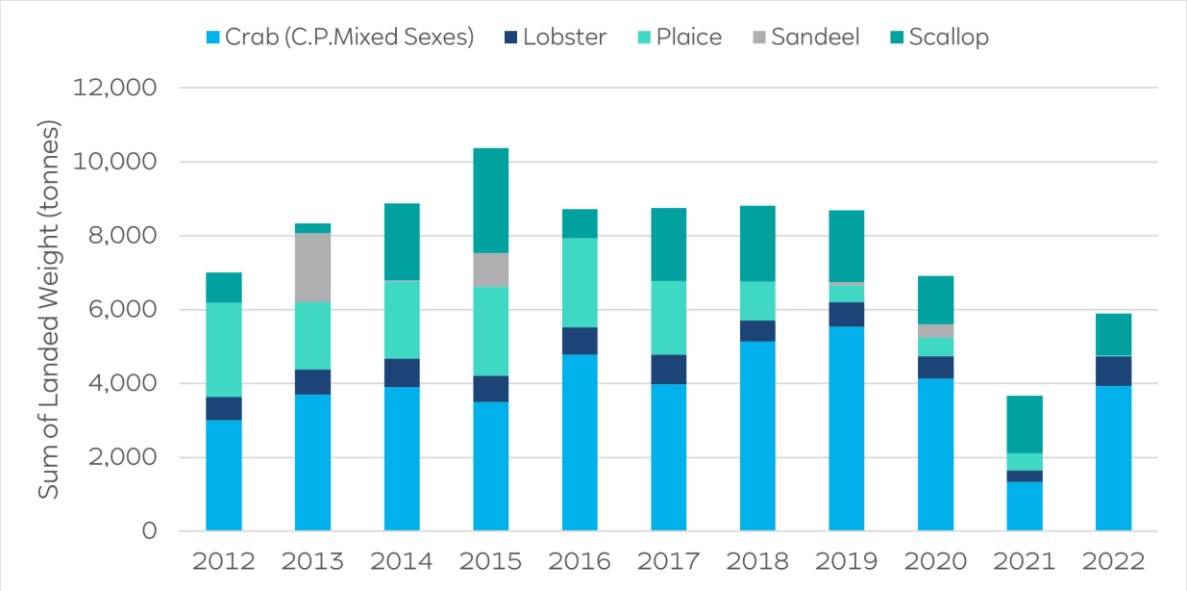

Plate 13-5 Annual trends in Top Five Species by Total Landed Weight (Tonnes) from UK Vessels Across the Commercial Fisheries Study Area (2012-2022) (Source: MMO, 2023a)

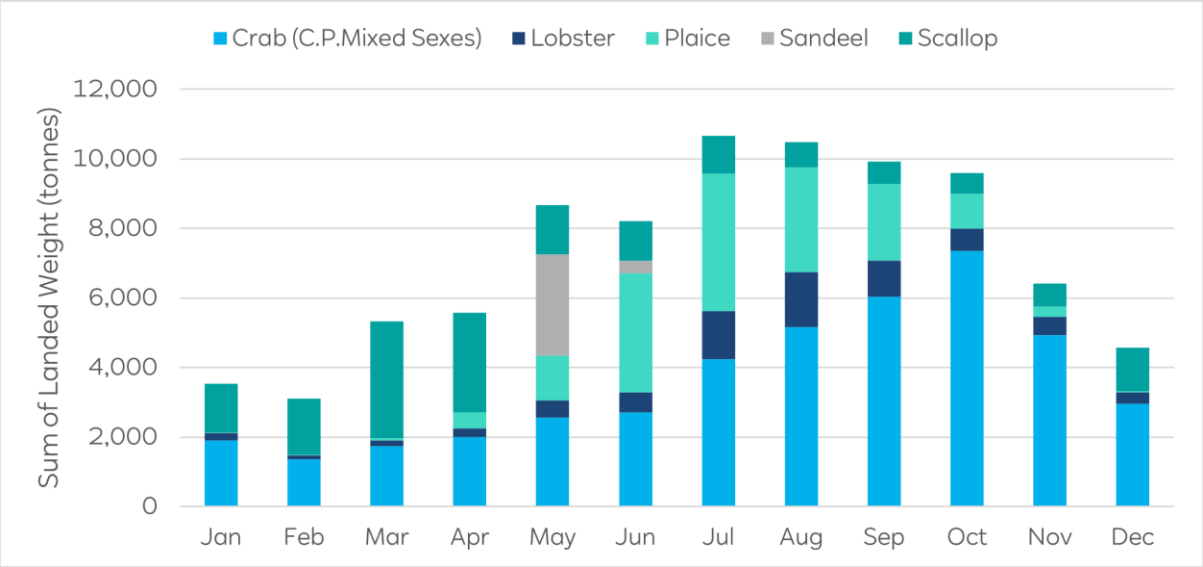

Plate 13-6 Seasonal Trends in Top Five Species by Total Landed Weight (Tonnes) from UK Vessels Across the Commercial Fisheries Study Area (2012-2022) (Source: MMO, 2023a)

13.5.3 Spatial Distribution of Fishing Activity

64. The spatial distribution of fishing activity in the Commercial Fisheries Study Area has been described within **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**, based on review and analysis of multiple datasets as well as more direct consultation with individuals and fisheries organisations. Fishing activity of the <12m fleet is typically under-represented by official activity datasets, as a result of VMS not being a requirement for smaller vessels. Therefore, site specific surveys and consultation feedback has been used to inform the existing environment for this group. Relevant data sources are listed in section 13.4.2, with assumptions and limitations discussed in more detail in **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**. The datasets show that fishing occurs along all parts of the Offshore Export Cable Corridor and Array Areas over the study period to varying degrees.

13.5.3.1 Static Gear

65. The use of static gear by UK vessels ≥15m was generally located south-west of the DBS Array Areas during 2009-2020, however, ≥15m static gear activity covered a progressively greater geographical area and increased in intensity throughout 2009-2020. Static gear activity by ≥15m vessels overlapped with the Offshore Export Cable Corridor during most years, while also overlapping with DBS West Array Area during 2019 and 2020. The majority of fishing hours were spent in ICES rectangles 36F0 and 36F1, which do not overlap with the Array Areas or Offshore Export Cable Corridor. Consultation feedback has indicated that the static gear activity observed in recent years within the Array Areas, is solely due to potting targeting shellfish.

66. The Cefas dataset[5], site specific data (potting surveys) and feedback from consultation has been utilised to supplement the VMS data that does not capture smaller fishing vessels. As described in in section 3 of **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**, the Cefas dataset has been cross-referenced with knowledge of the local fleets, based on site specific data and feedback from consultation with local fishing operators. The Cefas data indicate that highest intensities of inshore static fishing were located within the 6nm limit, and intersected with the Offshore Export Cable Corridor, generally aligning with information collated from fisheries consultation and site specific surveys.

13.5.3.2 Dredge Gear

67. Dredge gear vessels were active at moderate to high levels within the inshore areas of the Commercial Fisheries Study Area (generally within the 12nm limit), most notably off Flamborough Head and with an overlap of the Offshore Export Cable Corridor. No dredge activity overlapped with the DBS Array Areas between 2009 and 2017. As noted within **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**, in 2020, a new scallop stock was identified and so dredging occurred within the DBS Array Areas. However, a temporary closure for scallop fishing was introduced within the Dogger Bank SAC in April 2021, and this closure became permanent (subject to further review every five years) when the byelaw was enacted from 13th June 2022 (discussed further in 13.5.6).

13.5.3.3 Demersal Fishery – Beam Trawl

68. Beam trawl activity was relatively high in the southeast of the Commercial Fisheries Study Area and further south (**Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**, There was limited overlap of beam trawl activity with the Array Areas and Offshore Export Cable Corridor. Beam trawl activity generally decreased in spatial extent within the Commercial Fisheries Study Area between 2009-2017.

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[5] *Cefas undertook a study between 2010 to 2012 to provide an improved understanding of inshore fisheries activity (vessels <15 m), with input from the Inshore Fisheries and Conservation Authorities (IFCA), Welsh Government, and the MMO. The dataset is based on sightings and surveillance effort, and the various limitations of the data are outlined in section 2.2.1 of* ***Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)****.*

13.5.3.4 Demersal Fishery – Otter Trawl

69. Bottom otter trawl activity overlapped with both Array Areas and the Offshore Export Cable Corridor in 2009-2017 (**Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**). Observed activity was generally higher north of the Array Areas and southeast of the Array Areas in discrete areas; however, activity within the Array Areas varied between low to high across the time period. Further analysis of the data indicated that within the Array Areas, otter trawl activity mostly targeted cod or plaice; while otter trawl activity that overlapped the Offshore Export Cable Corridor predominantly targeted sprat or sandeel (located approximately 30 - 40km offshore). Otter trawl activity for sprat or sandeel was also observed east of the Array Areas. This fishery is no longer active within the Dogger Bank SAC following the Dogger Bank SAC Byelaw, introduced in June 2022 (discussed further in section 13.5.6).

13.5.3.5 Demersal Fishery – Demersal Seine

70. Fishing activity by demersal seine vessels was relatively low in the Commercial Fisheries Study Area, with activity mostly observed within the north-eastern part, and which overlapped with the Array Areas during most years (**Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**), This fishery is no longer active within the Dogger Bank SAC following the Dogger Bank SAC Byelaw, introduced in June 2022 (discussed further in section 13.5.6). A discrete area of demersal seine activity around the 12nm limit was also identified, which overlapped with the Offshore Export Cable Corridor, and which appeared to increase in spatial extent between 2009-2017.

13.5.3.6 Pelagic Trawl

71. EU vessels deploying pelagic trawl gear are active across the Commercial Fisheries Study Area, including within the DBS Array Areas and Offshore Export Cable Corridor. Highest levels of fishing activity are generally observed outside of the Array Areas, concentrated predominantly within ICES rectangle 37F0, in proximity to the 12nm limit, and overlapping with the Offshore Export Cable Corridor (evident via analysis of VMS data and landing statistics). This fishing activity consists of Danish, Dutch, French, German, and Swedish vessels, which are targeting highly mobile species such as herring, mackerel, sprat, sandeel and whiting.

13.5.4 Port Landings

72. Within the Commercial Fisheries Study Area, Bridlington, Grimsby, Hornsea, Scarborough and Whitby all had relatively high fishing effort (**Volume 7, Figure 2.4.1 Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**) (MMO, 2023b). Landings data, compiled by the MMO were reviewed for the period January 2012 to December 2022 (MMO, 2023b). English vessels accounted for the majority of landed weights across the ports assessed; Scottish vessels also made notable contributions to landed weights at Grimsby, Scarborough, and Whitby. Total landings ranged from a maximum of 37,000 tonnes in Grimsby, to a minimum of 1,400 tonnes in Hornsea. Non-UK vessel landings were highest at the port of Grimsby, accounting for 16% of total landings, which included landings from Danish, Russian, Dutch, French, Spanish, Belize and Belgian vessels.

73. UK fishing vessels lists compiled by the MMO show vessels ≤10m make up the majority of vessels registered with a home port of Scarborough, Hornsea or Whitby, whereas there is almost an equal number of ≤10m and >10m vessels which are registered to have a home port of Grimsby or Bridlington (MMO, 2023d). However, it should be noted that many of the ≤10m vessels registered with a home port of Scarborough are based and operate from Bridlington port. In general, the majority of vessels hold a shellfish licence, with the highest number of shellfish licences held by vessels with a home port of Bridlington, and the lowest number of shellfish licences held by vessels with a home port of Hornsea; all vessels in Hornsea are <10m and beach launched. In total, only four scallop licences were recorded[6], these were all held by >10m vessels, with a home port of Scarborough.

13.5.5 Summary of the Existing Environment

74. A wide range of data have been assessed to characterise commercial fishing activity in the Commercial Fisheries Study Area, as outlined in more detail within the **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**. The review has concluded that whilst fishing occurs in and around the Array Areas and Offshore Export Cable Corridors, by both UK and non-UK vessels, the extent and intensity of this activity is less than in other parts of the wider North Sea region.

[6] *The North East Inshore Fisheries and Conservation Authority only allows four local vessels to target scallops within the 6nm.*

75. Within the Commercial Fisheries Study Area, the top five species caught by UK vessels were crab (*C. pagurus* Mixed Sexes), lobster, scallop, plaice and sandeel. The top five species caught by non-UK vessels were sandeel, herring, sprat, plaice and whiting.

76. The inshore region of the Commercial Fisheries Study Area (<12nm) supports moderate numbers of smaller (≤10m) UK vessels deploying static gear, targeting crab, lobster and whelk. The activity of these vessels overlaps with the inshore parts of the Offshore Cable Corridor at relatively high levels. Fishing vessels deploying dredges were active at moderate to high levels within the inshore areas of the Commercial Fisheries Study Area, with VMS data and landing statistics indicating an overlap of such activity with the Offshore Export Cable Corridor. VMS data and landing statistics also indicate an overlap of pelagic trawl activity with the Offshore Export Cable Corridor, with activity predominantly concentrated within ICES rectangle 37F0.

77. VMS data (see **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**), for figures) and landings statistics indicated that beam trawl vessels showed minimal overlap with the Offshore Export Cable Corridor and the Array Areas. Bottom otter trawl activity was observed to overlap with the DBS East and DBS West Array Areas and Offshore Export Cable Corridors. VMS data and landing statistics indicated that such activity is predominantly observed within ICES rectangle 37F0 and 38F2, a range of species are observed to be landed, including that of herring and plaice. It is noted, however, that since the implementation of the Dogger Bank SAC Byelaw, this bottom trawl activity will no longer continue within the Array Areas.

78. Static gear activity covered a progressively greater geographical area, and increased in intensity throughout 2009 to 2020. This increase in activity is likely to continue as a result of the Dogger Bank SAC Byelaw, as discussed further in section 13.5.6.

79. Non-UK fishing activity within the Commercial Fisheries Study Area consisted predominantly of otter trawl vessels targeting species such as herring and sandeel. To a lesser extent, pelagic trawl vessels are predominantly targeting herring, sprat, and sandeel. Non-UK otter trawl activity was observed overlapping with the Array Areas and Offshore Cable Corridors. However, VMS data and landing statistics indicate that activity is generally higher to the north and southeast of the Array Areas, and in discrete patches.

80. Non-UK pelagic trawl vessels were active across the Commercial Fisheries Study Area, with highest landings recorded within ICES rectangle 37F0 (evident via VMS data and landings statistics). Non-UK beam trawl vessels were also active; although, observed landings were significantly lower with this gear type. Non-UK beam trawl activity was relatively high in the southeast of the Commercial Fisheries Study Area; although a limited overlap with the Array Areas and Offshore Export Cable Corridor was observed (evident via VMS data and landings statistics). It is noted that since the implementation of the Dogger Bank SAC Byelaw, beam trawl and otter trawl activity will no longer continue within the Array Areas.

13.5.6 Future Trends

81. In the event that the Projects are not developed, an assessment of future conditions for Commercial Fisheries has been carried out and is described within this section, and in more detail within **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2).**

82. The existing environment for commercial fisheries is constantly evolving, as the fishing industry is dynamic, with frequent and sometimes unpredictable changes which affect activity, such as changes in fish abundance and distribution, climatic conditions, management regulations and fuel costs (DECC, 2016).

83. The most significant change to fisheries in the Commercial Fisheries Study Area is the Dogger Bank SAC Byelaw, which was introduced in June 2022. This byelaw prohibits bottom towed fishing (including trawls, seines, dredges or similar gear) across the whole of the Dogger Bank SAC and buffer zone. The Dogger Bank SAC overlaps the whole of the Array Areas. The byelaw will be reviewed every five years, or sooner, if significant new information is received regarding the impact of fisheries on the SAC.

84. During formal consultation, consultees noted that the sandeel fishery has started utilising pelagic trawl doors which have limited and / or no contact with the seabed, so the impacts on the SAC are reduced. Subsequently, the MMO has welcomed any evidence to prove that semi pelagic gears do not cause impacts that would undermine the conservation objectives of the SAC.

85. As a result of the byelaw, a large proportion of the commercial fishing gear types being operated within the Array Areas are now prohibited in the area. Therefore, the future existing environment, particularly within the Array Area, will be significantly different than is shown in the official datasets up to 2022, if the byelaw remains in place. With potentially reduced mobile gear fishing within the Array Areas, more static gear vessels will be able to move into these areas as a result of reduced conflict. The official datasets have indicated that prior to 2020, there has already been an increase in static gear activity within the Commercial Fisheries Study Area, including within the DBS West Array Area. Site specific surveys during 2022 have confirmed sightings of potting gear within the western part of the DBS West Array Area, on the western edge of the Dogger Bank where there is a difference in depth of approximately 20m. This static gear activity is likely to increase in spatial extent, duration, and intensity as a result of the byelaw. However, if mobile gear vessels switch from bottom-interacting demersal trawls to semi-pelagic gears and re-engage in fishing within the area, this may act as a limit to any increase in static gear activity.

86. As mobile gear vessels that deploy gear which interacts with the seabed will be displaced from the Dogger Bank area, there is likely to be increased pressure on fishing grounds outside of the Dogger Bank SAC Byelaw area for these gear types. This could include areas such as The Hills, which overlap with parts of the Offshore Export Cable Corridor. Fisheries stakeholders have indicated that, since the implementation of the byelaw in June 2022, vessels targeting herring and sandeel have shifted south of the DBS Array Areas, and beam trawl vessels have moved further south.

87. In addition, in January 2024 Defra announced that the UK government had decided to prohibit the fishing of sandeels within English waters of ICES Area 4 (North Sea) effective from March 2024[7].

[7] https://www.gov.uk/government/consultations/consultation-on-spatial-management-measures-for-industrial-sandeel-fishing/outcome/government-response

88. The impacts of Brexit on the commercial fisheries existing environment are uncertain. Fisheries within UK waters were managed through the EU Common Fisheries Policy (CFP), prior to the withdrawal of the UK in 2021. Under the new EU UK Trade and Cooperation Agreement, there is a 5 year transition period, whereby 25% of the EU quota for British waters will be transferred to the UK fishing fleet, phased across the five years until 2025. As a result, the UK will receive higher quota shares for some stocks, as outlined in **Table 13-14** for selected species within the North Sea (see **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)** for more details). However, a large proportion of landings within the Commercial Fisheries Study Area are from non-quota shellfish species, so will not be affected by the quota changes. Quota allocations for 2026 and beyond, are likely to be the same as for 2025; and access to EU and UK waters will be subject to annual negotiations.

*Table 13-14 Quota Share Changes by 2026 for the UK, for Selected Species Within the North Sea (ABPmer, 2021), See **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)** for More Species.*

Stock	2020 UK share of EU quota	2026 UK share of EU/UK quota or TAC	UK quota absolute increase
Sole	4.28%	17%	13%
Herring	24.09%	69.20%	11%
Cod	46.92%	57%	10%
Whiting	66.92%	73.53%	7%
Plaice	28.46%	28.46%	0%
Lemon sole and witch	61.09%	66.00%	5%
Turbot and brill	15.45%	20.00%	5%
Skates and rays	64.77%	69.00%	4%
Sandeel	2.06%	3.20%	1%
Mackerel	5.33%	6.60%	1%
Sprat	3.79%	3.82%	0%
Norway lobster	86.62%	86.62%	0%
Haddock	84.17%	84.17%	0%

89. Other potential changes to the commercial fisheries existing environment include the Joint Fisheries Statement (Defra *et al.* 2022), which outlines the Fisheries Management Plans (FMPs) and further restrictions on fisheries operating within other Marine Protected Areas (MPAs) in the region. These are discussed in more detail within the **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**.

13.6 Assessment of Significance

90. There are a range of different fishing fleets active within the Commercial Fisheries Study Area, as described in section 13.5 and **Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**. For the purposes of this assessment, to ensure that potential impacts which may affect certain fleets and / or fisheries in different ways are fully assessed, a number of different commercial fisheries receptor groups have been identified, as summarised in **Table 13-15**.

91. It is acknowledged that at present, bottom towed fishing activity is prohibited within the Dogger Bank SAC, which covers the Array Areas and the eastern section of the Offshore Export Cable Corridor. Within the assessment, the impacts are considered for three different scenarios: firstly, the Dogger Bank SAC byelaw is in place which prohibits bottom towed gear within the entire SAC; secondly, a scenario where the Dogger Bank SAC byelaw is revoked and bottom fishing activity is permitted again within the boundary of the SAC; and thirdly for the Offshore Export Cable Corridor (where the only overlap covers approximately 20km of the DBS East Offshore Export Cable Corridor and DBS West Offshore Export Cable Corridor).

Table 13-15 Key Commercial Fisheries Receptor Groups Used as Part of this Assessment

Receptor Group	Summary	Active in Offshore Export Cable Corridor	Active in Array Areas
Demersal trawl and seine	Key species: cod, herring, Norway lobster, plaice, sandeel, sole, turbot, and whiting Vessel size: >10m vessels Nationalities: UK, Dutch, German, French, Belgium	Yes	Yes

Receptor Group	Summary	Active in Offshore Export Cable Corridor	Active in Array Areas
Dredge	Key species: scallop Vessel size: Mostly >10m vessels Nationalities: UK	Yes	No[8]
Intertidal netters	Key species: sea trout, sea bass, sole, mullet, skate, and thornback ray Vessel size: n/a Nationalities: UK	Yes	No
Otter trawl	Key species: herring, Norway lobster, plaice, sandeel, scallop, sprat, and turbot Vessel size: Mostly >10m vessels, although the majority of otter trawlers targeting scallop were <10m Nationalities: UK, Danish, Dutch German, Swedish	Yes	Yes
Pelagic trawl	Key species: herring, mackerel, sprat, sandeel, and whiting Vessel size: >10m vessels Nationalities: Danish, Dutch, French, German and Swedish	Yes	Yes
Static gear inshore	Key species: crab, lobster, and whelk Vessel size: <10m vessels active inshore Nationalities: UK	Yes	No
Static gear offshore	Key species: crab, lobster, and whelk Vessel size: >10m vessels operating further offshore, with increasing spatial extent Nationalities: UK	Yes	Yes (only DBS West)

[8] With the exception of 2020, where a scallop stock was identified and so dredging occurred within the DBS Array Areas. This activity only occurred temporarily and the Dogger Bank SAC Byelaw now prohibits this activity within the area.

13.6.1 Potential Effects During Construction

13.6.1.1 Impact 1: Loss or Restricted Access to Fishing Grounds

13.6.1.1.1 Magnitude of Impact – DBS East or DBS West In-isolation

92. Construction of the DBS East or DBS West Array Area in isolation would take place over a maximum period of five years and may lead to temporary loss or restricted access to fishing grounds during the construction phase. A range of construction activities would take place simultaneously, with a maximum number of 100 small wind turbines constructed. The minimum distance between wind turbines would be 830m. A number of independent fishers raised array layouts and turbine spacing during consultation (**Volume 5, Consultation Report (application ref: 5.1)**) and **Volume 7, Appendix 13-1 (application ref: 7.13.13.1)**, noting that fishing is still undertaken with the Triton Knoll operation wind farm which has a maximum turbine spacing of 875m.

93. The worst case scenario for loss or restricted access to fishing grounds during construction is that fishing activity would be excluded from the entire DBS East or DBS West Array Area for five years. This is highly precautionary and equates to an area excluded to fishing activity of 349km² from DBS East or 355km² from DBS West Array Areas and Offshore Export Cable Corridors, respectively.

94. The loss of and / or restricted access to fishing grounds would be of a regional spatial extent, reversible, occur over a short to medium term period, and would impact the receptors directly. The assessments are based on the different commercial fisheries receptor groups which are outlined in **Table 13-15**.

95. The effect of construction activities leading to a loss or restricted access to fishing grounds for UK and non-UK fishing fleets is described below for different scenarios firstly, the Dogger Bank SAC byelaw is in place which prohibits bottom towed gear within the entire SAC; secondly, a scenario where the Dogger Bank SAC byelaw is revoked and bottom fishing activity is permitted again within the boundary of the SAC; and thirdly for the Offshore Export Cable Corridor (where the only overlap with the Dogger Bank SAC byelaw is the DBS East and DBS West Offshore Export Cable Corridor). The magnitude of impact for each scenario is summarised in **Table 13-16, Table 13-17** and **Table 13-18**.

13.6.1.1.1.1 Dogger Bank SAC Byelaw in Place

96. The following assessment assumes there is no bottom fishing within the Dogger Bank SAC due to the implementation of the Dogger Bank SAC Byelaw.

97. The spatial extent of the Dogger Bank SAC byelaw covers the entirety of the Array Areas and the branch of the Offshore Export Cable Corridor servicing DBS East Offshore Export Cable Corridor. As demersal seines, dredges and otter trawls are classified as bottom towed gear types, under this scenario, these receptor groups are not active across the entire DBS East Array Area, DBS West Array Area and eastern section of the Offshore Export Cable Corridor. Pelagic trawling that has contact with the seabed, such as that of the sandeel fishery (established via Project-specific consultation), is also prohibited and is, therefore, not active within the Offshore Development Area covered by the Dogger Bank SAC Byelaw.

98. Therefore, while assessing against the current situation, these commercial fisheries receptor groups would not be affected by construction activities within the DBS East or DBS West Array Areas (**Table 13-16**).

Table 13-16 Magnitude relating to Loss or Restricted Access to Fishing Grounds During Construction of DBS East or DBS West in Isolation for the scenario where the Dogger Bank SAC byelaw is in place.

Receptor Group	Magnitude
Demersal seine and dredge	No change
Otter trawl and pelagic trawl	No change

13.6.1.1.1.2 Dogger Bank SAC Byelaw Revoked

99. The following assessment assumes that the Dogger Bank SAC Byelaw is revoked.

100. **Demersal seine**: While UK and non-UK demersal seine vessels are active across the Commercial Fisheries Study Area, analysis of VMS and landings data indicate that fishing activity by this receptor group is undertaken at relatively low levels. While noting that highest levels of such activity is observed to overlap with the DBS East Array Area during most years of the study period (2009 to 2017), this overlap remains at a relatively low level, with little indication that this is an area of commercial importance for this receptor group. This activity predominantly consists of Danish vessels targeting plaice and cod, and Scottish and English vessels (Scottish and English vessels to a lesser extent) targeting cod, haddock and flatfish.

101. This receptor group would be affected by construction works at the DBS East Array Area. The proportion of species landed by Scottish and English vessels deploying demersal seine gear within ICES rectangle 38F1 (in which the DBS West Array Area is solely situated) is over 75%, while landing statistics indicate an average annual value of £309K for the Scottish and English demersal seine fishery within this ICES rectangle. It is noted that the DBS West Array Area covers approximately 15% of ICES rectangle 38F1, with UK and non-UK VMS data illustrating that the majority of activity is located outside of the DBS West Array Area during most years of the study period. The DBS East Array Area is situated predominantly within ICES rectangles 38F1 and 37F1, with a small overlap with ICES rectangles 38F2 and 37F2. Landing statistics indicate an average annual value of £3.5M in ICES rectangles 38F1, 37F1, and 38F2 and 37F2, combined; however, the DBS East Array Area covers approximately 4% of these ICES rectangles. Therefore, the worst case scenario based on average annual landed values for demersal seine vessels, would be the exclusion of fishing activities from the DBS West Array Area.

102. Based on the worst case scenario for loss or restricted access to fishing grounds during construction, fishing activity is to be excluded from the entirety of DBS East or DBS West Array Areas and the Offshore Export Cable Corridor for the duration of works. The maximum offshore construction period for the DBS East or DBS West Array Areas is up to five years, across an approximate area of 349km^2 or 355km^2 respectively. As discussed above, this receptor group's fishing activity is observed at relatively low levels across the DBS Array Areas and is present across the wider North Sea region, not just in areas that are to be excluded to fishing. Therefore, the duration of impact of <5yrs and the fact that the area affected represents only a small reduction (5-10%) in this receptor group's annual value of landings, means that the magnitude of impact is considered to be low.

