

DOGGER BANK D WIND FARM

Preliminary Environmental Information Report

Volume 1
Chapter 14 Commercial Fisheries

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Glossary

Term	Definition
Additional Mitigation	Measures identified through the Environmental Impact Assessment (EIA) process that are required as further action to avoid, prevent, reduce or, if possible, offset likely significant adverse effects to acceptable levels (also known as secondary (foreseeable) mitigation). All additional mitigation measures adopted by the Project are provided in the Commitments Register.
Beam trawl	A method of bottom trawling with a net that is held open by a beam, which is generally a heavy steel tube supported by steel trawl heads at each end. Tickler chains or chain mats, attached between the beam and the ground rope of the net, are used to disturb fish and crustaceans that rise up and fall back into the attached net.
Bycatch	Unwanted fish and other marine creatures, including marine mammals and birds, trapped by commercial fishing for other target species.
Commercial fishing	Any form of fishing activity legally undertaken for taxable profit and does not include recreational or angling fisheries.
Array Area	The area within which the wind turbines, inter-array cables and offshore platform(s) will be located.
Deemed Marine Licence (DML)	A consent required under the Marine and Coastal Access Act 2009 for certain activities undertaken within the UK marine area, which may be granted as part of the Development Consent Order.
Demersal	Living on or closely associated with the seabed.
Demersal seine	A seine net is a long net, with or without a bag in the centre, which is set either from the shore or from a boat for surrounding a certain area and is operated with two (long) ropes fixed to its ends (for hauling and herding the fish).
Development Consent Order (DCO)	A consent required under Section 37 of the Planning Act 2008 to authorise the development of a Nationally Significant Infrastructure Project, which is granted by the relevant Secretary of State following an application to the Planning Inspectorate.
Displacement (fishing activity)	Displacement of fishing activity refers to the relocation of fishing activity (i.e. pressure or effort) from an area into other area(s) as a result of the presence of other licensed marine activities and / or associated infrastructure.
Effect	An effect is the consequence of an impact when considered in combination with the receptor’s sensitivity / value / importance, defined in terms of significance.

Term	Definition
Embedded Mitigation	Embedded mitigation includes: <ul style="list-style-type: none">Measures that form an inherent part of the project design evolution such as modifications to the location or design of the development made during the pre-application phase (also known as primary (inherent) mitigation); andMeasures that will occur regardless of the EIA process as they are imposed by other existing legislative requirements or are considered as standard or best practice to manage commonly occurring environmental impacts (also known as tertiary (inexorable) mitigation). All embedded mitigation measures adopted by the Project are provided in the Commitments Register.
Enhancement	Measures committed to by the Project to create or enhance positive benefits to the environment or communities, as a result of the Project. All enhancement measures adopted by the Project are provided in the Commitments Register.
Environmental Impact Assessment (EIA)	A process by which certain planned projects must be assessed before a formal decision to proceed can be made. It involves the collection and consideration of environmental information and includes the publication of an Environmental Statement.
Environmental Statement (ES)	A document reporting the findings of the EIA which describes the measures proposed to mitigate any likely significant effects.
Expert Topic Group (ETG)	A forum for targeted technical engagement with relevant stakeholders through the EPP.
Fishery	A group of vessel voyages which target the same species or use the same gear.
Fishing ground	An area of water or sea bed targeted by fishing activity.
Fleet	A physical group of vessels sharing similar characteristics (e.g. nationality).
Gear type	The method / equipment used for fishing.
ICES statistical rectangles	ICES standardise the division of sea areas to enable statistical analysis of data. Each ICES statistical rectangle is '30 min latitude by 1 degree longitude' in size (approximately 30 x 30 nautical miles). A number of rectangles are amalgamated to create ICES statistical areas.
Impact	A change resulting from an activity associated with the Project, defined in terms of magnitude.
Inter-Array Cables	Cables which link the wind turbines to the offshore platform(s).

Term	Definition
Landfall	The area on the coastline, south-east of Skipsea, at which the offshore export cables are brought ashore, connecting to the onshore export cables at the transition joint bay above Mean High Water Springs.
Landings	Quantitative description of the amount of fish returned to port for sale, in terms of value or weight.
Mean High Water Spring	MHWS is the average of the heights of two successive high waters during a 24-hour period.
Mobile Fishing Gear	Fishing gear that is moved through the water to catch fish and shellfish. Examples include trawls and towed dredges.
Monitoring	<p>Measures to ensure the systematic and ongoing collection, analysis and evaluation of data related to the implementation and performance of a development. Monitoring can be undertaken to monitor conditions in the future to verify any environmental effects identified by the EIA, the effectiveness of mitigation or enhancement measures or ensure remedial action are taken should adverse effects above a set threshold occur.</p> <p>All monitoring measures adopted by the Project are provided in the Commitments Register.</p>
Offshore Development Area	The area in which all offshore infrastructure associated with the Project will be located, including any temporary works area during construction, which extends seaward of Mean High Water Springs. There is an overlap with the Onshore Development Area in the intertidal zone.
Offshore Export Cable Corridor (ECC)	The area within which the offshore export cables will be located, extending from the DBD Array Area to Mean High Water Springs at the landfall.
Offshore Export Cables	Cables which bring electricity from the offshore platform(s) to the transition joint bay at landfall.
Offshore Platform(s)	Fixed structures located within the DBD Array Area that contain electrical equipment to aggregate and, where required, convert the power from the wind turbines, into a more suitable voltage for transmission through the export cables to the Onshore Converter Station. Such structures could include (but are not limited to): Offshore Converter Station(s) and an Offshore Switching Station.
Otter trawl	A net with large rectangular boards (otter boards) which are used to keep the mouth of the trawl net open. Otter boards are made of timber or steel and are positioned in such a way that the hydrodynamic forces, acting on them when the net is towed along the seabed, pushes them outwards and prevents the mouth of the net from closing.
Pelagic	The water column or open sea.
Pelagic trawl	A net used to target fish species in the mid water column.

Term	Definition
Pots	Pots and traps are generally rigid structures into which fish or shellfish are guided or enticed through funnels that make entry easy but from which escape is difficult. There are many different styles and designs, each one has been designed to suit the behaviour of its target species.
Project Design Envelope	<p>A range of design parameters defined where appropriate to enable the identification and assessment of likely significant effects arising from a project’s worst-case scenario.</p> <p>The Project Design Envelope incorporates flexibility and addresses uncertainty in the DCO application and will be further refined during the EIA process.</p>
Safety Zones	A statutory, temporary marine zone demarcated for safety purposes around a possibly hazardous offshore installation or works / construction area.
Scallop dredge	A method to catch scallop using steel dredges with a leading bar fitted with a set of spring loaded, downward pointing teeth. Behind this toothed bar (sword), a mat of steel rings is fitted. A heavy net cover (back) is laced to the frame, sides and after end of the mat to form a bag.
Scoping Opinion	<p>A written opinion issued by the Planning Inspectorate on behalf of the Secretary of State regarding the scope and level of detail of the information to be provided in the Applicant’s Environmental Statement.</p> <p>The Scoping Opinion for the Project was adopted by the Secretary of State on 02 August 2024.</p>
Scoping Report	<p>A request by the Applicant made to the Planning Inspectorate for a Scoping Opinion on behalf of the Secretary of State.</p> <p>The Scoping Report for the Project was submitted to the Secretary of State on 24 June 2024.</p>
Scour Protection	Protective materials used to avoid sediment erosion from the base of the wind turbine foundations and offshore platform foundations due to water flow.
Static Fishing Gear	Fishing gear that is set in the water to wait for fish or shellfish to swim into it or be attracted to it. Examples include pots and traps, and fixed nets.
String	A series of static fishing gear (pots) joined together to form a single deployable linear line of pots.
Study Areas	A geographical area and / or temporal limit defined for each EIA topic to identify sensitive receptors and assess the relevant likely significant effects.
Swept Area Ratio (SAR)	Swept Area Ratio indicates the number of times in an annual period that a fishing gear makes contact with (or sweeps) the seabed surface. SAR provides a proxy for fishing intensity.

Term	Definition
The Applicant	SSE Renewables and Equinor acting through 'Doggerbank Offshore Wind Farm Project 4 Projco Limited'.
The Project	Dogger Bank D Offshore Wind Farm Project, also referred to as DBD in this PEIR.
Vessel Monitoring System (VMS)	A system used in commercial fishing to allow environmental and fisheries regulatory organisations to monitor, minimally, the position, time at a position, and course and speed of fishing vessels.
Wind Turbines	Power generating devices located within the DBD Array Area that convert kinetic energy from wind into electricity.

14 Commercial Fisheries

14.1 Introduction

1. This chapter of the Preliminary Environmental Information Report (PEIR) presents the preliminary results of the Environmental Impact Assessment (EIA) of Dogger Bank D Offshore Wind Farm (hereafter 'the Project' or 'DBD') on commercial fisheries.
2. **Chapter 4 Project Description** provides a description of the design of infrastructure components and construction, operation and maintenance and decommissioning activities for DBD, presented in **Section 4.5**.
3. The primary purpose of the PEIR is to support the statutory consultation activities required for a Development Consent Order (DCO) application under the Planning Act 2008. The information presented in this PEIR chapter is based on the baseline characterisation and assessment work undertaken to date. The feedback from the statutory consultation will be used to inform the final project design where appropriate and presented in an Environmental Statement (ES), which will be submitted with the DCO application.
4. This PEIR chapter:
 - Describes the baseline environment relating to commercial fisheries;
 - Presents an assessment of the likely significant effects on commercial fisheries during the construction, operation and maintenance, and decommissioning phases of the Project;
 - Identifies any assumptions and limitations encountered in compiling the environmental information; and
 - Sets out proposed mitigation measures to avoid, reduce or offset potential adverse environmental effects identified during the EIA process and, where relevant, monitoring measures or enhancement measures to create or enhance positive effects.
5. This chapter should be read in conjunction with the following related chapters. Inter-relationships are discussed further in **Section 14.10.1**.
 - **Chapter 11 Fish and Shellfish Ecology** where impacts on the ecology of fish and shellfish, including species of commercial interest, are assessed; and
 - **Chapter 15 Shipping and Navigation** where impacts on the navigational safety aspects of fishing activity are assessed.

6. Additional information to support the commercial fisheries assessment includes:
 - **Volume 2, Appendix 14.1 Consultation Responses for Commercial Fisheries;** and
 - **Volume 2, Appendix 14.2 Commercial Fisheries Baseline Technical Report.**
7. This chapter considers commercial fisheries activity, which is understood as fishing activity legally undertaken where the catch is sold for taxable profit. Potential impacts of the Project on charter angling, defined as fishing for marine species where the purpose is recreation and not sale or trade, are assessed in **Chapter 18 Other Marine Users**.

14.2 Policy and Legislation

14.2.1 National Policy Statements

8. Planning policy on energy Nationally Significant Infrastructure Projects is set out in the National Policy Statements. The following National Policy Statements are relevant to the commercial fisheries assessment:
 - Overarching National Policy Statements for Energy (EN-1) (Department for Energy Security and Net Zero (DESNZ), 2023a); and
 - National Policy Statements for Renewable Energy Infrastructure (EN-3) (DESNZ, 2023b).
9. The commercial fisheries chapter has been prepared with reference to specific requirements in the above National Policy Statements. The relevant parts of the National Policy Statements are summarised in **Table 14-1**, along with how and where they have been considered in this PEIR chapter.

Table 14-1 Summary of Relevant National Policy Statement Requirements for Commercial Fisheries

National Policy Statements Reference and Requirement	How and Where Considered in the PEIR
National Policy Statements for Renewable Energy Infrastructure (EN-3)	
<p>Paragraph 2.6.127:</p> <p>“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”</p>	Consultation with representatives of the fishing industry has commenced and is ongoing. Engagement is summarised in Section 14.3 .
<p>Paragraph 2.6.128:</p> <p>“Where a number of offshore wind farms have been proposed within an identified zone, it may be beneficial to undertake such consultation at a zonal, rather than a site-specific, level”</p>	Consultation has been undertaken at a scale that seeks to capture fishing activity in the region, including in and around the Project. Engagement is summarised in Section 14.3 .
<p>Paragraph 2.6.129:</p> <p>“The assessment by the applicant should include detailed surveys of the effects on fish stocks of commercial interest and any potential reduction in such stocks, as well as any likely constraints on fishing activity within the project’s boundaries”</p>	Relevant surveys and data are detailed in Chapter 11 Fish and Shellfish Ecology . In addition, consultation with the fishing industry (see Section 14.3) has identified key concerns as well as available data and potential impacts, which have been taken into account within the commercial fisheries assessment (see Section 14.7).
<p>Paragraph 2.6.129:</p> <p>“Robust baseline data should have been collected and studies conducted as part of the assessment”</p>	Robust baseline datasets analysed include EU and UK statistics and surveillance data, industry consultation and published reports, as described in Section 14.6 .
<p>Paragraph 2.6.126:</p> <p>“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.”</p>	The Applicant will apply for safety zones post-consent. Safety zones of up to 500m will be sought during construction, maintenance and decommissioning phases, as described in both the maximum design scenario and embedded mitigation measures presented in Section 14.4.2 . The need for safety zones has been considered by the Navigational Risk Assessment (NRA) completed for the Project. The risk assessment results have been taken into account within the commercial fisheries assessment (see Section 14.7). Consultation has also been undertaken with the Maritime and Coastguard Agency (MCA) (see Chapter 15 Shipping and Navigation).
<p>Paragraph 2.6.130:</p> <p>“Where there is a possibility that safety zones will be sought around offshore infrastructure, potential effects should be included in the assessment on commercial fishing”</p>	
<p>Paragraph 2.6.131:</p> <p>“Where the precise extents of potential safety zones are unknown, a realistic worst-case scenario should be assessed. Applicants should consult the Maritime and Coastguard Agency (MCA)”</p>	
<p>Paragraph 2.6.131:</p> <p>“The assessment by the applicant should include detailed surveys of the effects on fish stocks of commercial interest and the potential reduction or increase in such stocks that will result from the presence of the wind farm development and of any safety zones”</p>	The Project assessment has considered the effects on commercial fish stocks (see Chapter 11 Fish and Shellfish Ecology).
<p>Paragraph 2.6.132:</p> <p>“The IPC 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”</p>	The site selection process is fully described in Chapter 4 Project Description . The effects arising from the Project have been and will be discussed with statutory bodies during pre- and post-application consultation. The Applicant is taking steps, and will continue to do so, to minimise the effects upon the fishing industry in the area through appropriate mitigation where required. Commitments related to commercial fisheries and adopted as part of the Project are provided in Section 14.4.3 .

National Policy Statements Reference and Requirement	How and Where Considered in the PEIR
<p>Paragraph 2.6.132:</p> <p>“The Infrastructure Planning Commission (IPC) should consider the extent to which the proposed development occupies any recognised important fishing grounds and whether the project would prevent or significantly impede protection of sustainable commercial fisheries or fishing activities. Where the IPC considers the wind farm would significantly impede protection of sustainable fisheries or fishing activity at recognised important fishing grounds, this should be attributed correspondingly significant weight”</p>	<p>The extent to which the Project impacts on recognised and important fishing grounds has been considered, and consultation with fishing stakeholders in order to fully understand any potential impacts has been undertaken (see Section 14.3). The results of the commercial fisheries assessment are presented in Section 14.7.</p>
<p>Paragraph 2.6.133:</p> <p>“The IPC should be satisfied that the applicant has sought to design the proposal having consulted 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”</p>	
<p>Paragraph 2.6.134 3:</p> <p>“Any mitigation proposals should result from the applicant having detailed consultation with relevant representatives of the fishing industry”</p>	<p>Consultation with UK and overseas stakeholders from the fishing community is on-going (see Section 14.3).</p>
<p>Paragraph 2.6.135:</p> <p>“Mitigation should be designed to enhance where reasonably possible any potential medium and long-term positive benefits to the fishing industry and Commercial fish stocks”</p>	<p>A range of mitigation commitments are presented within Section14.4.3.</p>

14.2.2 Other Policy and Legislation

10. Other policy and legislation relevant to the commercial fisheries assessment is summarised in the following sections.

14.2.2.1 National

11. The Marine and Coastal Access Act (2009) sets out provisions for marine management, including the management of commercial fishing activities in the UK, and outlines the ways in which licensing, conservation and fisheries rules are to be enforced. The Act also establishes the Marine Management Organisation (MMO) as the public body responsible for the preparation and implementation of new marine plans, as well as enforcing fisheries and nature conservation regulations.
12. The UK Fisheries Act (2020) (23 Nov 2020) sets out a series of objectives for management of commercial fisheries as follows:
- The sustainability objective;
 - The precautionary objective;
 - The ecosystem objective;
 - The scientific evidence objective;
 - The bycatch objective;
 - The equal access objective;
 - The national benefit objective; and
 - The climate change objective.
13. The Joint Fishery Statement (JFS) was published in November 2022 and outlines commitments for delivery of Fisheries Management Plans (FMPs) by UK fisheries administrators. Of relevance to fisheries operating in and around the Proposed Development is the existing and planned implementation of FMPs for English and Welsh waters for the following species: brown crab and lobster, whelk, king scallop and bass. The JFS defines which fisheries administrator is responsible for the delivery of the FMPs, including development of co-management groups with the industry. Delivery of the FMPs, which specify fisheries management actions required to maintain species stock levels, and which will be relevant to some of the commercial fishing fleets active in and around the Project, is ongoing, with the first six FMPs already published, and five more open to public consultation (Defra, 2025). It is expected that the majority of FMPs will be published by 2026.

14. The UK Marine Policy Statement (MPS) (HM Government, 2011) explicitly expresses support for the fishing sector, and with regard to displacement, advocates “seeking solutions such as co-location of activity wherever possible”. Specifically, paragraphs 3.8.1, 3.8.2, and 2.3.1.5 stipulate that the process of marine planning should “*enable the co-existence of compatible activities wherever possible*” and supports the reduction of real and potential conflict as well as maximising compatibility and encouraging co-existence of activities.

14.2.2.2 Regional

15. The East Inshore and East Offshore Marine Plans (Defra, 2014) and the North East Inshore and North East Offshore Marine Plans (Defra, 2021) support sustainable fishing activity by avoiding adverse impacts resulting from development and activities. They are inclusive of the following policies:
- E-FISH-1: Within areas of fishing activity, proposals should demonstrate in order of preference: that they will not prevent fishing activities on, or access to, fishing grounds how, if there are adverse impacts on the ability to undertake fishing activities or access to fishing grounds, they will minimise them how, if the adverse impacts cannot be minimised, they will be mitigated the case for proceeding with their proposal if it is not possible to minimise or mitigate the adverse impacts;
 - NE-FISH-1: Proposals that support a sustainable fishing industry, including the industry's diversification, should be supported; and
 - 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.