103. **Dredge:** While UK vessels deploying dredges are active within the Commercial Fisheries Study Area, VMS data indicate that no dredge activity overlapped with the Array Areas between 2009 to 2017. In 2020, a lucrative scallop stock was found within the DBS Array Areas and so dredging occurred. However, a temporary closure for scallop fishing was introduced within the Dogger Bank SAC in April 2021, and this closure became permanent when the byelaw was enacted from 13 June 2022 (discussed further in section 13.5.6).

104. Under the scenario where the Dogger Bank SAC byelaw is revoked and based on the worst case scenario of excluded fishing from the entire Offshore Development Area for the duration of construction, this receptor group could be affected by construction works. The maximum offshore construction period for the DBS East or DBS West Array Areas is up to five years, across an approximate area of 349km^2 or 355km^2 respectively. Therefore, the duration of impact of <5yrs, and the fact that the area affected represents a small reduction in this receptor group's annual value of landings (5 - 10%), means that the magnitude of impact is considered to be low.

105. **Otter Trawl:** UK and non-UK vessels deploying the otter trawl gear type are active across the Commercial Fisheries Study Area, including within the Array Areas. UK and non-UK VMS data indicate a varied level of otter trawl activity within both the DBS East and DBS West Array Areas throughout the study period (2009 to 2017), ranging between relatively low to a high level of fishing activity. Generally, higher levels of fishing activity are observed to the north and to the south east of the Array Areas, in discrete areas. This fishing activity observed within and around the Array Areas consists predominantly of non-UK Swedish, German, Danish, and Dutch vessels, and UK Scottish and English vessels (although, Scottish and English[9] vessels to a lesser extent), predominantly targeting cod and plaice.

106. This receptor group would, therefore, be affected by construction works at the DBS Array Areas. The proportion of species landed by the non-UK vessels deploying otter trawl gear within ICES rectangle 38F1 (in which the DBS West Array Area solely situated) is approximately 90%. Landing statistics data further indicate the importance of ICES rectangle 38F1 to the non-UK otter trawl fishery, with an average annual landed weight of 27,000 tonnes across Swedish, German, Danish, and Dutch vessels within this ICES rectangle (2006 to 2016). It is noted, however, that the DBS West Array Area covers approximately 15% of ICES rectangle 38F1, and UK and non-UK VMS data illustrate that highest levels of activity are generally located outside of the DBS West Array Area during most years of the study period.

[9] Several of these are Dutch owned vessels but registered in the UK.

107. Whilst highest levels of otter trawl activity within the Commercial Fisheries Study Area are observed outside of the DBS East and DBS West Array Areas, VMS and landings data still show relatively high levels of fishing within the Array Areas, particularly within the DBS East Array Area where a degree of commercial reliance can be observed for this receptor group. Landing statistics for 2006-2016 indicate an average annual landed weight of 49,093 tonnes by non-UK vessels in ICES rectangles 38F1, 37F1, and 38F2, and 37F2 combined, (in which the DBS East Array Area is situated but only covers approximately 4% of these rectangles). Fisheries stakeholders provided a dataset which showed that established Danish sandeel fishing grounds overlap with the Array Areas (**Volume 7, Appendix 13-2 Commercial Fisheries Technical Report (application ref: 7.13.13.2)**).

108. Due to the degree of observed commercial reliance, DBS East has been assumed as the worst case scenario for the purposes of this assessment. Based on the worst case scenario, fishing activity is to be excluded from the entire Offshore Development Area for the duration of works. The maximum offshore construction period for the DBS East Array Area is up to five years, across an approximate area of 349km^2. Therefore, the duration of impact of <5yrs and the fact that the area affected represents a moderate reduction of 11 – 50% in this receptor group's annual value of landings, means that the magnitude of impact is considered to be medium.

109. **Pelagic Trawl:** Non-UK vessels deploying the pelagic trawl gear types are active across the Commercial Fisheries Study Area, including within the Array Areas. While VMS data recorded between 2017 and 2020 show pelagic trawl activity within the Array Areas, this is observed at relatively low levels across DBS East or DBS West. Higher levels of fishing activity are generally observed outside of the Array Areas, with the highest of such levels concentrated predominantly within ICES rectangle 37F0, in proximity to the 12nm limit (also confirmed via Project-specific consultation). This fishing activity consists of non-UK Danish, Dutch, French, German and Swedish vessels, targeting highly mobile species such as herring, mackerel, sprat, sandeel and whiting.

110. This receptor group would be affected, to a relatively small degree, by construction works at DBS East or DBS West Array Areas. Based on the worst case scenario, fishing activity is to be excluded from the entire Offshore Development Area for the duration of works. The maximum offshore construction period for the DBS East or DBS West Array Areas is up to five years, across an approximate area of 349km^2 or 355km^2 respectively. Therefore, the duration of impact of <5yrs and the fact that the area affected represents a small reduction (5-10%) of in this receptor group's annual value of landings, means that the magnitude of impact is considered to be low.

111. **Offshore static gear**: UK offshore static gear vessels (≥10m) are active across the Commercial Fisheries Study Area, with project-specific consultation establishing that these are predominantly English vessels targeting lobster and brown crab. UK VMS data indicate that offshore static gear activity overlapped with a western section of DBS West during 2019 and 2020. However, throughout the study period, highest levels of fishing activity by this receptor group are generally located southwest of the Array Areas, within ICES rectangles 36F0 and 36F1. Scouting surveys and gear observations undertaken in 2022 confirmed the overlap of offshore static gear fishing activity with the western half of the DBS West Array Area. Based on the UK and non-UK VMS data and 2022 scouting surveys and gear observations, no activity by this receptor group was observed within the DBS East Array Area, therefore, construction works at the DBS East Array Area would not affect this receptor group.

112. Under this scenario, the element of construction activity that would affect this receptor group is seabed preparation and installation work at the DBS West Array Area. Project-specific consultation results generally align with those of the UK VMS data, and 2022 scouting surveys and gear observations, indicating the overlap of activity predominantly during summer months. The construction phase of DBS West (assumed as worst case scenario for the purpose of this assessment), has an anticipated duration of up to five years and during this period, fishing activity is likely to be excluded from the entire Array Area (355km^2). Vessels within this receptor group would likely be required to temporarily remove their gear from areas where installation works were being undertaken, and relocate to other areas offshore. It is noted, however, that equivalent fishing grounds exist within the vicinity of the Offshore Development Area.

113. In light of the above, the duration of impact of <5yrs, and in consideration that the area affected represents a small reduction of 5 – 10% in this receptor group's annual value of landings means that the magnitude of impact is considered to be low.

Table 13-17 Magnitude relating to Loss or Restricted Access to Fishing Grounds During Construction of DBS East or DBS West in Isolation for the scenario where the Dogger Bank SAC byelaw is revoked

Receptor Group	Magnitude
Demersal seine	Low
Dredge	Low
Otter trawl	Medium
Pelagic trawl	Low
Offshore static gear	Low

13.6.1.1.1.3 Offshore Export Cable Corridor

114. **Demersal Seine:** Discrete areas of demersal seine activity were observed via VMS data around the 12nm limit of the Commercial Fisheries Study Area, overlapping with the Offshore Export Cable Corridor; this activity was predominantly by Scottish vessels. This receptor group would, therefore, be affected by construction works at the section of the Offshore Export Cable Corridor located around the 12nm limit. This activity is observed at relatively low levels, while VMS data further illustrates that the overlap is not present in all years over the study period.

115. Based on the worst case scenario for loss or restricted access to fishing grounds during construction, fishing activity is to be excluded from the entire Offshore Development Area for the duration of works. The maximum offshore construction period for the Offshore Export Cable installation is up to 21 months, across a maximum length of 188km for the DBS East Offshore Export Cable Corridor. As discussed, this receptor group's fishing activity is observed at relatively low levels across the Offshore Export Cable Corridor and is present across the wider North Sea Region, not just of that excluded to fishing. Therefore, the duration of impact of <2yrs and the fact that the area affected represents only a small reduction (5-10%) in this receptor group's annual value of landings, means that the magnitude of impact is considered to be low.

116. **Dredge:** UK vessels deploying dredges are active within the Commercial Fisheries Study Area, specifically within the inshore section (generally within and around the 12nm limit). VMS data indicate that such UK dredge activity is observed at moderate to high levels within the inshore section, notably off Flamborough Head, and with an overlap with the Offshore Export Cable Corridor during all years of the study period (2009 to 2017). This activity predominantly consists of Scottish and English dredge vessels targeting scallop (English dredge vessels to a lesser extent). The proportion of species landed by Scottish and English vessels deploying dredges within ICES rectangle 37F0 (where there is overlap between this receptor group's fishing activity and the Offshore Export Cable Corridor) is over 25% (pots and traps >35% and demersal seine >32%). Landing statistics indicate an average annual value of £1.05M for the Scottish and English dredge fishery within this ICES rectangle.

117. An identified area of commercial importance to this receptor group is, therefore, observed to overlap with the Offshore Export Cable Corridor (relevant to both DBS East and DBS West). Based on the worst case scenario, fishing activity is to be excluded from the entire Offshore Development Area for the duration of construction works. The maximum offshore construction period for the Offshore Export Cable installation is up to 21 months, across a maximum length of 188km for the DBS East Offshore Export Cable Corridor. Therefore, the duration of impact of <2yrs, and the fact that the area affected represents a 11 - 50% reduction in this receptor group's annual value of landings means that the magnitude of impact is considered to be medium.

118. **Intertidal netters**: This commercial fisheries receptor group comprises UK intertidal netters that operate with beach nets at low water, in two locations within the near shore region of the Commercial Fisheries Study Area. These two areas Skipsea Lane End and Far Grange are located within the Commercial Fisheries Study Area. Skipsea Lane End overlaps with the Offshore Export Cable Corridor, while Far Grange is located within the Commercial Fisheries Study Area but does not directly overlap with the Offshore Development Area. This fisher has a licence that only allows him to fish in a discrete area (approximately 500m parallel to the beach) and has buried anchors in set locations to secure the nets. Each net is 150 yards in length. Project-specific consultation established that fishing activity is conducted between October and August, with no activity in September. The fishery targets sea trout, sea bass, and sole.

119. Based on the onshore grid connection point at Creyke Beck, East Yorkshire, a single landfall location has been identified close to Skipsea and the Offshore Export Cable Corridor overlaps with this receptor group. Construction of the nearshore section of the Offshore Export Cable Corridor would not affect this receptor group, given that the estimated trenchless crossing length is 1400m at an indicative depth of 20m below sea bed level and the intertidal nets are less than 150 yards. There is a potential overlap with this receptor group from buffer zones around any nearshore UXO clearance (requirements to be determined post-consent and subject to a separate Marine Licence application).

120. In light of this, the duration of impact of <2yrs and the fact that the area affected represents only a very small reduction (<5%) in this receptor group's annual value of landings, means that the magnitude of impact is considered to be negligible.

121. **Otter Trawl:** Vessels deploying the otter trawl gear type are active across the Commercial Fisheries Study Area, including within the DBS East and DBS West Offshore Export Cable Corridor. UK and non-UK VMS data indicate overlap of otter trawl activity with the Offshore Export Cable Corridor across all years of the study period (2009 to 2017), with highest levels of overlap observed approximately 30 to 40 km offshore. This activity consists predominantly of non-UK Swedish, German, Danish, and Dutch vessels, and UK Scottish and English vessels (although, Scottish and English vessels[10] to a lesser extent), predominantly targeting sandeel and sprat. Despite VMS data indicating a relatively consistent overlap of otter trawl activity within the DBS Offshore Cable Corridor (within ICES rectangles 37F0 and 36F1) across the study period, this is observed at relatively low levels, with higher levels being observed within the wider Commercial Fisheries Study Area, the North Sea and beyond.

122. Based on the worst case scenario, fishing activity is to be excluded from the entire Offshore Development Area for the duration of construction works. The maximum offshore construction period for the Offshore Export Cable installation is up to 21 months, across a maximum length of 188km for the DBS East Offshore Export Cable Corridor. Therefore, the duration of impact of <2yrs, and the fact that the area affected represents a small reduction in this receptor group's annual value of landings (5 - 10%) means that the magnitude of impact is considered to be low.

[10] Several of these are Dutch owned vessels but registered in the UK.

123. **Pelagic Trawl:** Non-UK vessels deploying the pelagic trawl gear types are active across the Commercial Fisheries Study Area, including within the Offshore Export Cable Corridor. Highest levels of fishing activity are generally observed within ICES rectangle 37F0, in proximity to the 12nm limit and overlapping with the Offshore Export Cable Corridor (also confirmed via Project-specific consultation). This fishing activity consists of Danish, Dutch, French, German and Swedish vessels, targeting highly mobile species such as herring, mackerel, sprat, sandeel and whiting. Landings data from 2006 to 2016 further recognises the importance of ICES rectangle 37F0, indicating an average annual landed weight of 7,838 tonnes across the Danish, Dutch, French, German, and Swedish fleets.

124. This receptor group would, therefore, be affected by seabed preparation and installation work within the Offshore Export Cable Corridor (of which comprises both DBS East and DBS West). Based on the worst case scenario, fishing activity is to be excluded from the entire Offshore Development Area for the duration of works. The maximum offshore construction period for the Offshore Export Cable installation is up to 21 months, across a maximum length of 188km for the DBS East Offshore Export Cable Corridor. Therefore, the duration of impact of <2yrs and the fact that the area affected represents a reduction of 11 – 50% in this receptor group's annual value of landings, means that the magnitude of impact is considered to be medium.

125. **Inshore static gear**: UK inshore static gear vessels (<10m) are active within the inshore region of the Commercial Fisheries Study Area and the Offshore Export Cable Corridor, with Project-specific feedback establishing that these are predominantly English vessels targeting lobster and brown crab (and occasionally whelk), operating out of local ports such as Bridlington and Hornsea. Limited spatial activity data are available for this receptor group, however, Cefas data and site specific surveys, combined with feedback from fisheries stakeholders, indicate that the highest intensities of inshore static gear fishing were located within the 6nm limit and intersected with the Offshore Export Cable Corridor.

126. The element of construction activity that would, therefore, affect this receptor group is seabed preparation and installation work at the Offshore Export Cable Corridor, specifically within the inshore region (0 to 12nm). Project-specific consultation generally aligns with that of the Cefas dataset, indicating areas of relative importance overlapping with the Offshore Export Cable Corridor during the summer months. Based on the worst case scenario, fishing activity is to be excluded from the entire Offshore Export Cable Corridor for the duration of works. The maximum offshore construction period for the Offshore Export Cable is 21 months and across a maximum length of 188km for DBS East. Vessels within this receptor group would likely be required to temporarily remove their gear from areas where installation works were being undertaken, and either relocate to other areas offshore or bring to shore, depending on fishing preferences. It is noted that equivalent fishing grounds exist within the vicinity of the Offshore Development Area, so it is likely that vessels would relocate their gear and continue to fish.

127. Due to the likely requirement that this receptor group would have to relocate their gear ahead of and for the duration of construction works (<2yrs), together with the fact that they operate within a more limited spatial range than that of offshore vessels, the area affected represents a reduction of 11 - 50% in this receptor group's annual value of landings. The magnitude of impact for the receptor group is therefore, considered to be medium.

128. **Offshore static gear**: UK offshore static gear vessels (≥10m) are active across the Commercial Fisheries Study Area, with Project-specific consultation establishing that these are predominantly English vessels targeting lobster and brown crab *Cancer pagurus*. UK VMS data indicate that offshore static gear activity overlapped with the Offshore Export Cable Corridor during most years of the study period 2009 to 2020. However, throughout the study period, highest levels of fishing activity by this receptor group are generally located south of the Offshore Export Cable Corridor, within ICES rectangles 36F0 and 36F1. The main element of construction activity that would affect this receptor group is seabed preparation and installation work at the sections of the Offshore Export Cable Corridor beyond 12nm. Project-specific consultation generally aligns with that of the UK VMS data, highlighting that the overlap of activity predominantly occurs during summer months.

129. Based on the worst case scenario, fishing activity is to be excluded from the entire offshore cable export corridor for the duration of works. The maximum offshore construction period for the Offshore Export Cable is 21 months and across a maximum length of 188km for DBS East. Vessels within this receptor group would likely be required to temporarily remove their gear from areas where installation works were being undertaken, and relocate to other areas offshore. It is noted, however, that equivalent fishing grounds exist within the vicinity of the Offshore Development Area and this this receptor group is present across the wider North Sea region, not just in areas that are to be excluded to fishing.

130. In light of the above, the duration of impact of <2yrs, and in consideration that the area affected represents a small reduction of 5 – 10% in this receptor group's annual value of landings means that the magnitude of impact is considered to be low.

Table 13-18 Magnitude relating to Loss or Restricted Access to Fishing Grounds During Construction of DBS East or DBS West in Isolation for the Offshore Export Cable Corridor

Receptor Group	Magnitude
Demersal seine	Low
Dredge	Medium
Intertidal netters	Negligible
Otter trawl	Low
Pelagic trawl	Medium
Inshore static gear	Medium
Offshore static gear	Low

13.6.1.1.2 Magnitude of Impact – DBS East and DBS West Together

131. The construction period for the DBS East and DBS West Concurrent Scenario is assumed as up to five years (identical construction period to that of the DBS East or DBS West In Isolation Scenario). However, in the instance of Sequential development of the two Projects, the construction period increases to seven years, as up to a two year lag between the start of construction activities is possible (final overall footprint (see section 13.3.2) would be identical to the Concurrent Scenario). For fisheries not included under the Dogger Bank SAC Byelaw, or if the Byelaw was revoked, it is assumed that fishing would be able to continue during the two-year lag between the construction phases for the Projects, i.e. when construction started at one Project, fishing could still take place in the other Projects' Array Area for this initial two year period, before both sites were in their construction phase.

132. The worst case scenario for loss or restricted access to fishing grounds during construction is that fishing activity is to be excluded from the entire Offshore Development Area (inclusive of both the Array Area and Offshore Cable Corridor) for the duration of works. This equates to an area excluded to fishing activity of 704km^2 from the Array Areas, and 188km from the DBS East Offshore Export Cable Corridor and 153km from the DBS West Offshore Export Cable Corridor. Voluntary exclusion zones of 1.5nm (2.8km) may also be present around vessels conducting seabed preparatory activities (such as sandwave and boulder clearance) and during installation of foundations, wind turbines, offshore platforms, Inter-Platform Cables, inter-array cables and Offshore Export Cables.

133. Considering the scenario where the Dogger Bank SAC byelaw is in place, the magnitude of impacts would remain the same as outlined in **Table 13-16**, due to these receptor groups being prohibited from fishing within this area.

134. Where the bylaw is revoked and for the Offshore Export Cable Corridor, loss or restricted access to fishing grounds would be higher than the worst case for an individual site, but the effect would still be anticipated to not exceed a short to medium term. Given this and consideration of the areas of fishing activity for each receptor group within the Offshore Development Area, the reduction in the receptor group's annual value of landings and the magnitude of impact on each receptor group is not expected to exceed the assessment of DBS East or DBS West in isolation for these scenarios (**Table 13-17** and **Table 13-18**).

13.6.1.1.3 Sensitivity of Receptor

135. **Demersal seine**: Vessels within this receptor group exhibit a relatively high operational range and high spatial tolerance, due to their ability to fish numerous grounds within the wider North Sea and beyond. The sensitivity of the receptor is therefore considered to be negligible.

136. **Dredge**: Although vessels within this receptor group exhibit a relatively high operational range, they possess limited spatial tolerance, due to their dependence upon the area that overlaps with the Offshore Export Cable Corridor. It was also established, via project-specific consultation, that scallop vessels within this receptor group have a limited ability to deploy alternative gear. The sensitivity of the receptor is therefore considered to be medium.

137. **Intertidal netters**: The intertidal netters operate across distinct areas and are considered to have lower levels of alternative fishing grounds and spatial adaptability. This receptor group has no ability to deploy alternative gear, due to permits issued by the North Eastern IFCA. The sensitivity of the receptor is therefore, considered to be medium.

138. **Otter trawl**: This receptor group exhibits an extensive operational range and is able to mitigate, to a degree, reduced access to fishing grounds through its spatial tolerance. The sensitivity of the receptor is therefore, considered to be low.

139. **Pelagic trawl**: This receptor group exhibits an extensive operational range and is able to mitigate, to a degree, reduced access to fishing grounds through its spatial tolerance. The sensitivity of the receptor is therefore considered to be low.

140. **Inshore static gear**: The inshore static gear vessels operate within distinct areas and are considered to have lower levels of alternative fishing grounds and spatial adaptability. Due to this receptor group's smaller vessel size, they possess a lower operational range to that of the larger offshore vessels. Although some of these vessels have ability to deploy alternative gear, this is relatively limited as most static gear fishers hold category C licences and are only entitled to fish for shellfish species. The sensitivity of the receptor is therefore, considered to be medium.

141. **Offshore static gear**: This receptor group has the ability to fish a wider area than any areas they may be temporarily excluded from during construction works. The sensitivity of the receptor is therefore considered to be low.

13.6.1.1.4 Significance of Effect – DBS East or DBS West in Isolation or the Projects Together

142. A summary of the impact magnitude, sensitivity of receptors, and overall effect of significance for DBS East or DBS West in isolation or the Projects being built together is provided in **Table 13-19** for the different scenarios. Under the current situation, with the Dogger Bank SAC Byelaw in place, **no significant change** is predicted within the Array Areas for demersal seine, dredge, otter trawl or pelagic trawl receptor groups. In the event the byelaw is revoked, **negligible** significance is predicted for demersal seine and minor adverse is predicted for all other receptor groups. **Moderate adverse** effects are predicted for the Offshore Export Cable for dredge and inshore static gear receptor groups. There is no difference in the magnitude of impact between the Projects being built in isolation or together.

Table 13-19 Magnitude, Sensitivity and Impact Significance Relating to Loss or Restricted Access to Fishing Grounds During Construction of DBS East or DBS West in Isolation or Built Together, per scenario.

Receptor Group	Magnitude	Sensitivity	Significance
Dogger Bank SAC byelaw being in place			
Demersal seine	No change	Negligible	No change
Dredge	No change	Medium	No change
Otter trawl	No change	Low	No change
Pelagic trawl	No change	Low	No change
Dogger Bank SAC byelaw revoked			
Demersal seine	Low	Negligible	Negligible
Dredge	Low	Medium	Minor adverse
Otter trawl	Medium	Low	Minor adverse
Pelagic trawl	Low	Low	Minor adverse
Offshore static gear	Low	Low	Minor adverse
Offshore Export Cable Corridor			
Demersal seine	Low	Negligible	Negligible

Receptor Group	Magnitude	Sensitivity	Significance
Dredge	Medium	Medium	Moderate adverse
Intertidal netters	Negligible	Medium	Minor adverse
Otter trawl	Low	Low	Minor adverse
Pelagic trawl	Medium	Low	Minor adverse
Inshore static gear	Medium	Medium	Moderate adverse
Offshore static gear	Low	Low	Minor adverse

13.6.1.1.5 Additional Mitigation and Residual Significance of Effect – DBS East or DBS West In Isolation or Built Together

143. A moderate adverse effect from loss of and / or reduced access to fishing grounds is predicted on the inshore static gear and dredge vessels receptor groups as a result of construction of the Offshore Export Cable Corridor. This is significant in EIA terms. In order to mitigate this effect on the inshore static gear and dredge vessels, and the minor adverse effect on other receptor groups, the Projects would explore options to encourage co-existence between receptor groups and construction vessels and / or activities to further mitigate the effect. Such measures may include disruption payments in accordance with FLOWW guidance and cooperation agreements. Additional mitigation measures may also include discussions to ascertain whether there are periods of time and / or particular locations during construction when it would be safe for fishing to occur. These additional mitigation measures above are included in the **Volume 8, Outline Fisheries Liaison and Coexistence Plan (application ref: 8.28)**, which is included as an embedded mitigation measure and is submitted as part of the DCO application.

144. If successfully implemented, these measures would reduce the magnitude of impact from medium to low for inshore static gear and dredge vessels, therefore the residual effect is **minor adverse**, which is deemed to be not significant in EIA terms.

13.6.1.2 Impact 2: Displacement from the Wind Farm Site and Offshore Export Cable Leading to Gear Conflict and Increased Pressure on Adjacent Fishing Grounds

13.6.1.2.1 Magnitude of Impact – DBS East or DBS West In-Isolation

145. Exclusion from fishing grounds during construction of DBS East or DBS West in isolation could, in theory, lead to temporary increases in fishing effort in other areas where existing fisheries are active, thereby leading to increased fishing pressure on adjacent grounds and potential gear conflicts. As intertidal netters operate from the beach, the potential displacement from them on other receptor groups has not been considered.

146. The worst case scenario for loss or restricted access to fishing grounds during construction is that fishing activity would be excluded from the entire DBS East or DBS West Array Area for five years. This is highly precautionary and equates to an area excluded to fishing activity of 349km² from DBS East and 355km² from DBS West Array Areas and Offshore Export Cable Corridors, respectively.

147. This effect is predicted to lead to displacement of fishing activity onto adjacent grounds and, therefore, lead to gear conflicts during the construction activities for each Project, which would directly affect fishing activity over a short to medium term duration (i.e. less than 5 years). The effect is predicted to be intermittent and is of relevance to UK fishing fleets in all areas and international fishing fleets outside the 12nm limit. The assessments are based on the different commercial fisheries receptor groups which are outlined in **Table 13-15**.

148. The effect of construction activities leading to displacement and increased pressure on adjacent fishing grounds for UK and non-UK fishing fleets is described below. For demersal seine, dredge, otter trawl and pelagic trawling fisheries receptors, this is firstly assessed against the current situation, i.e. the Dogger Bank SAC byelaw is in place which prohibits bottom towed gear within the entire SAC; secondly, against a scenario where the Dogger Bank SAC byelaw is revoked and bottom fishing activity is permitted again within the boundary of the SAC; and thirdly the assessment for the Offshore Export Cable Corridor. The magnitude of impact for each scenario is summarised in **Table 13-20** and **Table 13-21**.

13.6.1.2.1.1 Dogger Bank SAC Byelaw in Place

149. The following assessment assumes the current situation, i.e. there is no bottom fishing within the SAC due to the implementation of the Dogger Bank SAC Byelaw.

150. The spatial extent of the Dogger Bank SAC byelaw covers the entirety of the Array Areas. Therefore, vessels deploying demersal seines, dredges and otter trawls, under this scenario, are not active within the entire DBS East and DBS West Array Area and eastern section of the Offshore Export Cable Corridor, and displacement of these into the areas beyond 12nm as a result of construction works would not occur. Pelagic trawling that has contact with the seabed, such as that of the sandeel fishery (established via project-specific consultation), is also prohibited, with displacement of fishing activity from the described area onto adjacent grounds, therefore, also not likely to occur.

151. Therefore, while assessing against the current situation, displacement of these commercial fisheries receptor groups as a result of construction activities onto adjacent grounds where other receptor groups are active is not likely to occur. No magnitude of change is predicted for the construction phase of the Array Areas for demersal seine and dredge receptor groups. No magnitude of change is also predicted for the construction phase within the DBS East and DBS West Array Areas for otter trawl or pelagic trawl receptor groups.

Table 13-20 Magnitude relating to Displacement from the Wind Farm Site and Offshore Export Cable Leading to Gear Conflict and Increased Pressure on Adjacent Fishing Grounds during Construction of DBS East or DBS West in Isolation, for the scenario where the Dogger Bank SAC byelaw is in place

Receptor Group	Magnitude
Demersal seine and dredge	No change
Otter trawl and pelagic trawl	No change

13.6.1.2.1.2 Dogger Bank SAC Byelaw Revoked

152. The following assessment assumes that the Dogger Bank SAC byelaw is revoked.

153. **Demersal seine:** Based on the worst case scenario, fishing activity is to be excluded from the entire Offshore Development Area for the duration of construction works. The maximum offshore construction period for the DBS East or DBS West Array Areas is up to five years, across an approximate area of 349km^2 or 355km^2 respectively.

154. Potential displacement of vessels deploying dredges, otter trawls, pelagic trawls, and offshore static gear from the DBS East or DBS West Array Areas, into the areas where demersal seine vessels are active could cause conflict between these different receptor groups. However, data indicate that this receptor group targets a relatively large area in comparison to the area excluded to fishing as a result of construction works.

155. Therefore, the short to medium term duration (<5yrs) and the area affected during construction of DBS East or DBS West Array Areas represents only a small reduction of 5 – 10% in this receptor group's annual value of landings. The magnitude of impact is therefore considered to be low.

156. **Dredge:** Potential displacement of vessels deploying demersal seine, otter trawls, pelagic trawls and offshore static gear from the DBS East or DBS West Array Areas into the areas where dredge vessels are active, could cause conflict between these different receptor groups. However, due to the relatively small size of area that would affect this receptor group, in comparison to the wider extent of fishing grounds available within the North Sea region and beyond, the extent of this displacement is judged to be relatively limited.

157. Therefore, the duration of impact of <5yrs, and in consideration that the area affected during construction of DBS East or DBS West represents only a small reduction of 5 – 10% in this receptor group's annual value of landings, means that the magnitude of impact is considered to be low.

158. **Otter trawl:** Displacement of vessels deploying dredges, demersal seine, pelagic trawls, and offshore static gear from the DBS East or DBS West Array Areas into areas where otter trawl vessels are active, could cause conflict between these different receptor groups. However, due to the relatively small size of area that would affect this receptor group, in comparison to the wider extent of fishing grounds available within the North Sea region and beyond, the extent of this displacement is judged to be relatively limited. Therefore, the duration of impact of <5yrs, and in consideration that the area affected during construction of DBS East or DBS West represents only a small reduction of 5 – 10% in this receptor group's annual value of landings, means that the magnitude of impact is, therefore, considered to be low.

159. **Pelagic trawl:** Potential displacement of vessels deploying dredges, demersal seine, otter trawls, and offshore static gear from the DBS East or DBS West Array Areas, into areas where otter trawl vessels are active, could cause conflict between these different receptor groups. However, due to the relatively small size of area that would be affected compared to the wider extent of fishing grounds within the North Sea region and beyond, the extent of this displacement is judged to be relatively limited. The magnitude of impact is therefore considered to be low.

160. **Inshore static gear**: The potential displacement of mobile dredges, demersal seine, otter trawls, and pelagic trawls from the DBS East or DBS West Array Areas into the inshore areas where this receptor's vessels set static gear (pots), is unlikely as the mobile vessels would likely focus on alternative established offshore grounds (i.e. beyond 12nm) throughout the North Sea. The potential displacement of offshore static vessels from the two Array Areas could occur due to construction works, requiring the inshore static gear vessels to temporarily relocate gear and / or experience a reduction in landings due to a greater number of vessels targeting stocks in this inshore area. However, this is also judged to be unlikely, as these offshore static vessels would likely look to remain in grounds further offshore (i.e. beyond 12nm), such as in that of the wider North Sea region. In light of this, the duration of impact of <5yrs and the fact that the area affected during construction of DBS East or DBS West represents only a small reduction (5 – 10%) of this receptor group's annual value of landings, means that the magnitude of impact is considered to be low.

161. **Offshore static gear**: The potential displacement of mobile vessels deploying dredges, demersal seine, otter trawls and pelagic trawls from the DBS East or DBS West Array Areas into the areas where offshore static gear vessels set static gear (pots), could cause conflict between these different receptor groups. However, due to the relatively small size of area that would be affected compared to the wider extent of fishing grounds within the North Sea region and beyond, the extent of this displacement is judged to be relatively limited. The magnitude of impact is, therefore, considered to be low.

Table 13-21 Magnitude relating to Displacement from the Wind Farm Site and Offshore Export Cable Leading to Gear Conflict and Increased Pressure on Adjacent Fishing Grounds during Construction of DBS East or DBS West in Isolation for the scenario where the Dogger Bank SAC byelaw is revoked

Receptor Group	Magnitude
Demersal seine	Low
Dredge	Low
Otter trawl	Low
Pelagic trawl	Low
Inshore static gear	Low
Offshore static gear	Low

13.6.1.2.1.3 Offshore Export Cable Corridor

162. **Demersal seine**: Based on the worst case scenario for loss or restricted access to fishing grounds during construction, fishing activity is to be excluded from the entire Offshore Development Area for the duration of works. The maximum offshore construction period for the Offshore Export Cable installation is up to 21 months, across a maximum length of 188km for the DBS East Offshore Export Cable Corridor.

163. Potential displacement of vessels deploying dredges, otter trawls, pelagic trawls, and offshore static gear from the part of the Offshore Export Cable Corridor beyond 12nm, into areas where demersal seine vessels are active, could cause conflict between these different receptor groups. However, data indicate that this receptor group targets a relatively large area in comparison to the area of exclusion as a result of construction works.

164. Potential displacement of inshore static gear vessels from the Offshore Export Cable Corridor, into the areas beyond 12nm where demersal seine vessels are mostly active is unlikely. The smaller size of these vessels means it is more likely that these receptor groups would focus on alternative established grounds further inshore, i.e. within 12nm.

165. Therefore, the short to medium term duration (<2yrs) and the area affected during installation of the DBS East or West Offshore Export Cable, represents only a small reduction of 5 – 10% in this receptor group's annual value of landings. The magnitude of impact is therefore considered to be low.

166. **Dredge:** Potential displacement of vessels deploying demersal seine, otter trawls, pelagic trawls and offshore static gear from the part of the DBS East or DBS West Offshore Export Cable Corridor beyond 12nm, into the areas where dredge vessels are active, could cause conflict between these different receptor groups. However, due to the relatively small size of area that would be affected compared to the wider extent of fishing grounds within the North Sea region and beyond, the extent of this displacement is judged to be relatively limited.

167. Potential displacement of inshore static gear vessels from the Offshore Export Cable Corridor, into areas around the 12nm limit and beyond, where these dredge vessels are mostly active is unlikely. The smaller size of these vessels means it is more likely that these receptor groups would focus on alternative established grounds further inshore.

168. Therefore, the duration of impact of <2yrs, and in consideration that the area affected during installation of the DBS East or West Offshore Export Cable, represents only a small reduction of 5 – 10% in this receptor group's annual value of landings, means that the magnitude of impact is considered to be low.

169. **Otter trawl:** Displacement of vessels deploying dredges, demersal seine, pelagic trawls, and offshore static gear from the DBS East or DBS West Offshore Export Cable Corridor beyond 12nm, into the areas where otter trawl vessels are active, could cause conflict between these different receptor groups. However, due to the relatively small size of area that would be affected compared to the wider extent of fishing grounds within the North Sea region and beyond, the extent of this displacement is judged to be relatively limited.

170. Potential displacement of inshore static gear vessels from the Offshore Export Cable Corridor, into the areas beyond the 12nm limit where otter trawl vessels are active is unlikely, as inshore static gear vessels would likely focus on alternative established grounds further inshore, i.e. within 12nm.

171. Therefore, the duration of impact of <2yrs, and in consideration that the area affected during installation of the DBS East or West Offshore Export Cable represents only a small reduction of 5 – 10% in this receptor group's annual value of landings, means that the magnitude of impact is, therefore, considered to be low.

172. **Pelagic trawl:** Potential displacement of vessels deploying dredges, demersal seine, otter trawls, inshore and offshore static gear from the DBS East or DBS West Offshore Export Cable Corridor, into the areas where pelagic trawl vessels are active, could cause conflict between these different receptor groups. However, due to the relatively small size of area that would be affected compared to the wider extent of fishing grounds within the North Sea region and beyond, the extent of this displacement is judged to be relatively limited.

173. Therefore, the duration of impact of <2yrs, and in consideration that the area affected during installation of the DBS East or West Offshore Export Cable represents only a small reduction of 5 – 10% in this receptor group's annual value of landings, means that the magnitude of impact is, therefore, considered to be low.

174. **Inshore static gear**: Potential displacement of mobile dredges, demersal seine, otter trawls, and pelagic trawls from the part of the Offshore Export Cable Corridor beyond 12nm, into the inshore areas where this receptor's vessels set static gear (pots), is unlikely as the mobile vessels would likely focus on alternative established offshore grounds (i.e. beyond 12nm) throughout the North Sea.

175. Potential displacement of offshore static vessels from the Offshore Export Cable Corridor beyond 12nm into inshore areas could occur due to construction works, requiring the inshore static gear vessels to temporarily relocate gear and / or experience a reduction in landings due to a greater number of vessels targeting stocks in this inshore area. However, this is also judged to be unlikely, as these offshore static vessels would likely look to remain in grounds further offshore (i.e. beyond 12nm), such as in that of the wider North Sea region.

176. Potential displacement of individual vessels within this receptor group, from the Offshore Export Cable Corridor within 12nm, onto adjacent grounds that may be fished by other inshore vessels, is also possible.

177. In light of this, the duration of impact of <2yrs and the fact that the area affected during installation of the DBS East or West Offshore Export Cable, represents only a small reduction (5 – 10%) of this receptor group's annual value of landings, means that the magnitude of impact is considered to be low.

178. **Offshore static gear**: Potential displacement of mobile vessels deploying dredges, demersal seine, otter trawls, inshore static gear vessels, and pelagic trawls from the DBS East or DBS West Offshore Export Cable Corridor into the areas where offshore static gear vessels set static gear (pots), could cause conflict between these different receptor groups. However, due to the relatively small size of area that would be affected compared to the wider extent of fishing grounds within the North Sea region and beyond, the extent of this displacement is judged to be relatively limited. The magnitude of impact is, therefore, considered to be low.

Table 13-22: Magnitude relating to Displacement from the Wind Farm Site and Offshore Export Cable Leading to Gear Conflict and Increased Pressure on Adjacent Fishing Grounds during Construction of DBS East or DBS West in Isolation for the Offshore Export Cable Corridor.

Receptor Group	Magnitude
Demersal seine	Low
Dredge	Low
Otter trawl	Low
Pelagic trawl	Low
Inshore static gear	Low
Offshore static gear	Low

13.6.1.2.2 Magnitude of Impact – DBS East and DBS West Together

179. The construction period for the DBS East and DBS West Concurrent Scenario is up to five years (identical construction period to that of the DBS East or DBS West In-isolation scenario). However, in the instance of Sequential development of the two Projects, the construction period increases to seven years, as up to a two year lag between the start of construction activities is possible (final overall footprint would be identical to the Concurrent Design Scenario).

180. The worst case scenario for fisheries displacement during construction is that fishing activity is to be excluded from the entire Offshore Development Area (inclusive of both the Array Area and Offshore Export Cable Corridor) for the duration of works. This equates to an area of 704km^2 from the Array Areas, 188km from the DBS East Offshore Export Cable Corridor and 153km from the DBS West Offshore Export Cable Corridor. Additionally, voluntary exclusion zones of 1.5nm (2.8km) may also be present around vessels conducting seabed preparatory and during major installation works.

181. This effect is predicted to lead to displacement of fishing activity onto adjacent grounds and, therefore, lead to gear conflicts during the construction activities for each Project, which would directly affect fishing activity over a short to medium term duration (i.e. up to 7 years if built Sequentially). The effect is predicted to be intermittent and is of relevance to UK fishing fleets in all areas and international fishing fleets outside the 12nm limit.

182. Considering the scenario where the Dogger Bank SAC byelaw is in place, the magnitude of impacts would remain the same as outlined in **Table 13-20**, due to these receptor groups being prohibited from fishing within this area.

183. Where the bylaw is revoked and for the Offshore Export Cable Corridor, displacement would be higher than the worst case for an individual site, but the effect would still be anticipated to not exceed a short to medium term. Given this and consideration of the areas of fishing activity for each receptor group within the Offshore Development Area, the reduction in the receptor group's annual value of landings and the magnitude of impact on each receptor group is not expected to exceed the assessment of DBS East or DBS West in isolation for these scenarios (**Table 13-21**).

13.6.1.2.3 Sensitivity of Receptor

184. **Demersal seine**: Demersal seine vessels exhibit a relatively high operational range and spatial tolerance, due to their ability to fish numerous grounds within the wider North Sea and beyond. Vessels within this receptor group have little dependency on the Array Areas and Offshore Export Cable Corridor and are able to avoid construction areas provided adequate notification is given. The sensitivity of the receptor is therefore, considered to be negligible.

185. **Dredge**: Although vessels within this receptor group exhibit a relatively high operational range, they possess limited spatial tolerance due to their dependence upon a specific area for king scallop, which overlaps with the Offshore Export Cable Corridor. This receptor group also possesses a limited ability to deploy alternative gear. The sensitivity of the receptor is therefore considered to be medium.

186. **Otter trawl**: This receptor group exhibits an extensive operational range and is able to mitigate, to a degree, displacement as a result of loss or restricted access to fishing grounds through its spatial tolerance. The sensitivity of the receptor is therefore, considered to be low.

187. **Pelagic trawl**: This receptor group exhibits an extensive operational range and is able to mitigate, to a degree, displacement as a result of loss or restricted access to fishing grounds through its spatial tolerance. The sensitivity of the receptor is therefore, considered to be low.

188. **Inshore static gear**: This receptor is limited to a number of grounds, and although these vessels have some ability to deploy alternative gear, this is relatively limited. The sensitivity of the receptor is therefore considered to be medium.

189. **Offshore static gear**: This receptor group has the ability to fish a wider area than those areas they may be temporarily excluded from during construction works. The sensitivity of the receptor is therefore, considered to be low.

13.6.1.2.4 Significance of Effect – DBS East or DBS West in Isolation or Built Together

190. A summary of the impact magnitude, sensitivity of receptors, and overall effect of significance for DBS East or DBS West in isolation or both Projects built out together is provided in **Table 13-23**. Under the current situation, with the Dogger Bank SAC Byelaw in place, **no significant change** is predicted within the Array Areas for demersal seine, dredge, otter trawl or pelagic trawl receptor groups. In the event the byelaw is revoked, **negligible** significance is predicted for demersal seine and **minor adverse** is predicted for all other receptor groups. **Minor adverse** effects are predicted for the Offshore Export Cable Corridor for dredge and inshore static gear receptor groups. There is no difference in the magnitude of impact between the Projects being built in isolation or together. No additional mitigation is proposed for this impact.

Table 13-23: Magnitude, Sensitivity and Impact Significance Relating to Displacement of Fishing Activity Leading to Gear Conflict and Increased Pressure on Adjacent Grounds During Construction of DBS East or DBS West in Isolation or Built Together, per scenario.

Receptor Group	Magnitude	Sensitivity	Significance
Dogger Bank SAC byelaw being in place			
Demersal seine	No change	Negligible	No change
Dredge	No change	Medium	No change
Otter trawl	No change	Low	No change
Pelagic trawl	No change	Low	No change
Dogger Bank SAC byelaw revoked and Offshore Export Cable Corridor			
Demersal seine	Low	Negligible	Negligible
Dredge	Low	Medium	Minor adverse
Otter trawl	Low	Low	Minor adverse
Pelagic trawl	Low	Low	Minor adverse
Inshore static gear	Low	Medium	Minor adverse
Offshore static gear	Low	Low	Minor adverse

13.6.1.3 Impact 3: Temporary Increased Steaming Times

13.6.1.3.1 Magnitude of Impact – DBS East or DBS West In-Isolation

191. Exclusion from fishing grounds during construction of DBS East or DBS West in isolation could, in theory, lead to increases in steaming times for commercial fisheries receptors which could lead to increased operational costs. The worst case scenario for increased steaming times during construction is that commercial fishing vessels are to be excluded from steaming across the entire array, equating to an area of 349km^2 and 355km^2 for DBS East or DBS West, respectively. Voluntary exclusion zones of 1.5nm (2.8km) may also be present around vessels conducting seabed preparatory activities (such as sandwave and boulder clearance) and during installation of foundations, wind turbines, offshore platforms, Inter-Platform Cables, inter-array cables and Offshore Export Cables.

192. Embedded mitigation (section 13.3.3) would minimise the impact of temporary increased steaming times during construction. The commercial fishing industry would be informed in advance of any offshore construction activities by the FLO, through NtMs, Kingfisher Bulletins and ongoing liaison, which would ensure that fishing vessels would be in a position to plan ahead to avoid construction areas.

193. Vessel traffic surveys indicated that fishing vessels transiting through the Array Areas were non-UK >50m trawlers; however these transits through the DBS Array Areas were infrequent (**Volume 7, Appendix 13-2 Commercial Fisheries Technical Appendix (application ref: 7.13.13.2); Chapter 14 Shipping and Navigation (application ref: 7.14)**. Any increase in steaming times for these vessels is likely to be minimal due to the distances from their home ports. Inshore static gear vessels may have slightly increased steaming times to avoid construction works within the Offshore Export Cable, however this is predicted to be localised and temporary. Therefore, with these considerations and the fact that the duration of the impact is <5yrs, the magnitude of impact is considered to be low.

13.6.1.3.2 Magnitude of Impact – DBS East and DBS West Together

194. While DBS East and DBS West together would encompass a larger spatial scale than that of either Projects in isolation, taking into account the embedded mitigation measures outlined in section 13.3.3 and level of transits, the magnitude of impact would remain low for all commercial fisheries receptor groups.

13.6.1.3.3 Sensitivity of Receptor

195. All commercial fisheries receptor groups have operational ranges that are beyond that of the areas of construction, so would have the ability to make deviation to transit routes. Providing that adequate notification is given and the embedded mitigation measures are followed (section 13.3.3), all fishing vessels would be in a position to avoid construction areas.

196. All commercial fisheries receptor groups are deemed to be of low vulnerability and moderate spatial tolerance to increased steaming times. The sensitivity of the receptors is therefore considered to be low.

13.6.1.3.4 Significance of Effect – DBS East or DBS West in Isolation or Built Together

197. Based on the worst case low magnitude and low sensitivity, the significance of effect would be **minor adverse** for all fisheries receptors. No additional mitigation is proposed for this impact.

13.6.1.4 Impact 4: Loss or Damage to Fishing Gear due to Snagging

13.6.1.4.1 Magnitude of Impact – DBS East or DBS West in Isolation or Built Together

198. Project infrastructure, such as near surface or exposed cables, with or without secondary protection materials, array cables and Offshore Export Cables represent potential snagging points for fishing gears. Potential risks associated with snagging include damage or loss of fishing gear, the potential for loss of life and vessel capsize. A more focussed assessment of potential marine safety and navigation risks is included in **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)**.

199. Relevant embedded mitigation measures, summarised in **Table 13-3**, would be implemented to minimise the risk of snagging. These include the timely promulgation of NtMs and Kingfisher Bulletins, navigational aids, and advisory safety distances and liaison organised via the appointed FLO.

200. This specific assessment considers the potential loss or damage to fishing gear (and related vessel safety), due to snagging on the Projects' infrastructure. The realistic worst case scenario has been used whereby all commercial fishing is excluded from the entire Offshore Development Area for the entirety of construction. Assuming this proposed exclusion is implemented successfully, with close engagement and communication with commercial fisheries stakeholders, then there would be no scope for snagging fishing gear on sub-surface obstructions or structures within the Array Area or Offshore Export Cable Corridor. Therefore, for all commercial fisheries receptor groups, no magnitude of change is predicted.

201. Impacts to loss or damage to fishing gear due to snagging are therefore only presented for the operational phase, where similar infrastructure would exist *in situ* for the lifetime of the Projects in section 13.6.2.4.

202. If a snagging incident does occur, best practice guidance for fisheries liaison with offshore renewable developers by FLOWW (2014) would be followed, where safe and appropriate to do so. Further guidance on safe vessel operations within the vicinity of sub-sea cables by the ICPC (2009) and the ESCA (2018) would also be adhered to and considered within the Fisheries Liaison and Coexistence Plan.

13.6.1.4.2 Sensitivity of Receptor

203. **Demersal trawls and seine:** this gear type is in direct, near continuous contact with the seabed where there is an increased risk of snagging on structures on the seabed and sub-sea cables associated with the Projects. This receptor is therefore, vulnerable to impacts that may arise from the Projects, as despite having a high spatial tolerance, this group has limited ability to deploy alternative gear types. The sensitivity of this receptor group is therefore, considered to be medium.

204. **Dredge:** this gear type is in direct, near continuous contact with the seabed where there is an increased risk of snagging on structures on the seabed and sub-sea cables associated with the Projects, compared to gears operated within the water column where there is no direct contact with the seabed. This receptor is, therefore, vulnerable to impacts that may arise from the Projects, as despite having a high operational range, this group has a low spatial tolerance and limited ability to deploy alternative gear types. The sensitivity of this receptor group is therefore, considered to be medium.

205. **Intertidal netters:** this receptor group operates from the shore and does not involve any vessel or towing activities and would not be vulnerable to impacts as a result of snagging. The sensitivity of this receptor is therefore, considered to be negligible.

206. **Otter trawl:** this gear type is in direct, near continuous contact with the seabed where there is an increased risk of snagging on structures on the seabed and sub-sea cables associated with the Projects. This receptor is, therefore, vulnerable to impacts that may arise from the Projects, as despite having an extensive operational range, this group has a limited ability to deploy alternative gear types. The sensitivity of this receptor group is therefore, considered to be medium.

207. **Pelagic trawl:** pelagic gear is designed to be towed within the water column and limited contact with the seabed is expected. This receptor is therefore vulnerable to impacts that may arise from the Projects, as despite having an extensive operational range, this group has a limited ability to deploy alternative gear types. The sensitivity of this receptor is therefore considered to be low.

208. **Inshore and offshore static gear:** as static gears are not towed, they are less susceptible to loss or damage due to snagging. It is acknowledged, however, that snagging still poses a risk to static gear vessels, for example when hauling gear. The sensitivity is therefore, considered to be low.

13.6.1.4.3 Significance of Effect – DBS East or DBS West in Isolation or Built Together

209. A summary of the impact magnitude, sensitivity of receptors and overall effect of significance is provided in **Table 13-24**. No additional mitigation is proposed for this impact.

Table 13-24 Magnitude, Sensitivity and Impact Significance Relating to Loss or Damage of Gear Due to Snagging During Construction of DBS East or DBS West in Isolation or Built Together.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	No change	Medium	No change
Dredge	No change	Medium	No change
Intertidal netters	No change	Negligible	No change
Otter trawl	No change	Medium	No change
Pelagic trawl	No change	Low	No change
Inshore static gear	No change	Low	No change
Offshore static gear	No change	Low	No change

13.6.1.5 Impact 5: Supply Chain Opportunities for Local Fishing Vessels

13.6.1.5.1 Magnitude of Impact – DBS East or DBS West In-Isolation

210. Construction of the DBS East or DBS West Array Areas and Offshore Export Cable Corridors in isolation, would take place over a maximum of five years and poses the potential for beneficial supply chain opportunities for local fishing vessels. Potential areas of support during the construction phase of the Projects include provision of up to five guard vessels at any one time, provision of fishing vessels for scouting surveys and OFLO duties.

211. As this impact is beneficial, it should be noted that the definition for magnitude outlined in **Table 13-11** would still apply albeit in reverse.

212. **Demersal trawl and seine, dredge, otter trawl, pelagic trawl and offshore static gear:** the impact to these receptor groups is predicted to be of limited spatial extent and short to medium term duration. It is predicted that direct impacts would occur to these receptors, which are judged to be of a minor benefit; any revenue gained as a result of supply chain opportunities is likely to be equivalent to 5 - 10% of the annual landed value of these receptor groups. Therefore, the magnitude is considered to be low.

213. **Intertidal netters:** there would be no change to this receptor group as this fishing method does not require vessels; therefore, there is no pathway for supply chain opportunities to occur.

214. **Inshore static gear**: it is unlikely that any notable supply chain opportunities would be relevant to this receptor group, due to the small size and nature of vessels involved. This receptor group does, however, have the potential to provide inshore scouting surveys of the Offshore Export Cable Corridor prior to installation works. This would allow any static gear to be located and temporarily removed before cable installation works commenced. However, this impact would be spatially and temporally limited in extent, and likely not result in any significant revenue for the receptor group.

215. The impact is predicted to be of a small spatial extent and be short to medium term in duration. It is predicted that direct impacts would occur to this receptor group, but these would be of negligible benefit, and any revenue gained as a result of supply chain opportunities is likely to be equivalent to <5% of the annual landed value of this receptor group. Therefore, the magnitude is considered to be negligible.

13.6.1.5.2 Magnitude of Impact – DBS East and DBS West Together

216. Construction of the DBS East and DBS West Array Areas and the Offshore Export Cable Corridors together would take place over a maximum of seven years if built Sequentially and poses the potential for beneficial supply chain opportunities for local fishing vessels. Potential areas of support during the construction phase of the Projects include provisioning of up to ten guard vessels at any one time, provisioning of fishing vessels for scouting surveys, and OFLO duties.

217. The opportunities for vessel provisioning for the construction of DBS East and DBS West together are considered to be comparable to the construction of DBS East or DBS West in isolation. Any increase in vessel provisioning services due to the construction of both Array Areas are considered to be marginal and therefore the magnitude of impacts for each receptor group are considered the same as detailed in section 13.6.1.5.1.

13.6.1.5.3 Sensitivity of Receptor

218. Unlike other assessments, where receptor sensitivity has been defined largely by vulnerability to a potential impact, the sensitivity of each receptor group to this potential impact, has been defined as the opportunity each receptor group has for provisioning of supply chain opportunities during the construction of the DBS East and DBS West Projects.

219. **Demersal trawl and seine, otter trawl and pelagic trawl:** these vessels have a low suitability to support provisioning of supply chain opportunities during the construction phase of the Projects, as they may require additional vessel modifications to comply with safe working conditions for support vessel opportunities. Therefore, the sensitivity of these receptors is considered to be low.

220. **Dredge:** these vessels are assessed as moderately suitable to support supply chain opportunities associated with the Projects, due to the vessel type and size and the assumption that these vessels would hold the relevant workboat certifications. Therefore, the sensitivity of this receptor is considered to be medium.

221. **Intertidal netters:** this receptor would not be able to support any supply chain opportunities, as this fishing method does not require fishing vessels. Therefore, the sensitivity of this receptor is considered to be negligible.

222. **Inshore static gear:** due to the size and suitability of vessels within the inshore static fleet, this receptor is unlikely to support supply chain opportunities during the construction phase of the Projects. Additionally, these vessels are unlikely to have the necessary certifications to support non-commercial fishing activities. Therefore, the sensitivity of this receptor is considered to be negligible.

223. **Offshore static gear**: these vessels are larger compared to inshore static vessels and so have greater operational ranges and a greater capacity to support supply chain opportunities associated with the Projects. Additionally, it is assumed that these vessels would hold the necessary certifications and crew requirements for workboat activities. This receptor group is judged to be of moderate suitability; therefore, the sensitivity is considered to be medium.

13.6.1.5.4 Significance of Effect – DBS East or DBS West in Isolation or Built Together

224. A summary of the impact magnitude, sensitivity of receptors and overall effect of significance is provided in **Table 13-25**. No additional mitigation is proposed for this impact.