14.3 Consultation

16. Topic-specific consultation in relation to commercial fisheries has been undertaken in line with the process set out in **Chapter 7 Consultation**. A Scoping Opinion from the Planning Inspectorate (PINS) was received on 2nd August 2024, which has informed the scope of the assessment presented within this chapter (as outlined in **Section 14.4.2**).
17. Feedback received through wider consultation meetings with relevant stakeholders has also been considered in the preparation of this chapter. Details of consultation undertaken to date on commercial fisheries are provided in **Table 14-2**.
18. **Volume 2, Appendix 14.1 Consultation Responses for Commercial Fisheries** summarises how consultation responses received to date are addressed in this chapter.

Table 14-2 Technical Consultation Undertaken to Date on Commercial Fisheries

Expert Topic Group (ETG) Meeting	Stakeholder(s)	Date(s) of Meeting / Frequency	Purpose of Meeting
Other Technical Consultation			
Dogger Bank D Wind Farm – Meeting with National Federation of Fishermen’s Organisations (NFFO)	NFFO	February 2025	Provision of Project update to NFFO Presentation and discussion of commercial fisheries baseline to inform PEIR
Dogger Bank D Wind Farm – Meeting with Rederscentrale	Rederscentrale	February 2025	Provision of Project update to Rederscentrale Presentation and discussion of commercial fisheries baseline to inform PEIR
Email exchange with FROM NORD, French producer organisation	FROM NORD	January 2025	Meeting offered to FROM NORD; FROM NORD requested project boundary GIS shapefiles, which were supplied to them in January 2025. No further feedback to date.
Email exchange with MMO North East Team (Beverly)	MMO	January 2025	Meeting offered to regional MMO team; response confirmed that consultation with the MMO should be directed centrally to the Marine Licensing team rather than to any local team.
Email to Scottish Fishermen's Federation (SFF)	SFF	January 2025	Meeting offered; no response received to date.
Email to Visned, Dutch producer organisation	Visned	January 2025	Meeting offered; no response received to date.
Email to Nederlandse Visserbond, Dutch producer organisation	Nederlandse Visserbond	January 2025	Meeting offered; no response received to date.
Email to Danmarks Fiskeriforening, Danish producer organisation	Danmarks Fiskeriforening	January 2025	Meeting offered; no response received to date.
Email to Deutscher Fischerei-Verband e.V, German producer organisation	Deutscher Fischerei-Verband e.V	January 2025	Meeting offered; no response received to date.

Expert Topic Group (ETG) Meeting	Stakeholder(s)	Date(s) of Meeting / Frequency	Purpose of Meeting
Email to CRPMEM Nord, French producer organisation	CRPMEM Nord	January 2025	Meeting offered; no response received to date.
Email to Cooperative Maritime Etaploise, French producer organisation	Cooperative Maritime Etaploise	January 2025	Meeting offered; no response received to date.
Email to Department for Environment, Food & Rural Affairs (Defra)	Defra	January 2025	Meeting offered; no response received to date.
Dogger Bank D Wind Farm – Meeting with NFFO	NFFO	July 2024	Provision of Project update to NFFO Discussion of initial NFFO views on Project issues
Dogger Bank D Wind Farm – Meeting with Rederscentrale, the Belgian producer organisation and professional association for shipowners in sea fishing	Rederscentrale	May 2024	Provision of Project update to Rederscentrale, including discussion of approach to offshore site selection
Dogger Bank D Wind Farm – Meeting with NFFO and Holderness Fishing Industry Group (HFIG), noting that HFIG is no longer active	NFFO HFIG	March 2023	Provision of Project introduction to NFFO and HFIG

19. This chapter will be updated based on refinements made to the Project Design Envelope and to consider, where appropriate, stakeholder feedback on the PEIR. The updated chapter will form part of the Environmental Statement to be submitted with the DCO Application.

14.4 Basis of the Assessment

20. The following sections establish the basis of the assessment of likely significant effects, which is defined by the Study Area(s), assessment scope, and realistic worst-case scenarios. This section should be read in conjunction with **Volume 2, Appendix 1.2 Guide to PEIR, Volume 2, Appendix 6.2 Impacts Register** and **Volume 2, Appendix 6.3 Commitments Register**.

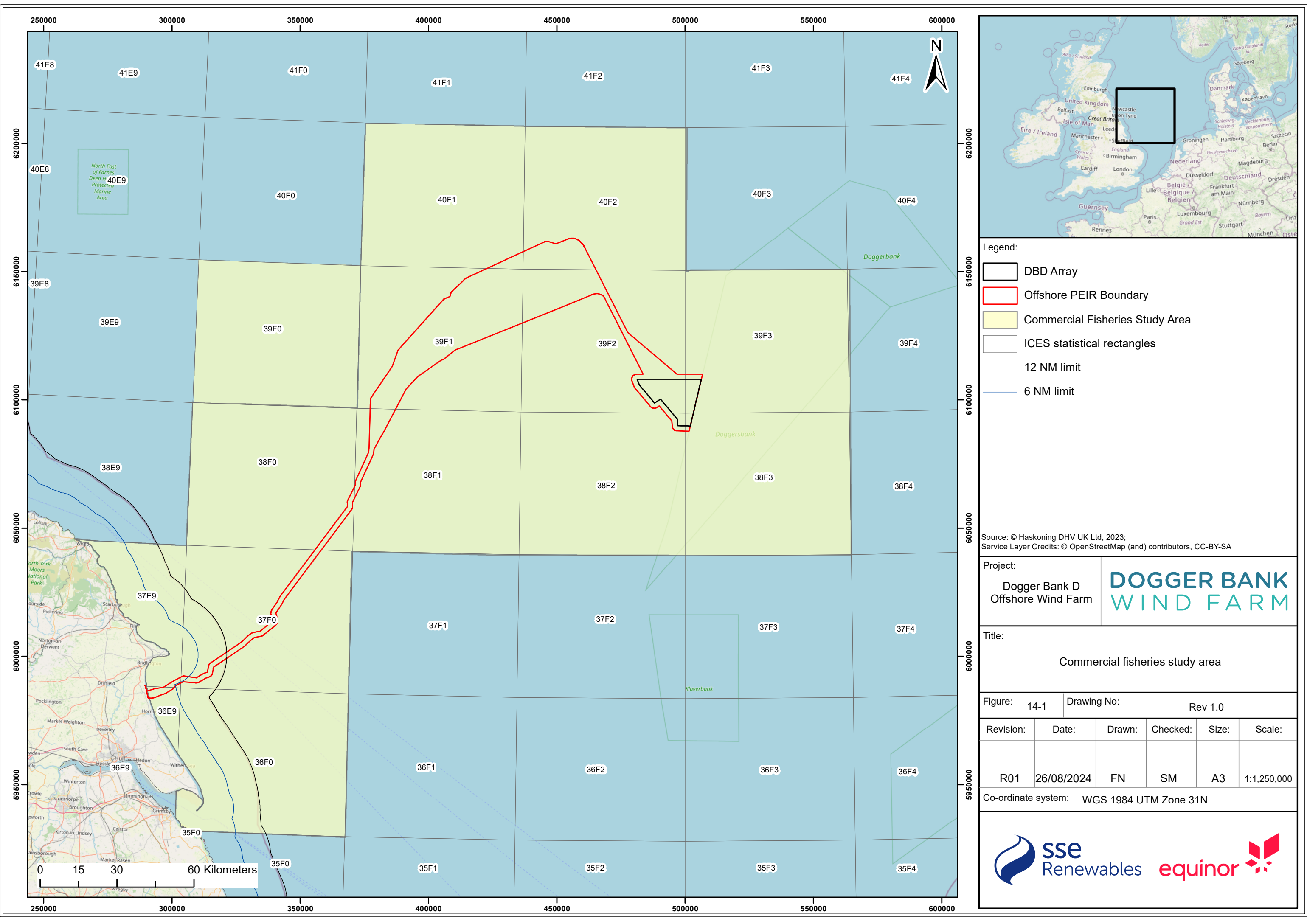
14.4.1 Study Area

21. The Offshore Development Area is located within the western portion of the International Council for the Exploration of the Sea (ICES) Division 4b (Central North Sea) statistical area, within UK Exclusive Economic Zone (EEZ) waters, with the Array Area and a large portion of the offshore export cable corridor (ECC) located outside of the 12 nautical mile (nm) limit. For the purposes of recording fisheries landings, ICES Division 4b is divided into statistical rectangles which are consistent across the UK and European Member States operating in the North Sea. Each ICES statistical rectangle is '30 min latitude and 1 degree longitude' in size, which equates to approximately 30nm².
22. The Array Area is located primarily in ICES rectangles 39F2 (spatially occupying just under five per cent of ICES rectangle 39F2), with relatively smaller areas of overlap with ICES rectangles 39F3 (approximately two per cent), 38F2 (0.5 per cent) and 38F3 (0.4 per cent). The offshore ECC is located within portions of several ICES rectangles. Based on this spatial overlap of the Offshore Development Area with ICES rectangles, the Commercial Fisheries Study Area (hereafter referred to as 'the Study Area') has been defined as the following 14 ICES rectangles 36E9, 36F0, 37E9, 37F0, 38F0, 38F1, 38F2, 38F3, 39F0, 39F1, 39F2, 39F3, 40F1 and 40F2 (**Figure 14-1**). Whilst the Offshore Development Area does not directly overlap with ICES rectangles 39F0 or 36F0, these rectangles have been retained within the Study Area given its proximity (several kilometres to Offshore Development Area boundary). The Study Area is shown on **Figure 14-1**. In total, the Offshore Development Area footprint spatially overlaps with approximately 7% of the total Study Area comprising the fourteen rectangles.

14.4.2 Scope of the Assessment

23. A number of impacts have been scoped out of the commercial fisheries assessment. These impacts are outlined in the Impacts Register provided in **Volume 2, Appendix 6.2 Impacts Register**, along with supporting justification and are in line with the Scoping Opinion (discussed in **Section 14.3**) and the project description outlined in **Chapter 4 Project Description**.

24. On the basis that use of bottom-towed fishing gear in the Dogger Bank byelaw area is prohibited as of byelaw enactment in 2022, it was proposed that certain potential impacts on mobile gear fleets in this area are scoped out of EIA. Within their Scoping Opinion, the Planning Inspectorate confirmed that they agreed with this scoping out.
25. Impacts scoped into the assessment relating to commercial fisheries are outlined in **Table 14-3** and discussed further in **Section 14.7**.
26. A full list of impacts scoped in / out of the commercial fisheries assessment is summarised in the Impacts Register provided in **Volume 2, Appendix 6.1**. A description of how the Impacts Register should be used alongside the PEIR chapter is provided in **Chapter 6 Environmental Impact Assessment Methodology**.



CHAPTER 14 COMMERCIAL FISHERIES

Table 14-3 Commercial Fisheries – Impacts Scoped into the Assessment

Impact ID	Impact and Project Activity	Rationale
Construction		
CF-C-02	Reduction in access to, or exclusion from established fishing grounds (all other fleets) – installation activities and the physical presence of constructed infrastructure.	Project activities and the presence of Project infrastructure may lead to a reduction in access to, or exclusion from established fishing grounds. There is potential for some loss of fishing opportunities.
CF-C-03	Displacement leading to gear conflict and increased fishing pressure on adjacent / alternative grounds– construction activities, such as the presence of installation vessels and use of safety zones.	Fishing activity may be displaced from the Project footprint, leading to gear conflict and increased fishing pressure on adjacent / alternative grounds. There is potential for displacement of fishing activity.
CF-C-04	Displacement or disruption of commercially important fish and shellfish resources– construction activities, such as the presence of installation vessels and installation of the foundations and cables.	Project activities may lead to the displacement or disruption of commercially important fish and shellfish resources. It is assumed that commercial fisheries will be affected as a result of any loss of resources.
CF-C-05	Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity – movement of vessels associated with the Project.	The movement of vessels associated with the Project may add to the existing volume of marine traffic in the area, leading to interference with fishing activity.
CF-C-07	Additional steaming to alternative fishing grounds – construction activities, such as the presence of installation vessels and use of safety zones.	This effect will be localised to safety zones and construction, operation and maintenance and decommissioning activities and therefore limited deviations to steaming routes are expected.
Operation and Maintenance		
CF-O-02	Reduction in access to, or exclusion from established fishing grounds (all other fleets)- O&M activities and the physical presence of constructed infrastructure.	Project activities and the presence of Project infrastructure may lead to a reduction in access to, or exclusion from established fishing grounds. There is potential for some loss of fishing opportunities.
CF-O-03	Displacement leading to gear conflict and increased fishing pressure on adjacent grounds- O&M activities and the physical presence of constructed infrastructure.	Fishing activity may be displaced from the Project footprint, leading to gear conflict and increased fishing pressure on adjacent / alternative grounds. There is potential for displacement of fishing activity.
CF-O-04	Displacement or disruption of commercially important fish and shellfish resources - EMF effects and noise disturbance as a result of the O&M.	Project activities may lead to the displacement or disruption of commercially important fish and shellfish resources. It is assumed that commercial fisheries will be affected as a result of any loss of resources.
CF-O-05	Increased vessel traffic associated with the O&M of the Project within fishing grounds leading to interference with fishing activity- movement of vessels associated with the O&M phase of the Project.	The movement of vessels associated with the Project may add to the existing volume of marine traffic in the area, leading to interference with fishing activity.
CF-O-07	Additional steaming to alternative fishing grounds- movement of vessels associated with the Project and presence of constructed infrastructure.	This effect will be localised to safety zones and construction, operation and maintenance and decommissioning activities and therefore limited deviations to steaming routes are expected.
CF-O-09	Physical presence of infrastructure leading to gear snagging- physical presence of infrastructure.	The physical presence of infrastructure on the seabed represents potential snagging points for fishing gear and could lead to damage to, or loss of, fishing gear.

Impact ID	Impact and Project Activity	Rationale
Decommissioning		
CF-D-02	Reduction in access to, or exclusion from established fishing grounds - Mobile gear fleets all other fleets – decommissioning activities, such as the presence of decommissioning vessels and use of safety zones.	Decommissioning impacts are scoped in; however, details of offshore decommissioning activities are not known at this stage. As discussed in Section 14.7.3 , decommissioning impacts will be assessed in detail through the Offshore Decommissioning Programme (see Table 14-4 , Commitment ID CO21) where relevant, which will be developed prior to the commencement of offshore decommissioning works. In this assessment, it is assumed that most decommissioning activities would be the reverse of their construction counterparts, and that their impacts would be of similar nature to, and no worse than, those identified during the construction phase.
CF-D-03	Displacement leading to gear conflict and increased fishing pressure on adjacent / alternative grounds – decommissioning activities, such as the presence of decommissioning vessels and use of safety zones.	
CF-D-04	Displacement or disruption of commercially important fish and shellfish resources– decommissioning activities, such as the presence of decommissioning vessels and removal of infrastructure.	
CF-D-05	Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity – decommissioning activities, such as the presence of decommissioning vessels.	
CF-D-07	Additional steaming to alternative fishing grounds – decommissioning activities, such as the presence of decommissioning vessels.	
CF-D-09	Displacement leading to gear conflict and increased fishing pressure on adjacent grounds – decommissioning activities, such as the presence of decommissioning vessels and removal of infrastructure.	

14.4.3 Embedded Mitigation Measures

27. **Volume 2, Appendix 6.3 Commitments Register** is provided at PEIR stage to provide stakeholders with an early opportunity to review and comment on the proposed commitments. Proposed commitments may evolve during the pre-application phase as the EIA progresses and in response to refinements to the Project Design Envelope and stakeholder feedback. The final commitments will be confirmed in the Commitments Register submitted along with the DCO application.
28. Full details of all commitments made by the Project are provided within **Volume 2, Appendix 6.3 Commitments Register**. A description of how the Commitments Register should be used alongside the PEIR chapter is provided in **Chapter 6 Environmental Impact Assessment Methodology**. In addition, a list of draft outline management plans which are submitted with the PEIR for consultation is provided in **Section 1.10 of Chapter 1 Introduction**. These documents will be further refined and submitted along with the DCO application.
29. The Project has made several commitments to avoid, reduce or offset potential adverse environmental effects through mitigation measures embedded into the project design. These measures include actions that will be undertaken to meet other existing legislative requirements and those considered to be standard or best practice to manage commonly occurring environmental effects. The assessment of likely significant effects has therefore been undertaken on the assumption that these measures are adopted during the construction, operation and maintenance, and decommissioning phases. **Table 14-4** identifies proposed embedded mitigation measures that are relevant to the commercial fisheries assessment.