Table 13-25 Magnitude, Sensitivity and Impact Significance Relating to Supply Chain Opportunities During Construction of DBS East or DBS West in Isolation or Built Together.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Low	Low	Minor beneficial
Dredge	Low	Medium	Minor beneficial
Intertidal netters	No Change	Negligible	Negligible
Otter trawl	Low	Low	Minor beneficial
Pelagic trawl	Low	Low	Minor beneficial
Inshore static gear	Negligible	Negligible	Negligible
Offshore static gear	Low	Medium	Minor beneficial

13.6.1.6 Impact 6: Potential Consequential Impacts on commercial fisheries from Impacts on Commercially Important Fish and Shellfish Resources

225. Impacts to commercially important fish and shellfish resources during construction of the Project have been assessed in **Volume 7, Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)**. As a result of this, potential consequential effects to commercial fisheries would be assessed here.

226. Fish and shellfish species that have been identified for their commercial importance are summarised in **Table 13-26**.

Table 13-26 Commercially Important Fish and Shellfish Species

Species Group	Species
Elasmobranchs	• Thornback ray *Raja clavata*; and • Spotted ray *Raja montagui*.
Demersal Fish	• Plaice *Pleuronectes platessa*; • Sea Bass *Dicentrarchus labrax*; • Turbot *Scophthalmus maximus*; • Lemon sole *Microstomus kitt*; • Atlantic cod *Gadus morhua*; • Whiting *Merlangius merlangus*; • Dover sole *Solea solea*; • Red mullet *Mullus surmuletus*; • Brill *Scophthalmus rhombus*; and • Sandeel species Ammodytidae.
Pelagic Fish	• Herring *Clupea harengus*; • Sea trout *Salmo trutta*; • Sprat *Sprattus*; and • Atlantic mackerel *Scomber scombrus*.
Shellfish	• European lobster *Homarus gammarus*; • Brown crab *Cancer pagurus*; • Velvet crab *Necora puber*; • King scallops *Pecten maximus*; • Queen scallops *Aequipecten opercularis*; • Norway lobster *Nephrops norvegicus*; and • Common whelk *Buccinum undatum*.

13.6.1.6.1 Magnitude of Impact – DBS East or DBS West in Isolation or Built Together

227. The magnitude of impacts to commercial fisheries for the construction of DBS East or DBS West in isolation and together would be assessed based on the overall significance of effects during construction to fish and shellfish ecology, in order to incorporate both the magnitude and sensitivity of fish and shellfish receptors within the Commercial Fisheries assessment. **Volume 7, Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)** considers the magnitude of impacts to be the same for the development of DBS East or DBS West in isolation and together. The assessment of significance considers elasmobranchs (sharks and rays), demersal and pelagic (bony) fish, and shellfish species groups which encompasses commercially important species within the Commercial Fisheries Study Area.

228. A summary of the significance of effects to fish and shellfish ecology is provided in **Table 13-27** and provides the basis for the magnitude of impacts to commercial fisheries. The potential impacts to fish and shellfish were assessed to have at worst a minor adverse effect within **Volume 7**, **Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)**. Based on this the potential impact on commercially important fish and shellfish resources is considered to be of low magnitude across all receptor groups.

Table 13-27 Significance of Effects for the Construction of DBS East or DBS West in Isolation or Built Together to Fish and Shellfish Ecology

Potential Impact	Significance of Effect
Temporary habitat disturbance to fish and shellfish species and spawning and / or nursery grounds including direct damage and installation of turbine foundations, scour protection and cables	Minor adverse
Increased local suspended sediment concentrations and sediment settlement	Minor adverse
Release of sequestered contaminants following sediment disturbance	Negligible
Impacts on fish and shellfish species as a result of noise and vibration (from piling and UXO clearance, only)	Minor adverse

13.6.1.6.2 Sensitivity of Receptor

229. **Demersal trawls and seines:** Danish vessels targeting plaice and cod, as well as Scottish and English vessels which primarily target cod, haddock, and flatfish are the main receptors of this group. Of these species, cod and plaice have been identified of key commercial importance. Vessels within this receptor group exhibit a relatively high operational range and high spatial tolerance, the sensitivity is therefore, considered to be negligible.

230. **Dredge:** Scottish and English scallopers are key receptors of this group, for which both king and queen scallops are identified as commercially important. Although this receptor group exhibits a relatively high operational range, they have a low spatial tolerance and limited availability to deploy alternative gear types. The sensitivity of this receptor is therefore, considered to be medium.

231. **Intertidal netters:** this receptor group targets sea trout, sea bass, and Dover sole within the nearshore intertidal area. It is considered that this receptor group is limited to a small spatial area and has no opportunity to deploy alternative gear types, therefore, the sensitivity is assessed as medium.

232. **Otter trawl:** vessels from the non-UK and UK target cod and plaice, both of which have been identified as commercially important species. This receptor group exhibits an extensive operational range and has a moderate spatial tolerance. The sensitivity of the receptor is therefore, considered to be low.

233. **Pelagic trawl:** vessels primarily from the non-UK, target herring, mackerel, sprat, sandeel, and whiting, all of which are identified as commercially important species. This receptor group exhibits an extensive operational range and has a moderate spatial tolerance. The sensitivity of the receptor is therefore considered to be low.

234. **Inshore static gear:** English vessels <10m targeting lobster and brown crab are the key receptors of this group. As this receptor group operates smaller vessel sizes, they possess a lower operational range to that of the larger offshore vessels and have a limited availability to deploy alternative gear types. The sensitivity of the receptor is therefore, considered to be medium.

235. **Offshore static gear:** English vessels targeting lobster and brown crab are the key receptors of this group. This receptor group has the ability to fish a wider area than any areas they may be temporarily excluded from during construction works. The sensitivity of the receptor is therefore, considered to be low.

13.6.1.6.3 Significance of Effect – DBS East or DBS West in Isolation or Built Together

236. A summary of the impact magnitude, sensitivity of receptors and overall effect of significance is provided in **Table 13-28**. No additional mitigation is proposed for this impact.

Table 13-28 Magnitude, Sensitivity and Impact Significance Relating to Potential Impacts to Commercially Important Fish and Shellfish Resources During the Construction of DBS East or DBS West in Isolation or Built Together.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Low	Negligible	Negligible
Dredge	Low	Medium	Minor adverse
Intertidal netters	Low	Medium	Minor adverse
Otter trawl	Low	Low	Minor adverse
Pelagic trawl	Low	Low	Minor adverse
Inshore static gear	Low	Medium	Minor adverse
Offshore static gear	Low	Low	Minor adverse

13.6.1.7 Impact 7: Navigational Safety

237. Impacts regarding navigational safety have been separately assessed in **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)**. Of the impacts assessed within this chapter the potential effects during construction relevant to commercial fisheries receptor groups are as follows:

- Vessel displacement and increased vessel to vessel collision risk between third -party vessels; and,
- Increased vessel to vessel collision risk between a third-party vessel and a Project vessel.

13.6.1.7.1 Magnitude of Impact – DBS East or DBS West in Isolation or Built Together

238. Marine vessel traffic surveys, undertaken using Radar, AIS and visual observations, recorded infrequent transit of the Array Area by commercial fishing vessels. The realistic worst case scenario has been used whereby all commercial fishing is excluded from the entire Offshore Development Area for the entirety of construction. Assuming this proposed exclusion is implemented successfully, with close engagement and communication with commercial fisheries stakeholders, then there would be no scope for navigational safety impacts. Therefore, for all commercial fisheries receptor groups, no magnitude of change is predicted.

13.6.1.7.2 Sensitivity of Receptor

239. The sensitivity of the receptor groups is considered to be the same for this impact as described in section 13.6.1.1.3, with the exception of intertidal netters which would be negligible, as fishers operate using shore-based methods.

13.6.1.7.3 Significance of Effect - DBS East or DBS West in Isolation or Built Together

240. A summary of the impact magnitude, sensitivity of receptors and overall effect of significance is provided in **Table 13-29**. No additional mitigation is proposed for this impact.

Table 13-29 Magnitude, Sensitivity and Impact Significance Relating to Potential Impacts to Navigational Safety During the Construction of DBS East or DBS West in Isolation or Built Together

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	No Change	Negligible	No Change
Dredge	No Change	Medium	No Change
Intertidal netters	No Change	Negligible	No Change
Otter trawl	No Change	Low	No Change
Pelagic trawl	No Change	Low	No Change
Inshore static gear	No Change	Medium	No Change
Offshore static gear	No Change	Low	No Change

13.6.2 Potential Effects During Operation

13.6.2.1 Impact 1: Loss or Restricted Access to Fishing Grounds

241. During the operation phase of the Projects, commercial fishing activity may be affected via long-term loss, or restricted access to fishing grounds and the associated reduction in revenue. This impact is dependent on the location of the receptor's fishing grounds, and the spatial extent of potential fishing grounds lost.

13.6.2.1.1 Magnitude of Impact – DBS East or DBS West In-Isolation

242. With regard to the Array Areas, the assessment assumes that commercial fisheries during the operation phase would be prevented from actively fishing within a total area of 0.74km^2 or 0.74km^2, due to physical presence of infrastructure within the DBS East and DBS West Array Areas respectively (full details of area breakdowns are provided for DBS East and DBS West in **Table 13-1**). Minimum wind turbine spacing is 830m for each Project, inclusive of between wind turbines and other infrastructure.

243. Other than within the infrastructure footprint area and that of temporary safety zones (around infrastructure undergoing major maintenance and around vessels undertaking major maintenance activities), the assessment assumes that fishing would be possible within the DBS East or DBS West Array Areas. However, individual decisions made by skippers with their own perception of risk would contribute to the likelihood of whether their fishing would resume within the Array Areas. The dimension and type of fishing gear deployed would be a significant contributor to risk perception, in addition to specific weather and tidal conditions.

244. Existing UK legislation does not prohibit commercial fishing within operational offshore wind farms, and for some sites that have fixed foundation options, commercial fishing has continued during this phase. For example:

- Towed demersal fishing has occurred within the Walney 4 Extension Wind Farm since it has been operation, which could be partly attributed to layout of the wind turbines which facilitates vessels to safely fish within the boundary of the wind farm (Dunkley and Solandt, 2022);
- A study investigating the impact of the Westermost Rough Offshore Wind Farm on commercial crustacean stock within its Array Area found that offshore static gear vessels were able to fish between wind turbines (spacing of 1,100m) and, therefore, continue their activity within the array during the operation phase (Roach and Cohen, 2015);

- Post construction fish surveys undertaken on Westermost Rough Offshore Wind Farm highlighted that landings per unit effort were consistent with pre-construction surveys and catches per unit effort of lobsters increased post-construction (Roach *et al.*, 2022);
- Post-construction fish surveys undertaken on the Barrow Offshore Wind Farm demonstrated that it is feasible to tow beam trawl gear between the wind turbines of the wind farm (Gray *et al.*, 2016);
- Two independent static gear fishers have indicated through consultation that they fish within the Triton Knoll array; and
- Trial areas for the use of static commercial fishing gear within the Hywind Floating Offshore Wind Farm, based on safety parameters and a minimum distance of 200m to a turbine and dynamic sections of the export/inter-array cables and 50m away from all other sub-sea infrastructure, allowed the safe operation of the static gear and sufficient room to manoeuvre for a 30m fishing vessel (Wright *et al.*, 2023).

245. Mitigation embedded in the DBS East and DBS West Project design, as outlined within **Table 13-3**, would minimise the impact of the loss or restricted access to fishing grounds during the operation phase. A dedicated FLO would also be appointed to communicate timings and location of any maintenance works within the Array Area.

246. The impact would lead to localised loss of access to fishing grounds during the operation phase, which would affect fleets directly and over a long-term duration. Evidence on the importance and value of the Array Areas and Offshore Export Cable Corridor to the commercial fisheries receptor groups, is the same as that presented for construction (see section 13.6.1.1.1).

247. The effect of operation activities leading to a loss or restricted access to fishing grounds for UK and non-UK fishing fleets is described below for different scenarios: firstly, the Dogger Bank SAC byelaw is in place which prohibits bottom towed gear within the entire SAC; secondly, assessed against a scenario where the Dogger Bank SAC byelaw is revoked and bottom fishing activity is permitted again within the boundary of the SAC; and thirdly for the Offshore Export Cable Corridor (where the only overlap with the Dogger Bank SAC byelaw is the eastern section). The magnitude of impact for each scenario is summarised in **Table 13-30 Table 13-31** and **Table 13-32**.

13.6.2.1.1.1 Dogger Bank SAC Byelaw in Place

248. The following assessment assumes there is no bottom fishing within the SAC due to the implementation of the Dogger Bank SAC Byelaw, as outlined in section 13.6.1.

249. While assessing against the current situation, The Dogger Bank SAC Byelaws prohibition of bottom towed gear covers the entirety of the Array Areas.

250. As per section 13.6.1.1.1, demersal seine, dredge, otter trawls and pelagic trawls are classified as bottom towed gears and are not active within the Offshore Development Area covered by the Dogger Bank SAC Byelaw. As such no change is predicted (**Table 13-30**).

Table 13-30 Magnitude relating to Loss or Restricted Access to Fishing Grounds During Operation of DBS East or DBS West in Isolation for the scenario where the Dogger Bank SAC byelaw is in place

Receptor Group	Magnitude
Demersal seine and dredge	No change
Otter trawl and pelagic trawl	No change

13.6.2.1.1.2 Dogger Bank SAC Byelaw Revoked

251. The following is assessed against historical fishing activity in the event the Dogger Bank Byelaw is revoked.

252. **Demersal seine:** Due to the nature of this receptor group's gear type, in terms of the width and weight of gear in seabed contact, the degree to which demersal seine gear can be safely deployed within the Array Areas is somewhat limited. Vessels deploying demersal seine gear are, therefore, expected to experience a degree of reduced access to fishing grounds during the operation phase of DBS East and DBS West. Analysis of VMS and landings data indicate that fishing activity by this receptor group is undertaken at relatively low levels across the Commercial Fisheries Study Area. Although, while noting that highest levels of such activity are observed to overlap with the DBS East Array Area, this overlap remains at a relatively low level, with little indication that this is an area of commercial importance for this receptor group.

253. Although this receptor group may experience some reduced access to fishing grounds during the operation phase (assuming DBS West in isolation as the worst case scenario based on annual average landed values), the area affected is assessed as representing only a very small reduction (<5%) in this receptor group's annual value of landings. The magnitude for this receptor group is therefore considered to be negligible.

254. **Dredge**: While UK vessels deploying dredges are active within the Commercial Fisheries Study Area, VMS data indicate that no dredge activity overlapped with the Array Areas between 2009 to 2017. In 2020, a lucrative scallop stock was found within the Array Areas and so dredging occurred. However, a temporary closure for scallop fishing was introduced within the Dogger Bank SAC in April 2021, and this closure became permanent when the byelaw was enacted from 13 June 2022 (discussed further in section 13.5.6).

255. Under the scenario where the Dogger Bank SAC byelaw is revoked and based on the scallop dredging within the Array Areas during 2020, this receptor groups could be affected by the operational phase. However, given that this receptor group predominantly focuses on the area around the 12nm, the magnitude of impact, the area affected represents a small reduction in this receptor group's annual value of landings (5 - 10%), means that the magnitude of impact is considered to be low.

256. **Intertidal netters**: Due to the nature of intertidal nets being set at low water and nets only being 150 yards in length, this receptor group would not experience reduced access to fishing grounds as a result of operation within the Array Areas (i.e. this receptor group does not set their nets in these areas). No magnitude of change is therefore predicted for this receptor group.

257. **Otter trawl**: The Dogger Bank is an area of relatively shallow seabed, with shallowest areas of the bank approximately 18m in depth. The desired length of otter trawl warp for optimal control is highly dependent on water depth, with shallower waters generally requiring a shorter length of warp to be paid out than when operating within deeper waters. This requirement of shorter otter trawl warp to be paid out, such as that of the relatively shallow water depths within the Array Areas, could reduce the overall risk of operating in between wind turbines (i.e. less warp length, resulting in increased vessel control, particularly within space limited by wind turbines). While this can contribute to an increased degree to which this receptor group can resume fishing within the Array Areas, it is important to note that other factors can influence an individual vessel skipper's risk perception (i.e. wind speed and direction, sea state, vessel size, power output and vessel manoeuvrability).

258. Whilst highest levels of otter trawl activity within the Commercial Fisheries Study Area are observed outside of the DBS East and DBS West Array Areas, VMS and landings data still show relatively high levels of fishing within these areas, particularly within the DBS East Array Area, where a degree of commercial reliance can be observed for this receptor group. While considering this degree of reliance (assuming DBS East as the worst case scenario for the purpose of this assessment), in hand with the potential for resumed fishing in between turbines, the area affected is assessed as representing only a small reduction (5 – 10%) in this receptor group's annual value of landings. The magnitude for this receptor group is therefore, considered to be low.

259. **Pelagic trawl**: Pelagic trawls are designed to catch species at any point in the water column, between the surface and the seabed. Acoustic technology is often used to identify the depth and position of the target species shoal, with the depth of the net and vessel path adjusted accordingly. Based on the operational method which requires the vessel to move into the path of the target species shoal and provide enough space to safely set the pelagic trawl net, and gear width (provided via Project specific consultation: 100 to 120m), resumed fishing within the Array Areas during the operational phase is considered unlikely. This is unlikely due to the overall risk of operating such gear in between wind turbines, with a minimum spacing of 830m. However, given the relatively low levels of observed activity within both the DBS East and DBS West Array Areas, together with the nature of this receptor groups highly mobile target species which provides opportunities to land target species shoals outside Array Areas, the reduced access to fishing grounds represents only a small reduction (5 – 10%) in this receptor group's annual value of landings. The magnitude for this receptor group is therefore, considered to be low.

260. **Inshore static gear**: This receptor group would not be affected by a loss of grounds or restricted access to the Array Areas during the operational phase, due to the distance offshore (i.e. this receptor group does not set their gear in these areas). No magnitude of change is therefore predicted for this receptor group.

261. **Offshore static gear**: A study investigating the impact of the Westermost Rough Offshore Wind Farm on commercial crustacean stock within its array area found that offshore static gear vessels were able to fish between wind turbines (spacing of 1,100m) and, therefore, continue their activity within the array area during the operational phase (Roach and Cohen, 2015). While aware of the minimum spacing between wind turbines (830m), it was established during Project-specific consultation that this receptor group would likely resume fishing within the Projects' Array Areas once operational, however this would depend on the array layout, with stakeholders indicating that straight lines of turbines would be preferable. One independent static fisher noted that they view fishing within an operational wind farm as an additional safety measure. Two independent static gear fishers confirmed that they fish within the Triton Knoll Wind Farm which has a minimum spacing that is less than for DBS East and DBS West.

262. Considering these points, it is therefore, expected that offshore static gear activity may continue with the DBS East and DBS Wst Array Areas during the operational phase. In light of this it is predicted that reduced access to fishing grounds would represent only a very small reduction (<5%) in this receptor group's annual value of landings. The magnitude of impact for this receptor group is therefore, considered to be negligible.

263. A summary of the magnitude of impacts is provided in **Table 13-31** under the scenario that the Dogger Bank SAC Byelaw is revoked.

Table 13-31 Magnitude relating to Loss or Restricted Access to Fishing Grounds During Operation of DBS East or DBS West in Isolation for the scenario where the Dogger Bank SAC byelaw is revoked

Receptor Group	Magnitude
Demersal seine	Negligible
Dredge	Low
Intertidal netters	No Change
Otter trawl	Low
Pelagic trawl	Low
Inshore static gear	No change
Offshore static gear	Negligible

13.6.2.1.1.3 Offshore Export Cable Corridor

264. With respect to the Offshore Export Cable Corridor, it is assumed that during the operation phase, all Offshore Export Cables would be buried to an indicative target burial depth of 0.5-1.5m where possible, or where this is not possible external cable protection would be required. The total length of Offshore Export Cable protection would be 32.8km for DBS East and 25.8km for DBS West in isolation. The total footprint of pipeline and cables crossing material would be 0.07km² for DBS East and DBS West 0.07km² in isolation, respectively. Where required, the location of cable protection shall be considered to ensure that the most appropriate type is used. This is to ensure safety of fishing activity and to minimise the amount of fishing activity lost.

265. Therefore, it is assumed that there would be no material loss of fishing grounds along the Offshore Export Cable Corridor. During repair and remediation events, temporary (advisory) safety zones may be implemented; this would be temporary and short-term disruption.

266. **Demersal seine:** Discrete areas of demersal seine activity were observed via VMS data around the 12nm limit of the Commercial Fisheries Study Area, overlapping with the Offshore Export Cable Corridor; this activity was predominantly by Scottish vessels. This activity is observed at relatively low levels, while VMS data further illustrates that the overlap is not present in all years over the study period. Considering the level of fishing activity and the minimal area affected, there would only be a very small reduction (<5%) in this receptor group's annual value of landings. Therefore, the magnitude of impact for this receptor group is considered negligible within the Offshore Export Cable Corridor during the operation phase.

267. **Dredge:** An area of particular importance has been identified to overlap with the Offshore Export Cable Corridor (of which comprises both DBS East and DBS West), located off Flamborough Head, within and around the 12nm limit. The assessment assumes that individual vessels within this receptor group would be well informed of the integrity and location of the Offshore Export Cable Corridor (i.e. schedule and location of any maintenance work, details of planned cable integrity surveys and location of the Offshore Export Cable), and with caution, seek to actively fish grounds within the vicinity of the Offshore Export Cable Corridor. While this receptor group is expected to experience some degree of reduced access to fishing grounds, the area affected is assessed as representing only a small reduction (5 - 10%) in this receptor group's annual value of landings. The magnitude for this receptor group is therefore considered to be low.

268. **Otter trawl:** UK and non-UK VMS data indicate overlap of otter trawl activity with the Offshore Export Cable Corridor across all years of the study period (2009 to 2017), with highest levels of overlap observed approximately 30 to 40km offshore. Despite VMS data indicating a relatively consistent overlap of otter trawl activity within the DBS Offshore Cable Corridor (within ICES rectangles 37F0 and 36F1) across the study period, this is observed at relatively low levels, with higher levels being observed within the wider Commercial Fisheries Study Area, the North Sea and beyond. Considering the level of fishing activity and the minimal area affected, there would only be a very small reduction (<5%) in this receptor group's annual value of landings. Therefore, the magnitude of impact for this receptor group is considered negligible within the Offshore Export Cable Corridor during the operation phase.

269. **Pelagic trawl:** Highest levels of fishing activity are generally observed within ICES rectangle 37F0, in proximity to the 12nm limit and overlapping with the Offshore Export Cable Corridor (also confirmed via Project-specific consultation). The assessment assumes that individual vessels within this receptor group would be well informed of the integrity and location of the Offshore Export Cable Corridor (i.e. schedule and location of any maintenance work, details of planned cable integrity surveys and location of the DBS Offshore Export Cable), and with caution, seek to actively fish grounds within the vicinity of the Offshore Export Cable Corridor. While this receptor group is expected to experience some degree of reduced access to fishing grounds, the area affected is assessed as representing only a small reduction (5 - 10%) in this receptor group's annual value of landings. The magnitude for this receptor group is therefore considered to be low.

270. **Intertidal netters:** The only permanent infrastructure within the nearshore region would be the Offshore Export Cable Corridor; however, this would be offshore from the trenchless crossing exits pits which would be located beyond the reach of the intertidal nets so would therefore not interact with the spatial extent of this receptor group. Therefore, for intertidal netters, no magnitude of change is predicted.

271. **Inshore static gear:** The only permanent infrastructure within the inshore region would be the Offshore Export Cable Corridor of which comprises both DBS East and DBS West, in isolation. The Offshore Export Cable would be fully buried or have external cable protection and would, therefore, not prevent this receptor continuing to fish. The only exception to this is if any cable repair and remediation events are required in the operation phase in the inshore region. This would lead to some temporary, spatially limited impacts where vessels would be requested to avoid such areas for the duration of the works. Thereby, the receptor groups reduced access to fishing represents only a very small reduction (<5%) in this receptor group's annual value of landings. The magnitude for this receptor group is therefore, considered to be negligible.

272. **Offshore static gear:** The section of the Offshore Export Cable Corridor beyond 12nm would not affect this receptor during the operational phase, as the cables would be fully buried or have external cable protection, thus, permitting the deployment of static gear (pots). The only exception to this is if any cable repair and remediation events are required in the operation phase. This would lead to some temporary, spatially limited impacts where vessels would be requested to avoid such areas for the duration of the works.

273. Presuming that fishing by this receptor group could continue within the Offshore Export Cable Corridor, the reduced access to fishing grounds represents only a very small reduction (<5%) in this receptor group's annual value of landings. The magnitude for this receptor group is therefore, considered to be negligible.

274. A summary of the magnitude of impacts within the Offshore Export Cable Corridor during the construction phase is provided in **Table 13-32**.

Table 13-32 Magnitude relating to Loss or Restricted Access to Fishing Grounds During Operation of DBS East or DBS West in Isolation for the Offshore Export Cable Corridor

Receptor Group	Magnitude
Demersal seine	Negligible
Dredge	Low
Intertidal netters	No change
Otter trawl	Negligible
Pelagic trawl	Low
Inshore static gear	Negligible
Offshore static gear	Negligible

13.6.2.1.2 Magnitude of Impact – DBS East and DBS West Together

275. Considering the scenario where the Dogger Bank SAC byelaw is in place, the magnitude of impacts would remain the same as outlined in **Table 13-30** , due to these receptor groups being prohibited from fishing within this area. Where the bylaw is revoked and for the Offshore Export Cable Corridor, loss or restricted access to fishing grounds would be higher than the worst case for an individual site, but the effect would still be anticipated to not exceed a short to medium term. Given this and consideration of the areas of fishing activity for each receptor group within the Offshore Development Area, the reduction in the receptor group's annual value of landings and the magnitude of impact on each receptor group is not expected to exceed the assessment of DBS East or DBS West in isolation for these scenarios (**Table 13-31** and **Table 13-32**).

13.6.2.1.3 Sensitivity of Receptor

276. The sensitivity for each of the commercial fisheries receptor groups remains consistent with that presented for the construction phase (see section 13.6.1.1.3). The sensitivity is therefore, considered to be negligible for demersal seine, low for offshore static gear, otter trawls and pelagic trawls and medium for all other receptor groups.

13.6.2.1.4 Significance of Effect – DBS East or DBS West in Isolation or Built Together

277. A summary of the impact magnitude, sensitivity of receptors, and overall effect of significance for DBS East or DBS West in isolation or built out together is provided in **Table 13-33** for the different scenarios. Under the current situation, with the Dogger Bank SAC Byelaw in place, **no significant change** is predicted within the DBS Array Areas for demersal seine, dredge, otter trawl or pelagic trawl receptor groups. In the event the byelaw is revoked, **no change** is predicted for intertidal netters or inshore static gear, negligible significance is predicted for demersal seine and offshore static gear, and **minor adverse** is predicted for all other receptor groups. There is no difference in the magnitude of impact between the Projects being built in isolation or together. No additional mitigation is proposed for this impact.

Table 13-33: Magnitude, Sensitivity and Impact Significance Relating to Loss or Restricted Access to Fishing Grounds During Operation of DBS East or DBS West in Isolation or Together.

Receptor Group	Magnitude	Sensitivity	Significance
Dogger Bank SAC byelaw being in place			
Demersal seine	No change	Negligible	No change
Dredge	No change	Medium	No change
Otter trawl	No change	Low	No change
Pelagic trawl	No change	Low	No change
Dogger Bank SAC byelaw revoked			
Demersal seine	Negligible	Negligible	Negligible
Dredge	Low	Medium	Minor adverse
Intertidal netters	No change	Medium	No change
Otter trawl	Low	Low	Minor adverse
Pelagic trawl	Low	Low	Minor adverse
Inshore static gear	No change	Medium	No change
Offshore static gear	Negligible	Low	Negligible
Offshore Export Cable Corridor			
Demersal seine	Negligible	Negligible	Negligible
Dredge	Low	Medium	Minor adverse
Intertidal netters	No change	Medium	No change
Otter trawl	Negligible	Low	Negligible
Pelagic trawl	Low	Low	Minor adverse
Inshore static gear	Negligible	Medium	Minor adverse
Offshore static gear	Negligible	Low	Negligible

13.6.2.2 Impact 2: Displacement from the Wind farm Site and Offshore Export Cable Leading to Gear Conflict and Increased Pressure on Adjacent Fishing Grounds

278. Localised exclusion from fishing grounds during the operation phase of DBS East and DBS West may lead to increases in fishing effort in other areas where existing fisheries are active, thereby leading to increased fishing pressure on adjacent grounds and potential gear conflict. The magnitude of impact for each scenario is summarised in **Table 13-34**, **Table 13-35** and **Table 13-36**.

279. As intertidal netters operate from the beach, the potential displacement from them on other receptor groups has not been considered.

13.6.2.2.1 Magnitude of Impact – DBS East or DBS West In-Isolation

13.6.2.2.1.1 Dogger Bank SAC Byelaw in Place

280. The following assessment assumes the current situation, i.e. there is no bottom fishing within the SAC due to the implementation of the Dogger Bank SAC Byelaw.

281. The spatial extent of the Dogger Bank SAC byelaw covers the entirety of the DBS Array Areas. Therefore, vessels deploying demersal seines, dredges and otter trawls, under this scenario, are not active within the entire DBS East and DBS West Array Area and eastern section of the Offshore Export Cable Corridor, and displacement of these into the areas beyond 12nm as a result of the operational phase would not occur. Pelagic trawling that has contact with the seabed, such as that of the sandeel fishery (established via Project-specific consultation), is also prohibited, with displacement of fishing activity from the described area onto adjacent grounds, therefore, also not likely to occur.

282. Therefore, while assessing against the current situation, displacement of these commercial fisheries receptor groups onto adjacent grounds where other receptor groups are active is not likely to occur as a result of the operational phase. No magnitude of change is predicted for the operational phase of the Array Areas for demersal seine and dredge receptor groups. No magnitude of change is also predicted for the operational phase within the Array Areas for otter trawl or pelagic trawl receptor groups.

Table 13-34 Magnitude relating to Displacement from the Wind Farm Site and Offshore Export Cable Leading to Gear Conflict and Increased Pressure on Adjacent Fishing Grounds during Operation of DBS East or DBS West in Isolation, for the scenario where the Dogger Bank SAC byelaw is in place

Receptor Group	Magnitude
Demersal seine and dredge	No change
Pelagic trawl and otter trawl	No change

13.6.2.2.1.2 Dogger Bank SAC Byelaw Revoked

283. The following is assessed against historical fishing activity in the event the Dogger Bank Byelaw is revoked.

284. **Demersal seine:** Vast areas across a range of established fishing grounds are targeted by demersal seine vessels within the wider North Sea region and beyond (evident via analysis of VMS data and landing statistics). Within the Commercial Fisheries Study Area, fishing activity by this receptor group is observed at relatively low levels. Therefore, displaced vessels of other gear types during the operation phase from either DBS East or DBS West, is predicted to lead only to a small reduction (5 – 10%) in this receptor group's annual value of landings. The magnitude of impact is therefore, considered to be low.

285. **Dredge:** Within the Commercial Fisheries Study Area, the dredge gear fishery targeting king scallop operate in an area of relative commercial importance, located within and around the 12nm limit. Based on the distance from the DBS West and DBS East Array Areas to these king scallop grounds, displacement of offshore static gear and mobile gear from either Array Area is predicted to affect an area from which a very small proportion of the receptor group's annual value of landings is caught. In light of this, the extent of displacement is judged to lead only to a small reduction (5 – 10%) in this receptor groups annual value of landings. The magnitude of impact is therefore considered to be low.

286. **Otter trawl:** The otter trawl vessels have a considerable presence within the Commercial Fisheries Study Area, with highest levels of fishing activity observed beyond the 12nm limit, and across a relatively vast spatial extent. Displacement of offshore static gear and other mobile gear receptor groups from either DBS Array Area into the areas where otter trawl vessels are active, could cause conflict between these different receptor groups. It is noted, however, that the offshore static gear vessels and other mobile gear receptor groups target a relatively large area, in comparison to either Array Area in isolation. The extent of this displacement is judged to lead only to a small reduction (5 – 10%) in this receptor group's annual value of landings. The magnitude of impact is therefore, considered to be low.

287. **Pelagic trawl:** Potential displacement of vessels deploying dredges, demersal seine, otter trawls, and offshore static gear from the DBS East or DBS West Array Areas, into areas where otter trawl vessels are active, could cause conflict between these different receptor groups. However, due to the relatively small size of area that would be affected compared to the wider extent of fishing grounds within the North Sea region and beyond, the extent of this displacement is judged to be relatively limited.

288. It is also currently understood that an active line of communication exists between the pelagic trawl and offshore static gear in operation in this area (established via Project-specific consultation), and it is assumed that this would continue during the operational phase. The magnitude of impact is therefore considered to be low.

289. **Inshore static gear:** It is unlikely that this receptor group would be affected by displacement of vessels from either the DBS East or DBS West Array Area, due to the offshore vessels preferring to focus on alternative established offshore grounds throughout the North Sea and beyond. Therefore, it is assumed that fishing in the inshore region by this receptor group, would be able to continue during the operation phase. In light of this, the extent of displacement is judged to lead only to a small reduction (<5%) in this receptor groups annual value of landings. The magnitude of impact is therefore considered to be negligible.

290. **Offshore static gear:** Displacement of mobile vessels deploying beam trawl and scallop dredges during the operation phase from the Array Areas, into the areas where offshore static gear vessels set pots, could cause conflict between these different receptor groups. However, it is noted that the other mobile gear receptor groups target a relatively large area in comparison to the Array Areas. It is also currently understood that a spatial 'gentleman's agreement' exists between the different gear types in operation in this area and it is assumed that this would continue during the operation phase. It is also noted that an active line of communication exists between the pelagic trawl and offshore static gear in operation in this area (established via Project-specific consultation), and it is assumed that this would continue during the operation phase. Therefore, displacement of fishing activity is judged to lead only to a small reduction (<5%) in this receptor group's annual value of landings. The magnitude of impact is therefore considered to be low.

Table 13-35 Magnitude relating to Displacement from the Wind Farm Site and Offshore Export Cable Leading to Gear Conflict and Increased Pressure on Adjacent Fishing Grounds during Operation of DBS East or DBS West in Isolation for the scenario where the Dogger Bank SAC byelaw is revoked

Receptor Group	Magnitude
Demersal seine	Low
Dredge	Low
Otter trawl	Low
Pelagic trawl	Low
Inshore static gear	Negligible
Offshore static gear	Low

13.6.2.2.1.3 Offshore Export Cable Corridor

291. **Demersal seine:** Potential displacement of vessels deploying dredges, otter trawls, pelagic trawls, offshore static gear and inshore static gear from the Offshore Export Cable Corridor, into areas where demersal seine vessels are active is unlikely as there would be no material loss of fishing grounds during operation for these vessels. During repair and remediation events, temporary (advisory) safety zones may be implemented; this would be temporary and short-term disruption and could result in minor short-term

displacement. In light of this, the extent of displacement is judged to lead only to a small reduction (<5%) in this receptor groups annual value of landings. The magnitude of impact is therefore, considered to be negligible.

292. **Dredge:** Within the Commercial Fisheries Study Area, the dredge gear fishery targeting king scallop operate in an area of relative commercial importance, located within and around the 12nm limit. Displacement of offshore static gear and mobile gear from the Offshore Export Cable Corridor into the king scallop grounds is unlikely due to ongoing agreements between local static gear fishers and the scallopers using dredge gear types. Therefore, there would be no material loss of fishing grounds, except during temporary short-term repair and remediation events. In light of this, the extent of displacement is judged to lead only to a small reduction (<5%) in this receptor groups annual value of landings. The magnitude of impact is therefore, considered to be negligible.

293. **Otter trawl:** The otter trawl vessels have a considerable presence within the Commercial Fisheries Study Area, with highest levels of fishing activity observed beyond the 12nm limit, and across a relatively vast spatial extent. Displacement of offshore static gear and other mobile gear receptor groups from the Offshore Export Cable Corridor beyond 12nm, into the areas where otter trawl vessels are active is unlikely as there would be no material loss of fishing grounds, except during temporary short-term repair and remediation events. In light of this, the extent of displacement is judged to lead only to a small reduction (<5%) in this receptor groups annual value of landings. The magnitude of impact is therefore, considered to be negligible.

294. **Pelagic trawl:** Pelagic trawl vessels are active within the Commercial Fisheries Study Area, particularly within ICES rectangle 37F0, which overlaps with the Offshore Export Cable Corridor. While a degree of commercial reliance is observed to overlap within the Offshore Export Cable Corridor, pelagic trawl vessels are understood to be sporadic and their activity is based on shoaling behaviour of target species, which are able to be landed over a wide. area.

295. It is also currently understood that an active line of communication exists between the pelagic trawl and offshore static gear in operation in this area (established via Project specific consultation), and it is assumed that this would continue during the operational phase. Displacement of other mobile gear receptor groups from the Offshore Export Cable Corridor is unlikely as there would be no material loss of fishing grounds, except during temporary short-term repair and remediation events. In light of this, the extent of displacement is judged to lead only to a small reduction (<5%) in this receptor groups annual value of landings. The magnitude of impact is therefore, considered to be negligible.

296. **Inshore static gear:** It is unlikely that this receptor group would be affected by displacement of vessels from the Offshore Export Cable Corridor which would be fully buried or have external cable protection. Therefore, it is assumed that fishing in the inshore region by this receptor group would be able to continue during the operation phase. No magnitude of change is therefore predicted for this receptor group.

297. **Offshore static gear:** Displacement of vessels during the operation phase from the section of the Offshore Export Cable Corridor beyond 12nm, into the areas where offshore static gear vessels set pots, is unlikely as there would be no material loss of fishing grounds, except during advisory safety distances around vessels undertaking temporary short-term repair and remediation events. In light of this, the extent of displacement is judged to lead only to a small reduction (<5%) in this receptor groups annual value of landings. The magnitude of impact is therefore, considered to be negligible.

Table 13-36 Magnitude relating to Displacement from the Wind Farm Site and Offshore Export Cable Leading to Gear Conflict and Increased Pressure on Adjacent Fishing Grounds during Operation of DBS East or DBS West in Isolation for the scenario where the Dogger Bank SAC byelaw is revoked

Receptor Group	Magnitude
Demersal seine	Negligible
Dredge	Negligible
Otter trawl	Negligible
Pelagic trawl	Negligible
Inshore static gear	No change
Offshore static gear	Negligible

13.6.2.2.2 Magnitude of Impact – DBS East and DBS West Together

298. Considering the scenario where the Dogger Bank SAC byelaw is in place, the magnitude of impacts would remain the same as **Table 13-34** for DBS East and West being built together. Where the bylaw is revoked and for the Offshore Export Cable Corridor, displacement would be higher than the worst case for an individual site, but the magnitude would remain the same (**Table 13-35** and **Table 13-36**) given the limited area affected during operation. Given this and consideration of the areas of fishing activity for each receptor group within the Offshore Development Area, the reduction in the receptor group's annual value of landings and the magnitude of impact on each receptor group is not expected to exceed the assessment of DBS East or DBS West in isolation for these scenarios.

13.6.2.2.3 Sensitivity of Receptor

299. The sensitivity for each of the commercial fisheries receptor groups remains consistent with that presented for the construction phase (see section 13.6.1.2.3). The sensitivity is therefore considered to be negligible for demersal seine, low for offshore static gear, otter trawl and pelagic trawl, and medium for all other receptor groups.

13.6.2.2.4 Significance of Effect – DBS East or DBS West in Isolation or Built Together

300. A summary of the impact magnitude, sensitivity of receptors and overall effect of significance for DBS East or DBS West in isolation and built out together is provided in **Table 13-37**. Under the current situation, with the Dogger Bank SAC Byelaw in place, impacts of **negligible** significance are predicted for demersal seines, dredgers, otter trawls and pelagic trawls. In the event the byelaw is revoked, **negligible** significance is predicted for demersal seine and minor adverse is predicted for all other receptor groups. For the Offshore Export Cable Corridor, **no change** is predicted for inshore static groups, **minor adverse** is predicted for dredges and negligible significance is predicted for all other receptor groups. There is no difference in the magnitude of impact between the Projects being built in isolation or together. No additional mitigation is proposed for this impact.

Table 13-37: Magnitude, Sensitivity and Impact Significance Relating to Displacement of Fishing Activity Leading to Gear Conflict and Increased Pressure on Adjacent Grounds During Operation of DBS East or DBS West in Isolation or Together.

Receptor Group	Magnitude	Sensitivity	Significance
Dogger Bank SAC byelaw being in place			
Demersal seine	No change	Negligible	No change
Dredge	No change	Medium	No change
Otter trawl	No change	Low	No change
Pelagic trawl	No change	Low	No change
Dogger Bank SAC byelaw revoked			
Demersal seine	Low	Negligible	Negligible
Dredge	Low	Medium	Minor adverse
Otter trawl	Low	Low	Minor adverse
Pelagic trawl	Low	Low	Minor adverse
Inshore static gear	Negligible	Medium	Minor adverse
Offshore static gear	Low	Low	Minor adverse
Offshore Export Cable Corridor			
Demersal seine	Negligible	Negligible	Negligible
Dredge	Negligible	Medium	Minor adverse
Otter trawl	Negligible	Low	Negligible
Pelagic trawl	Negligible	Low	Negligible
Inshore static gear	No change	Medium	No change
Offshore static gear	Negligible	Low	Negligible

13.6.2.3 Impact 3: Increased Steaming Times

13.6.2.3.1 Magnitude of Impact – DBS East or DBS West In-Isolation

301. Very localised exclusion from fishing grounds during operation of DBS East or DBS West in isolation could, in theory, lead to minor temporary increases in steaming times for commercial fisheries receptors which could lead to increased operational costs. Discrete sections of the Array Areas and Offshore Export Cable Corridor would be subject to temporary restrictions during operation via temporary 500m safety zones and / or voluntary safety zones around major maintenance and cable repair vessels.

302. Embedded mitigation (section 13.3.3) would minimise the impact of temporary increased steaming times during operation. The commercial fishing industry would be informed in advance of any offshore activities by the FLO, through NtMs, Kingfisher Bulletins and ongoing liaison, which would ensure that fishing vessels would be in a position to avoid work areas with no or minimal impact on steaming times.

303. It is anticipated that fishing vessels would only be required to take minor deviations, as impacts would be localised to the immediate area of works and maintenance vessels.

304. Due to the temporary, very localised nature of the impact, increased steaming times is considered to be of negligible magnitude for all commercial fisheries receptor groups.

13.6.2.3.2 Magnitude of Impact – DBS East and DBS West Together

305. While DBS East and DBS West together would encompass a larger spatial scale than that of either Projects in isolation, taking into account the embedded mitigation measures outlined in section 13.3.3, the magnitude of impact would still be negligible for all commercial fisheries receptor groups.

13.6.2.3.3 Sensitivity of Receptor

306. All commercial fisheries receptor groups have operational ranges that are beyond that of the areas of maintenance, so would have the ability to make deviation to transit routes. Providing that adequate notification is given and the embedded mitigation measures (section 13.3.3) are followed, all fishing vessels would be in a position to avoid maintenance areas with no, or minimal impact on steaming times.

307. All commercial fisheries receptor groups are deemed to be of low vulnerability and moderate spatial tolerance to increased steaming times. The sensitivity of the receptors is therefore, considered to be low.

13.6.2.3.4 Significance of Effect – DBS East or DBS West in Isolation or Built Together

308. Based on the worst case negligible magnitude and low sensitivity, the significance of effect would be **negligible**. No additional mitigation is proposed for this impact.

13.6.2.4 Impact 4: Loss or Damage to Fishing Gear Due to Snagging

309. It is assumed that fishing activities would resume within the Array Areas where possible during the 30-year operational phase of the Projects. The risk due to snagging is primarily associated with structures on the seabed, near surface or exposed cables, with or without secondary protection materials, array cables and Offshore Export Cables. Maximum burial depth for array and inter-platform cables is 1.5m, with the maximum burial depth for offshore export cables being 1.5m. Where burial is not possible, there would be an indicative length of 58.6km of Offshore Export Cable protection, 70km of array cable protection and 16.1km of inter-platform cable protection, thus reducing the risk of snagging on sub-sea cable infrastructure. Furthermore, relevant embedded mitigation measures, summarised in **Table 13-3**, would be implemented to minimise the risk of snagging, including timely promulgation of NtM and Kingfisher Bulletins, navigational aids, and advisory safety distances.

310. If a snagging incident does occur, best practice guidance for fisheries liaison with offshore renewable developers by FLOWW (2014), where safe, would be followed. Further guidance on safe vessel operations within the vicinity of sub-sea cables by the ICPC (2009) and the ESCA (2018) would also be adhered to, and considered in the Fisheries Liaison and Coexistence Plan.

13.6.2.4.1 Magnitude of Impact – DBS East or DBS West In-Isolation

311. It is projected that up to nine array cable repair events and two inter platform cable repair events would be scheduled during the operation and maintenance phase for each Project if DBS East or DBS West were to be developed in isolation. This would result in a potential maximum total area of 54,000m^2 to be disturbed within either Array Area (6,000m^2 per event). Additionally, five Offshore Export Cable repair events are expected for DBS East and seven for DBS West, resulting in a total maximum disturbance of 42,000m^2 or 30,000m^2 along the Offshore Export Cable Corridor for DBS East or DBS West respectively. A 500m voluntary safety zone would be implemented during any major cable repair and remediation works, minimising the risk of gear snagging on exposed cables, alongside an advisory exclusion zone around construction vessels.

312. Associated external cable protection also poses potential impacts to loss or damage of gear due to snagging. Total array and inter-platform cable protection (including cable / pipeline crossings) could cover up to a maximum of 418,988m^2 within DBS East and up to 576,021m^2 of Offshore Export Cable protection (including crossings). Total array and inter-platform cable protection (including crossings) for DBS West could cover up to a maximum of 418,988m^2, as well as 470,350m^2 of Offshore Export Cable protection (including crossings).

313. **Demersal trawl and seine:** While assessing against the current situation, The Dogger Bank SAC Byelaws prohibition of bottom towed gear covers the entire DBS Array Areas. Therefore, this receptor group is not present within the DBS Array Areas and would not be impacted by loss or damage to gear due to snagging as a result of the Projects.

314. The following is assessed against historical fishing activity in the event the Dogger Bank Byelaw is revoked.

315. There are generally low activity levels of these receptor groups observed across the Array Areas and Offshore Export Cable Corridors. With the addition of proposed safety measures and guidance protocols in place, loss or damage due to snagging is predicted to impact a very small proportion (<5%) of this receptor's annual landings over long timescales. Based on this, the magnitude is considered to be negligible.

316. **Dredge:** While assessing against the current situation, The Dogger Bank SAC Byelaws prohibition of bottom towed gear covers the entire Array Areas. Therefore, this receptor group is not present within the Array Areas and would not be impacted by loss or damage to gear due to snagging as a result of the Project. The Dogger Bank SAC also overlaps with approximately 20km of the Offshore Export Cable Corridor; in the remaining section of the Offshore Export Cable Corridor where dredge fishing is still permitted there is a risk of snagging to this receptor. Outside of the Dogger Bank SAC, moderate to high levels of dredge fishing activity were observed to overlap the inshore region of the Offshore Export Cable Corridor within the 12nm limit. Under the current situation, the area available for dredge gear types within the Offshore Export Cable Corridor is reduced, and thus the impact of loss or damage to gear due to snagging is also reduced.

317. Therefore, the limited area of exclusion for fishing activity and long-term duration of operational works is assessed as affecting an area from which a very small proportion (<5%) of this receptor group's annual value of landings is caught. The magnitude for the receptor group undertaking dredging is therefore, considered to be negligible under the current scenario.

318. The following is assessed against historical fishing activity in the event the Dogger Bank Byelaw is revoked.

319. Dredging was not recorded within the Array Areas, and so potential loss or damage of gear due to snagging is not expected to occur on this receptor within these areas. Moderate to high levels of dredging were primarily observed within the 12nm limit inshore areas, overlapping the Offshore Export Cable Corridor, posing the potential for direct impacts to this receptor group to occur.

320. The limited area of exclusion for fishing activity and long-term duration of operational works is assessed as affecting an area from which a very small proportion (<5%) of this receptor group's annual value of landings is caught. The magnitude for the receptor group undertaking dredging is therefore, considered to be negligible.

321. **Intertidal netters:** the magnitude of impacts to this receptor group would be negligible as fishermen operate netting activities from the shore and are not involved in any towing/trawling of gear from a vessel.

322. **Otter trawl:** While assessing against the current situation, The Dogger Bank SAC Byelaws prohibition of bottom towed gear covers the entire Array Areas. Therefore, this receptor group is not present within the Array Areas and would not be impacted by loss or damage to gear due to snagging as a result of the Projects. The Dogger Bank SAC also overlaps with approximately 20km of the DBS East Offshore Export Cable Corridor and DBS West Offshore Export Cable Corridor, reducing the area available for otter trawling within the Offshore Export Cable Corridor, and thus the impact of loss or damage to gear due to snagging against the current scenario.

323. The following is assessed against historical fishing activity in the event the Dogger Bank Byelaw is revoked.

324. High activities of otter trawling were observed within the Array Areas. Otter trawling was also recorded to overlap with the Offshore Export Cable Corridors, posing the potential for direct impacts to occur over much of the Offshore Development Area.

325. When considering the embedded safety measures and guidance protocols in place, loss or damage due to snagging is predicted to impact a very small proportion (<5%) of this receptor's annual landings over long timescales. Based on this, the magnitude is considered to be negligible.

326. **Pelagic trawl**: While assessing against the current situation, The Dogger Bank SAC Byelaws prohibition of bottom towed gear covers the entire Array Areas. Due to the shallow depths within the DBS Array Areas, this receptor group would likely be prohibited from fishing within the entire DBS East or DBS West Array Areas due to bottom trawl prohibition implemented through the Dogger Bank SAC Byelaw, and would therefore not be impacted by loss or damage to gear as a result of the Projects. The Dogger Bank SAC also overlaps with approximately 20km of the DBS East Offshore Export Cable Corridor and DBS West Offshore Export Cable Corridor, reducing the area available for pelagic trawling within the Offshore Export Cable Corridor, and thus the impact of loss or damage to gear due to snagging against the current scenario.

327. The following is assessed against historical fishing activity in the event the Dogger Bank Byelaw is revoked.

328. Generally, low activity levels of this receptor group were observed across the Array Areas and Offshore Export Cable Corridors. Highest activities were observed within the 12nm limit overlapping the Offshore Export Cable Corridor. With the addition of proposed safety measures and guidance protocols in place, loss or damage due to snagging is predicted to impact a very small proportion (<5%) of this receptor's annual landings over long timescales. Based on this, the magnitude is considered to be negligible.

329. **Inshore static gear:** installation of the Offshore Export Cable Corridor in inshore waters, would primarily affect this receptor group where highest fishing intensities were recorded within the 6nm limit. Inshore static gear vessels were not recorded within the Array Area, therefore, associated fixed seabed structures, array and inter-array cable works would not pose a risk to snagging of this receptor.

330. It is noted that vessels within this receptor group would likely be required to temporarily remove their gear from areas where maintenance works are being undertaken, and either relocate to other areas offshore or bring to shore, depending on fishing preferences.

331. The limited area of exclusion for fishing activity and long-term duration of operational works is assessed as affecting an area from which a very small proportion of this receptor group's annual value of landings is caught (<5%). The magnitude for the receptor group is therefore considered to be negligible.

332. **Offshore static gear:** highest fishing activity levels of this receptor group were primarily observed outside of the Array Areas. Scouting surveys observed offshore static gear vessels fishing within the western portion of the DBS West Array Area and no vessels were recorded within the DBS East Array Area, therefore, there is limited potential risk to snagging of this receptor group within the Array Areas. Fishing activity was recorded to overlap with the Offshore Export Cable Corridor; however, vessels would likely be required to temporarily remove their gear from areas where maintenance works, in particular cable repair events, were being undertaken, and either relocate to other areas offshore or bring to shore, depending on available grounds and fishing preferences.

333. The limited area of exclusion for fishing activity and long-term duration of operational works is assessed as affecting an area from which a very small proportion of this receptor group's annual value of landings is caught (<5%). The magnitude for the receptor group is therefore, considered to be negligible.

13.6.2.4.2 Magnitude of Impact – DBS East and DBS West Together

334. It is projected that up to 17 array cable repair events and six inter platform cable repair events would be scheduled during the operation and maintenance phase, if both Projects were to be developed concurrently. This would result in a potential maximum area of 102,000m^2 to be disturbed within the Array Areas (6,000m^2 per event). Additionally, 12 Offshore Export Cable repair events are expected, resulting in a total maximum disturbance of 72,000m^2 along the Offshore Export Cable Corridor. A 500m voluntary safety zone would be implemented during any major cable repair and remediation works, minimising the risk of gear snagging on exposed cables.

335. Associated external cable protection also poses potential impacts to loss or damage of gear due to snagging. Total array cable and inter-platform cable protection (including crossings) could cover up to a maximum of 1,076,200m^2 across the Offshore Development Area and up to 1,046,371m^2 of Offshore Export Cable protection (including crossings).

336. As these works would be undertaken across both DBS East and DBS West, the maximum area of disturbance and potential risk to snagging is considered to be comparable to the assessment of impacts if DBS East or DBS West were to be developed in isolation. The magnitude of impacts for each receptor group is therefore, considered the same as detailed in section 13.6.2.4.1 above.

13.6.2.4.3 Sensitivity of Receptor

337. The sensitivity of commercial fisheries receptors is considered the same as for construction, detailed in section 13.6.1.4.2.

338. It is considered that demersal trawls and seines, dredge, and otter trawls would be of medium sensitivity and pelagic trawls would be of low sensitivity. Intertidal netters, inshore and offshore static gear would be of negligible sensitivity.

13.6.2.4.4 Significance of Effect - DBS East or DBS West in Isolation or Together

339. A summary of the impact magnitude, sensitivity of receptors and overall effect of significance is provided in **Table 13-38**. No additional mitigation is proposed for this impact.

Table 13-38 Magnitude, Sensitivity and Impact Significance Relating to Loss of Damage of Gear Due to Snagging During Operation and Maintenance of DBS East or DBS West in Isolation or Together.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Negligible	Medium	Minor adverse
Dredge	Negligible	Medium	Minor adverse
Intertidal netters	Negligible	Negligible	Negligible
Otter trawl	Negligible	Medium	Minor adverse
Pelagic trawl	Negligible	Low	Negligible
Inshore static gear	Negligible	Low	Negligible
Offshore static gear	Negligible	Low	Negligible

13.6.2.5 Impact 5: Supply Chain Opportunities for Local Fishing Vessels

340. During the operation of the DBS East and DBS West there is the potential for beneficial supply chain opportunities for local fishing vessels over a 30-year period. Potential areas of support during the operation and maintenance phase of the Projects include providing marine operational support such as OFLO duties, support during major maintenance works and guard vessel requirements.

341. As this impact is beneficial, it should be noted that the definition for magnitude outlined in **Table 13-11** would still apply, albeit in reverse.