Table 14-4 Embedded Mitigation Measures Relevant to Commercial Fisheries

Commitment ID	Proposed Commitment	How the Commitment will be Secured	Relevance to Commercial Fisheries Assessment	Relevance to Impact ID
CO7	The Project will ensure compliance with Marine Guidance Note (MGN) 654 and its annexes, where applicable, including implementation of an Emergency Response Cooperation Plan (ERCoP) for all phases of the Project and completion of a Search and Rescue (SAR) checklist.	DML Condition - Emergency Response and Cooperation Plan (ERCoP)	Compliance with MGN 654 will ensure impacts on navigational safety and emergency response are suitably assessed.	CF-C-05 CF-O-02 CF-O-09 CF-D-05 CF-D-09
CO9	Aids to navigation (marking and lighting) will be deployed in accordance with the latest relevant available standard industry guidance and as advised by Trinity House, Maritime and Coastguard Agency (MCA) and Civil Aviation Authority (CAA) and Ministry of Defence (MoD) as appropriate. This will include a buoyed construction area around the Array Area. Consultation with Trinity House, MCA, and CAA will occur to determine appropriate lighting and marking.	DML Condition - Aids to Navigation Plan	Maximises awareness in both day and night conditions including in restricted visibility and assists with SAR operations and protects fishing vessels from project vessels involved in construction and major maintenance activities which may be Restricted in their Ability to Manoeuvre (RAM).	CF-C-02 CF-C-03 CF-C-05 CF-C-07 CF-O-02 CF-O-03 CF-O-07 CF-O-09 CF-D-05 CF-D-09
CO10	A Vessel Traffic Monitoring Plan will be developed and will include provision for monitoring of vessel traffic during the construction phase.	DML Condition - Vessel Traffic Monitoring Plan	Monitoring of vessel traffic, including fisheries traffic, in and around the Array Area will allow the effectiveness of embedded mitigation measures to be suitably reviewed and any additional mitigation required to be identified.	CF-C-02 CF-C-03 CF-C-05 CF-C-07 CF-D-05 CF-D-09
CO11	Advanced warning and accurate location details of construction, maintenance, and decommissioning operations, associated safety zones and advisory safe passing distances will be given via Notifications to Mariners and Kingfisher Bulletins at least 14 days prior where possible. The Project will ensure that local Notifications to Mariners are updated and reissued at weekly intervals during construction activities and at least five days before any planned operation and maintenance works and supplemented with very high frequency (VHF) radio broadcasts agreed with the Maritime and Coastguard Agency (MCA) in accordance with the construction and monitoring programme approved under the relevant	DML Condition	Maximises awareness of the infrastructure allowing fishing vessels to passage plan in advance.	CF-C-05 CF-O-02 CF-O-09 CF-D-05 CF-D-09

Commitment ID	Proposed Commitment	How the Commitment will be Secured	Relevance to Commercial Fisheries Assessment	Relevance to Impact ID
	Deemed Marine Licence (DML) condition. In the event of any cable exposure on or above the seabed, notification to other marine users will be issued via Notices to Mariners and Kingfisher Bulletins confirming the location and extent of the exposure.			
CO12	Project vessels will ensure compliance with Flag State regulations including the Convention on the International Regulations for Preventing Collisions at Sea (COLREG) (International Maritime Organization (IMO), 1972 / 77) and International Convention for the Safety of Life at Sea (SOLAS) (IMO, 1974).	International maritime regulations.	Minimises the risk introduced due to the presence of project vessels.	CF-C-05 CF-O-02 CF-O-09 CF-D-05 CF-D-09
CO14	Marine coordination for project vessels will be implemented through Detailed Construction and Monitoring Programme (Construction Phase) and Offshore Operations and Maintenance Plan (O&M Phase).	DML Condition - Construction and Monitoring Programme (Construction Phase) and Offshore Operations and Maintenance Plan (O&M Phase)	Ensures project vessels are suitably managed to minimise the likelihood of involvement in incidents and maximise the ability to assist in the event of a third-party incident involving fishing vessels.	CF-C-02 CF-C-03 CF-C-05 CF-C-07 CF-O-02 CF-O-03 CF-O-05 CF-O-07 CF-O-09 CF-D-05 CF-D-09

Commitment ID	Proposed Commitment	How the Commitment will be Secured	Relevance to Commercial Fisheries Assessment	Relevance to Impact ID
CO15	<p>A Fisheries Liaison and Coexistence Plan (FLCP) will be provided in accordance with the Outline FLCP. The FLCP will include commitment to ongoing liaison with fishermen throughout all stages of the Project, based upon the Fisheries Liaison with Offshore Wind and Wet Renewables Group (FLOWW) (2014, 2015) guidance (or latest relevant available guidance) and specifically the following:</p> <ul style="list-style-type: none"> • The appointment of a company Fisheries Liaison Officer (FLO) to maintain effective communications between the Project and fishermen; • Appropriate liaison with relevant fishing interests to ensure that they are appropriately fully informed of development planning and any offshore activities and works; • The provision of advance warning and accurate location details of construction, maintenance and decommissioning operations, associated safety zones and advisory passing distances, to be given via Notices to Mariners and Kingfisher Bulletins; and • Specific to the UK potting fishery the implementation of evidence-based mitigation in line with relevant FLOWW guidelines. 	DML Condition - Fisheries Liaison and Coexistence Plan	Will assist in raising awareness of the Project and associated operations with the fishing industry.	All impacts for commercial fisheries
CO16	There will be appropriate marking of all offshore infrastructure associated with the Project on suitably scaled UK Hydrographic Office (UKHO) Admiralty Charts.	DML Condition	Maximises awareness of the infrastructure allowing fishing vessels to passage plan in advance.	CF-C-02 CF-C-03 CF-C-05 CF-C-07 CF-O-02 CF-O-03 CF-O-07 CF-O-09 CF-D-05 CF-D-09

Commitment ID	Proposed Commitment	How the Commitment will be Secured	Relevance to Commercial Fisheries Assessment	Relevance to Impact ID
CO17	Safety zones of up to 500m will be applied for during construction, major maintenance and decommissioning phases and up to 50m for installed structures pre-commissioning. Where defined by risk assessment, guard vessels will also be used to ensure adherence with safety zones or advisory passing distances to mitigate impacts which pose a risk to surface navigation during construction, maintenance and decommissioning phases. Where deemed appropriate by risk assessment, guard vessels will be used to reduce risks to surface navigation during construction, maintenance and decommissioning.	Secured through a Safety Zone Application submitted post-consent.	Maximises awareness of temporary hazards and protects fishing vessels from project vessels involved in construction and major maintenance activities which may be RAM.	CF-C-02 CF-C-03 CF-C-05 CF-C-07 CF-O-02 CF-O-05 CF-O-07 CF-O-09 CF-D-05 CF-D-09
CO21	An Offshore Decommissioning Programme will be provided prior to the construction of the offshore works and implemented at the time of decommissioning, based on the relevant guidance and legislation.	DCO Requirement - Decommissioning Programme	The development and agreement of a Decommissioning Programme will ensure that the process of decommissioning the Project minimises effects on fishing industry.	CF-D-02 CF-D-03 CF-D-04 CF-D-05 CF-D-07 CF-D-09
CO24	A Cable Specification and Installation Plan will be provided and submitted for approval prior to offshore construction. The Cable Specification and Installation Plan will detail the methods used for construction of offshore export and inter-array cables. Where possible, cable burial will be the preferred method for cable protection. Where cable protection is required, this will be minimised so far as is feasible. All cable protection will adhere to the requirements of Marine Guidance Note (MGN) 654 with respect to changes greater than 5% to the under-keel clearance in consultation with the Maritime and Coastguard Agency (MCA) and Trinity House. Any damage, destruction or decay of cables must be notified to the MCA, Trinity House, Kingfisher and UK Hydrographic Office (UKHO) no later than 24 hours after being discovered.	DML Condition - Cable Specification and Installation Plan	Minimises the risks of underwater collision with cable protection, anchor or fishing gear interaction with subsea cables and interference with magnetic position fixing equipment.	CF-C-02 CF-C-03 CF-C-04 CF-C-05 CF-C-07 CF-O-04

Commitment ID	Proposed Commitment	How the Commitment will be Secured	Relevance to Commercial Fisheries Assessment	Relevance to Impact ID
CO25	<p>A Project Environmental Management Plan (PEMP) will be provided in accordance with the Outline PEMP and will include:</p> <ul style="list-style-type: none"> • A Marine Pollution Contingency Plan (MPCP), which will include plans to address the risks, methods and procedures to deal with any spills and collision incidents in relation to all activities carried out below Mean High Water Springs (MHWS) to safeguard the marine environment; • Best practice measures for the storage, use and disposal of lubricant and chemicals will be undertaken throughout the construction phase; • A Chemical Risk Assessment (CRA) to ensure any chemicals, substances and materials to be used will be suitable for use in the marine environment and in accordance with the Health and Safety Executive and the Environment Agency Pollution Prevention Control Guidelines or latest relevant available guidelines; • A marine biosecurity plan detailing how the risk of introduction and spread of invasive non-native species will be minimised; and • Details of waste management and disposal arrangements. 	DML Condition - Project Environmental Management Plan	Minimises the environmental effects in the event of an incident involving pollution.	<p>CF-C-02</p> <p>CF-C-03</p> <p>CF-C-04</p> <p>CF-C-05</p> <p>CF-O-02</p> <p>CF-O-03</p> <p>CF-O-04</p> <p>CF-O-05</p> <p>CF-O-07</p> <p>CF-O-09</p> <p>CF-D-05</p> <p>CF-D-09</p>
CO28	An Offshore Operations and Maintenance Plan (O&M) will be provided prior to commencement of operation and will outline the reasonably foreseeable O&M offshore activities.	DML Condition - Offshore Operations and Maintenance Plan	The development of an offshore O&M plan will ensure that the O&M activities minimise effects on fishing industry.	<p>CF-O-02</p> <p>CF-O-03</p> <p>CF-O-04</p> <p>CF-O-05</p> <p>CF-O-07</p> <p>CF-O-09</p>

Commitment ID	Proposed Commitment	How the Commitment will be Secured	Relevance to Commercial Fisheries Assessment	Relevance to Impact ID
CO31	All dropped objects will be reported to the Marine Management Organisation (MMO) using the dropped object form as soon as reasonably practicable and in any event within 24 hours of the undertaker becoming aware of an incident.	DML Condition	Maximises awareness and minimises the risk of any dropped object on fishing gear and fishing activity.	CF-C-03 CF-C-05 CF-C-07 CF-O-02 CF-O-03 CF-O-04 CF-O-05 CF-O-07 CF-O-09 CF-D-05 CF-D-09

30. An Outline FLCP will be submitted with the DCO application, which will detail measures relevant to commercial fisheries that will be secured in the plan. Indicative embedded mitigation measures which are proposed to be included in the plan are set out in **Table 14-5**.

Table 14-5 Indicative Embedded Mitigation Measures to be Included in the Outline FLCP

Measures to be Included: Outline FLCP
Principles of liaison between the Applicant and fisheries stakeholders and fishers, including liaison roles and responsibilities and means of information dissemination by the Applicant.
Principles of approaches to co-existence, for example: <ul style="list-style-type: none">The Applicant will implement measures to minimise and mitigate as far as practicable, potential impacts to commercial fishers during the lifetime of the Project;The Applicant will minimise the size and duration of advisory safety distances during surveys and other works where safe and practicable to do so;Safe working practices underpinned by appropriate safety management systems are expected from all vessels undertaking operations related to the Project. Vessels employed by the Applicant will only undertake activities prescribed in their line of work;<ul style="list-style-type: none">The Applicant will provide local fisheries stakeholders with procedures for registering claims for loss of / damage to fishing gear resulting from Project surveys, construction activities and during the operation and maintenance phase of the Project; andVessels involved in the construction, and operation and maintenance of the Project, including guard vessels and survey vessels, will be provided with the relevant lines of communication (as outlined within this document) to minimise disruption to fishing vessels undertaking their normal activities.
Confirmation of embedded mitigation measures (aligned with Table 14-4) and how they will be delivered by the Applicant.
Identification of industry-standard good practise measures, for example, relating to procedures specific to fisheries interactions such as fishing gear loss, and how they will be delivered by the Applicant.
Identification of any further mitigation measures and how they will be delivered by the Applicant (see Section 14.7.4).

31. Proposed commitments may evolve during the pre-application phase as the EIA progresses and in response to refinements to the Project’s design envelope and stakeholder feedback. The final commitments will be confirmed in **Volume 2, Appendix 6.3 Commitments Register** submitted with the DCO application.

32. Full details of all commitments made by the Project are provided in **Volume 2, Appendix 6.3 Commitments Register**. A description of how the Commitments Register should be used alongside the PEIR chapter is provided in **Volume 2, Appendix 1.2 Guide to PEIR** and **Chapter 6 Environmental Impact Assessment Methodology**. In addition, a list of draft outline management plans which are submitted with the PEIR for consultation is provided in **Section 1.10 of Chapter 1 Introduction**. These documents will be further refined and submitted along with the DCO application. See **Volume 2, Appendix 1.2 Guide to PEIR** for a list of all PEIR documents.

33. The Commitments Register is provided at PEIR stage to provide stakeholders with an early opportunity to review and comment on the proposed commitments. Proposed commitments may evolve during the pre-application phase as the EIA progresses and in response to refinements to the Project Design Envelope and stakeholder feedback. The final commitments will be confirmed in the Commitments Register submitted along with the DCO application.

14.4.4 Realistic Worst-Case Scenarios

34. To provide a precautionary, but robust, assessment at this stage of the Project’s development process, a realistic worst-case scenario has been defined in **Table 14-6** for each impact scoped into the assessment (as outlined in **Section 14.4.2**). The realistic worst-case scenarios are derived from the range of parameters included in the design envelope. They ensure that the assessment of likely significant effects is based on the maximum potential impact on the environment. Should an alternative development scenario be taken forward in the final design of the Project, the resulting effects would not be greater in effect significance. Further details on the design envelope approach are provided in **Chapter 6 Environmental Impact Assessment Methodology**.

35. The realistic worst-case scenarios used to assess impacts on commercial fisheries are defined in **Table 14-6**. Following the PEIR publication, further design refinements will be made based on ongoing engineering studies and considerations of the EIA and stakeholder feedback. Therefore, realistic worst-case scenarios presented in the PEIR may be updated in the ES. The design envelope will be refined where possible to retain design flexibility only where it is needed.

Table 14-6 Realistic Worst-Case Scenarios for Impacts on Commercial Fisheries

Impact ID	Impact	Embedded Mitigation Measures	Realistic Worst-Case Scenario	Rationale
Construction				
CF-C-02	Reduction in access to, or exclusion from established fishing grounds	CO9; CO10; CO14; CO17; CO15; CO16; CO24; CO25; CO31	<p>Total temporary reduction</p> <ul style="list-style-type: none">• Construction duration of up to five years.• Total Array Area developable area of 262km².• Seabed preparation:<ul style="list-style-type: none">○ Seabed preparation, likely to include unexploded ordnance clearance, pre-lay grapnel run, boulder and sand wave clearance. <p>Safety Zones and construction buoyage:</p> <ul style="list-style-type: none">• 500m safety zones around construction activities;• 50m safety zones around partially complete structures or complete structures;• Roaming 500m safe passing distance for mobile installation vessels; and• Construction buoyage deployed around the maximum extent of the Offshore Development Area. <p>Total temporary reduction</p> <ul style="list-style-type: none">• Wind turbine generator seabed disturbance, based on maximum scour protection area per 113 foundation including structure footprint for suction buckets (1,617,482m²), vessel jack-up footprint (1,356,000m²), and vessel anchoring (180,800m²) (3,154,282m² total disturbance footprint);• Offshore substation seabed disturbance, based on two OPs with monopile foundations (50,000m²), vessel jack-up footprint (24,000m²), and vessel anchoring (6,800m²); (80,800m² total disturbance footprint); and• Cable seabed footprint, based on:<ul style="list-style-type: none">○ 400km inter-array cable length with sand wave levelling and installation (35m wide x 4m deep; 14,000,000m²) and vessel anchoring (13,560m²) totalling 14,013,560m² disturbance footprint;	<p>The maximum design scenario represents the maximum duration and extent of fishing exclusion throughout the construction phase and, hence, the greatest potential to restrict access to fishing grounds.</p> <p>The construction phase footprint comprises the total permanent seabed reduction area of structures, scour protection and cable protection plus the total temporary reduction area of preparatory works including seabed preparation. The impact area also incorporates Safety Zones around major construction activities.</p> <p>It is assumed that construction activities could occur anywhere at any given time. Construction activities will be completed sequentially to some extent; all activities identified in the scenario to the left would not occur in parallel.</p> <p>The worse case scenario for OP is two small platforms as opposed to one large platform, both in terms of extent and volumes, hence only the worst case parameters shown.</p> <p>It has been assumed for the worst case that 100% of the inter-array cable would require sand wave levelling. It has therefore been assumed that as the sand wave levelling corridor is 100%, the installation footprint falls within that corridor, therefore no additional disturbance would arise.</p>

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Impact ID	Impact	Embedded Mitigation Measures	Realistic Worst-Case Scenario	Rationale
			<ul style="list-style-type: none"> 800km export cable length with up to two cables of 400km length each and spacing between them of 200m. Sand wave levelling (230,400m long x 35m wide; 8,064,000m²), cable installation (569,600 long x 15m wide = 8,544,000m²), vessel anchoring (14,400m²), vessel anchoring at landfall exit pit (7,200m²), and landfall exit pit (7,500m²) totalling 16,637,100m² disturbance footprint. 	
CF-C-03	Displacement leading to gear conflict and increased fishing pressure on adjacent / alternative grounds	CO9; CO10; CO14; CO17; CO15; CO16; CO24; CO25; CO31	As for 'Reduction in access to, or exclusion from established fishing grounds' (see above).	The maximum design scenario represents the maximum duration and extent of fishing exclusion throughout the construction phase and, hence, the greatest potential to lead to displacement of fishing effort.
CF-C-04	Displacement or disruption of commercially important fish and shellfish resources	See fish and shellfish ecology embedded mitigation measures in Chapter 11 Fish and Shellfish Ecology .	See fish and shellfish ecology maximum design scenario presented in Chapter 11 Fish and Shellfish Ecology .	The scenarios presented in fish and shellfish ecology provide for the greatest disturbance to fish and shellfish species and therefore the greatest knock-on effect to commercial fisheries. Importantly, this considers the impacts as a whole on commercially important species as considered in the maximum design scenario for the fish and shellfish chapter, rather than any one impact in particular.
CF-C-05	Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity	CO10; CO14; CO17; CO15; CO25	<ul style="list-style-type: none"> Construction duration of up to five years. Maximum number of return trips for vessels over the pre-construction site preparation period: 243; Maximum number of vessels on site at one time over the pre-construction period: 18; Maximum number of vessel return trips during the construction phase: 7,527. Realistic number of vessels expected to be on site at the same time: 90. 	<p>The maximum number of wind turbines and associated infrastructure will lead to the highest level of construction activities and therefore highest level of construction vessel round trips.</p> <p>The maximum number of vessels transits and the maximum duration of the construction would result in the greatest potential for interference.</p>
CF-C-07	Additional steaming to alternative fishing grounds	CO9; CO10; CO14; CO17; CO15; CO16; CO24; CO25; CO31	As for 'Reduction in access to, or exclusion from established fishing grounds' (see above).	The maximum design scenario represents the maximum duration and extent of fishing exclusion throughout the construction phase and, hence, the greatest potential for additional steaming to alternative fishing grounds.