13.6.2.5.1 Magnitude of Impact – DBS East or DBS West In-Isolation

342. **Demersal trawls and seines, dredge, otter trawl, pelagic trawl and offshore static gear:** the impact to these receptor groups are predicted to be of limited spatial extent and long-term in duration. It is predicted that direct impacts would occur to these receptors, which are judged to be of a low benefit. Any revenue gained as a result of supply chain opportunities is likely to be equivalent to 5 – 10% of the annual landed value of these receptor groups. Therefore, the magnitude across these receptors is considered to be low.

343. **Intertidal netters:** there would be no change to this receptor group as this fishing method is shore based and does not require vessels; therefore, there is no pathway for supply chain opportunities to occur.

344. **Inshore static gear:** it is unlikely that any notable supply chain opportunities would be relevant to this recent group, due to the small size and nature of vessels involved, however an exception to this would be the potential for this receptor group to provide maintenance support for inshore cable repair works. However, this impact would be spatially and temporally limited in extent, and likely not result in any significant revenue for the receptor group.

345. The impact is predicted to be of a small spatial extent and be long-term in duration. It is predicted that direct impacts would occur to this receptor group, but these would be of negligible benefit. Any revenue gained as a result of supply chain opportunities is likely to be equivalent to <5% of the annual landed value of this receptor group. Therefore, the magnitude is considered to be negligible.

13.6.2.5.2 Magnitude of Impact – DBS East and DBS West Together

346. Operation of the DBS East and DBS West would take place over a maximum 30-year period and poses the potential for beneficial supply chain opportunities for local fishing vessels. Potential areas of support during the operation phase include providing marine operation support such as OFLO duties, major maintenance work support and guard vessel requirements.

347. The opportunities for vessel provisioning for the operation of DBS East and DBS West together are considered to be comparable to the operation of DBS East or DBS West in isolation. Any increase in vessel provisioning services due to the construction of both Array Areas are considered to be marginal and therefore the magnitude of impacts for each receptor group are considered the same as detailed in section 13.6.2.5.1.

348. For this impact the sensitivity has been defined as the likely potential each receptor group has for provisioning of supply chain opportunities during the operation and maintenance of the DBS East and DBS West Projects. It is considered that the sensitivity of commercial fisheries receptors would be the same as for the construction phase, detailed in section 13.6.1.5.3. It is considered that the sensitivity of demersal trawls and seines, otter trawls, pelagic trawls, and offshore static gear would be low, and the sensitivity of dredges would be medium. Intertidal netters and inshore static gear have been assessed as negligible sensitivity.

13.6.2.5.3 Significance of Effect – DBS East or DBS West in Isolation or Together

349. A summary of the impact magnitude, sensitivity of receptors and overall effect of significance is provided in **Table 13-39**. No additional mitigation is proposed for this impact.

Table 13-39 Magnitude, Sensitivity and Impact Significance Relating to Supply Chain Opportunities During the Operation and Maintenance of DBS East or DBS West in Isolation or Together.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Low	Low	Minor beneficial
Dredge	Low	Medium	Minor beneficial
Intertidal netters	No change	Negligible	No Change
Otter trawl	Low	Low	Minor beneficial
Pelagic trawl	Low	Low	Minor beneficial
Inshore static gear	Negligible	Negligible	Negligible
Offshore static gear	Low	Low	Minor beneficial

13.6.2.6 Impact 6: Potential Consequential Impacts on commercial fisheries from Impacts on Commercially Important Fish and Shellfish Resources

350. Impacts to commercially important fish and shellfish resources due to the physical presence and operation of the Projects, including long-term habitat disturbance, increased sediments and direct damage have been assessed in **Volume 7, Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)**. There is also the potential for beneficial effects to arise on fish and shellfish ecology, as a result of reduced fishing pressure within the Array Areas. The potential consequential effects to commercial fisheries as a result of potential impacts to commercially important fish and shellfish resources would be assessed here.

- Reduced fishing pressure within the Array Areas and increased fishing pressure outside of the Array Area.

351. Fish and shellfish species that have been identified for their commercial importance are summarised in **Table 13-28** in section 13.6.1.6.1.

13.6.2.6.1 Magnitude of Impact – DBS East or DBS West In-Isolation or Together

352. Potential effects arising from electromagnetic fields (EMF) emitted from cables would be reduced by cables being buried to a minimum depth of 0.5m, and through placement of cable protection. Elasmobranchs (sharks and rays) are most likely to be affected by potential impacts resulting from EMF effects, however this species group is not fished commercially by the receptor groups identified within the commercial fisheries assessment, and instead only landed as by-catch. Therefore, it is expected that a very small proportion of the commercial fishing receptor's annual landed value would be impacted.

353. Temporary and long-term habitat loss during the operational phase of the Projects, as well as direct disturbance and damage to fish and shellfish species, could occur over a maximum total area of 741,535m^2 for the DBS East Array Area and 741,535m^2 for the DBS West Array Area. Additionally, along the Offshore Export Cable Corridor, total temporary and long-term habitat loss is estimated up to 576,021m^2 for DBS East and 470,350m^2 for DBS West.

354. The magnitude of impacts to commercial fisheries during the operation of DBS East and DBS West separately and together, would be assessed based on the overall significance of effects during the operation phase to fish and shellfish ecology, in order to incorporate both the magnitude and sensitivity of fish and shellfish receptors within the Commercial Fisheries assessment. **Volume 7**, **Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)** considers the magnitude of impacts to be the same for the development of DBS East and DBS West in isolation and together. The assessment of significance considers Elasmobranchs, demersal and pelagic (bony) fish, and shellfish species groups which encompasses commercially important species within the Study Area.

355. A summary of the significance of effects to fish and shellfish ecology is included in **Table 13-40** and provides the basis for the magnitude of impacts to commercial fisheries. The potential impacts to fish and shellfish were assessed to have at worst a minor adverse effect within **Volume 7, Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)**. Based on this the potential impact on commercially important fish and shellfish resources is considered to be of low magnitude across all commercial fisheries receptor groups.

Table 13-40 Significance of Effects for the Operation of DBS East or DBS West in Isolation or Together to Fish and Shellfish Ecology

Potential Impact	Significance of Effect
Permanent loss of habitat and / or change in habitat type as a result of changes in substrate composition	Minor adverse
Temporary habitat disturbance to fish and shellfish species and spawning and / or nursery grounds, including direct damage from repair and maintenance	Minor adverse
Increased local suspended sediment concentrations and sediment settlement	Minor adverse
Release of sequestered contaminants following sediment disturbance	Negligible
Impacts on fish and shellfish species as a result of underwater noise and vibration	Minor adverse
Electromagnetic Frequency (EMF) effects arising from cables	Negligible

Potential Impact	Significance of Effect
Reduced fishing pressure within the Array Areas and increased fishing pressure outside of the Array Area	Negligible

13.6.2.6.2 Sensitivity of Receptor

356. It is considered that the sensitivity of commercial fisheries receptors would be the same as the construction phase, outlined in section 13.6.1.6.2. Dredges, intertidal netters and inshore static gear vessels have been assessed as medium sensitivity. Otter trawls, pelagic trawls and offshore static gear vessels have been assessed as low sensitivity and demersal trawls and seines are considered to be of negligible sensitivities.

13.6.2.6.3 Significance of Effect – DBS East or DBS West in Isolation or Together

357. A summary of the impact magnitude, sensitivity of receptors, and overall effect of significance is provided in **Table 13-41**. No additional mitigation is proposed for this impact.

Table 13-41 Magnitude, Sensitivity and Impact Significance Relating to Potential Impacts to Commercially Important Fish and Shellfish Resources During the Operation and Maintenance of DBS East or DBS West in Isolation or Together.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Low	Negligible	Negligible
Dredge	Low	Medium	Minor adverse
Intertidal netters	Low	Medium	Minor adverse
Otter trawl	Low	Low	Minor adverse
Pelagic trawl	Low	Low	Minor adverse
Inshore static gear	Low	Medium	Minor adverse
Offshore static gear	Low	Low	Minor adverse

13.6.2.7 Impact 7: Navigational Safety

358. Impacts regarding navigational safety have been separately assessed in **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)**. Of the impacts assessed within this chapter, the potential effects during operation and maintenance relevant to commercial fisheries receptor groups are as follows:

- Vessel displacement and increased vessel to vessel collision risk between third-party vessels;
- Increased vessel to vessel collision risk between a third-party vessel and a Project vessel;
- Creation of vessel to structure allision risk; and
- Anchor interaction with sub-sea cables.

359. Marine vessel traffic surveys, undertaken using Radar, AIS, and visual observations, recorded infrequent transit of the Array Area by commercial fishing vessels. It is likely that vessels would not be prohibited from the Array Areas once operational, but would adhere to 500m safety zones and / or 50m voluntary safety zones around vessels undertaking major maintenance works.

360. Vessel displacement and vessel to vessel collision risk of small crafts are therefore, predicted to be remote with a moderate sensitivity. This is assessed as broadly acceptable within **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)**. Increased collision risk between third-party and Project vessels is considered to be of a negligible occurrence, but of serious consequence if a collision was to occur. This is assessed as broadly acceptable within the **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)**.

361. Anchor interaction with sub-sea cables poses risk of snagging to commercial fishing vessels which could cause loss or damage of gear. During the operation and maintenance phase, there would be 350km of array cables, 23km of Inter-Platform Cables and 153km of Offshore Export Cables for DBS West and 350km of array cables, 23km of Inter-Platform Cables and 188km of Offshore Export Cables for DBS East. Maximum burial depth for array and inter-platform cables is 1.5m, with the maximum burial depth for offshore export cables being 1.5m. Approximately 10% of cables would require cable protection up to a maximum height of 1m for the array and Inter-Platform Cables, and 1.4m for the Offshore Export Cables. The potential impacts of anchoring were therefore, assessed by **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)** as broadly acceptable.

362. Lastly, the creation of vessel to structure allision risk, although considered extremely unlikely, could pose serious consequences. Marine vessel traffic surveys observed commercial fishing vessels to use the Array Area particularly during summer months. Despite a minimum wind turbine spacing of 830m within the array layout deemed to be safe for navigation, the significance of effect was assessed as tolerable. Consultation with regular operators is proposed in **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)** to reduce these effects to within broadly acceptable limits.

363. Ongoing fisheries liaison through the appointed FLO, as well as timely promulgation of NtMs and Kingfisher Bulletins would also be implemented to minimise navigational safety risks.

13.6.2.7.1 Magnitude of Impact – DBS East or DBS West In-Isolation

364. Fewer Project vessels would be required on-site at any one time if DBS East or DBS West were operated in isolation. This would result in fewer vessel encounters, reducing potential collision risks and navigational safety impacts. Additionally, there would be greater manoeuvrability for vessels to navigate and maintain safe passing distances as there would be more sea room available. With the embedded mitigation measures proposed in **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)** the worst-case impacts are considered to be within broadly acceptable limits for the impacts detailed above. The magnitude of impact across all commercial fisheries receptor groups would, therefore, be considered as low.

13.6.2.7.2 Magnitude of Impact – DBS East and DBS West Together

365. Impacts to navigational safety are predicted to be more severe under the Concurrent operation and maintenance of DBS East and DBS West by **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)**. With the embedded mitigation measures proposed in the Chapter, such impacts detailed above are assessed to be broadly acceptable therefore, the magnitude of impact across all commercial fisheries receptor groups would be considered as low.

13.6.2.7.3 Sensitivity of Receptor

366. The sensitivity of commercial fisheries receptors is considered to be the same described for construction, detailed in section 13.6.1.7.2.

13.6.2.7.4 Significance of Effect – DBS East or DBS West in Isolation or Together

367. A summary of the impact magnitude, sensitivity of receptors and overall effect of significance is provided in **Table 13-42**. No additional mitigation is proposed for this impact.

Table 13-42 Magnitude, Sensitivity and Impact Significance Relating to Potential Impacts to Navigational Safety During the Operation of DBS East or DBS West in Isolation or Together

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Low	Negligible	Negligible
Dredge	Low	Medium	Minor adverse
Intertidal netters	Low	Negligible	Negligible
Otter trawl	Low	Medium	Minor adverse
Pelagic trawl	Low	Medium	Minor adverse
Inshore static gear	Low	Medium	Minor adverse
Offshore static gear	Low	Low	Minor adverse

13.6.3 Potential Effects During Decommissioning

368. A decision regarding the final decommissioning policy is yet to be made as it is recognised that rules and legislation change over time in line with industry best practice. The decommissioning methodology and programme would need to be finalised nearer to the end of the lifetime of the Projects, to ensure it is in line within the most recent guidance, policy and legislation.

369. This is outlined in **Volume 7, Chapter 5 Project Description (application ref: 7.5)**, and the details would be agreed with the relevant authorities at the time of decommissioning. Offshore decommissioning is likely to include the removal of wind turbine components and part of the foundations (above seabed level), removal of some or all of the array and Offshore Export Cables. Scour and cable protection would likely be left *in situ*.

370. During the decommissioning phase, there is potential for wind turbine foundation and cable removal activities to cause effects that would be comparable to those identified for the construction phase and the operational phase, specifically:

- Loss or restricted access to fishing grounds;
- Displacement from the Wind Farm site and Offshore Export Cable Leading to Gear Conflict and Increased Pressure on Adjacent Fishing Grounds;
- Temporary Increased Steaming Times;
- Loss or Damage to Fishing Gear Due to Snagging;
- Supply Chain Opportunities for Local Fishing Vessels;
- Potential Impacts to Commercially Important Fish and Shellfish Resource; and
- Navigational Safety

371. The magnitude of decommissioning effects would be comparable to or less than the construction phase. Accordingly, given that impacts were assessed to be of no greater than minor adverse significance, following the implementation of embedded mitigation measures, for the identified commercial fisheries receptors during the construction phase, it is anticipated that the same would be true for the decommissioning phase.

13.7 Potential Monitoring Requirements

372. No specific monitoring in relation to commercial fisheries is considered necessary. However, the **Volume 8, Outline Fisheries Liaison and Coexistence Plan (application ref: 8.28)** will outline the commitments and approach to fisheries liaison and is submitted as part of the DCO application along with the ES.

13.8 Cumulative Effects Assessment

373. Cumulative effects can be defined as incremental effects on that same receptor from other proposed and reasonably foreseeable schemes and developments in combination with the Projects. This includes all schemes that result in a comparative effect that is not intrinsically considered as part of the existing environment and is not limited to offshore wind projects.

374. The overarching method followed in identifying and assessing potential cumulative effects is set out in **Volume 7, Chapter 6 EIA Methodology (application ref: 7.6)** and **Volume 7, Appendix 6-2 Offshore CEA Methodology (application ref: 7.6.6.2)**. The overall approach is based upon the Planning Inspectorate Advice Note Seventeen: Cumulative Effects Assessment (PINS, 2017) and Phase III Best Practice by Natural England and DEFRA (Parker *et al.*, 2022). The approach to the CEA is intended to be specific to the Projects and takes account of the available knowledge or the environment and other activities around the Offshore Development Area.

375. The CEA has followed a four-stage approach developed from the Planning Inspectorate Advice Note Seventeen. These stages are set out in Table 1-1 of **Volume 7, Appendix 6-2 Offshore CEA Methodology (application ref: 7.6.6.2)**. Stage four of this process, the CEA assessment is undertaken in two phases. The first step in the CEA is the identification of which residual impacts assessed for the Projects on their own have the potential for a cumulative impact with other schemes and activities. This information is set out in **Table 13-43** which sets out the potential impacts assessed in this chapter and identifies the potential for cumulative effects to arise, providing a rationale for such determinations. Only potential impacts assessed in section 13.6 where the potential for cumulative effects has been identified (minor, moderate or major), have been taken forward to the final CEA (i.e. those assessed as 'negligible' or 'no change' are not taken forward, as there is no potential for them to contribute to a cumulative effect). Each scheme has been considered on a case by case basis for screening in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial / temporal scales involved.

Table 13-43 Potential Cumulative Impacts

Impact	Potential for Cumulative Effect	Data Confidence	Rationale
Construction			
Impact 1: Loss or Restricted Access to Fishing Grounds	Yes	Medium	Plans and projects currently in planning have potential to have cumulative effects on the loss or restricted access to fishing grounds.
Impact 2: Displacement Leading to Gear Conflict and Increased Pressure on Adjacent Fishing Grounds	Yes	Medium	Plans and projects currently in planning have potential to have cumulative effects on displacement of fishing vessels.
Impact 3: Temporary Increased Steaming Times	Yes	Medium	Plans and projects currently in planning have potential to have cumulative effects on steaming times for fishing vessels.
Impact 4: Loss or Damage to Fishing Gear Due to Snagging	No	Medium	No likely change is predicted via this effect for the Projects alone; therefore, no potential exists for cumulative effects with other plans or projects currently in planning.
Impact 5: Supply Chain Opportunities for Local Fishing Vessels	No	Medium	No likely change is predicted via this effect for the Projects alone; therefore, no potential exists for cumulative effects with other plans or projects currently in planning.
Impact 6: Potential Impacts on Commercially Important Fish and Shellfish Resources	Yes	Medium	Underwater noise from other developments within the region have the potential to overlap with impacts produced during construction associated with the Projects.

Impact	Potential for Cumulative Effect	Data Confidence	Rationale
Impact 7: Navigational Safety	No	Medium	No likely change is predicted via this effect for the Projects alone; therefore, no potential exists for cumulative effects with other plans or projects currently in planning.
Operation & Maintenance			
Impact 1: Loss or Restricted Access to Fishing Grounds	Yes	Medium	Plans and projects currently in planning have potential to have cumulative effects on the loss or restricted access to fishing grounds.
Impact 2: Displacement Leading to Gear Conflict and Increased Pressure on Adjacent Fishing Grounds	Yes	Medium	Plans and projects currently in planning have potential to have cumulative effects on displacement of fishing vessels.
Impact 3: Increased Steaming Times	Yes	Medium	Plans and projects currently in planning have potential to have cumulative effects on steaming times for fishing vessels.
Impact 4: Loss or Damage to Fishing Gear Due to Snagging	Yes	Medium	Plans and projects currently in planning have potential to have cumulative effects on loss or damage to fishing gear due to snagging.
Impact 5: Supply Chain Opportunities for Local Fishing Vessels	No	Medium	No likely change is predicted via this effect for the Projects alone; therefore, no potential exists for cumulative effects with other plans or projects currently in planning.

Impact	Potential for Cumulative Effect	Data Confidence	Rationale
Impact 6: Potential Impacts on Commercially Important Fish and Shellfish Resources	Yes	Medium	Plans and projects currently in planning have potential to have cumulative effects on fish and shellfish resources.
Impact 7: Navigational Safety	Yes	Medium	Plans and projects currently in planning have potential to have cumulative effects on navigational safety.
Decommissioning			
Impact 1: Loss or Restricted Access to Fishing Grounds	Yes	Medium	Plans and projects currently in planning have potential to have cumulative effects on the loss or restricted access to fishing grounds.
Impact 2: Displacement Leading to Gear Conflict and Increased Pressure on Adjacent Fishing Grounds	Yes	Medium	Plans and projects currently in planning have potential to have cumulative effects on displacement of fishing vessels.
Impact 3: Increased Steaming Times	Yes	Medium	Plans and projects currently in planning have potential to have cumulative effects on steaming times for fishing vessels.
Impact 4: Loss or Damage to Fishing Gear due to Snagging	No	Medium	No likely change is predicted via this effect for the Projects alone; therefore, no potential exists for cumulative effects with other plans or projects currently in planning.

Impact	Potential for Cumulative Effect	Data Confidence	Rationale
Impact 5: Supply Chain Opportunities for Local Fishing Vessels	No	Medium	No likely change is predicted via this effect for the Projects alone; therefore, no potential exists for cumulative effects with other plans or projects currently in planning.
Impact 6: Potential Impacts on Commercially Important Fish and Shellfish Resources	Yes	Medium	These impacts are of limited spatial and temporal extent. Management plans will be developed to further mitigate impacts, as described within **Volume 7, Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)**.
Impact 7: Navigational Safety	No	Medium	No likely change is predicted via this effect for the Projects alone; therefore, no potential exists for cumulative effects with other plans or projects currently in planning.

376. The second phase of the CEA is a project specific assessment of the potential for any significant cumulative effects to arise due to the construction and / or operation and maintenance of the Projects. To do this, a short-list of schemes for the CEA has been produced relevant to commercial fisheries following the approach outlined in **Volume 7, Appendix 6-2 Offshore CEA Methodology (application ref: 7.6.6.2)**. The second phase of this assessment is only undertaken if the first phase identifies that cumulative effects are possible.

377. The CEA has been based on information available on each relevant scheme as of January 2024. It is noted that further information regarding the identified schemes may become available in the period up to construction, or may not be available in detail at all prior to construction. The assessment presented here is therefore considered to be conservative, with the level of impacts expected to be reduced compared to those presented here.

378. Schemes have been assigned a tier, based on information used within the CEA. A seven tier system, based on the guidance issued by Natural England and Defra (Parker *et al.*, 2022), has been employed as presented in **Volume 7, Appendix 6-2 Offshore CEA Methodology (application ref: 7.6.6.2)**.

379. This approach has been agreed via EIA Scoping and consultation with technical working groups and follows advice from Natural England. Further information on the methodology can be found in **Volume 7, Chapter 6 EIA Methodology (application ref: 7.6)**.

380. Types of schemes that could potentially be considered for the cumulative assessment of commercial fisheries include:

- Other offshore wind farms;
- Strategic plans;
- Protected Areas;
- Carbon Capture Storage (CCS);
- Marine aggregate extraction;
- Oil and gas exploration and extraction;
- Sub-sea cables and pipelines; and
- Commercial shipping.

381. With respect to these types of schemes, for those that are fully operational (i.e. Tier 1 schemes) at the time of this assessment, the cumulative assessment methodology considers them to be part of the baseline conditions for the surrounding area (and assumes that any residual effect has been captured within the baseline). As such, it is not expected that the Projects would contribute to cumulative effects with these existing activities and, therefore, these have not been the subject of further assessment.

382. For projects that are not currently fully operational, i.e. those in planning / pre-construction stages, or even where construction may have commenced but not yet be complete, these are screened in for further assessment in the final cumulative assessment.

383. Schemes screened in for assessment in the CEA, and their distance to the Array Areas and Offshore Export Cable Corridor for the Projects are provided below in **Table 13-44**.

Table 13-44 High-Level List of plans/projects Screened In For Further Assessment in the Final CEA

Tier	Scheme Name	Closest Distance to (km)	
		Export Cable Corridor	Array Areas
Strategic Plans			
1	East Inshore, North East Inshore, East Offshore and North East Offshore Marine Plans	Overlap with Offshore Development Area.	Overlap with Offshore Development Area.
Offshore Wind Farms and associated export cables			
2	Dogger Bank A	20	8
2	Dogger Bank A export cable	0.25	4
2	Dogger Bank B	21	17
2	Dogger Bank B export cable	0.25	8
2	Sofia	53	35
3	Sofia export cable	18	15
3	Dogger Bank C export cable	17	15
3	Hornsea Project Four	30	41
5	Hornsea Project Four export cable	0	41
5	Hornsea Project Three (HOW03)	62	45
6	Dogger Bank D export cable	11	0
Carbon Capture and Storage			
4	Northern Endurance	12	37
4	Northern Endurance pipeline	0	45

Tier	Scheme Name	Closest Distance to (km)	
		Export Cable Corridor	Array Areas
7	CCS North Sea Leasing Round SNS Area 1 - Licences CS020 & CS025)	0	0
7	CCS North Sea Leasing Round SNS Area 3 - Licence CS028	0	92
7	CCS North Sea Leasing Round SNS Area 5	46	26
7	CCS North Sea Leasing Round: SNS Area 6	35	69
7	CCS North Sea Leasing Round: SNS Area 7	30	8
Sub-sea Cables			
1	Viking Link Interconnector	44	29
6	Eastern Green Link 2 (EGL 2)	2	117
6	Eastern Green Link 3 (EGL 3)*	0 (potentially crosses Projects Offshore Export Cable Corridor)	n/a
6	Eastern Green Link 4 (EGL 4)*	0 (potentially crosses Projects Offshore Export Cable Corridor)	n/a
Protected Areas			

Tier	Scheme Name	Closest Distance to (km)	
		Export Cable Corridor	Array Areas
1	MCZs: including Cromer Shoal Chalk Beds, Markham's Triangle, Holderness Inshore and Holderness Offshore.	Within 100m of the Offshore Development Area (Holderness Inshore MCZ).	Within 100m of the Offshore Development Area (Holderness Inshore MCZ).
1	No Take Zone (NTZ): Flamborough Head	Within 100m of the Offshore Development Area	Within 100m of the Offshore Development Area
1	SPAs: including the Wash, North Norfolk Coast, Greater Wash and Humber Estuary.	Within the Offshore Development Area (Greater Wash SPA).	Within the Offshore Development Area (Greater Wash SPA).
1	SACs: including Dogger Bank SAC, North Norfolk Coast, The Wash and North Norfolk Coast, Haisborough, Hammond and Winterton, Inner Dowsing, Race Bank and North Ridge, North Norfolk Sandbanks and Saturn Reef, and Southern North Sea.	Within the Offshore Development Area (Dogger Bank SAC).	Within the Offshore Development Area (Dogger Bank SAC).

Cable route not yet finalised

13.8.1 Potential Cumulative Effects during Construction

384. The CEA assumes the worst-case scenario for commercial fisheries. Therefore, the construction, operation and decommissioning of DBS West and DBS East Concurrently, and / or in sequence, is assessed within the CEA.

385. Where no cumulative effects are anticipated for the construction, operation and decommissioning of DBS West and DBS East concurrently, and / or in sequence, the same is also predicted for the construction operation and decommissioning of DBS West and DBS East in isolation.

13.8.1.1 Impact 1: Loss or restricted access to fishing grounds

13.8.1.1.1 Magnitude of effect

386. Cumulative loss, restricted access to fishing grounds has the potential to occur, as a result of other projects and the construction of DBS West and DBS East concurrently, and / or in sequence.

387. Dredgers and the inshore static fleet are identified as the most sensitive receptor groups to loss or restricted access to fishing grounds, particularly associated with installation of the Offshore Export Cables. Schemes not yet operational or fully constructed (i.e. assessed as Tier 4 to Tier 7) are expected to have a negligible to low magnitude of effect on these receptors, and a negligible effect on all other gear types.

388. Impacts of loss or restricted access from other offshore wind farms assessed as Tier 1 to Tier 3 are assessed within their respective commercial fisheries assessments, and are presented in **Table 13-45**.

389. Due to the proximity of Dogger Bank A, Dogger Bank B, Hornsea Three, Hornsea Four, and Sofia, which lie within 20 km of the Offshore Development Area, these offshore wind farms have the greatest potential to result in cumulative impacts to loss or restricted access to fishing grounds. Dogger Bank C also poses the potential for cumulative effects to arise, however as it is located 56km from the Offshore Development Area it is expected to have a negligible to low magnitude of effect on dredge and inshore static gear receptor groups, and a negligible effect on all other gear types.

390. Within the individual impact assessments of Dogger Bank A, Dogger Bank B, Hornsea Three, Hornsea Four, and Sofia these offshore wind farms assess the greatest impacts to occur on the inshore static fleet (also referred to as the potting industry) targeting lobster and brown crab. During the construction of the export cable corridors of Dogger Bank A, Dogger Bank B and Hornsea Three, residual moderate adverse effects are predicted on the inshore static fleet. A residual significance of a moderate adverse effect is identified for seine netters during the construction and operation of Sofia, and a residual significance of minor is identified for potters during the construction of Hornsea Four. The residual significance of effects to all other fleets is assessed to be minor adverse to negligible.

391. Offshore construction of Dogger Bank A, Dogger Bank B and Sofia is underway, and estimated to be completed by 2024. Therefore, no cumulative impacts with the construction of DBS West and DBS East, along the Offshore Export Cable Corridor are anticipated, as the construction timelines do not align.

392. Construction is yet to begin for Dogger Bank C (estimated to commence in 2026), Hornsea Three (construction estimated to commence in 2026) and Hornsea Four (construction estimated to commence in 2029). With mitigation, residual effects from Hornsea Three and Hornsea Four are assessed to be reduced to minor residual significance for the inshore static fleet. For Dogger Bank C, residual moderate significance is predicted for seine nets and a minor significance is predicted for all other fleets.

393. Loss or restricted access to inshore static gear fishers is assessed to have a residual impact of minor adverse significance for the construction of DBS West and DBS East in isolation or built together, when additional mitigations such as co-operation agreements and associated disruption payments in accordance with FLOWW guidance, are applied.

394. The overall cumulative magnitude of effect for loss or restricted access to fishing grounds associated with installation of the Offshore Export Cable for Tier 1 and 2 projects is, therefore, assessed as low for dredgers and inshore static gear fishers and negligible for all other gear types.

Table 13-45 Summary Of commercial fisheries Impact Assessment Results From Other Offshore Wind Farms For Loss Or Restricted Access To Fishing Grounds

Project	Consented Capacity/Scale	Residual significance of effect
Dogger Bank A	Up to 1.2 Gigawatt (GW) (Up to 200 turbines of up to 10 MW capacity)	Minor for all fleets during all phases, except moderate for potters targeting crab and lobster across Offshore Export Cable Corridor during construction.
Dogger Bank B	Up to 1.2GW (Up to 200 turbines of up to 10 MW capacity)	Minor for all fleets during all phases, except moderate for potters targeting crab and lobster across Offshore Export Cable Corridor during construction.
Dogger Bank C	Up to 1.2GW	Minor for all fleets during all phases, except moderate for seine nets across wind farm site during construction and operation.
Sofia	Up to 1.2GW	Minor for all fleets during all phases, except moderate for seine nets across wind farm site during construction and operation.

Project	Consented Capacity/Scale	Residual significance of effect
Hornsea Project Three	231 turbines	Minor to negligible for all fleets during construction and operation; except moderate (reduced to minor residual with mitigation) for UK potting fleet during construction of Offshore Cable Corridor.
Hornsea Project Four	Up to 2.6GW (up to 180 turbines)	Moderate for potters (reduced to minor residual after mitigation) during construction and minor to negligible for all other fleets during construction and operation.

395. There are a number of protected areas included as plans, which have the potential to have cumulative effects on commercial fisheries, most notably the Dogger Bank SAC, designated for the protection of the Annex I sandbank feature.

396. The primary objective of this designation is to maintain the extent, distribution, structure and functioning of qualifying natural habitats, and the supporting processes, upon which the qualifying habitats rely.

397. JNCC has determined the Annex I sandbank features to currently be in unfavourable condition. As such, the MMO has prohibited the use of bottom towed fishing gears, within the Dogger Bank SAC Bottom Towed Fishing Gear Byelaw 2022, in order to support the conservation objectives of this site.

398. Due to the introduction of fishing management measures within this protected area, with the potential for ongoing restrictions, the cumulative magnitude of effect is considered to be medium for UK dredgers.

399. Other fisheries management restrictions are also implemented for UK mobile bottom contacting gears and potting in the Cromer Shoal Chalk Beds MCZ. Given the low level of otter trawling activity in this area, and distance of the MCZ from DBS West and DBS East, the cumulative magnitude of effect is considered to be low for otter trawling and inshore static gears, and negligible for all other receptors.

400. The Northern Endurance Partnership CCS Project is located 2km from the Offshore Development Area and will link the Endurance store to the Teesside and Humber industrial clusters via two pipelines (BEIS, 2022). Construction of the Northern Endurance CCS scheme is estimated to be completed within 70 days, with drilling projected to commence in 2025 (BEIS, 2022). Cumulative effects on dredgers and the inshore static fleet have the potential to occur during installation of the Offshore Export Cable Corridor. Given the short construction period, and small area of the Northern Endurance CCS scheme, the magnitude of effect is considered to be low for both dredgers and the inshore static fleet, and negligible for all other receptors.

401. Provisional leasing awards have also been made for CCS in the North Sea, however CCS schemes within these areas are yet to be established. Therefore, no likely change is predicted to occur.

402. Cumulative effects resulting from sub-sea cables are assessed for the Viking Link interconnector and the EGL 2 project. Cumulative effects on dredgers and the inshore static fleet relating to sub-sea cables within the Offshore Export Cable Corridor are predicted to have the greatest impact, given their reliance on the area. Installation of the Viking Link interconnector sub-sea cables occurred during 2020-2023, therefore this project is classed as a Tier 1 project. Overall insignificant effects to commercial fisheries receptors are predicted for the installation of the Viking Link interconnector (Viking Link, 2017). Construction of EGL 2 is due to commence in 2024, for operation in 2029 (EGL 2, 2023) and, therefore, has the potential to coincide with the construction phase of DBS West and DBS East. The magnitude of effect is, therefore, considered to be low for dredgers and the inshore static fleet, and negligible for all other receptors.

403. Other sub-sea cables such as Eastern Green Link 3 and 4 have also been noted, however these projects have not yet submitted sufficient information to be included within this assessment and, therefore, no likely change is predicted to occur.

404. The cumulative magnitude of effect assessed for marine plans is considered to be negligible for all receptors, given that the Projects contribute towards the overall objectives of both the East (Defra, 2014) and North East (Defra, 2021) Inshore and Offshore Marine Plans, via the establishment of new opportunities for offshore wind development.

13.8.1.1.2 Receptor sensitivity

405. Although UK dredgers exhibit a relatively high operational range, they possess limited spatial tolerance, due to their dependence upon the area that overlaps with the Offshore Export Cable Corridor. The sensitivity of UK dredgers is, therefore, considered to be medium.

406. Similarly, intertidal netters and inshore static gear fishers operate across distinct areas, and are considered to have lower levels of alternative fishing grounds and spatial adaptability. Although these receptors may have some ability to deploy alternative gear, this is relatively limited. The sensitivity of inshore netters and static gear fishers is, therefore, considered to be medium.

407. Otter trawlers, pelagic trawlers and offshore static gear fishers have a larger operational area and a high spatial tolerance. The sensitivity of these receptors is, therefore, considered to be low, and negligible for demersal seines.

13.8.1.1.3 Significance of Impact

408. With the consideration of additional mitigation measures, outlined in section 13.6.1.1.5, the overall significance of impact is assessed as **minor adverse** for the inshore static fleet, which has a medium sensitivity and low magnitude of effect (**Table 13-46**).

409. The overall significance of impact to UK dredgers is assessed as **moderate adverse** due to a medium sensitivity and medium magnitude of effect, resulting from fisheries management measures within the Dogger Bank SAC (**Table 13-46**).

410. For all other receptors, the overall sensitivity is considered to be low (as per section 13.6.1.1.3) and the magnitude is considered to be negligible to low, resulting in an overall **minor adverse** to **negligible** significance (**Table 13-46**).

Table 13-46 Cumulative Magnitude, Sensitivity and Impact Significance Relating to Cumulative Impacts to Loss or Restricted Access to Fishing Grounds Within the Offshore Export Cable Corridor, During Construction.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Low	Negligible	Minor adverse
Dredge	Medium	Medium	Moderate adverse
Intertidal netters	Low	Low	Minor adverse

Receptor Group	Magnitude	Sensitivity	Significance
Otter trawl	Low	Low	Minor adverse
Pelagic trawl	Low	Low	Minor adverse
Inshore static gear	Low	Medium	Minor adverse
Offshore static gear	Low	Low	Minor adverse

13.8.1.1.4 Additional Mitigation

411. In order to reduce moderate adverse effects on the dredge receptor group to a minor residual effect, the Projects would explore options to encourage co-existence between receptor groups and construction vessels and / or activities to further mitigate the of loss or restricted access to fishing ground in light of restrictions within the Dogger Bank SAC.

412. Such measures may include disruption payments in accordance with FLOWW guidance and cooperation agreements. Additional mitigation measures may also include discussions to ascertain whether there are periods of time and /or particular locations during construction when it would be safe for fishing to occur. These additional mitigation measures above are included in the **Volume 8, Outline Fisheries Liaison and Coexistence Plan (application ref: 8.28)**, which is included as an embedded mitigation measure and is submitted as part of the DCO application.

13.8.1.2 Impact 2: Displacement leading to gear conflict and increased pressure on adjacent fishing grounds

13.8.1.2.1 Magnitude of effect

413. Cumulative displacement, gear conflict and increased pressure on adjacent fishing grounds has the potential to occur as a result of other projects and the construction of DBS West and DBS East, concurrently and / or sequentially, and is directly correlated to Impact 1: Loss or restricted access to fishing grounds (i.e. if there is no loss or restricted access to grounds, there would be no displacement).

414. Schemes assessed as Tier 3 or higher are expected to have a negligible to low magnitude of effect on dredgers and the inshore static fleet, and a negligible effect on all other gear types.

415. For Tier 1 and 2 schemes, the cumulative magnitude of effect is assessed as low for dredgers and inshore static gear fishers, and negligible for all other gear types.

416. In consideration of protected areas, due to the introduction of fishing management measures within the Dogger Bank SAC, the cumulative impact is assessed as having a medium magnitude for UK dredgers. Other fisheries management restrictions within protected areas are also implemented for UK mobile bottom contacting gears and potting; the cumulative magnitude of effect is considered to be low for otter trawling and inshore static gears, and negligible for all other receptors.

417. As per Impact 1, the cumulative magnitude of effect of displacement in consideration of CCS schemes and sub-sea cables is considered to be low for dredgers and the inshore static fleet during installation of the Offshore Export Cable Corridor, and negligible for all other receptors. In consideration of other marine plans, a negligible magnitude of effect is predicted for all receptors.

13.8.1.2.2 Receptor Sensitivity

418. The receptor sensitivity is considered the same as for the assessment of loss or reduced access to fishing gears (section 13.8.1.1.2). The sensitivity is, therefore, medium for dredgers, intertidal netters and inshore static gear fishers. All other receptor groups are considered to have a low sensitivity.

13.8.1.2.3 Significance of Impact

419. The overall cumulative significance of impact is assessed to be the same as for section 13.6.2.1, Impact 1: Loss or Restricted Access to Fishing Grounds.

420. With the consideration of additional mitigation measures, outlined in section 13.6.1.1.5, the overall cumulative significance of impact to the inshore static fleet is assessed as **minor adverse,** with a medium sensitivity and low magnitude of effect (**Table 13-47**).

421. For UK dredgers, the overall significance of impact is assessed as **moderate adverse** due to a medium sensitivity and medium magnitude of effect (**Table 13-47**).

422. For all other receptors, the overall sensitivity is considered to be low (as per section 13.6.1.1.3) and the magnitude is considered to be negligible to low, resulting in an overall **minor adverse** to **negligible** significance (**Table 13-47**).

Table 13-47 Cumulative Magnitude, Sensitivity and Impact Significance Relating to Cumulative Impacts to Displacement Leading to Gear Conflict and Increase Pressure on Adjacent Fishing Grounds, During Construction.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Low	Negligible	Minor adverse
Dredge	Medium	Medium	Moderate adverse
Intertidal netters	Low	Low	Minor adverse
Otter trawl	Low	Low	Minor adverse
Pelagic trawl	Low	Low	Minor adverse
Inshore static gear	Low	Medium	Minor adverse
Offshore static gear	Low	Low	Minor adverse

13.8.1.3 Impact 3: Temporary increased steaming times

13.8.1.3.1 Magnitude of effect

423. Temporary increased steaming times for schemes assessed as Tier 3 or higher are expected to have a negligible magnitude of effect across all receptor groups.

424. For Tier 1 and 2 schemes, the offshore construction of Dogger Bank A, Dogger Bank B and Sofia is underway, and estimated to be completed by 2024. Therefore, no cumulative impacts are anticipated with the construction of DBS West and DBS East, as the construction timelines do not align. Construction is yet to begin for Hornsea Three and Hornsea Four; however, taking into account the embedded mitigation measures outlined in section 13.3.3 and level of transits, the cumulative magnitude of effect would remain low for all commercial fisheries receptor groups.

425. The overall cumulative magnitude of effect for temporary increased steaming times, for Tier 1 and 2 schemes is, therefore, assessed as low for all gear types.

13.8.1.3.2 Receptor Sensitivity

426. Providing that adequate notification is given, and the embedded mitigation measures are followed (section 13.3.3), all fishing vessels would be in a position to avoid construction areas, as the offshore receptor groups have operational ranges which extend beyond the area of construction.

427. All commercial fisheries receptor groups are deemed to be of low vulnerability and moderate spatial tolerance to increased steaming times. The sensitivity of the receptors is, therefore, considered to be low.

13.8.1.3.3 Significance of Impact

428. The overall cumulative significance of impact is assessed as **negligible** for Tier 3 or higher schemes, where the receptor sensitivity is low and magnitude of effect is negligible.

429. For Tier 1 and 2 schemes, the overall cumulative significance of impact is assessed as **minor adverse**, where the receptor sensitivity is low and magnitude of effect is low (**Table 13-48**).

Table 13-48 Cumulative Magnitude, Sensitivity and Impact Significance Relating to Cumulative Impacts to Temporary Increased Steaming Times in Consideration of Tier 1 and Tier 2 Projects, During Construction.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Low	Low	Minor adverse
Dredge	Low	Low	Minor adverse
Intertidal netters	Low	Low	Minor adverse
Otter trawl	Low	Low	Minor adverse
Pelagic trawl	Low	Low	Minor adverse
Inshore static gear	Low	Low	Minor adverse
Offshore static gear	Low	Low	Minor adverse

13.8.1.4 Impact 6: Potential Consequential Impacts on commercial fisheries from Impacts on Commercially Important Fish and Shellfish Resources

13.8.1.4.1 Magnitude of effect

430. Impacts to commercially important fish and shellfish resources for schemes assessed as Tier 3 or higher, are expected to have a negligible magnitude of effect across all receptor groups.

431. For Tier 1 and 2 schemes, Dogger Bank A and Dogger Bank B are considered to have the greatest potential for cumulative effects to arise, given their close proximity to the installation of DBS West and DBS East. However, impacts to commercial fish and shellfish resources during the construction phase are predicted to be of short-term duration and highly localised. The potential impacts to fish and shellfish were assessed to have, at worst, a minor adverse effect within **Volume 7, Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)**. Based on this, the potential cumulative magnitude of effect is considered to be of low across all receptor groups.

13.8.1.4.2 Receptor Sensitivity

432. UK dredgers primarily targeting scallops have a low spatial tolerance and limited availability to deploy alternative gear types. The sensitivity of this receptor is therefore, considered to be medium.

433. Intertidal netters targeting sea trout, sea bass, and Dover sole within the nearshore intertidal area, are limited to a small spatial area and have reduced adaptability to deploy alternative gear types; therefore, the sensitivity is assessed as medium.

434. Inshore static gear vessels <10m, targeting lobster and brown crab, have lower operational ranges than that of the larger offshore vessels, and have a limited availability to deploy alternative gear types. The sensitivity of the receptor is, therefore, considered to be medium.

435. Otter trawlers from the non-UK and UK, targeting cod and plaice, and Pelagic trawlers targeting herring, mackerel, sprat, sandeel, and whiting, exhibit an extensive operational range and have a moderate spatial tolerance. The sensitivity of these receptors is, therefore, considered to be low. Additionally, the sensitivity of offshore static gear vessels is also determined to be low, as this receptor has the ability to fish over a wider area, than only areas they may be temporarily excluded from during construction works.

436. Demersal trawlers and seines have relatively high operational range and high spatial tolerance; the sensitivity is, therefore, considered to be negligible.

13.8.1.4.3 Significance of Impact

437. For Tier 3 schemes, the overall cumulative significance of impact is assessed as **negligible** for otter trawlers, pelagic trawlers, offshore static gear and demersal trawlers and seines, where the sensitivity is low and magnitude is negligible. For dredgers, intertidal netters and inshore static gear fishers, the cumulative significance is assessed as **minor adverse**, where the sensitivity is medium and magnitude is negligible.

438. For Tier 1 and 2 schemes, the overall cumulative significance of impact for all receptor groups is assessed as **minor adverse**, where the sensitivity is low to medium and magnitude is low (**Table 13-49**).

Table 13-49 Cumulative Magnitude, Sensitivity and Impact Significance Relating to Cumulative Impacts to Potential Consequential Impacts on Commercial Fisheries from Impacts to Commercial Fish Stocks, for Tier 1 and Tier 2 Projects, During Construction.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Low	Negligible	Negligible
Dredge	Low	Medium	Minor adverse
Intertidal netters	Low	Medium	Minor adverse
Otter trawl	Low	Low	Minor adverse
Pelagic trawl	Low	Low	Minor adverse
Inshore static gear	Low	Medium	Minor adverse
Offshore static gear	Low	Low	Minor adverse

13.8.2 Potential Cumulative Effects during Operation

13.8.2.1 Impact 1: Loss or restricted access to fishing grounds

13.8.2.1.1 Magnitude of effect

439. The cumulative magnitude of effect during the operational phase due to loss or restricted access to fishing grounds is expected to be lower than that presented during construction (section 13.8.1.1), as many fishing practices can resume access across the Offshore Export Cable Corridor, Array Areas and within other constructed wind farms.

440. Similarly, many fishing practices can resume access across the Offshore Export Cable Corridor and those of other sub-sea cables and CCS pipelines.

441. As such, the magnitude of effect for all tiered projects is assessed as a low magnitude for UK dredgers within the Dogger Bank SAC, and negligible for all other receptors.

13.8.2.1.2 Receptor Sensitivity

442. The receptor sensitivity is considered the same as detailed in section 13.8.1.1.2.

443. The sensitivity of UK dredgers, intertidal netters and inshore static gear fishers is considered to be medium. The sensitivity of otter trawlers, pelagic trawlers and offshore static gear fishers is considered to be low, and negligible for demersal seines.

13.8.2.1.3 Significance of Impact

444. The overall cumulative significance of impact for loss or restricted access to fishing grounds during the operational phase is assessed as **minor adverse** for intertidal netters and inshore static gear fishers, where the sensitivity is medium and magnitude is negligible, and **negligible** for otter trawlers, pelagic trawlers and offshore static gear fishers, where the sensitivity is low and magnitude is negligible (**Table 13-50**).

445. A **minor adverse** effect is assessed for UK dredgers, which have a medium sensitivity and low magnitude of effect (**Table 13-50**).

Table 13-50 Cumulative Magnitude, Sensitivity and Impact Significance Relating to Cumulative Impacts to Loss or Restricted Access to Fishing Grounds, During Operation.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Negligible	Negligible	Negligible
Dredge	Low	Medium	Minor adverse

Receptor Group	Magnitude	Sensitivity	Significance
Intertidal netters	Negligible	Medium	Minor adverse
Otter trawl	Negligible	Low	Negligible
Pelagic trawl	Negligible	Low	Negligible
Inshore static gear	Negligible	Medium	Minor adverse
Offshore static gear	Negligible	Low	Negligible

13.8.2.2 Impact 2: Displacement leading to gear conflict and increased pressure on adjacent fishing grounds

13.8.2.2.1 Magnitude of effect

446. Cumulative displacement, gear conflict and increased pressure on adjacent fishing grounds has the potential to occur as a result of other projects and the operation of DBS West and DBS East concurrently and / or sequentially, and is directly correlated to Impact 1: Loss or restricted access to fishing grounds, i.e. if there is no loss or restricted access to grounds, there would be no displacement.

447. As such, the magnitude of effect for all tiered projects is assessed as a low magnitude for UK dredgers within the Dogger Bank SAC, and negligible for all other receptors.

13.8.2.2.2 Receptor Sensitivity

448. The receptor sensitivity is considered the same as detailed in section 13.8.1.1.2.

449. The sensitivity of UK dredgers, intertidal netters and inshore static gear fishers is considered to be medium. The sensitivity of otter trawlers, pelagic trawlers and offshore static gear fishers is considered to be low, and negligible for demersal seines.

13.8.2.2.3 Significance of Impact

450. The overall cumulative significance of impact for displacement leading to gear conflict and increased pressure on adjacent fishing grounds during the operational phase is assessed as **minor adverse** for intertidal netters and inshore static gear fishers, where the sensitivity is medium and magnitude is negligible, and **negligible** for otter trawlers, pelagic trawlers and offshore static gear fishers, where the sensitivity is low and magnitude is negligible (**Table 13-51**).

451. A **minor adverse** effect is assessed for UK dredgers, which have a medium sensitivity and low magnitude of effect (Table 13-51).

Table 13-51 Cumulative Magnitude, Sensitivity and Impact Significance Relating to Cumulative Impacts to Displacement leading to Gear Conflict And Increased Pressure On Adjacent Fishing Grounds, During Operation.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Negligible	Negligible	Negligible
Dredge	Low	Medium	Minor adverse
Intertidal netters	Negligible	Medium	Minor adverse
Otter trawl	Negligible	Low	Negligible
Pelagic trawl	Negligible	Low	Negligible
Inshore static gear	Negligible	Medium	Minor adverse
Offshore static gear	Negligible	Low	Negligible

13.8.2.3 Impact 3: Temporary increased steaming times

13.8.2.3.1 Magnitude of effect

452. The cumulative magnitude of effect during the operational phase due to increased steaming times is expected to be lower than that presented during construction (section 13.8.2.3.113.8.113.8.1.1), as many fishing practices can resume access across the Offshore Export Cable Corridor, Array Areas and within other constructed wind farms.

453. As such the magnitude of effect for all tiered projects is assessed as negligible for all receptors.

13.8.2.3.2 Receptor Sensitivity

454. The receptor sensitivity is considered the same as detailed in section 13.8.1.3.2, where the sensitivity is determined to be low for all receptor groups.

13.8.2.3.3 Significance of Impact

455. The overall cumulative significance of impact for increased steaming times during the operational phase is assessed to be **negligible**, given the low receptor sensitivity and negligible magnitude of effect (**Table 13-52**).

Table 13-52 Cumulative Magnitude, Sensitivity and Impact Significance Relating to Cumulative Impacts to Temporary Increased Steaming Times, During Operation.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Negligible	Low	Negligible
Dredge	Negligible	Low	Negligible
Intertidal netters	Negligible	Low	Negligible
Otter trawl	Negligible	Low	Negligible
Pelagic trawl	Negligible	Low	Negligible
Inshore static gear	Negligible	Low	Negligible
Offshore static gear	Negligible	Low	Negligible

13.8.2.4 Impact 4: Loss or damage to fishing gear due to snagging

13.8.2.4.1 Magnitude of effect

456. Demersal trawls and seines, otter trawls and dredgers are identified as the most sensitive receptor groups to snagging. Schemes assessed as Tier 1 and 2 are expected to have a low magnitude of effect on these receptors, and a negligible magnitude of effect on all other gear types.

457. With the addition of proposed safety measures, including safety areas, cable protection, and guidance protocols in place, loss or damage due to snagging is predicted have an overall negligible magnitude of effect during the operational phase.

13.8.2.4.2 Receptor Sensitivity

458. Demersal trawls, seines, otter trawlers and dredges are in direct, near continuous contact with the seabed, where there is an increased risk of snagging on structures on the seabed and sub-sea cables associated with the Projects. These receptors are, therefore, vulnerable to impacts that may arise from the Projects, as despite having a high spatial tolerance, this group has limited ability to deploy alternative gear types. The sensitivity of these receptors is, therefore, considered to be medium.

459. Inshore and offshore static gears are not towed, and they are less susceptible to loss or damage due to snagging. It is acknowledged, however, that snagging still poses a risk to static gear vessels, for example when hauling gear. The sensitivity is therefore, considered to be low. Similarly, pelagic gear is designed to be towed within the water column, and limited contact with the seabed is expected. This receptor is, therefore, vulnerable to impacts that may arise from the Projects, as despite having an extensive operational range, this group has a limited ability to deploy alternative gear types. The sensitivity of this receptor is, therefore, considered to be low.

460. Intertidal netters operate from the shore, and do not involve any vessel or towing activities, and would not be vulnerable to impacts as a result of snagging. The sensitivity of this receptor is therefore, considered to be negligible.

13.8.2.4.3 Significance of Impact

461. The overall cumulative significance of impact for loss or damage of fishing gear due to snagging during the operational phase is assessed to be **minor adverse** for demersal trawls and seines, otter trawlers and dredgers, given the medium receptor sensitivity and negligible magnitude of effect. The overall cumulative significance of impact for all other receptor groups is considered **negligible** (**Table 13-53**).

Table 13-53 Cumulative Magnitude, Sensitivity and Impact Significance Relating to Cumulative Impacts to Loss or Damage to Fishing Gear due to Snagging, During Operation.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Negligible	Medium	Minor adverse
Dredge	Negligible	Medium	Minor adverse
Intertidal netters	Negligible	Negligible	Negligible
Otter trawl	Negligible	Medium	Minor adverse
Pelagic trawl	Negligible	Low	Negligible
Inshore static gear	Negligible	Low	Negligible
Offshore static gear	Negligible	Low	Negligible

13.8.2.5 Impact 6: Potential Consequential Impacts on commercial fisheries from Impacts on Commercially Important Fish and Shellfish Resources

13.8.2.5.1 Magnitude of effect

462. The cumulative magnitude of effect during the operational phase due to potential impacts to commercially important fish and shellfish resources is expected to be lower than that presented during construction (section 13.8.1.4.1). Noise, turbidity and sedimentation associated with installation activities would be reduced.

463. As such, the magnitude of effect for all tiered schemes is assessed as negligible for all receptors.

13.8.2.5.2 Receptor Sensitivity

464. The receptor sensitivity is considered the same as detailed in section 13.8.1.4.2.

465. Dredgers, intertidal netters and inshore static gear fishers are considered of medium sensitivity. Otter trawlers, pelagic trawlers and offshore static gear vessels are determined as low sensitivity, and demersal trawlers and seines are considered to have a negligible sensitivity.

13.8.2.5.3 Significance of Impact

466. The overall cumulative significance of impact for potential impacts to commercial important fish and shellfish resources during the operational phase is assessed to be **minor adverse** for dredgers, intertidal netters and inshore static gear fishers, given the medium receptor sensitivity and negligible magnitude of effect, and **negligible** for all other receptor groups (**Table 13-54**).

Table 13-54 Cumulative Magnitude, Sensitivity and Impact Significance Relating to Cumulative Impacts to Potential Consequential Impacts on Commercial Fisheries from Impacts on Commercially Important Fish and Shellfish Resources, During Operation.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Negligible	Negligible	Negligible
Dredge	Negligible	Medium	Minor adverse
Intertidal netters	Negligible	Medium	Minor adverse
Otter trawl	Negligible	Low	Negligible
Pelagic trawl	Negligible	Low	Negligible
Inshore static gear	Negligible	Medium	Minor adverse
Offshore static gear	Negligible	Low	Negligible

13.8.2.6 Impact 7: Navigational safety

13.8.2.6.1 Magnitude of effect

467. Cumulative navigational safety risks to commercial fishers are considered fully within **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)**. During the operational phase there would be fewer Project vessels on-site, resulting in fewer vessel encounters, reducing potential collision risks and navigational safety impacts. Additionally, there would be greater manoeuvrability for vessels to navigate and maintain safe passing distances, as there would be more sea room available.

468. Given the greater sea room available, and minor impacts assessed within Dogger Bank A and Dogger Bank B Tier 2 schemes, the magnitude of effect is considered to be low.

469. Schemes assessed as Tier 3 or higher are expected to have a negligible to low magnitude of effect across all receptor groups.

13.8.2.6.2 Receptor Sensitivity

470. The receptor sensitivity is considered the same as detailed in section 13.8.1.3.2, where the sensitivity is determined to be low for all receptor groups.