Impact ID	Impact	Embedded Mitigation Measures	Realistic Worst-Case Scenario	Rationale
Operation and Maintenance				
CF-O-02	Reduction in access to, or exclusion from established fishing grounds	CO9; CO10; CO14; CO17; CO15; CO16; CO24; CO25; CO28; CO31	<p>Total permanent reduction</p> <ul style="list-style-type: none">• Operational life of approximately 35 years.• Wind turbine generator seabed footprint, based on up to 113 turbines on multi-leg suction bucket foundations with scour protection (14,314m² per foundation; 1,617,482m² for 113 foundations);• Minimum spacing between turbines of 826m;• Offshore substation seabed footprint, based on up to two platforms on monopile foundations with scour protection (25,000m² per platform x 2; 50,000m² for two platforms); and• Cable seabed footprint, based on:<ul style="list-style-type: none">○ 400km inter-array cable length with up to 400,000m² mechanical cable protection (rock placement, concrete mattresses, rock bags or flow dissipation devices) along up to 10% of the cable length. Cables to be buried where possible, to target burial depth of 3.5m;○ Inter-array cable crossings (100m length of crossing x 10m width for cable crossings x 5 cable crossings = 5,000m².○ 800km export cable length with up to two cables of 400km length each and spacing between them of 200m. Up to 1,600,000m² mechanical cable protection (10m width for rock placement, concrete mattresses, rock bags or flow dissipation devices) along up to 20% of the cable length. Cables to be buried where possible, to target burial depth of 3.5m;○ Total footprint of pipeline / cable crossing material (100m length of crossing x 10m width for cable crossings x 16 cable crossings and 300m length of crossing x 16m width for pipeline crossings x 3 pipeline crossings) x 2 export cables = 60,800m². <p>Temporary reduction from maintenance activities</p> <ul style="list-style-type: none">• 500m safety zones around major maintenance activities.• Preventative and corrective maintenance, assumed to involve the following vessels being on site at any one time:<ul style="list-style-type: none">○ Up to three Service Operation Vessels (SOVs) permanently on site;○ Up to one Platform Supply Vessel (PSV) making up to 12 trips to the Array Area per year over the operational life;○ Up to two survey vessels making up to 35 trips to the Offshore Development Area over the operational life;	<p>The maximum design scenario represents the maximum duration and extent of fishing exclusion throughout the operation and maintenance phase and hence the greatest potential to restrict access to fishing grounds. It comprises the maximum footprint of infrastructure on the seabed plus maintenance activities throughout the operational and maintenance phase and associated temporary Safety Zones.</p> <p>The assessment assumes that fishing will be able to resume around and between infrastructure within the Offshore Development Area where possible, with the exception of 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 will determine the likelihood of whether their fishing will resume within the Offshore Development Area.</p>

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Impact ID	Impact	Embedded Mitigation Measures	Realistic Worst-Case Scenario	Rationale
			<ul style="list-style-type: none"> Up to one turbine installation vessel, making up to 7 visits per turbine over the operational life, and 10 visits per platform over the operational life; Up to three Cable Lay Vessels (CLVs), making up to 15 visits to the Array Area and 35 visits to the offshore ECC over the operational life; Up to one Offshore Supply Vessel (OSV) or Offshore Construction Vessel (OCV), making up to two visits to the Array Area over the operational life; Up to one Fall Pipe Vessel (FPV), making up to two visits to the Offshore Development Area over the operational life. 	
CF-O-03	Displacement leading to gear conflict and increased fishing pressure on adjacent / alternative grounds	CO9; CO10; CO14; CO17; CO15; CO16; CO24; CO25; CO28; CO31	As for 'Reduction in access to, or exclusion from established fishing grounds' (see above).	The maximum design scenario represents the maximum duration and extent of fishing exclusion throughout the operation and maintenance phase and, hence, the greatest potential to lead to displacement of fishing effort.
CF-O-04	Displacement or disruption of commercially important fish and shellfish resources	See fish and shellfish ecology embedded mitigation measures in Chapter 11 Fish and Shellfish Ecology .	See fish and shellfish ecology maximum design scenario presented in Chapter 11 Fish and Shellfish Ecology .	The scenarios presented in fish and shellfish ecology provide for the greatest disturbance to fish and shellfish species and therefore the greatest knock-on effect to commercial fisheries. Importantly, this considers the impacts as a whole on commercially important species as considered in the maximum design scenario for the fish and shellfish chapter, rather than any one impact in particular.
CF-O-05	Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity	CO10; CO14; CO17; CO15; CO25; CO28	<ul style="list-style-type: none"> Operational life of approximately 35 years. Maximum number of vessel return trips during the operation and maintenance phase: 3,045. Realistic number of vessels expected to be on site at the same time: 16. 	The maximum number of wind turbines and associated infrastructure will lead to the highest level of maintenance activities and therefore highest level of maintenance vessel round trips.
CF-O-07	Additional steaming to alternative fishing grounds	CO9; CO10; CO14; CO17; CO15; CO16; CO24; CO25; CO28; CO31	As for 'Reduction in access to, or exclusion from established fishing grounds' (see above).	The maximum design scenario represents the maximum duration and extent of fishing exclusion throughout the operation and maintenance phase and, hence, the greatest potential for additional steaming to alternative fishing grounds.
CF-O-09	Physical presence infrastructure leading to gear snagging	CO9; CO15; CO16; CO24; CO28; CO31	As for 'Reduction in access to, or exclusion from established fishing grounds' (see above).	The maximum design scenario represents the maximum number and extent of project infrastructure and, hence, the greatest potential for gear snagging to occur.

Impact ID	Impact	Embedded Mitigation Measures	Realistic Worst-Case Scenario	Rationale
Decommissioning				
<p>The final decommissioning strategy of the Project’s offshore infrastructure has not yet been decided. For a description of potential offshore decommissioning works, refer to Chapter 4 Project Description.</p> <p>It is recognised that regulatory requirements and industry best practice change over time. Therefore, the details and scope of offshore decommissioning works will be determined by the relevant regulations and guidance at the time of decommissioning. Specific arrangements will be detailed in an Offshore Decommissioning Programme (see Table 14-4, Commitment ID CO21), which will be submitted and agreed with the relevant authorities prior to the construction of the offshore works.</p> <p>For this assessment, it is assumed that decommissioning is likely to operate within the parameters identified for construction (i.e. any activities are likely to occur within the temporary construction working areas and require no greater amount or duration of activity than assessed for construction). The decommissioning sequence will generally be the reverse of the construction sequence. It is therefore assumed that decommissioning impacts would likely be of similar nature to, and no worse than, those identified during the construction phase.</p>				

14.5 Assessment Methodology

14.5.1 Guidance Documents

36. The following guidance documents have been used to inform the baseline characterisation, assessment methodology and mitigation design for commercial fisheries:
- Good Practice Guidance for Assessing Fisheries Displacement (Xodus, 2022);
 - Best Practice Guidance for Fishing Industry Financial and Economic Impact Assessments (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);
 - Damage to Gear Compensation Claim Forms (Marine Scotland, 2021);
 - Guidance on completing Damage to Gear Compensation Claim Forms (Marine Scotland, 2021);
 - Options and opportunities for marine fisheries mitigation associated with wind farms (Blyth-Skyrme, 2010a);
 - Developing guidance on fisheries Cumulative Impact Assessment for wind farm developers (Blyth-Skyrme, 2010b);
 - Cumulative impact assessment guidelines, guiding principles for cumulative impacts assessments in offshore wind farms (RenewableUK, 2013);
 - Fishing and Submarine Cables – Working Together (International Cable Protection Committee, 2009); and
 - Planning Inspectorate Scoping Opinion (Planning Inspectorate, 2024) which included scoping responses from statutory consultees.
37. It is noted that at the time of PEIR preparation, FLOWW Best Practice Guidance is intended to be revised with revision currently ongoing. The Application will take into account any revised guidance where it becomes available within the relevant timeframe.

14.5.2 Data and Information Sources

14.5.2.1 Desk Study

38. A desk study has been undertaken to compile baseline information in the previously defined Study Area (see **Section 14.4.1**) using the sources of information set out in **Table 14-7**.

Table 14-7 Desk-Based Sources for Commercial Fisheries Data

Data Source	Spatial Coverage	Year(s)	Summary of Data Contents
MMO, 2024	Full coverage of the Study Area	2018 to 2023	Landings statistics data for UK-registered vessels, with data query attributes for: landing year; landing month; vessel length category; ICES rectangle; vessel / gear type; port of landing; species; live weight (tonnes); and value (£).
EU DCF, 2023	Full coverage of the Study Area	2012 to 2016	Landings statistics for EU registered vessels with data query attributes for: landing year; landing quarter; ICES rectangle; vessel length; gear type; species; and, landed weight (tonnes).
MMO, 2022a	Full coverage of the Study Area	2016 to 2020	VMS data for UK registered vessels ≥15m length. Note that UK vessels ≥12m in length have VMS on board, however, to date, the MMO provide amalgamated VMS datasets for ≥15m vessels only. VMS data sourced from MMO displays the first sales value (£) of catches.
ICES, 2022	Full coverage of the Study Area	2016 to 2020	VMS data for EU registered vessels ≥12m length. VMS data sourced from ICES displays the surface Swept Area Ratio (SAR) of catches by different gear types and covers EU (including UK) registered vessels 12m and over in length. Surface SAR indicates the number of times in an annual period that a demersal fishing gear makes contact with (or sweeps) the seabed surface. Surface SAR provides a proxy for fishing intensity.
EMSA, 2024	Full coverage of the Study Area	2019 to 2022	Fishing vessel route density, based on vessel AIS positional data. AIS is required to be fitted on fishing vessels ≥15m length.
MMO, 2023b	Full coverage of the Study Area	2018 to 2022	Surveillance data indicating vessel nationality and gear type for actively fishing vessels.
The Applicant	Partial coverage of the Study Area	2023 and 2024	Marine traffic (AIS and radar) survey data for Dogger Bank D.

Data Source	Spatial Coverage	Year(s)	Summary of Data Contents
The Applicant	Partial coverage of the Study Area	Various dates in 2021, 2022 and 2023	Static fishing gear observations in Dogger Bank A, B and D.

39. Data has been sourced from ICES, the European Union (EU) Data Collection Framework (DCF), the UK MMO and the European Maritime Safety Agency (EMSA). This includes annual landings statistics for UK registered fishing vessels and landings data for both UK and EU registered fishing vessels collected via the logbooks scheme and recorded by ICES statistical rectangle and stored in the EU DCF database. Vessel Monitoring System (VMS) is a form of satellite tracking using transmitters on board fishing vessels. Annual VMS data are collated by the MMO for all vessels $\geq 15\text{m}$ registered to the UK, including all gear types, and this spatial data has been sourced and analysed. All EU fishing vessels (i.e. fishing vessels flying the flag of an EU Member State), and third-party fishing vessels operating in EU waters, that are $\geq 12\text{m}$ in length, are required to have a VMS on board. EU vessel VMS data has also been sourced and analysed. Through a European-wide data call, ICES collated VMS data for vessels $\geq 12\text{m}$ operating mobile gear that has contact with the seabed and this spatial data has also been sourced and analysed. Information on fisheries activity specifically in the Offshore Development Area, gathered via marine traffic surveys and fisheries static gear surveys, has also been analysed. Relevant literature from several sources has also been reviewed in the preparation of this report.
40. Where data sources allow, a five-year trend analysis has been undertaken, using the most recent annual datasets available at the time of writing. The temporal extent of this time period is dependent on each data source analysed.
41. **Volume 2, Appendix 14.2 Commercial Fisheries Baseline Technical Report** includes full details of these data sources and the analysis undertaken to develop the commercial fisheries baseline.
42. Limitations of the data sources listed above are fully described in **Appendix 14.2 Commercial Fisheries Baseline Technical Report**. They are summarised in the paragraphs below.
43. Limitations of landings data include the spatial size of ICES rectangles, which can misrepresent actual activity across the Offshore Development Area, and care is therefore required when interpreting the data.

44. It is noted that all commercial landings by UK registered vessels are subject to the Register of Buyers and Sellers (RBS) legislation and therefore landings by UK vessels of all lengths are recorded within the MMO iFish database. While it is recognised that there is no statutory requirement for owners of vessels 10m and under to declare their catches, registered buyers are legally required to provide sales notes of all commercially sold fish and shellfish due to the 2005 Registration of Buyers and Sellers of First-Sale Fish Scheme (RBS legislation) (MMO, 2022a; 2023a). The RBS legislation is applicable to licenced fishing vessels of all lengths and requires name, port letters and numbers (PLN) of the vessel which landed the fish to be recorded in relation to each purchase. For the 10m and under sector, landing statistics are recorded on sales notes provided by the registered buyers (MMO, 2022a; 2023a). Information that may not be formally recorded on the sales note, such as gear and fishing area, is added by coastal staff based on local knowledge of the vessels they administer - for example, from observations of the vessel during inspections at ports or from air and sea surveillance activities as well as discussions with the owner and / or operator of the vessel (MMO, 2022a; 2023a).
45. Lack of recent landings statistics for EU (non-UK) fleets is also recognised as a data limitation; based on the most recent European Commission data call, more recent (from 2017 onwards) landings data is no longer available by ICES rectangle. Data at a scale of ICES division (the whole of the central North Sea) is less useful to understand fishing activity specific to the area overlapping the Offshore Development Area. It is however noted that recently published MMO landings statistics incorporate data on landings by non-UK vessels into UK ports.
46. Limitations of VMS data are primarily focused on the coverage being limited to larger vessels 15m and over for UK fishing vessels. It is important to be aware that where mapped VMS data may appear to show inshore areas as having lower (or no) fishing activity compared with offshore areas, this is not necessarily the case because VMS data do not include vessels typically operating in inshore area (i.e., which typically comprises of vessels $<15\text{m}$ in length). To assist in mitigating the risk of under-representing smaller inshore vessels, site-specific marine traffic survey data comprising information on vessel movements gathered by both AIS and radar (which will detect vessels $<15\text{m}$ in length) has been analysed alongside VMS data. Information on fishing activity gathered by the FLO, and via long-term fisheries static gear surveys, has also been considered.
47. Fishing vessel route density data from the EMSA is based on AIS data, representing activity for vessels with AIS ($\geq 15\text{m}$ in length). A limitation of this AIS data is that it does not distinguish between steaming and actively fishing; nevertheless, it provides corroboration for key fishing grounds and insight into transit routes to alternative fishing grounds.

48. It is highlighted that the fishing activity described in **Section 14.6** can be expected to have been modified to some degree by the introduction of fishing restrictions subsequent to the baseline study period. The introduction in 2022 of a byelaw prohibiting the use of bottom towed gear across the Dogger Bank Special Area of Conservation (SAC) will have resulted in removal of any dredge, trawl or seine net fishing activity across the Array Area and eastern extent of the offshore ECC, and the North Sea sandeel fishery was closed in 2024. Whilst changes in fishing activity post-2022 will be reflected in landings statistics and in some of the spatial fisheries data analyses that extend up to 2024, it is acknowledged that not all datasets extend to capture the period following introduction of these fisheries management measures.

14.5.2.2 Site-Specific Surveys

49. No site-specific surveys have been undertaken to inform the EIA for commercial fisheries, though baseline characterisation has drawn on static fishing gear observations and marine traffic survey specific to Dogger Bank D. Baseline data sources have been validated via engagement with fisheries stakeholders and by the results of site-specific marine traffic surveys that are described in **Chapter 15 Shipping and Navigation**.

14.5.3 Impact Assessment Methodology

50. **Chapter 6 Environmental Impact Assessment Methodology** sets out the overarching approach to the impact assessment methodology. The topic-specific methodology for the commercial fisheries assessment is described further in this section.

14.5.3.1 Impact Assessment Criteria

51. The method for determining the significance of effects is a two-stage process that involves defining the sensitivity of the receptors and the magnitude of the impacts. This section describes the criteria applied in this chapter to assign values to the sensitivity of receptors and the magnitude of potential impacts. The terms used to define impact magnitude and receptor sensitivity for commercial fisheries are based on those described in further detail **Chapter 6 Environmental Impact Assessment Methodology**.

14.5.3.1.1 Receptor Sensitivity

52. The sensitivity criteria for commercial fisheries receptors are provided in **Table 14-8**.

Table 14-8 Receptor Sensitivity Criteria for Commercial Fisheries

Sensitivity Value	Description
Negligible	Receptor is not vulnerable to impacts that may arise from the project and / or has high recoverability. And / or: Extensive alternative fishing grounds available and / or fishing fleet is highly adaptive and resilient to change.
Low	Receptor is not generally vulnerable to impacts that may arise from the project and / or has high recoverability. And / or: High levels of alternative fishing grounds are available and / or fishing fleet has large to extensive operational range; fishing fleet is adaptive and resilient to change.
Medium	Receptor is somewhat vulnerable to impacts that may arise from the project and has moderate levels of recoverability. And / or: Moderate levels of alternative fishing grounds are available and / or fishing fleet has moderate operational range.
High	Receptor is highly vulnerable to impacts that may arise from the project and recoverability is long term or not possible. And / or: No alternative fishing grounds are available.

14.5.3.1.2 Impact Magnitude

53. The magnitude criteria for commercial fisheries are provided in **Table 14-9** are based on the technical expert’s experience and judgement. In determining magnitude, each assessment considered the spatial extent, duration, frequency, and reversibility of impact and these are outlined within the magnitude section of each assessment of impact (e.g. a duration of hours or days would be considered for most receptors to be of short-term duration, which is likely to result in a low magnitude of impact).

Table 14-9 Impact Magnitude Criteria for Commercial Fisheries

Sensitivity Value	Description
Negligible	Impact is expected to be undetectable compared to pre-development baseline conditions.
Low (Adverse)	<p>Impact is expected to result in one or more of the following:</p> <ul style="list-style-type: none">Minor loss of target fish or shellfish biological resource (e.g. minor loss of resource within Array Area); andMinor loss of ability to carry on fishing activities (e.g. minor reduction of fishing effort within Array Area). <p>And / or: Impact is of short-term duration (e.g. less than two years) and / or is of limited physical extent. The short-term time period is based on professional judgement and is not definitive dependant on the nature of the impact.</p>
Low (Beneficial)	<p>Impact is expected to result in one or more of the following:</p> <ul style="list-style-type: none">Minor benefit to or minor improvement of resource quality; And:Minor restoration or enhancement of habitats supporting commercial fisheries resources.
Medium (Adverse)	<p>Impact is expected to result in one or more of the following:</p> <ul style="list-style-type: none">Partial loss of target fish or shellfish biological resource (e.g. moderate loss of resource within Array Area); andPartial loss of ability to carry on fishing activities (e.g. moderate reduction of fishing effort within Array Area). <p>And / or: Impact is of medium-term duration (e.g. less than 12 years) and / or is of moderate physical extent.</p>
Medium (Beneficial)	<p>Impact is expected to result in one or more of the following:</p> <ul style="list-style-type: none">Moderate improvement of resource quality; andModerate restoration or enhancement of habitats supporting commercial fisheries resources.
High (Adverse)	<p>Impact is expected to result in one or more of the following:</p> <ul style="list-style-type: none">Substantial loss of target fish or shellfish biological resource (e.g. loss of substantial proportion of resource within Array Area); andSubstantial loss of ability to carry on fishing activities (e.g. substantial proportion of effort within Array Area). <p>And / or: Impact is of long-term duration (e.g. greater than 12 years duration) and / or is of extended physical extent.</p>

Sensitivity Value	Description
High (Beneficial)	<p>Impact is expected to result in one or more of the following:</p> <ul style="list-style-type: none">Large scale or major improvement of resource quality, measurable against biomass reference points; andExtensive restoration or enhancement of habitats supporting commercial fisheries resources.

14.5.3.1.3 Effect Significance

54. By assigning and combining magnitude and sensitivity criteria, overall effect significance upon commercial fisheries receptors can be determined (Table 14-10).

Table 14-10 Matrix Used for the Assessment of Significance of the Effect

		Impact Magnitude							
		Adverse Effect				Beneficial Effect			
		High	Medium	Low	Negligible	Negligible	Low	Medium	High
Receptor 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

55. Where a range is suggested for the significance of effect, for example, minor to moderate, it is possible that this may span the significance threshold. The technical specialist’s professional judgement will be applied to determine which outcome defines the most likely effect, which takes in to account the sensitivity of the receptor and the magnitude of impact. Where professional judgement is applied to quantify final significance from a range, the assessment will set out the factors that result in the final assessment of significance. These factors may include the likelihood that an effect will occur, data certainty and relevant information about the wider environmental context.