13.8.2.6.3 Significance of Impact

471. For Tier 1 and 2 schemes, the cumulative significance of impact is assessed to be **minor adverse**, given the low sensitivity and low magnitude (**Table 13-55**). For Tier 3 or higher schemes, the cumulative significance of impacts is assessed to be **negligible**, given the low sensitivity and negligible to low magnitude.

Table 13-55 Cumulative Magnitude, Sensitivity and Impact Significance Relating to Cumulative Impacts to Navigational Safety, for Tier 1 and Tier 2 Projects, During Operation.

Receptor Group	Magnitude	Sensitivity	Significance
Demersal seine	Low	Low	Minor adverse
Dredge	Low	Low	Minor adverse
Intertidal netters	Low	Low	Minor adverse
Otter trawl	Low	Low	Minor adverse
Pelagic trawl	Low	Low	Minor adverse
Inshore static gear	Low	Low	Minor adverse
Offshore static gear	Low	Low	Minor adverse

13.8.3 Potential Cumulative Effects during Decommissioning

472. The cumulative magnitude of decommissioning effects would be comparable to, or less than, the construction phase. Accordingly, for the identified commercial fisheries receptors during the construction phase (detailed in section 13.8.1), it is anticipated that the same would be true for the decommissioning phase.

473. Moderate adverse cumulative impacts were assessed for loss or restricted access to fishing grounds and displacement of fishing activities leading to increased gear conflict of UK dredgers, resulting from fisheries management measures within the Dogger Bank SAC.

13.9 Transboundary Effects

474. Given the prevalence of non-UK registered fishing vessels within the Commercial Fisheries Study Area, impacts that might arise on the interests of EEA states within UK waters, e.g. a non UK fishing vessel, have been considered within the main part of this assessment (section 13.6).

475. For commercial fisheries, the potential for transboundary effects within the EEZ of other EEA states is limited to potential displacement of fishing activity. Displacement of fishing activity was found to be minor (section 13.6), therefore the potential transboundary effect of displacement of fishing vessels is considered to be not significant.

13.10 Interactions

476. The effects identified and assessed in this chapter have the potential to interact with each other. The areas of potential interaction between effects are presented in **Table 13-56**. This provides a screening tool for which effects have the potential to interact. **Table 13-56** provides an assessment for each receptor (or receptor group) as related to these impacts.

477. Within **Table 13-57,** the effects are assessed relative to each development phase to see if multiple effects could increase the significance of the effect upon a receptor. Following this a lifetime assessment is undertaken which considers the potential for an effect to affect receptors across all development phases.

Table 13-56 Interactions Between Impacts – Screening (Construction (C), Operation (O) and Decommissioning (D))

Potential Interactions between Impacts							
	Impact 1: Loss or restricted access to fishing grounds	**Impact 2: Displacement leading to gear conflict and increased pressure on adjacent fishing grounds**	**Impact 3: Temporary increased steaming times**	**Impact 4: Loss or damage to fishing gear due to snagging**	**Impact 5: Supply chain opportunities for local fishing vessels**	**Impact 6: Potential impacts on commercially important fish and shellfish resources**	**Impact 7: Navigational safety**
Impact 1: Loss or restricted access to fishing grounds		C, O, D	No	No	No	No	No
Impact 2: Displacement leading to gear conflict and increased pressure on adjacent fishing grounds	C, O, D		No	No	No	No	No
Impact 3: Temporary increased steaming times	No	No		No	No	No	No
Impact 4: Loss or damage to fishing gear due to snagging	No	No	No		No	No	No
Impact 5: Supply chain opportunities for local fishing vessels	No	No	No	No		No	No
Impact 6: Potential impacts on commercially important fish and shellfish resources	No	No	No	No	No		No
Impact 7: Navigational safety	No	No	No	No	No	No	

Table 13-57 Interaction Between Impacts – Phase and Lifetime Assessment

Receptor	Highest Significance Level				
	Construction	**Operation**	**Decommissioning**	**Phase Assessment**	**Lifetime Assessment**
Demersal trawl/seine	Minor adverse	Minor adverse	Minor adverse	No greater than individually assessed impacts: Loss or restricted access to fishing grounds increases the potential for displacement of fishing vessels. A potential significant effect has been predicted for inshore static gear during construction; however, measures outlined in section 13.6.1.1.5 will reduce the magnitude of impact from medium to low. Therefore, the residual effect is minor adverse, which is deemed to be not significant in EIA terms. All other potential effects are non-significant (minor adverse or less) and localised in nature. The majority of effects are also temporary in nature. Together, these factors and the embedded mitigation measures, limit the potential for different impacts to interact within each phase. As a result, none of the potential interactions identified with respect to commercial fisheries are expected to result in a synergistic or greater significance of effect than those already assessed	No greater than individually assessed impacts: As with the phase assessment, the residual effect for inshore static gear during construction is minor adverse, which is deemed to be not significant in EIA terms, limiting the potential for different impacts to interact across the different phases As with the phase assessment, all potential effects are non-significant and localised in nature, limiting the potential for different impacts to interact across the different phases. Effects from decommissioning are temporary in nature, limiting their potential to result in a synergistic or greater impact with those considered in other phases.
Dredge	Minor adverse	Minor adverse	Minor adverse		
Intertidal netters	Minor adverse	Minor adverse	Minor adverse		
Otter trawl	Minor adverse	Minor adverse	Minor adverse		
Pelagic trawl	Minor adverse	Minor adverse	Minor adverse		
Static gear inshore	Moderate adverse	Minor adverse	Minor adverse		
Static gear offshore	Minor adverse	Minor adverse	Minor adverse		

13.11 Inter-Relationships

478. For commercial fisheries potential inter-relationships between other topics assessed within the ES including **Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)** and **Volume 7, Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)**. A summary of the potential inter-relationships between these topics is provided in **Table 13-58**.

Table 13-58 Commercial fisheries Inter-relationships

Topic and Description	Related Chapter	Where Addressed in this Chapter	Rationale
Construction			
Potential impacts on commercially important fish and shellfish resources	**Volume 7, Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)**	Section 13.6.1.6	Construction activities could affect fish and shellfish stocks, which could result in changes to landings of commercially important fish and shellfish species.
Potential interference with fishing activity as a result of changes to shipping routes and project vessel traffic	**Volume 7, Chapter 14 Shipping and Navigation, (application ref: 7.14)**	Section 13.6.1.7	Construction activities could result in changes to shipping routes and increases in Project vessel traffic, which could interfere with fishing activity.
Operation			
Potential impacts on commercially important fish and shellfish resources	**Volume 7, Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)**	Section 13.6.2.6	Operation and maintenance activities and the presence of infrastructure could affect fish and shellfish stocks, which could result in changes to landings of commercially important fish and shellfish species.

Topic and Description	Related Chapter	Where Addressed in this Chapter	Rationale
Potential interference with fishing activity as a result of changes to shipping routes and project vessel traffic	**Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)**	Section 13.6.2.7	Operation and maintenance activities and the presence of infrastructure could result in changes to shipping routes and increases in Project vessel traffic, which could interfere with fishing activity.
Decommissioning			
Potential impacts on commercially important fish and shellfish resources	**Volume 7, Chapter 10 Fish and Shellfish Ecology (application ref: 7.10)**	Section 13.6.3	Decommissioning activities could affect fish and shellfish stocks, which could result in changes to landings of commercially important fish and shellfish species.
Potential interference with fishing activity as a result of changes to shipping routes and project vessel traffic	**Volume 7, Chapter 14 Shipping and Navigation (application ref: 7.14)**	Section 13.6.3	Decommissioning activities could result in changes to shipping routes and increases in Project vessel traffic, which could interfere with fishing activity.

13.12 Summary

479. This chapter has provided a characterisation of the existing environment for commercial fisheries based on existing and site specific survey data, in addition to feedback from fisheries stakeholders.

480. A summary of the potential likely significant effects, mitigation measures, cumulative impacts, and residual effects to commercial fisheries receptors is provided in **Table 13-59**. It is noted that conclusions made within this assessment are constrained by the limitations and assumptions within the data, which are described in section 13.4.6.

481. Key receptor groups identified within the commercial fisheries assessment are as follows:

- Demersal seines and trawls;
- Dredge;
- Intertidal netters;
- Otter trawls;
- Pelagic trawls;
- Inshore static gear; and
- Offshore static gear.

482. Currently the Dogger Bank SAC Byelaw prohibits the use of bottom towed fishing gear within the entire DBS Array Areas. Therefore, for loss or restricted access to fishing grounds (during both construction and operation), impacts on demersal seines, dredgers, otter trawlers and pelagic trawlers are considered to be at most of negligible significance as they can no longer fish within the Array Areas.

483. The assessment also considers the impacts on receptor groups in the event that the byelaw is revoked and the impacts on receptor groups due to the Offshore Export Cable Corridor. Prior to additional mitigation measures, a moderate adverse effect was predicted for loss or restricted access to fishing grounds during the construction and decommissioning phases for dredge and inshore static vessels. These were the only moderate adverse effect identified within the assessment of significance.

484. As well as the proposed embedded mitigation measures detailed in **Table 13-3**, additional mitigation measures are proposed during the construction and decommissioning phases in order to reduce the residual effects on dredge and inshore static vessels to be of minor adverse significance. Options to encourage co-existence of fisheries, including cooperation agreements and associated payments in accordance with FLOWW guidance, will be explored. These commitments are outlined within **Volume 8, Outline Fisheries Liaison and Coexistence Plan (application ref: 8.28)**, submitted as part of the DCO application.

485. Potential impacts during the decommissioning phase are largely considered to be the same or similar to the potential impacts during the construction phase of DBS East and / or DBS West.

486. With the introduction of additional mitigation measures, this assessment has concluded that impacts to the commercial fisheries receptor groups will not be above a minor adverse effect during the construction and decommissioning phases of DBS East and / or DBS West in isolation and together. Likewise, impacts with the potential to occur during the operation and maintenance phase are not assessed to be above minor adverse significance. A complete summary of the potential likely significant effects is provided in **Table 13-59**.

487. The magnitude of impact assessed for the development of DBS East and /or DBS West in-isolation and together (Concurrent or Sequential Scenario), is considered to be comparable throughout the assessment of significance. The development of DBS East and DBS West concurrently or sequentially, would encompass a larger spatial area and overall footprint than that of either Projects In-isolation (and the overall construction period may be longer in regard to the Sequential Scenario). The impacts are therefore predicted to be higher for DBS West and DBS East together, however, the overall magnitude of effect remains the same as for the Projects In-isolation, given the duration of the construction works and the consideration of areas of fishing activity for each receptor group.

488. Despite the prevalence of non-UK fishing vessels within the Commercial Fisheries Study Area, no significant transboundary effects have been concluded. Impacts to vessels of other EEA states are limited to displacement, increased gear conflict and pressure on adjacent fishing grounds. This has been assessed to only be of a minor adverse effect, which is not significant in EIA terms.

489. Within the CEA, cumulative moderate adverse effects were assessed for loss or restricted access to fishing grounds and displacement of fishing activities leading to increased gear conflict for UK dredgers, during installation of the Offshore Export Cable Corridor. This impact is assessed as resulting from fisheries management measures within the Dogger Bank SAC, which unless revoked, will prohibit bottom contacting fishing methods within the Dogger Bank SAC.

490. Cumulative impacts of loss or restricted access and displacement due to other OWFs during the construction phase were also assessed to have a moderate adverse effect for inshore static vessels and UK dredgers. This effect is reduced to a minor residual effect when additional mitigations such as co-operation agreements and associated disruption payments in accordance with FLOWW guidance, are applied.

491. All other impacts were assessed to be of a negligible to minor adverse effect in consideration of all other plans and projects scoped into the CEA.

Table 13-59 Summary of Potential Likely Significant Effects on Commercial Fisheries

Potential Impact	Receptor	Magnitude	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect	Residual Cumulative Effect
Construction							
Impact 1: Loss or restricted access to fishing grounds – Dogger Bank SAC byelaw in place	Demersal seine	No change	Negligible	No change	N/A	No change	Minor adverse
	Dredge	No change	Medium	No change	N/A	No change	Minor adverse
	Otter trawl	No change	Low	No change	N/A	No change	Minor adverse
	Pelagic trawl	No change	Low	No change	N/A	No change	Minor adverse
Impact 1: Loss or restricted access to fishing grounds – Dogger Bank SAC byelaw revoked	Demersal seine	Low	Negligible	Negligible	N/A	Negligible	Minor adverse
	Dredge	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Otter trawl	Medium	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Pelagic trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Offshore static gear	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
Impact 1: Loss or restricted access to fishing grounds – Offshore Export Cable Corridor	Demersal seine	Low	Negligible	Negligible	N/A	Negligible	Minor adverse
	Dredge	Medium	Medium	Moderate adverse	Encourage coexistence through disruptions payments and cooperations agreements in accordance with FLOWW guidance. This will be detailed in the Outline Fisheries Liaison and Coexistence Plan	Minor adverse	Moderate adverse
	Intertidal netters	Negligible	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Otter trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Pelagic trawl	Medium	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Inshore static gear	Medium	Medium	Moderate adverse	Encourage coexistence through disruptions payments and cooperations agreements in accordance with FLOWW guidance. This will be detailed	Minor adverse	Minor adverse

Potential Impact	Receptor	Magnitude	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect	Residual Cumulative Effect
					in the Outline Fisheries Liaison and Coexistence Plan		
	Offshore static gear	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
Impact 2: Displacement leading to gear conflict and increased pressure on adjacent fishing grounds – Dogger Bank SAC byelaw in place	Demersal seine	No change	Negligible	No change	N/A	Negligible	Minor adverse
	Dredge	No change	Medium	No change	N/A	No change	Minor adverse
	Otter trawl	No change	Low	No change	N/A	No change	Minor adverse
	Pelagic trawl	No change	Low	No change	N/A	No change	Minor adverse
Impact 2: Displacement leading to gear conflict and increased pressure on adjacent fishing grounds – Dogger Bank SAC byelaw revoked	Demersal seine	Low	Negligible	Negligible	N/A	Negligible	Minor adverse
	Dredge	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Otter trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Pelagic trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Inshore static gear	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Offshore static gear	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
Impact 2: Displacement leading to gear conflict and increased pressure on adjacent fishing grounds – Offshore Export Cable Corridor	Demersal seine	Low	Negligible	Negligible	N/A	Negligible	Minor adverse
	Dredge	Low	Medium	Minor adverse	N/A	Minor adverse	Moderate adverse
	Otter trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Pelagic trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Inshore static gear	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Offshore static gear	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
Impact 3: Temporary increased steaming times	All commercial fisheries receptor groups	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Demersal seine	No change	Medium	No change	N/A	No change	N/A

Potential Impact	Receptor	Magnitude	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect	Residual Cumulative Effect
Impact 4: Loss or damage to fishing gear due to snagging	Dredge	No change	Medium	No change	N/A	No change	N/A
	Intertidal netters	No change	Negligible	No change	N/A	No change	N/A
	Otter trawl	No change	Medium	No change	N/A	No change	N/A
	Pelagic trawl	No change	Low	No change	N/A	No change	N/A
	Inshore static gear	No change	Low	No change	N/A	No change	N/A
	Offshore static gear	No change	Low	No change	N/A	No change	N/A
Impact 5: Supply chain opportunities for local fishing vessels	Demersal seine	Low	Low	Minor beneficial	N/A	Minor beneficial	N/A
	Dredge	Low	Medium	Minor beneficial	N/A	Minor beneficial	N/A
	Intertidal netters	Negligible	Negligible	Negligible	N/A	Negligible	N/A
	Otter trawl	Low	Low	Minor beneficial	N/A	Minor beneficial	N/A
	Pelagic trawl	Low	Low	Minor beneficial	N/A	Minor beneficial	N/A
	Inshore static gear	Negligible	Negligible	Negligible	N/A	Negligible	N/A
	Offshore static gear	Low	Medium	Minor beneficial	N/A	Minor beneficial	N/A
Impact 6: Potential impacts on commercially important fish and shellfish resources	Demersal seine	Low	Negligible	Negligible	N/A	Negligible	Negligible
	Dredge	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Intertidal netters	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Otter trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Pelagic trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Inshore static gear	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Offshore static gear	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
Impact 7: Navigational safety	Demersal seine	No Change	Negligible	No Change	N/A	No Change	N/A
	Dredge	No Change	Medium	No Change	N/A	No Change	N/A

Potential Impact	Receptor	Magnitude	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect	Residual Cumulative Effect
	Intertidal netters	No Change	Negligible	No Change	N/A	No Change	N/A
	Otter trawl	No Change	Low	No Change	N/A	No Change	N/A
	Pelagic trawl	No Change	Low	No Change	N/A	No Change	N/A
	Inshore static gear	No Change	Medium	No Change	N/A	No Change	N/A
	Offshore static gear	No Change	Low	No Change	N/A	No Change	N/A
Operation							
Impact 1: Loss or restricted access to fishing grounds – Dogger Bank SAC byelaw in place	Demersal seine	No change	Negligible	No change	N/A	No change	Negligible
	Dredge	No change	Medium	No change	N/A	No change	Minor adverse
	Otter trawl	No change	Low	No change	N/A	No change	Negligible
	Pelagic trawl	No change	Low	No change	N/A	No change	Negligible
Impact 1: Loss or restricted access to fishing grounds – Dogger Bank SAC byelaw revoked	Demersal seine	Negligible	Negligible	Negligible	N/A	Negligible	Negligible
	Dredge	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Intertidal netters	No change	Medium	No change	N/A	No change	Minor adverse
	Otter trawl	Low	Low	Minor adverse	N/A	Minor adverse	Negligible
	Pelagic trawl	Low	Low	Minor adverse	N/A	Minor adverse	Negligible
	Inshore static gear	No change	Medium	No change	N/A	No change	Minor adverse
	Offshore static gear	Negligible	Low	Negligible	N/A	Negligible	Negligible
Impact 1: Loss or restricted access to fishing grounds – Offshore Export Cable Corridor	Demersal seine	Negligible	Negligible	Negligible	N/A	Negligible	Negligible
	Dredge	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Intertidal netters	No change	Medium	No change	N/A	No change	Minor adverse
	Otter trawl	Negligible	Low	Negligible	N/A	Negligible	Negligible
	Pelagic trawl	Low	Low	Minor adverse	N/A	Minor adverse	Negligible

Potential Impact	Receptor	Magnitude	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect	Residual Cumulative Effect
	Inshore static gear	Negligible	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Offshore static gear	Negligible	Low	Negligible	N/A	Negligible	Negligible
Impact 2: Displacement leading to gear conflict and increased pressure on adjacent fishing grounds – Dogger Bank SAC byelaw in place	Demersal seine	No change	Negligible	No change	N/A	No change	Negligible
	Dredge	No change	Medium	No change	N/A	No change	Minor adverse
	Otter trawl	No change	Low	No change	N/A	No change	Negligible
	Pelagic trawl	No change	Low	No change	N/A	No change	Negligible
Impact 2: Displacement leading to gear conflict and increased pressure on adjacent fishing grounds – Dogger Bank SAC byelaw revoked	Demersal seine	Low	Negligible	Negligible	N/A	Negligible	Negligible
	Dredge	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Otter trawl	Low	Low	Minor adverse	N/A	Minor adverse	Negligible
	Pelagic trawl	Low	Low	Minor adverse	N/A	Minor adverse	Negligible
	Inshore static gear	Negligible	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Offshore static gear	Low	Low	Minor adverse	N/A	Minor adverse	Negligible
Impact 2: Displacement leading to gear conflict and increased pressure on adjacent fishing grounds – Offshore Export Cable Corridor	Demersal seine	Negligible	Negligible	Negligible	N/A	Negligible	Negligible
	Dredge	Negligible	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Intertidal netters	No change	Medium	No change	N/A	No change	Minor adverse
	Otter trawl	Negligible	Low	Negligible	N/A	Negligible	Negligible
	Pelagic trawl	Negligible	Low	Negligible	N/A	Negligible	Negligible
	Inshore static gear	No change	Medium	No change	N/A	No change	Minor adverse
	Offshore static gear	Negligible	Low	Negligible	N/A	Negligible	Negligible
Impact 3: Temporary increased steaming times	All receptor groups	Low	Low	Minor adverse	N/A	Minor adverse	Negligible
	Demersal seine	Negligible	Medium	Minor adverse	N/A	Minor adverse	Minor adverse

Potential Impact	Receptor	Magnitude	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect	Residual Cumulative Effect
Impact 4: Loss or damage to fishing gear due to snagging	Dredge	Negligible	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Intertidal netters	Negligible	Negligible	Negligible	N/A	Negligible	Negligible
	Otter trawl	Negligible	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Pelagic trawl	Negligible	Low	Minor adverse	N/A	Minor adverse	Negligible
	Inshore static gear	Negligible	Low	Negligible	N/A	Negligible	Negligible
	Offshore static gear	Negligible	Low	Negligible	N/A	Negligible	Negligible
Impact 5: Supply chain opportunities for local fishing vessels	Demersal seine	Low	Low	Minor beneficial	N/A	Minor beneficial	N/A
	Dredge	Low	Medium	Minor beneficial	N/A	Minor beneficial	N/A
	Intertidal netters	No change	Negligible	No Change	N/A	No Change	N/A
	Otter trawl	Low	Low	Minor beneficial	N/A	Minor beneficial	N/A
	Pelagic trawl	Low	Low	Minor beneficial	N/A	Minor beneficial	N/A
	Inshore static gear	Negligible	Negligible	Negligible	N/A	Negligible	N/A
	Offshore static gear	Low	Low	Minor beneficial	N/A	Minor beneficial	N/A
Impact 6: Potential impacts on commercially important fish and shellfish resources	Demersal seine	Low	Negligible	Negligible	N/A	Negligible	Negligible
	Dredge	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Intertidal netters	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Otter trawl	Low	Low	Minor adverse	N/A	Minor adverse	Negligible
	Pelagic trawl	Low	Low	Minor adverse	N/A	Minor adverse	Negligible
	Inshore static gear	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Offshore static gear	Low	Low	Minor adverse	N/A	Minor adverse	Negligible
Impact 7: Navigational safety	Demersal seine	Low	Negligible	Negligible	N/A	Negligible	Minor adverse
	Dredge	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse

Potential Impact	Receptor	Magnitude	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect	Residual Cumulative Effect
	Intertidal netters	Low	Negligible	Negligible	N/A	Negligible	Minor adverse
	Otter trawl	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Pelagic trawl	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Inshore static gear	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Offshore static gear	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
Decommissioning							
Impact 1: Loss or restricted access to fishing grounds – Dogger Bank SAC byelaw in place	Demersal seine	No change	Negligible	No change	N/A	No change	Minor adverse
	Dredge	No change	Medium	No change	N/A	No change	Minor adverse
	Otter trawl	Negligible	Low	Negligible	N/A	Negligible	Minor adverse
	Pelagic trawl	Negligible	Low	Negligible	N/A	Negligible	Minor adverse
Impact 1: Loss or restricted access to fishing grounds – Dogger Bank SAC byelaw revoked	Demersal seine	Low	Negligible	Negligible	N/A	Negligible	Minor adverse
	Dredge	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Otter trawl	Medium	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Pelagic trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Offshore static gear	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
Impact 1: Loss or restricted access to fishing grounds – Offshore Export Cable Corridor	Demersal seine	Low	Negligible	Negligible	N/A	Negligible	Minor adverse
	Dredge	Medium	Medium	Moderate adverse	Encourage coexistence through disruptions payments and cooperations agreements in accordance with FLOWW guidance. This will be detailed in the Outline Fisheries Liaison and Coexistence Plan	Minor adverse	Moderate adverse
	Intertidal netters	Negligible	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Otter trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse

Potential Impact	Receptor	Magnitude	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect	Residual Cumulative Effect
	Pelagic trawl	Medium	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Inshore static gear	Medium	Medium	Moderate adverse	Encourage coexistence through disruptions payments and cooperations agreements in accordance with FLOWW guidance. This will be detailed in the Outline Fisheries Liaison and Coexistence Plan	Minor adverse	Minor adverse
	Offshore static gear	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
Impact 2: Displacement leading to gear conflict and increased pressure on adjacent fishing grounds – Dogger Bank SAC byelaw in place	Demersal seine	Negligible	Negligible	Negligible	N/A	Negligible	Minor adverse
	Dredge	Negligible	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Otter trawl	Negligible	Low	Negligible	N/A	Negligible	Minor adverse
	Pelagic trawl	Negligible	Low	Negligible	N/A	Negligible	Minor adverse
Impact 2: Dis-placement leading to gear conflict and increased pressure on adjacent fishing grounds – Dogger Bank SAC byelaw revoked	Demersal seine	Low	Negligible	Negligible	N/A	Negligible	Minor adverse
	Dredge	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Otter trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Pelagic trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Inshore static gear	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Offshore static gear	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
Impact 2: Displacement leading to gear conflict and increased pressure on adjacent fishing grounds – Offshore Export Cable Corridor	Demersal seine	Low	Negligible	Negligible	N/A	Negligible	Minor adverse
	Dredge	Low	Medium	Minor adverse	N/A	Minor adverse	Moderate adverse
	Otter trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Pelagic trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Inshore static gear	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Offshore static gear	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse

Potential Impact	Receptor	Magnitude	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect	Residual Cumulative Effect
Impact 3: Temporary increased steaming times	All commercial fisheries receptor groups	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
Impact 4: Loss or damage to fishing gear due to snagging	Demersal seine	No change	Medium	No change	N/A	No change	N/A
	Dredge	No change	Medium	No change	N/A	No change	N/A
	Intertidal netters	No change	Negligible	No change	N/A	No change	N/A
	Otter trawl	No change	Medium	No change	N/A	No change	N/A
	Pelagic trawl	No change	Low	No change	N/A	No change	N/A
	Offshore static gear	No change	Low	No change	N/A	No change	N/A
	Inshore static gear	No change	Low	No change	N/A	No change	N/A
Impact 5: Supply chain opportunities for local fishing vessels	Demersal seine	Low	Low	Minor beneficial	N/A	Minor beneficial	N/A
	Dredge	Low	Medium	Minor beneficial	N/A	Minor beneficial	N/A
	Intertidal netters	No change	Negligible	Negligible	N/A	Negligible	N/A
	Otter trawl	Low	Low	Minor beneficial	N/A	Minor beneficial	N/A
	Pelagic trawl	Low	Low	Minor beneficial	N/A	Minor beneficial	N/A
	Inshore static gear	Negligible	Negligible	Negligible	N/A	Negligible	N/A
	Offshore static gear	Low	Medium	Minor beneficial	N/A	Minor beneficial	N/A
Impact 6: Potential impacts on commercially important fish and shellfish resources	Demersal seine	Low	Negligible	Negligible	N/A	Negligible	Negligible
	Dredge	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Intertidal netters	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse
	Otter trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Pelagic trawl	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
	Inshore static gear	Low	Medium	Minor adverse	N/A	Minor adverse	Minor adverse

Potential Impact	Receptor	Magnitude	Sensitivity	Pre-mitigation Effect	Mitigation Measures Proposed	Residual Effect	Residual Cumulative Effect
	Offshore static gear	Low	Low	Minor adverse	N/A	Minor adverse	Minor adverse
Impact 7: Navigational safety	Demersal seine	No change	Negligible	No change	N/A	No change	N/A
	Dredge	No change	Medium	No change	N/A	No change	N/A
	Intertidal netters	No change	Negligible	No change	N/A	No change	N/A
	Otter trawl	No change	Medium	No change	N/A	No change	N/A
	Pelagic trawl	No change	Medium	No change	N/A	No change	N/A
	Inshore static gear	No change	Medium	No change	N/A	No change	N/A
	Offshore static gear	No change	Low	No change	N/A	No change	N/A

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