56. For the purposes of this assessment:

- A level of residual effect of moderate or more will be considered a ‘significant’ effect in terms of the EIA Regulations; and
- A level of residual effect of minor or less will be considered ‘not significant’ in terms of the EIA Regulations.

57. Effects of moderate significance or above are therefore considered important in the decision-making process, whilst effects of minor significance or less, warrant little if any, weight in the decision-making process.

14.5.4 Cumulative Effects Assessment Methodology

58. The cumulative effects assessment (CEA) considers other plans and projects that may act collectively with the Project to give rise to cumulative effects on commercial fisheries receptors. The general approach to the CEA for commercial fisheries involves screening for potential cumulative effects, identifying a short list of plans and projects for consideration and evaluating the significance of cumulative effects. **Chapter 6 Environmental Impact Assessment Methodology** and **Volume 2, Appendix 6.4 Cumulative Effects Screening Report - Offshore** provides further details on the general framework and approach to the CEA.

14.5.5 Transboundary Effect Assessment Methodology

59. The transboundary effect assessment considers the potential for effects to occur as a result of the Project on commercial fisheries receptors within the EEZ of other European Economic Area (EEA) member states or other interests of EEA member states. **Chapter 6 Environmental Impact Assessment Methodology** provides further details on the general framework and approach to the transboundary effect assessment.

14.5.6 Assumptions and Limitations

60. This chapter provides a preliminary assessment of the likely significant effects of the Project in relation to commercial fisheries using information available at the time of drafting as described in **Chapter 6 Environmental Impact Assessment Methodology**. This assessment will be refined where relevant and presented in the ES to be submitted with the DCO application.

14.6 Baseline Environment

14.6.1 Existing Baseline

61. A summary of the commercial fisheries baseline environment is provided in the following sections. Full details of the analysis undertaken to develop the commercial fisheries baseline is provided in **Volume 2, Appendix 14.2 Commercial Fisheries Baseline Technical Report**.
62. It is highlighted that the fishing activity described in this section can be expected to have been recently modified by the introduction in 2022 of a byelaw prohibiting the use of bottom towed gear across the Dogger Bank SAC, which will have resulted in removal of any dredge, trawl or seine net fishing activity across the Array Area and eastern extent of the offshore ECC in ICES rectangles 39F1, 39F2, 39F3, 38F1 and 38F2. Initial effects of this byelaw on fishing activity are expected to be captured in some baseline datasets, including UK landings statistics which are available up to 2023.
63. Historically, a Danish sandeel *Ammodytes marinus* fishery was active in the Study Area, which has declined substantially since the 2000's, and it is noted that as of March 2024 the UK government has prohibited the fishing of sandeels within the English waters of ICES Area 4 (North Sea) by vessels of any nationality. Again, this can be expected to have reduced the fishing activity described in this section.

14.6.1.1 Overview of Landings

64. Landings from the Study Area by UK-registered vessels had an average value of £30.1 million across the period 2018 to 2023 (MMO, 2024). **Plate 14-1** shows landings values across this time period for each ICES rectangle within the Study Area, highlighting relatively high landings values in rectangles 36F0, 37E9 and 37F0, within which the western portion of the offshore ECC is located. Landings from ICES rectangle 36F0 accounts for 41% of the total value of UK landings from the Study Area, and landings from rectangles 37E9 and 37F0 account for 22% and 17% of the total value, respectively. Across the 2018 to 2022 period, UK landings showed relative consistency, with a slight decline in 2020 likely to reflect the effects of the COVID-19 pandemic, increasing in 2021 before returning to approximately 2018 / 19 levels in 2022 and showing further slight decline in 2023 with landings values at £24.4 million.

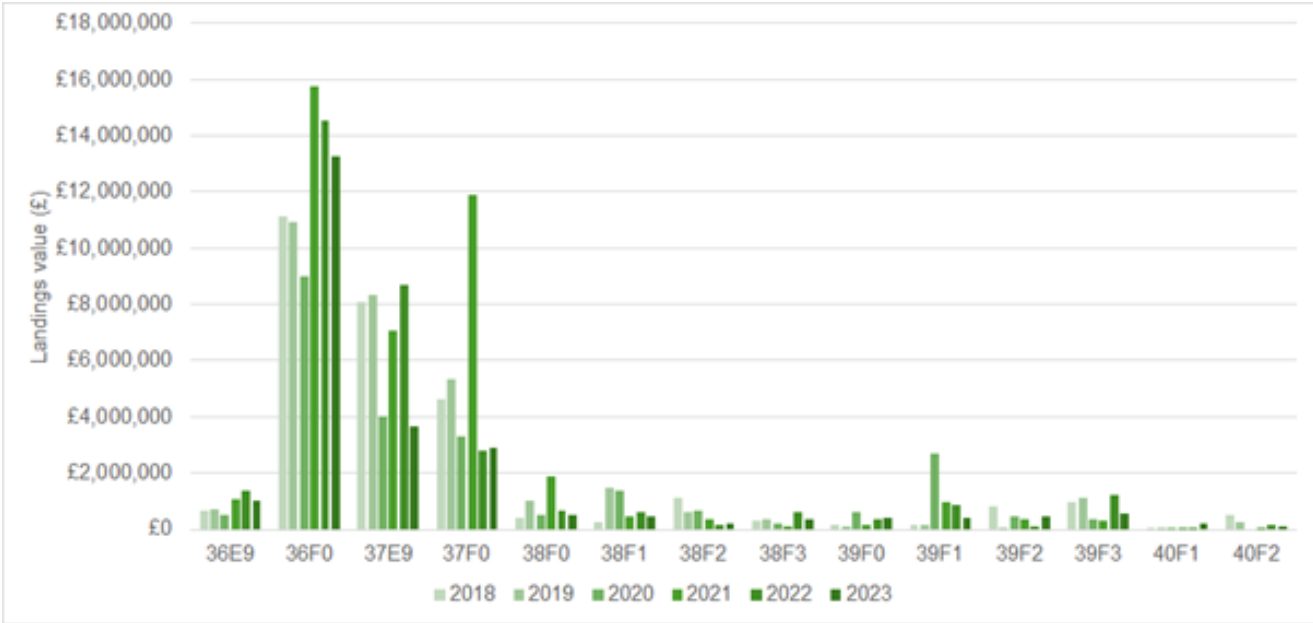


Plate 14-1 Annual Landings Value (£) by UK-Registered Vessels from the Commercial Fisheries Study Area, by ICES Rectangle, Between 2018 and 2023 (MMO, 2024)

65. **Plate 14-2** shows the key species landed from the Study Area. Shellfish species, most notably lobster *Homarus gammarus* and brown crab *Cancer pagurus* but also scallops *Pecten maximus*, Nephrops *Nephrops norvegicus* and whelks *Buccinum undatum*, account for approximately 80% of total landings from the Study Area by value. Between 2018 and 2023, annual landings of shellfish were relatively consistent, with a dip in landings observed in 2020 likely to reflect effects of the COVID-19 pandemic.
66. Landings of demersal fish species, including plaice *Pleuronectes platessa* and turbot *Scophthalmus maximus* account for approximately 9% of total landings from the Study Area by value and have shown a continuous decline across the five-year study period. Landings of pelagic species from the Study Area by UK-registered vessels have historically been very low but showed a substantial spike in 2021 which landings data indicate is associated with herring *Clupea harengus* catches in the month of September in 2021.

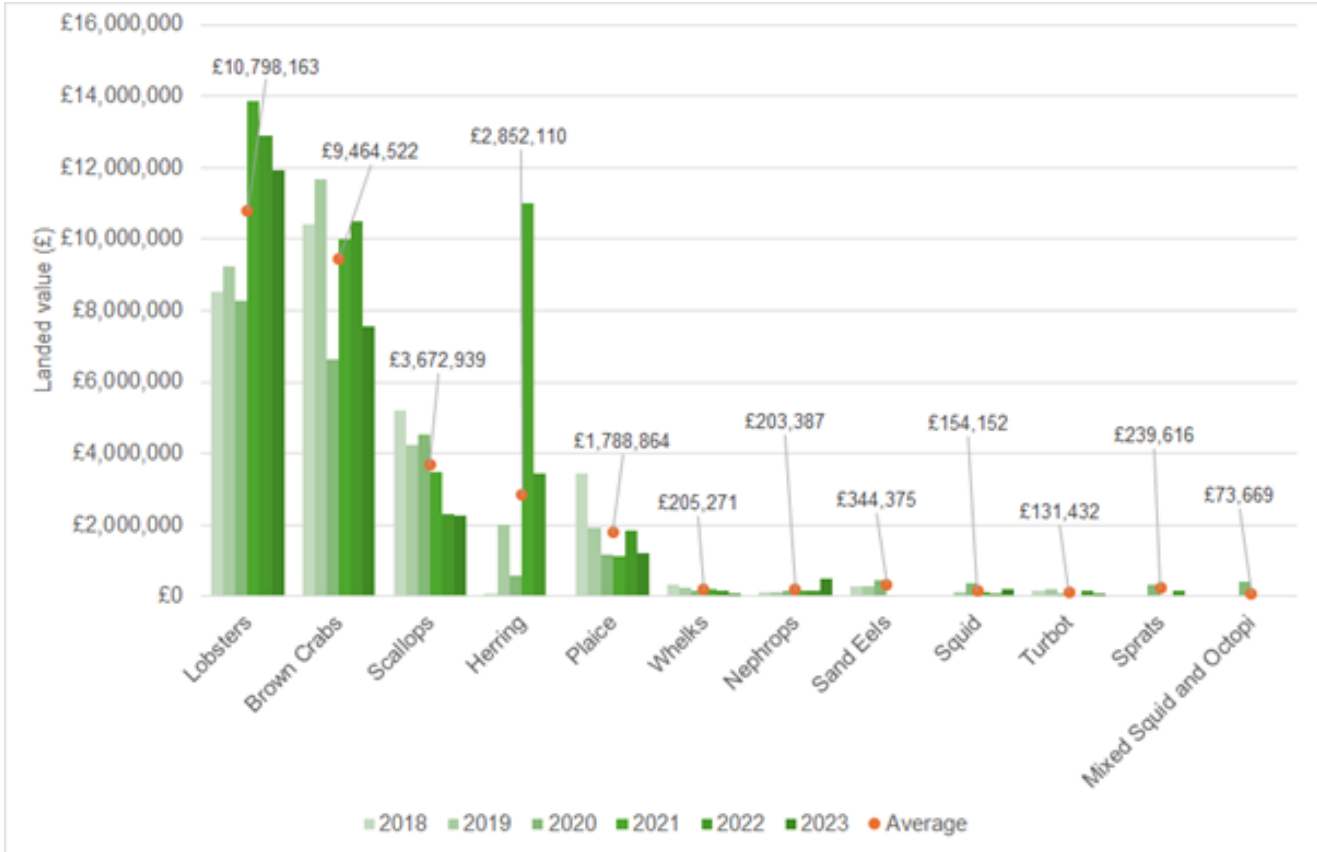


Plate 14-2 Annual Landings Value (£) by UK-Registered Vessels from the Study Area, by Key Species, Between 2018 and 2023 (MMO, 2024)

67. **Plate 14-3** shows the key fishing gear types utilised across the Study Area. The largest proportion of landings by value are attributed to potting gear. The value of landings by beam trawls operated by UK-registered vessels in the Study Area has declined over the 2018 to 2023 period, correlating with the observed decline in landings of demersal species over the same period, whilst use of demersal otter trawls has remained relatively consistent. The value of landings from dredge gear targeting scallops has remained relatively consistent over the same period showing slight decline from 2020 onwards. Use of pelagic gear is only identified in the landings data in 2021 and 2022, and not in previous years within the study period or in 2023. This is likely a reflection of the transient and highly mobile nature of pelagic shoaling fish, whereby landings are not associated with highly specific or consistent grounds.

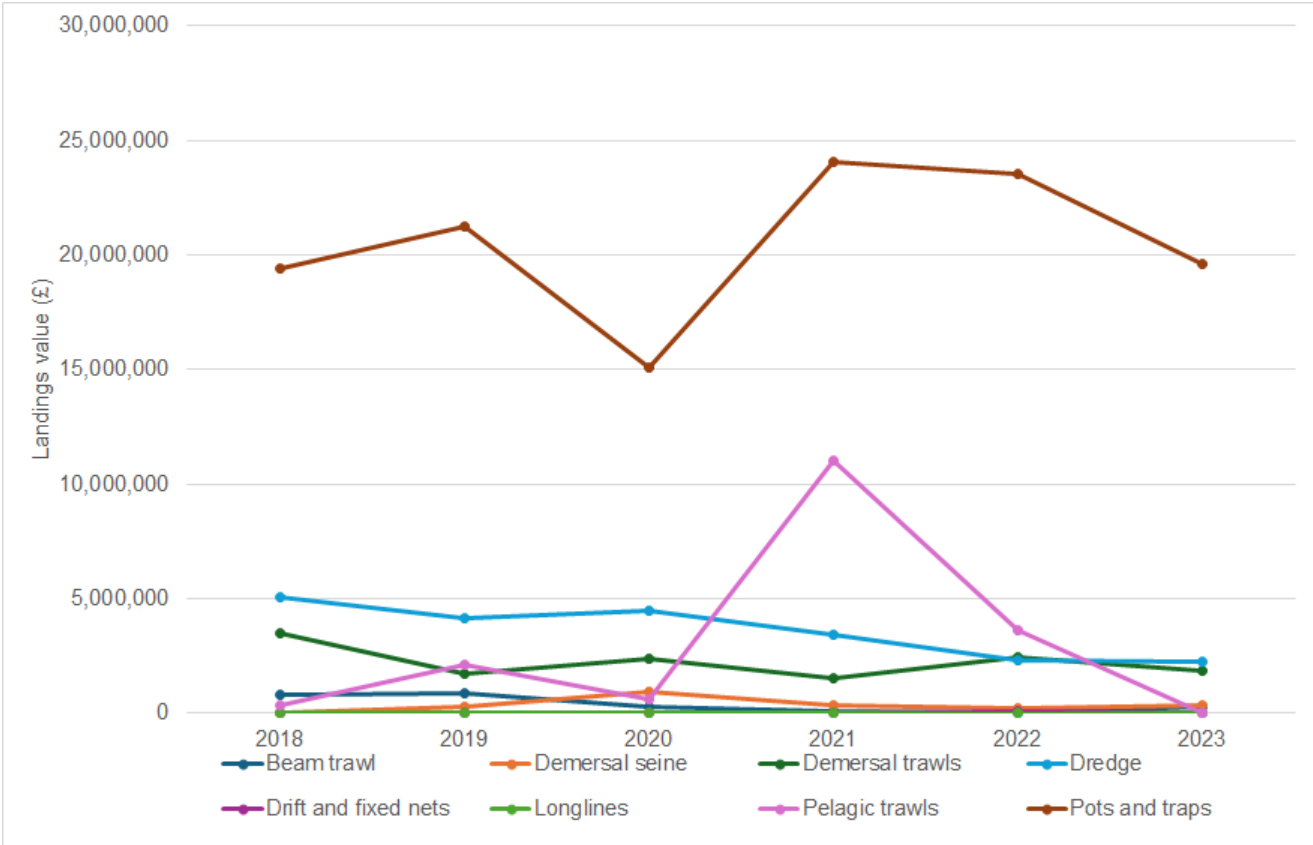


Plate 14-3 Annual Landings Value (£) by UK-Registered Vessels from the Study Area, by Key Fishing Gear, Between 2018 and 2023 (MMO, 2024)

68. Within the ICES rectangles that overlap the Array Area (38F2, 38F3, 39F2 and 39F3), landings statistics for 2018 to 2023 indicate that the majority of landings (77%) by value are associated with demersal otter trawls, with annual landings values declining across this period. In these rectangles beam trawl landings (accounting for 17% of annual average landings values) have declined substantially over the same period. Landings values associated with potting have been relatively low but have increased notably in 2022 and 2023 (accounting for 4% of annual average landings values), possibly as mobile gear fishing restrictions have been enacted. Data indicates limited / no landings associated with other gear types from these ICES rectangles.
69. UK landings data indicates that across the 2018 to 2023 period, and across the Study Area, English-registered fishing vessels accounted for approximately 76% of total landings, with Scottish-registered vessels accounting for 23%. Vessels accounting for the majority of landings by both weight and were within the following vessel length categories: 12m to 15m, 24m to 40m and over 40m. Key UK ports receiving landings from the Study Area include Bridlington, Scarborough, Grimsby, Hartlepool and Whitby. Non-UK ports including Florø (Norway), Scheveningen and Harlingen (Netherlands) also receive landings from the Study Area.

70. Plate 14-4 presents landings by both UK and non-UK fishing vessels from the Study Area between 2012 and 2016. The data indicates limited EU vessel activity in the inshore ICES rectangles, with relatively high levels of activity in those rectangles beyond the 12nm limit.

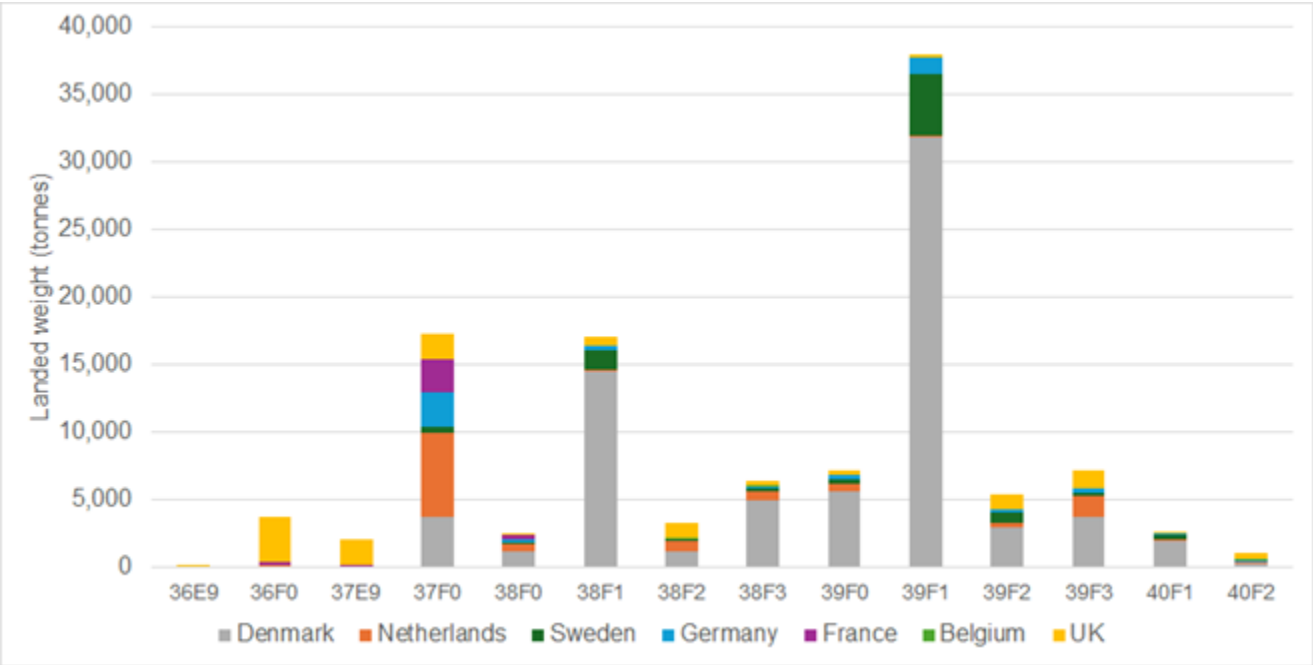


Plate 14-4 Average Annual Landed Weight (Tonnes) by UK and EU Vessels from the Study Area, by ICES Rectangle, Between 2012 and 2016 (EU DCF, 2023)

14.6.1.2 Landings by Fishing Gear Types

71. The following sub-sections summarise fishing activity in the Study Area by gear type. For a detailed description, reference should be made to **Volume 2, Appendix 14.2 Commercial Fisheries Baseline Technical Report**, including to the spatial activity data presented within it (Figure 8-1 to Figure 8-19).

14.6.1.2.1 Potting Fishery

72. The potting fishery primarily targets brown crabs and lobsters and accounts for £20.5 million first sales value landed annually from the Study Area. Approximately 58% of this value is associated with ICES rectangle 36F0, to the immediate south of the offshore ECC nearshore section.
73. In the Study Area, potting activity is focused inside of and around the 12nm boundary. Landings by potting vessels are made into Bridlington, Grimsby and Scarborough. Crab landings peak in autumn, lobster landings peak in late summer and whelk landings peak across spring and summer.

74. Landings statistics indicate that the UK potting fleet has historically not been active in and around the Array Area but that in 2022 and 2023 an increase in landings from the ICES rectangles that overlap the Array Area was recorded. Across ICES rectangles 38F2, 38F3, 39F2 and 39F3, which overlap the Array Area, potting landings were nil up to 2020 and were valued at £156,000 in 2022 and £297,000 in 2023. Spatial AIS data indicates that the potting activity in these ICES rectangles takes place outside of and to the west of the Array Area.

14.6.1.2.2 Scallop Dredge Fishery

75. The scallop dredge fishery primarily operates in ICES rectangles 37E9 and 37F0, out to the 12nm boundary. The offshore ECC routes through the southern extent of a scallop ground.
76. The scallop dredge fishery accounts for £3.6 million first sales value landed annually from the Study Area.
77. Landings by UK scallop dredge vessels are made into Hartlepool and Scarborough. Scallops are targeted year-round, with a spring peak in landings.

14.6.1.2.3 Pelagic Trawl Fishery

78. The UK pelagic trawl fishery sporadically targets herring in the Study Area. It accounts for £2.9 million first sales value landed annually from the Study Area. Landings of pelagic species from the Study Area have historically been low but showed a substantial spike in 2021 which landings data indicate is associated with herring catches in the month of September in 2021. Less than two tonnes of landings by UK pelagic trawl were recorded in the Study Area in 2023.
79. Non-UK pelagic trawlers may be sporadically active within the study area, with vessels registered in Denmark, the Netherlands, Sweden, Germany and France primarily targeting herring.

14.6.1.2.4 Demersal Trawl Fishery

80. The demersal trawl fishery primarily targets plaice and accounts for £2.3 million first sales value landed annually from the Study Area.
81. Relatively higher levels of demersal trawl activity occur in the eastern portion of the offshore ECC and in the Array Area (noting demersal trawling no longer takes place in the Array Area as a result of byelaw implementation in 2022), with key demersal trawl grounds located to the south and east of the Offshore Development Area. Nephrops are primarily landed from ICES rectangle 39F0 and 40F1, to the north of the offshore ECC.
82. Non-UK trawlers active in the Study Area include Danish, Dutch, French, and Belgian vessels targeting mixed demersal fish species.

83. Landings by demersal trawlers are made into North Shields and Dutch ports. Demersal trawl landings peak during autumn and winter months.

14.6.1.2.5 Beam Trawl Fishery

84. The beam trawl fishery primarily targets plaice, Nephrops and mixed demersal fish species and accounts for an average of £387,000 first sales value landed annually from the Study Area.
85. Relatively higher levels of activity in the eastern portion of the offshore ECC and in the Array Area (noting beam trawling no longer takes place in the Array Area as a result of byelaw implementation in 2022), with data also indicating that key beam trawl grounds are located to the south and east of the Offshore Development Area, with the Offshore Development Area located on the fringes of these grounds.
86. Non-UK trawlers active in the Study Area include Dutch and Belgian vessels targeting plaice.
87. Landings by beam trawlers are made into Hartlepool and Dutch ports. Beam trawl landings peak during spring months.

14.6.1.2.6 Demersal Seine Fishery

88. The demersal seine fishery primarily targets squid *Loligo*, mullets *Mugilidae* and whiting *Merlangius merlangus* and accounts for £348,000 first sales value landed annually from the Study Area, noting that landings peaked across 2019 and 2020 before declining substantially across 2021 to 2023.
89. UK, Belgian and Dutch demersal seine vessels are active throughout the Study Area and outside of it, with activity overlapping sections of the offshore ECC and Array Area (noting demersal seining no longer takes place in the Array Area as a result of byelaw implementation in 2022).
90. Landings by demersal seine vessels peak in September and October, with landings made into Hartlepool, Grimsby and Dutch ports.

14.6.1.2.7 Other Gear Types

91. Some intertidal fixed netting activity may also be expected to take place on the coastline between Flamborough and Withernsea, targeting shellfish, sea trout and white fish species. Landings in 2023 by drift and fixed nets in the nearshore portion of the Study Area (ICES rectangle 36E9) equated 0.2 tonnes (MMO, 2024).

14.6.1.3 Key Commercial Fisheries Receptors

92. A summary of fishing fleets active in the Study Area, with a focus on those expected to be active in the Array Area and offshore ECC, is provided in **Table 14-11**. This summary is based on the detailed characterisation of the commercial fisheries baseline presented in **Volume 2, Appendix 14.2 Commercial Fisheries Baseline Technical Report**.

Table 14-11 Summary of Fishing Fleets Active in the Study Area, and Identified as Commercial Fisheries EIA Receptors

Fishing Fleet	Array Area Activity	Offshore ECC Activity
UK Fishing Fleets		
UK potting	Very limited potting activity.	English registered vessels, under and over 10m length, targeting lobster and brown crab, and to a lesser extent whelk.
UK dredge	No current bottom towed gear activity based on enactment of Dogger Bank byelaw in 2022.	English and Scottish registered vessels, mostly over 10m length, targeting king scallop.
UK pelagic trawl	No current bottom towed (or semi-pelagic) gear activity based on enactment of Dogger Bank byelaw in 2022.	English and Scottish registered vessels, over 10m length, targeting herring.
UK demersal otter trawl	No current bottom towed gear activity based on enactment of Dogger Bank byelaw in 2022.	English and Scottish registered vessels, mostly over 10m length, targeting plaice and Nephrops.
UK beam trawl	No current bottom towed gear activity based on enactment of Dogger Bank byelaw in 2022.	Low levels of English registered vessels, mostly over 10m length, targeting plaice.
UK demersal seine	No current bottom towed gear activity based on enactment of Dogger Bank byelaw in 2022.	English and Scottish registered vessels, mostly over 10m length, targeting squid, whiting and mullets.
Non-UK Fishing Fleets		
Danish pelagic trawl	No current bottom towed gear activity based on enactment of Dogger Bank byelaw in 2022.	Sporadic landings of herring.
Danish demersal trawl	No current bottom towed gear activity based on enactment of Dogger Bank byelaw in 2022.	Relatively low levels (in a wider North Sea context) of activity by trawlers targeting plaice.

Fishing Fleet	Array Area Activity	Offshore ECC Activity
Dutch pelagic trawl	No current bottom towed (or semi-pelagic) gear activity based on enactment of Dogger Bank byelaw in 2022.	Sporadic landings of herring.
Dutch beam trawl	No current bottom towed gear activity based on enactment of Dogger Bank byelaw in 2022.	Relatively low levels (in a wider North Sea context) of activity by trawlers targeting plaice.
Swedish pelagic trawl	No current bottom towed gear activity based on enactment of Dogger Bank byelaw in 2022.	Sporadic landings of herring.
German pelagic trawl	No current bottom towed (or semi-pelagic) gear activity based on enactment of Dogger Bank byelaw in 2022.	Sporadic landings of herring.
German demersal trawl	No current bottom towed gear activity based on enactment of Dogger Bank byelaw in 2022.	Relatively low levels (in a wider North Sea context) of activity by trawlers targeting plaice.
French demersal trawl	No current bottom towed gear activity based on enactment of Dogger Bank byelaw in 2022.	Relatively low levels (in a wider North Sea context) of activity by trawlers targeting whiting and mackerel.
French pelagic trawl	No current bottom towed (or semi-pelagic) gear activity based on enactment of Dogger Bank byelaw in 2022.	Sporadic landings of herring.
Belgian beam trawl	No current bottom towed gear activity based on enactment of Dogger Bank byelaw in 2022.	Relatively low levels (in a wider North Sea context) of activity by trawlers targeting plaice and sole.
Belgian demersal trawl	No current bottom towed gear activity based on enactment of Dogger Bank byelaw in 2022.	Relatively low levels (in a wider North Sea context) of activity by trawlers targeting plaice and sole.

14.6.3 Predicted Future Baseline

93. Commercial fisheries patterns change and fluctuate based on a range of natural and management-controlled factors. This includes the following:
 - Market demand: commercial fishing fleets respond to market demand, which is impacted by a range of factors, including the 2020 to 2021 COVID pandemic;
 - Market prices: commercial fishing fleets respond to market prices by focusing effort on higher value target species when prices are high and markets in demand;
 - Stock abundance: fluctuation in the biomass of individual species stocks in response to status of the stock, recruitment, natural disturbances (e.g. due to storms, sea temperature etc.), changes in fishing pressure etc.;
 - Fisheries management: including new management for specific species where overexploitation has been identified, or changes in TACs leading to the relocation of effort, and / or an overall increase / decrease of effort and catches from specific areas;
 - Environmental management: including the potential restriction of certain fisheries within protected areas;
 - Improved efficiency and gear technology: with fishing fleets constantly evolving to reduce operational costs e.g. by moving from beam trawl to demersal seine; and
 - Sustainability: with seafood buyers more frequently requesting certification of the sustainability of fish and shellfish products, such as the Marine Stewardship Council certification, industry is adapting to improve fisheries management and wider environmental impacts.
94. The variations and trends in commercial fisheries activity are an important aspect of the baseline assessment and forms the principal reason for considering up to five years of key baseline data. Given the time periods assessed, the future baseline scenario would typically be reflected within the current baseline assessment undertaken. However, in this case, existing baseline data do not capture any potential changes in commercial fisheries activity resulting from the withdrawal of the UK from the EU.
95. Following withdrawal of the UK from the EU, a Trade and Cooperation Agreement (TCA) has been agreed between parties, applicable on a provisional basis from 1st January 2021. The TCA sets out fisheries rights and confirms that from 1st January 2021 and during a transition period until 30th June 2026, UK and EU vessels will continue to access respective EEZs (12nm to 200nm) to fish. In this period, EU vessels will also be able to fish in allocated parts of UK waters, typically between 6nm to 12nm, where historic rights allow access by the fishing fleets of authorised EU Members States and subject to licence issue.
96. Access rights of foreign vessels to UK EEZ waters will remain until at least the end of 2026 with reducing quotas, after which rights will be subject to the conclusion of negotiated agreements. In addition to access rights, the TCA requires that 25% of the EU's fisheries quota in UK waters will be transferred to the UK over the five-year transition period. Overall, the biggest gains for UK fleets targeting the North Sea are for pelagic and demersal stocks, including mackerel, sole, and herring. Across the Study Area, where UK fisheries primarily target non-quota shellfish species, it is expected that fleets are unlikely to be impacted by quota transfers. It is possible that UK vessels will seek to exploit additional quota species opportunities, but vessels would need to access quota holdings. There has been limited change in the overall UK share for plaice and sole, some of the key fisheries targeted by non-UK vessels, notably Dutch and Belgian trawlers.
97. Market changes have the potential to impact fishing activity in the Study Area; some of the catch landed by UK vessels is exported to EU markets (e.g. brown crab) and potential tariff / non-tariff barriers could affect which species are targeted and to what extent. A key species landed by potters in the area, is whelk, which is primarily exported to non-EU countries, including Korea, Taiwan, and Singapore. The trade in UK landed whelk has therefore not been as affected by the Brexit process and associated implications on shellfish exports in comparison to other species. In terms of future baseline scenarios, it is therefore possible, for example, that the UK fleet will more heavily target whelk given that prices have increased in recent years, and they are exported to non-EU countries.
98. In relation to the effects of the COVID pandemic, MMO annual reporting notes that the effects of the pandemic on the UK fishing industry were felt from March 2020. The MMO UK Sea Fisheries Statistics 2021 report observes that an increase in overall UK landings quantity and value in 2021 (relative to 2020) largely reflected recovery from the COVID period and additional quota available to the UK fleet after leaving the EU (MMO, 2022).
99. Fisheries and environmental management measures have recently influenced commercial fishing activity within the Study Area, with changes in activity not fully captured within the available baseline datasets. Notable measures include the introduction of the Dogger Bank SAC byelaw in 2022, prohibiting use of towed fishing gears across a significant portion of the Offshore Development Area, and closure of the sandeel fishery in 2024. These measures can reasonably be expected to have fully ceased the use of bottom towed fishing gear within the Array Area and resulted in a decrease in the use of bottom towed fishing gear across the commercial fisheries Study Area, though the extent to which this is reflected in landings values and volumes is yet to be confirmed as more up-to-date fisheries datasets are published. It is possible that in the future these management measures could be removed or altered, thus altering patterns of fishing activity again, though there is no current basis to assume that will be the case.

100. Commercial fisheries receptors (i.e. relevant fishing fleets) could theoretically be impacted by climate change over the lifetime of the Project. Increased sea temperature / change in pH levels have the potential to affect the distribution of commercially targeted fish and shellfish stocks in the Study Area. Changes may also result from changes in seabed habitat or natural disturbance events, which would be expected to have limited effects on mobile species, but with potential for effects on substrate-dependent species such as herring and sandeel, and on shellfish. Changes may in turn affect commercial fishing activity in the Study Area over the long-term; for example, altering fishing methods, targeted grounds and species, and seasonal patterns in activity. An increase in storm events may also directly impact fishing activity in the Study Area, with changes with seasonal fishing patterns in response to changes in weather and periods of safe fishing conditions.
101. Taking all of the above into account, fishing activity within the Study Area is likely to remain broadly consistent with the current baseline in terms of the fleets and Member States in operation, noting however that a sandeel fishery is no longer present and that bottom towed fishing gear may not be used within the Dogger Bank SAC byelaw area which overlaps the Array Area.

14.7 Assessment of Effects

102. The likely significant effects to commercial fisheries receptors that may occur during construction, operation and decommissioning of the Project are assessed in the following sections. The assessment follows the methodology set out in **Section 14.5** and is based on the realistic worst-case scenarios defined in **Section 14.4.4**, with consideration of embedded mitigation measures identified in **Section 14.4.3**.

14.7.1 Potential Effects during Construction

103. Whilst potential reduced access and displacement impacts are assessed separately for the Array Area and offshore ECC in the sub-sections below (in response to the presence of different fishing fleets active across these two areas, and the different nature of impacts associated with turbine and foundation installation and operation, and sub-sea cable installation and operation), it is not anticipated that impacts across these areas would interact in such a way as to result in a combined impact (i.e. Array Area impacts plus offshore ECC impacts) of greater significance than identified in each assessment. The assessment of effects upon fishing fleets is precautionary and takes into account where a single fleet may be impacted by both works and infrastructure in the Array Area and offshore ECC.

14.7.1.1 Reduction in access to, or exclusion from established fishing grounds (CF-C-02) – Array Area

104. This impact relates to the reduction in access to or exclusion from established fishing grounds within the Array Area due to construction activities related to the installation of the turbines and offshore substation platforms, their foundations, and the installation of inter-array cables.
105. Following introduction of the Dogger Bank byelaw in 2022, only the potting fleet is expected to be actively fishing in the Array Area. There is deemed to be no pathway for reduced access or exclusion impacts to mobile gear fishing fleets in the Array Area (see **Section 14.4.2** for confirmation of the scope of the assessment).

14.7.1.1.1 Receptor Sensitivity

106. The UK potting fleet has historically not been active in the Array Area. The fleet operates across relatively distinct areas of ground and therefore may be more sensitive to disruption than fishing fleets operating across wider spatial extents. The UK potting fleet is deemed to be of medium vulnerability and medium recoverability. The sensitivity of the receptor is therefore considered to be **medium**.

14.7.1.1.2 Impact Magnitude

107. During construction in the Array Area, commercial fisheries will be prevented from fishing where construction activities are taking place, within 500m safety zones around structures where active construction works are ongoing, and otherwise within 50m safety zones around partially completed structures or complete structures yet to be operational. In addition, it is recommended and assumed that up to 500m advisory safe passing distance for mobile installation vessels will be in place. The total construction duration for the Array Area is anticipated to be up to five years, with construction activities occurring anywhere within the Array Area at any given time and a number / range of construction activities being undertaken simultaneously. It is assumed that the construction will be undertaken in a single phase.
108. Construction activity in the Array Area will lead to a localised loss of access to fishing grounds and the fish and shellfish resources within these grounds for the potting fleet during the period of construction, which will directly affect fleets over a short- to medium-term duration (i.e. between two and 12 years). The impact is predicted to be intermittent with localised exclusion surrounding construction activities. The impact on the potting fleet is described below.

109. UK potting fishery: The Array Area is located offshore from and to the east of significant shellfish grounds routinely targeted by potting vessels, as indicated by VMS and landings data presented in **Volume 2, Appendix 14.2 Commercial Fisheries Baseline Technical Report**. Very low levels of potting activity are expected to take place within the Array Area. Landings data indicates that from the four ICES rectangles that overlap the Array Area (38F2, 39F2, 38F3, 39F3), annual average landings values (primarily associated with brown crab landings) are £116,000 (in the context of an equivalent value of £20.5 million for the whole Study Area). The Array Area spatially overlaps with 1.84% of these four rectangles; this equates to a pro-rata value of £2,130 for shellfish landings by potting vessels based on uniform landings across the entire rectangles. While such a simplistic calculation brings higher level of uncertainty to the resulting figure, it does demonstrate relative levels of potting activity across the Array Area in the context of the wider Study Area. It is observed that landings data indicates a trend of increasing landings from these four ICES rectangles up to 2023, with landings increasing in value from £3,300 in 2021 to £297,000 in 2023, suggesting increased targeting of grounds in this area. Available spatial data (AIS data, surveillance data, marine traffic survey data) does not indicate potting activity in the Array Area.
110. The UK potting fleet operating outside the 12nm boundary is comprised entirely of over 12m length vessels. These vessels are expected to have some opportunity to fish in alternative areas, noting however that regional grounds are already heavily targeted.
111. During construction, potting vessels will be required to remove pots from areas under construction. Potting fishers will therefore experience loss of earnings for the time taken to relocate gear, and (potentially) a loss of earnings associated with not being able to fish the specific grounds under construction (e.g. if alternative grounds are either not available, or not as productive). Potting typically involves a number of fleets of pots being deployed across a range of areas, and while it is highly unlikely that 100% of pots deployed by a single vessel will be impacted at any one time, it is understood that specific potting grounds may be targeted by specific operators. In this case, individual fishing businesses that routinely target the site will be impacted to a higher extent and this is accounted for within the assessment.
112. The impact on the UK potting fleet is predicted to be of regional spatial extent, short-medium term duration and intermittent. It is predicted that the impact will affect the receptor directly and result in a partial loss of ability to carry on fishing activity in the Array Area. Whilst data indicates that the Array Area has not been routinely targeted by the UK potting fishery to date, given the removal of bottom towed gear activity following enactment of Dogger Bank byelaw in 2022, there is scope for potting vessels to increasingly explore fishing potential in the byelaw area. Available data does not indicate that potting vessels are active in the Array Area. The magnitude is therefore considered to be **low adverse** for the UK potting fleet.

14.7.1.1.3 Effect Significance

113. Embedded mitigation measures include advance notification of planned construction activities to fishers and ongoing liaison throughout construction (see **Section 14.4.3**). Taking account of these measures, the residual effect on the UK potting fishery is set out immediately below, noting that the effect in all cases will be direct and temporary.
114. Overall, it is predicted that sensitivity of the receptor is **medium**, and the magnitude of impact is **low adverse**. The effect is therefore of **minor adverse** significance, which is **not significant** in EIA terms.

14.7.1.2 Reduction in access to, or exclusion from established fishing grounds (CF-C-02) – offshore ECC

115. Fishing activity will be locally and temporarily excluded at the location of construction of the offshore ECC owing to the presence of construction vessels, construction operations and the need to observe The Convention on the International Regulations for Preventing Collisions at Sea, 1972 (COLREGS) (International Maritime Organization (IMO), 1974).

14.7.1.2.1 Receptor Sensitivity

116. UK potting fishery: The UK potting fleet active in the offshore ECC operates across relatively distinct areas of ground in areas that are already heavily exploited and are therefore more sensitive to disruption. The UK potting fleet is deemed to be of medium vulnerability and medium recoverability across the offshore ECC. The sensitivity of the receptor is therefore, considered to be **medium**.
117. UK scallop dredge fishery: The UK scallop dredge fishery is targeted for the most part by nomadic vessels that are able to target distinct scallop grounds located around the UK coastline. Given adequate notification, it is expected that these vessels will be in a position to avoid construction areas. These fleets are considered to have a medium to large operational range; medium to high levels of alternative fishing grounds; and are deemed to be of low vulnerability and high recoverability. The sensitivity of these receptors is therefore considered to be **low**.
118. UK pelagic trawl fishery: The UK trawl fleets are highly mobile and operate across large areas of the North Sea and beyond, with data indicating that the offshore ECC is not routinely targeted by them. Given adequate notification, it is expected that these vessels will be in a position to avoid construction areas. These fleets are considered to have a medium to large operational range; medium to high levels of alternative fishing grounds; and are deemed to be of low vulnerability and high recoverability. The sensitivity of these receptors is therefore considered to be **low**.

119. UK demersal trawl fishery: The UK trawl fleets are highly mobile and operate across large areas of the North Sea and beyond. Given adequate notification, it is expected that these vessels will be in a position to avoid construction areas. These fleets are considered to have a medium to large operational range; medium to high levels of alternative fishing grounds; and are deemed to be of low vulnerability and high recoverability. The sensitivity of these receptors is therefore considered to be **low**.
120. UK beam trawl fishery: The UK trawl fleets are highly mobile and operate across large areas of the North Sea and beyond. Given adequate notification, it is expected that these vessels will be in a position to avoid construction areas. These fleets are considered to have a medium to large operational range; medium to high levels of alternative fishing grounds; and are deemed to be of low vulnerability and high recoverability. The sensitivity of these receptors is therefore considered to be **low**.
121. UK demersal seine fishery: The UK seine fleet are highly mobile and operate across large areas of the North Sea and beyond. Given adequate notification, it is expected that these vessels will be in a position to avoid construction areas. These fleets are considered to have a medium to large operational range; medium to high levels of alternative fishing grounds; and are deemed to be of low vulnerability and high recoverability. The sensitivity of this receptor is therefore considered to be **low**.
122. Non-UK pelagic trawl fishery: The non-UK trawl fleets are highly mobile and operate across large areas of the North Sea and beyond. They have an extensive operational range and are considered to be highly adaptive and resilient to change. Given adequate notification, it is expected that these vessels will be in a position to avoid construction areas. The sensitivity of these receptors is therefore considered to be **negligible**.
123. Non-UK demersal trawl fishery: The non-UK trawl fleets are highly mobile and operate across large areas of the North Sea and beyond. They have an extensive operational range and are considered to be highly adaptive and resilient to change. Given adequate notification, it is expected that these vessels will be in a position to avoid construction areas. The sensitivity of these receptors is therefore considered to be **negligible**.
124. Non-UK beam trawl fishery: The non-UK trawl fleets are highly mobile and operate across large areas of the North Sea and beyond. They have an extensive operational range and are considered to be highly adaptive and resilient to change. Given adequate notification, it is expected that these vessels will be in a position to avoid construction areas. The sensitivity of these receptors is therefore considered to be **negligible**.

14.7.1.2.2 Impact Magnitude

125. The construction scenario assumes a construction period of up to five years in a single phase, though installation of export cables is expected to have an approximate total duration of two years. In terms of the area impacted by offshore ECC construction activities, in total 16.637km² of seabed will be disturbed during export cable installation. In addition, an advisory safe passing distance of 500m radius around cable installation vessels active along the offshore ECC is recommended (i.e. a roaming 0.79km² area along the 800km length of offshore export cable to be installed). In addition, where burial cannot be achieved, the offshore ECC may require mechanical cable protection with a total seabed footprint of up to 1,600,000m² (1,424,000m² of which lies outside Dogger Bank SAC). Cable crossings will also require mechanical cable protection, with a total seabed footprint of up to 60,800m².
126. Construction in the offshore ECC may lead to a temporary loss of access to fishing grounds and the fish and shellfish resources within these grounds for a range of fishing opportunities during the construction activities, which will directly affect various fishing fleets over a short-term duration. The impact is predicted to be short-term and intermittent with localised exclusion surrounding construction activities.
127. The offshore ECC overlaps with multiple ICES rectangles and the region is fished by a range of different commercial fishing fleets, as discussed below.
128. UK potting fishery: The offshore ECC overlaps significant shellfish grounds routinely targeted by UK vessels. Key species targeted include brown crab and lobster. Spatial VMS data presented in Study Area indicates that the offshore ECC routes along the northernmost extent of key shellfish grounds. Landings data indicates that within the Study Area, the highest value shellfish landings made by potting vessels (annual average landings value of £11.8 million) are consistently from ICES rectangle 36F0, which is located to the immediate south of the offshore ECC and does not overlap with it. Beyond that, very high value landings are also associated with ICES rectangles 37E9 (£4.2 million), 37F0 (£2.1 million) and 36E9 (£850,000), with which the nearshore portion of the offshore ECC overlaps. The offshore ECC spatially overlaps with 1.03% of ICES rectangle 37E9; this equates to a pro-rata annual average landed value of £42,840 for shellfish landings by potting vessels based on uniform landings across the entire rectangle. The equivalent pro-rata values for 37F0 and 36E9 are £98,910 (4.71% overlap) and £54,400 (6.40% overlap). This is a simplistic calculation and uniform distribution of potting activity across ICES rectangles should not be assumed, but these landings values demonstrate the potential potting opportunity within the offshore ECC.
129. The UK potting fleet operating in the vicinity of the offshore ECC is comprised of smaller inshore vessels (mainly under 15m length) targeting inshore grounds and larger vessels targeting offshore grounds along the outermost portion of the offshore ECC. Whilst these vessels do have some opportunity to fish in alternative areas, adjacent / alternative grounds are understood to be already heavily targeted.

130. As described for the Array Area, during construction, potting vessels will be required to remove pots from areas under construction. Potting fishers will therefore experience loss of earnings for the time taken to relocate gear, and (potentially) a loss of earnings associated with not being able to fish the specific grounds under construction (e.g. if alternative grounds are either not available, or not as productive). Potting typically involves a number of fleets of pots being deployed across a range of areas, and while it is highly unlikely that 100% of pots deployed by a single vessel will be impacted at any one time, it is understood that specific potting grounds may be targeted by specific operators. In this case, individual fishing businesses that routinely target the site will be impacted to a higher extent and this is accounted for within the assessment.
131. The impact on the UK potting fleet is predicted to be of regional spatial extent, short-term duration and intermittent. It is predicted that the impact will affect the receptor directly. The magnitude is considered to be **medium (adverse)** for the UK potting fleet.
132. UK scallop dredge fishery: The offshore ECC is located towards the southern extent of important scallop grounds, as indicated by spatial VMS data presented in **Volume 2, Appendix 14.2 Commercial Fisheries Baseline Technical Report**. Landings data indicates that scallop landings from the Study Area are primarily associated with ICES rectangles 37E9 (annual average landings value of £1.8 million), 37F0 (£888,000) and 36F0 (£507,000). Scallop dredge activity is focused between the 6nm and 12nm boundaries. The offshore ECC spatially overlaps with 1.03% of ICES rectangle 37E9; this equates to a pro-rata annual average landed value of £18,540 for scallop landings by dredge vessels based on uniform landings across the entire rectangle. The equivalent pro rata values for 37F0 is £41,825 (4.71% overlap) noting there is no overlap with 36F0.
133. The impact on the UK scallop dredge fleet is predicted to be of regional spatial extent, short-term duration and intermittent. It is predicted that the impact will affect the receptor directly. The magnitude of impact is considered to be **medium (adverse)** for the UK dredge fleet.
134. UK pelagic trawl fishery: The UK pelagic trawl fleet is understood to be active across wide areas of the North Sea. Landings of herring from the Study Area have been sporadic across the study period, with pelagic trawl landings made from ICES rectangles 37F0 (annual average landings value of £2.7 million) and 37E9 (£1.5 million). Spatial VMS data presented in **Volume 2, Appendix 14.2 Commercial Fisheries Baseline Technical Report** indicates that the offshore ECC is located at the southernmost extent of grounds targeted by the UK pelagic trawl fishery.
135. Where the impact may affect the receptor, it will be direct, of regional spatial extent, short-term duration and intermittent. The magnitude of impact is considered to be **low (adverse)** for the UK pelagic trawl fishery.
136. UK demersal trawl fishery: The UK demersal trawl fishery is understood to be active across wide areas of the North Sea and spatial VMS data presented in **Volume 2, Appendix 14.2 Commercial Fisheries Baseline Technical Report** indicates that whilst there is scope for some UK demersal trawl activity to overlap the offshore ECC around the 12nm boundary and where the offshore ECC approaches the Array Area, the offshore ECC does not overlap key ground targeted by the UK fishery.
137. Where the impact may affect the receptor, it will be direct, of regional spatial extent, short-term duration and intermittent. The magnitude of impact is considered to be **low (adverse)** for the UK demersal trawl fishery.
138. UK beam trawl fishery: The UK beam trawl fishery is understood to be active across wide areas of the North Sea and spatial VMS data presented in **Volume 2, Appendix 14.2 Commercial Fisheries Baseline Technical Report** indicates that whilst there is scope for some UK beam trawl activity to overlap the offshore ECC where it approaches the Array Area, the offshore ECC does not overlap key ground targeted by the UK fishery.
139. Where the impact may affect the receptor, it will be direct, of regional spatial extent, short-term duration and intermittent. The magnitude of impact is considered to be **low (adverse)** for the UK beam trawl fishery.
140. UK demersal seine fishery: The UK demersal seine fishery is understood to be active across wide areas of the North Sea and spatial VMS data presented in **Volume 2, Appendix 14.2 Commercial Fisheries Baseline Technical Report** indicates that whilst there is scope for some UK demersal seine activity to overlap the offshore ECC around the 12nm boundary in ICES rectangle 37F0, the wider offshore ECC does not overlap key ground targeted by the UK fishery.
141. Where the impact may affect the receptor, it will be direct, of regional spatial extent, short-term duration and intermittent. The magnitude of impact is considered to be **low (adverse)** for the UK demersal seine fishery.
142. Non-UK pelagic trawl fishery: Landings data presented in **Volume 2, Appendix 14.2 Commercial Fisheries Baseline Technical Report** indicates that the offshore ECC is not located in important EU pelagic trawl grounds. Landings of herring by Danish and other EU-registered vessels from the Study Area are sporadic.
143. Where the impact may affect the receptor, it will be direct, of regional spatial extent, short-term duration and intermittent. The magnitude of impact is considered to be **negligible (adverse)** for the non-UK pelagic trawl fleet.
144. Non-UK demersal trawl fishery: The offshore ECC is located to the north of important EU demersal trawl grounds, which cover large areas of the North Sea. Spatial VMS data presented in **Volume 2, Appendix 14.2 Commercial Fisheries Baseline Technical Report** indicates scope for low levels of EU demersal trawl activity across the offshore ECC.

145. Where the impact may affect the receptor, it will be direct, of regional spatial extent, short-term duration and intermittent. The magnitude of impact is considered to be **negligible (adverse)** for the non-UK demersal trawl fleet.
146. Non-UK beam trawl fishery: The offshore ECC is located to the north of important EU beam trawl grounds, which cover large areas of the North Sea. Spatial VMS data presented in **Volume 2, Appendix 14.2 Commercial Fisheries Baseline Technical Report** indicates that the wider offshore ECC is not targeted by EU beam trawlers, with scope for some low levels of activity around the 12nm boundary and where the offshore ECC approaches the Array Area.
147. Where the impact may affect the receptor, it will be direct, of regional spatial extent, short-term duration and intermittent. The magnitude of impact is considered to be **negligible (adverse)** for the non-UK beam trawl fleet.

14.7.1.2.3 Effect Significance

148. Embedded mitigation measures include advance notification of planned construction activities to fishers and ongoing liaison throughout construction discussed in **Table 14-4** (Commitment IDs CO11, CO14 and CO15). Taking account of these measures, the residual effect is set out immediately below, noting that the effect in all cases will be direct and temporary.
149. UK potting fishery: Overall, it is predicted that sensitivity of the receptor is **medium**, and the magnitude of impact is **medium (adverse)**. The effect is therefore of **moderate adverse** significance, which is **significant** in EIA terms. In response to this, and specific to the UK potting fleet where there is a significant residual impact, further mitigation has been identified and is presented below.
150. UK scallop dredge fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **medium (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
151. UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low adverse**. The effect is of **minor (adverse)** significance, which is **not significant** in EIA terms.
152. UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low adverse**. The effect is of **minor (adverse)** significance, which is **not significant** in EIA terms.
153. UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

154. UK demersal seine fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
155. Non-UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **negligible**, and the magnitude of impact is **negligible**. The effect is of **negligible adverse** significance, which is **not significant** in EIA terms.
156. Non-UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **negligible**, and the magnitude of impact is **negligible**. The effect is of **negligible adverse** significance, which is **not significant** in EIA terms.
157. Non-UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **negligible**, and the magnitude of impact is **negligible**. The effect is of **negligible adverse** significance, which is **not significant** in EIA terms.

14.7.1.2.4 Additional Mitigation and Residual Effect

158. Specific to the UK potting fleet where there is a significant impact, the Applicant is committed to developing a FLCP as discussed in **Table 14-4** (Commitment ID CO15), which will explore options to encourage co-existence and further mitigate the effect, including establishment of cooperation agreements between the Applicant and fishers and associated justifiable disturbance payments made to fishers where appropriately evidenced. With respect to any cooperation agreements and associated payments, the procedures as outlined in the FLOWW guidance documents (2014 and 2015, and future relevant updates), will be followed.
159. Through the application of the FLCP, together with justifiable disturbance payments where relevant, the magnitude of impact would be **low (adverse)**. The residual effect is therefore of **minor adverse** significance, which is **not significant** in EIA terms.

14.7.1.3 Displacement leading to gear conflict and increased fishing pressure on adjacent / alternative grounds (CF-C-03)

160. Loss of access or exclusion from fishing grounds due to construction in the Offshore Development Area may lead to increases in fishing effort in other areas that may already be exploited thereby leading to increased pressure and gear conflict.

14.7.1.3.1 Receptor Sensitivity

161. The sensitivity of the fleets is as described under **Section 14.7.1.1** and is **medium** for the UK potting fleet and **low** for all other fleets except for the EU trawl fleets, which have **negligible** sensitivity.

14.7.1.3.2 Impact Magnitude

162. Conflict over diminished grounds may occur if displaced vessels explore grounds traditionally fished by other gear types; and / or displaced vessels relocate to actively fish grounds already targeted by the same gear. For example, this could include displaced demersal otter trawlers exploring areas fished by potters and thereby causing gear conflict or gear entanglement between potting lines and trawl gear and / or displaced demersal otter trawlers focusing effort in areas already fished by demersal otter trawlers and therefore increasing competition in that area. The impact is predicted to be of regional spatial extent, short-medium term duration and intermittent.
163. UK potting fishery: Conflict over diminished grounds may occur if displaced vessels operating mobile gear (e.g. dredge or demersal trawl) explore grounds traditionally fished by potters; and / or displaced potting gear is relocated into other actively fished potting grounds. Displacement of mobile gear may therefore increase the risk of interaction with potting gear.
164. When considering the impact of potters being displaced into grounds already targeted by potters two scenarios are feasible:
- Alternative fishing grounds are available to relocate gear, in which case gear conflict and displacement effects will be low.
 - Alternative fishing grounds are not available as adjacent areas are already being fished by potters, in which case the gear already on the ground limits the level of displacement. While there remains potential for gear conflicts and increased fishing pressure to arise, appropriately mitigated exclusion impacts will limit this.
165. Taking these aspects into consideration the magnitude of impact is considered to be **medium (adverse)** for the UK potting fishery.

166. UK scallop dredge fishery: Displacement is not expected to significantly affect the dredge fishery operating across a section of the offshore ECC, which has a wide operational range and is understood to predominantly take place on grounds to the north of the offshore ECC. The magnitude of the displacement impact is assessed to be **low (adverse)** for UK scallopers.
167. UK pelagic trawl fishery: Displacement from the Offshore Development Area is not expected to affect the UK trawl fleets, which have a wide operational range, and key grounds located outside of the Offshore Development Area. The magnitude of the displacement impact is assessed to be **negligible (adverse)** for the UK pelagic trawl fishery.
168. UK demersal trawl fishery: Displacement from the Offshore Development Area is not expected to affect the UK trawl fleets, which have a wide operational range, and key grounds located outside of the Offshore Development Area. The magnitude of the displacement impact is assessed to be **low (adverse)** for the UK demersal trawl fishery.
169. UK beam trawl fishery: Displacement from the Offshore Development Area is not expected to affect the UK trawl fleets, which have a wide operational range, and key grounds located outside of the Offshore Development Area. The magnitude of the displacement impact is assessed to be **low (adverse)** for the UK beam trawl fishery.
170. UK demersal seine fishery: Displacement from the Offshore Development Area is not expected to affect the UK trawl fleets, which have a wide operational range, and key grounds located outside of the Offshore Development Area. The magnitude of the displacement impact is assessed to be **low (adverse)** for the UK demersal seine fishery.
171. Non-UK pelagic trawl fishery: Displacement from the Offshore Development Area is not expected to affect non-UK trawl fisheries since key fishing grounds and therefore activity is located outside of Offshore Development Area boundaries. The magnitude of displacement is assessed to be **negligible (adverse)**.
172. Non-UK demersal trawl fishery: Displacement from the Offshore Development Area is not expected to affect non-UK trawl fisheries since key fishing grounds and therefore activity is located outside of Offshore Development Area boundaries. The magnitude of displacement is assessed to be **negligible (adverse)**.
173. Non-UK beam trawl fishery: Displacement from the Offshore Development Area is not expected to affect non-UK trawl fisheries since key fishing grounds and therefore activity is located outside of Offshore Development Area boundaries. The magnitude of displacement is assessed to be **negligible (adverse)**.

14.7.1.3.3 Effect Significance

174. Embedded mitigation measures include advance notification of planned construction activities to fishers and ongoing liaison throughout construction as discussed in **Table 14-4** (Commitment IDs CO11, CO14 and CO15). Taking account of these measures, the residual effect is set out immediately below, noting that the effect in all cases will be direct and temporary.
175. UK potting fishery: Overall, it is predicted that sensitivity of the receptor is **medium**, and the magnitude of impact is **medium (adverse)**. The effect is therefore of **moderate adverse** significance, which is **significant** in EIA terms. In response to this, and specific to the UK potting fleet where there is a significant residual impact, further mitigation has been identified and is presented below.
176. UK scallop dredge fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low-medium (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
177. UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **negligible (adverse)**. The effect is of **negligible adverse** significance, which is **not significant** in EIA terms.
178. UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor (adverse)** significance, which is **not significant** in EIA terms.
179. UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
180. UK demersal seine fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
181. Non-UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **negligible**, and the magnitude of impact is **negligible**. The effect is of **negligible adverse** significance, which is **not significant** in EIA terms.
182. Non-UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **negligible**, and the magnitude of impact is **negligible**. The effect is of **negligible adverse** significance, which is **not significant** in EIA terms.
183. Non-UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **negligible**, and the magnitude of impact is **negligible**. The effect is of **negligible (adverse)** significance, which is **not significant** in EIA terms.

14.7.1.3.4 Additional Mitigation and Residual Effect

184. Specific to the UK potting fleet where there is a significant impact, mitigation described under **Section 14.7.1.1** details the approach to ascertain justifiable disruption and co-operation agreements between the Applicant and commercial fishing vessel owners on an individual basis. To mitigate this displacement effect, emphasis is focused on ensuring that the effect of reduced access is mitigated by removing that effort to ensure that it is not moved or displaced elsewhere. This can be delivered in a number of ways, such as the requirement for fishing gear that is subject to a cooperation agreement under the FLCP (**Table 14-4**, Commitment ID CO15_to be dry stored (i.e. not actively fished), thereby minimising the displacement effect.
185. Through the application of the FLCP (**Table 14-4**, Commitment ID CO15), reduced access by removing fishing effort to ensure displacement does not occur can be mitigated, the magnitude of impact would be **low**, and the residual impact will be of **minor adverse** significance, which is **not significant** in EIA terms.

14.7.1.4 Displacement or disruption of commercially important fish and shellfish resources (CF-C-04)

186. Noise and seabed disturbances during the construction phase may decrease or displace commercially important fish and shellfish populations from the area. This section assesses the subsequent effect for the owners of fishing vessels, where commercially important stocks may be disturbed or displaced to a point where normal fishing practices would be affected.

14.7.1.4.1 Receptor Sensitivity

187. There is potential for fishing grounds beyond the immediate construction activities to be affected by these impacts. Exposure to the impact is likely and commercial fleets targeting key species may be affected, including those targeting shellfish species.
188. There is potential for shellfish grounds beyond the immediate construction activities to be affected by increased suspended sediment and sediment deposition, potentially impacting potting and dredge fleets. The UK potting and scallop dredge fisheries are deemed to be of medium vulnerability and medium recoverability reflecting the presence of known fishing grounds within parts of the Offshore Development Area. The sensitivity of these receptors is therefore considered to be **medium**.

189. There is potential for fish species to be impacted by underwater noise generated during the construction phase, associated with pile installation. It is predicted that fish species with swim bladder involving in hearing, including herring, whiting and cod, may be impacted up to several kilometres from the noise source, with potential impacts including mortality, injury and behavioural change across varying impact ranges. The UK and EU trawl fisheries that may target these and other fish species are active across relatively extensive fishing grounds throughout the central and southern North Sea and beyond and are deemed to be of low vulnerability and high recoverability. Due to the range of alternative areas targeted and the distribution of key commercial species throughout the North Sea, all other fleets are deemed to be of low vulnerability and high recoverability. The sensitivity is considered to be **low** for all other mobile fleets.

14.7.1.4.2 Impact Magnitude

190. Detailed assessments of the following potential construction impacts have been undertaken in **Chapter 11 Fish and Shellfish Ecology**:
- Temporary habitat loss / physical disturbance;
 - Increased suspended sediment and sediment-redeposition;
 - Remobilisation of contaminated sediments if present;
 - Underwater noise and vibration; and
 - Changes in fishing pressure.
191. With respect to the magnitude of this impact on commercial fisheries, the overall significance of the effect on fish and shellfish species is considered (i.e. both the magnitude and sensitivity of fish and shellfish species are considered to assess the magnitude on commercial fishing fleets). This is because the overall effect on the fish and / or shellfish species relates directly to the availability and amount of exploitable resource. For instance, where an effect of minor adverse significance is assessed for a species, a low magnitude is assessed for commercial fishing, and so on.
192. Details of the fish and shellfish ecology assessment, together with the supporting evidence and justification are provided in **Chapter 11 Fish and Shellfish Ecology**. The fish and shellfish ecology assessment found all construction impacts to be of negligible to minor adverse significance for all fish and shellfish receptors.
193. The magnitude of impact is predicted to be of regional spatial extent, of relevance to national and international fishing fleets, and of medium-term duration and temporary. It is predicted that the impact will affect the receptor directly through loss of resources. The magnitude is therefore considered to be low for all species. In relation to commercial fisheries receptors, the magnitude of impact to all fleets is considered to be **low (adverse)**.

14.7.1.4.3 Effect Significance

194. UK potting fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
195. UK scallop dredge fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
196. UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
197. UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
198. UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
199. UK demersal seine fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
200. Non-UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
201. Non-UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
202. Non-UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

14.7.1.5 Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity (CF-C-05)

203. This section assesses the likely significant effects arising from project related vessel traffic and changes to shipping patterns as a result of any potential navigational channels leading to interference with fishing activity (reduced access) during construction.

14.7.1.5.1 Receptor Sensitivity

204. Potting gear can be vulnerable to increased construction vessel movements within supply routes to and from entry and exit points due to risk of entanglement of construction vessel propellers with marker buoys of fishing gear. It is noted that construction vessels are likely to follow established shipping routes where possible. The sensitivity of the potting fleet is therefore, considered to be **medium**.
205. All other fishery fleets are expected to be able to avoid construction areas associated with the Project. The sensitivity of all other commercial fisheries receptors is considered to be **low**.

14.7.1.5.2 Impact Magnitude

206. Vessel movements (construction vessels transiting to and from areas undergoing construction works) related to the construction in the Offshore Development Area and all associated infrastructure will add to the existing level of shipping activity in the area, see **Chapter 15 Shipping and Navigation** for a full assessment of additional vessel movements.
207. Up to 7,527 return trips by construction vessels (and site preparation vessels) with up to 90 construction vessels on site at one time may occur throughout the construction phase and will include vessels which are Restricted in their Ability to Manoeuvre (RAM). Project vessels will be managed by marine coordination, including the use of traffic management procedures such as the designation of entry and exit points to and from the buoyed construction area. Project vessels will also carry AIS and be compliant with relevant Flag State regulations, including the COLREGs, and comply with the procedures set out in a Vessel Management Plan (expected to be a condition of consent).
208. Safety zones will be applied for including up to 500m around structures where vessels are undertaking construction work and 50m around partially completed or completed surface piercing structures prior to commissioning of the wind farm. Such safety zones will protect project vessels involved in construction which may be RAM. If on-site as deemed necessary via risk assessment, guard vessels will also assist with monitoring safety zones and alerting third party traffic to their presence.
209. Details of construction activities, including the presence of safety zones and any use of advisory safe passing distances, as defined by risk assessment, will be suitably promulgated to maximise awareness of ongoing construction activities.

210. Additionally, the use of International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA) G1162 (IALA, 2021) compliant lighting and marking including lights, marks, sounds, signals and other aids to navigation as required by Trinity House and the Maritime and Coastguard Agency (MCA) will further maximise awareness, both in day and night conditions including in restricted visibility. This includes the buoyed construction area which will be agreed with Trinity House prior to construction and within which project vessels undertaking construction activities will most likely be located during construction activities. In addition, the Developer will endeavour to agree shelter areas for construction vessels with the fishing industry to minimise impacts on fishing activities to the extent practicable.

211. It is noted that continuous liaison with the fishing industry will be undertaken including location and duration of construction activities; further details will be provided in a FLCP.

212. All fishing fleets are considered to be able to avoid vessel movements related to construction in the Offshore Development Area based on prior provision of construction details (timings and locations) allowing fishing vessels to plan their activities; use of traffic management procedures including entry and exit points for Project related vessels; application of a buoyed construction area and adherence to the VMP. The magnitude is therefore considered to be **low (adverse)** for all fisheries.

14.7.1.5.3 Effect Significance

213. Embedded mitigation measures include advance notification of planned construction activities to fishers and ongoing liaison throughout construction as discussed in **Table 14-4** (Commitment IDs CO11, CO14 and CO15). Taking account of these measures, the residual effect is set out immediately below, noting that the effect in all cases will be direct and temporary.
214. UK potting fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
215. UK scallop dredge fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
216. UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
217. UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

218. UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
219. UK demersal seine fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
220. Non-UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
221. Non-UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
222. Non-UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

14.7.1.6 Additional steaming to alternative fishing grounds (CF-C-07)

223. A detailed Navigational Risk Assessment (NRA) (**Volume 2, Appendix 15.2 Navigational Risk Assessment**) has been undertaken and is discussed in **Chapter 15 Shipping and Navigation**, which includes full consideration of commercial fishing vessels while transiting (e.g. from a collision and allision perspective). This assessment focuses on the likely significant effects arising from longer steaming distances to alternative fishing grounds that would have otherwise been targeted within the Offshore Development Area.

14.7.1.6.1 Receptor Sensitivity

224. The UK potting fleet active in the Study Area operate across a range of grounds to haul and re-set different fleets of traps / pots on a daily basis. Their normal operating range is expected to be inshore from the Array Area and include grounds overlapping the offshore ECC. Given adequate notification it is expected that these vessels will be in a position to avoid construction areas, which will be relatively small in extent and temporary in nature. The sensitivity is therefore considered to be **low**.
225. All other fisheries have moderate-high availability of alternative fishing grounds and a relatively wide operational range. Assuming prior notification which will allow fishers to plan fishing activities, the sensitivity of all other commercial fisheries receptors is therefore considered to be **low**.

14.7.1.6.2 Impact Magnitude

226. Details of the construction activities will be promulgated in advance of, and during construction via the usual means (e.g. Notice to Mariners, Kingfisher bulletin) so that mariners are made aware of the ongoing works. Localised construction works will necessitate minor deviations for fishing vessels. Localised impacts are anticipated but will be limited to the immediate area of construction activity and associated construction vessels. The vessel route density data (presented in **Volume 2, Appendix 14.2 Commercial Fisheries Baseline Technical Report**) for fishing vessels indicates high levels of activity and clear transit routes in the inshore areas (0 to 12nm).
227. For all fisheries with prior notification of construction activities, it is not expected that considerable additional steaming would be required to access fishing grounds outside those normally targeted within the Offshore Development Area. There may be an inconvenience to plan fishing around the construction activities, but this is not expected to result in additional steaming requirements above normal operating practices. The impact is predicted to be of regional spatial extent, short term duration, intermittent and with high reversibility. It is predicted that the impact will affect the receptor directly. Based on the justifications above, the magnitude is therefore, considered to be **low (adverse)** for all fisheries.

14.7.1.6.3 Effect Significance

228. Embedded mitigation measures include advance notification of planned construction activities to fishers and ongoing liaison throughout construction as discussed in **Table 14-4** (Commitment IDs CO11, CO14 and CO15). Taking account of these measures, the residual effect is set out immediately below, noting that the effect in all cases will be direct, short-term and temporary.
229. UK potting fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
230. UK scallop dredge fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
231. UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
232. UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

233. UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
234. UK demersal seine fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
235. Non-UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
236. Non-UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
237. Non-UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

14.7.2 Potential Effects during Operation

14.7.2.1 Reduction in access to, or exclusion from established fishing grounds (CF-O-02) – Array Area

238. This impact relates to the reduction in access to or exclusion from established fishing grounds within the Array Area due to the presence of installed infrastructure within together with associated safety zones for maintenance activities.
239. Following introduction of the Dogger Bank byelaw in 2022, only the potting fleet has the potential to be actively fishing in the Array Area. There is deemed to be no pathway for reduced access or exclusion impacts to mobile gear fishing fleets in the Array Area (see **Section 14.4.2** for confirmation of the scope of the assessment).

14.7.2.1.1 Receptor Sensitivity

240. The sensitivity of the UK potting fishery is the same as that presented for construction and is therefore considered to be **medium**.

14.7.2.1.2 Impact Magnitude

241. The assessment assumes that commercial fisheries will be prevented from actively fishing within the footprint of installed infrastructure within the Array Area, together with associated safety zones for maintenance activities.

242. Out with this footprint area, the assessment assumes that fishing will be possible within the Array Area where turbine spacing, at a minimum of 826m, and turbine layout allow productive grounds to be targeted, with the exception of areas of cable protection, and safety zones around infrastructure undergoing major maintenance or replacement. In addition, the individual decisions made by the skippers of fishing vessels with their own perception of risk will determine the likelihood of whether their fishing will resume within the Array Area. Inclement weather will be a significant contributor to this risk perception.

243. This impact will lead to localised loss of access to fishing grounds and resources within these grounds for the UK potting fishery during the operational and maintenance phase, which will directly affect fleets over a long-term duration, noting an operational life of approximately 35 years. The impact is predicted to be continuous with low reversibility for the lifetime of the Project and is of relevance to national fishing fleets.

244. UK potting fishery: A recent study by Roach *et al* (2018) investigated the effect of the construction and operation of the Westernmost Rough offshore wind farm on established lobster fishing grounds (noting that this site lies approximately 8km off the Holderness coast). The study concluded that:

- the temporary closure during the construction period offered some respite from fishing pressure for adult lobsters and led to an increase in abundance and size of lobster in the wind farm area;
- reopening of the site to fishing exploitation saw a decrease in catch rates and size structure, but this did not reach levels below that of the surrounding area;
- opening the site to exploitation allowed the fishery to recuperate some of the economic loss during the closure; and
- finally, the authors conclude that temporary closures of selected areas may be beneficial to lobster fisheries and should be considered as a management option for lobster fisheries.

245. A more recent study by Roach *et al* (2022) examined further Westernmost Rough lobster fisheries monitoring data gathered in 2019. The study reiterated that the increased catch rates and proportion of larger lobsters observed following wind farm construction could be attributed to temporary closure of the wind farm area during construction. During the operation and maintenance phase of the wind farm, monitoring data indicate no long-term effect of the wind farm on lobster catch rates or size distribution, though it is acknowledged that the findings of this study are specific to the study location. Based on minimum spacing between Project structures and awareness that potting fisheries do operate in some operational wind farms, it is expected that potting activity will resume within the array area during the operation and maintenance phase and that catch rates will, most likely, initially be higher than comparable grounds outside the array area, before returning to similar baseline levels.

246. Since it is expected that any potting activity would have the potential to resume within the array area during the operation and maintenance phase and the overall magnitude is considered to be **low (adverse)**.

14.7.2.1.3 Effect Significance

247. Embedded mitigation measures include advance notification of planned maintenance activities to fishers and ongoing liaison throughout the operation and maintenance phase as discussed in **Table 14-4** (Commitment IDs CO11, CO14 and CO15). Taking account of these measures, the residual effect is set out immediately below, noting that the effect in all cases will be direct and long-term.
248. UK potting fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

14.7.2.2 Reduction in access to, or exclusion from established fishing grounds (CF-O-02) – Offshore ECC

249. Export cables will be buried where possible, to target burial depth of 3.5m. The assessment assumes that commercial fisheries will be prevented from actively fishing within a total area of 1.6km² within the offshore ECC (1.424km² being outside Dogger Bank SAC), based on the worst-case scenario for cable protection requirements. In addition, there may be up to 16 cable crossings and 3 pipeline crossings, requiring up to 60,800m² of cable protection. There will be temporarily 500m safety zones around major maintenance activities related to remedial cable burial and cable repairs, with an assumption of one failure per cable per year.
250. European Subsea Cables Association (ESCA) (2018) notes that cables are potentially sub-sea hazards, and that while great effort is made to bury and protect them, mariners should never assume that cables are completely buried. Furthermore, the Mariners Handbook advises that every care should be taken to avoid anchoring, trawling, fishing, dredging, drilling or carrying out any other activity in the vicinity of cables which might damage them (UK Hydrographic Office [UKHO], 2004).
251. In addition, the MCA guidance MGN661 (MCA, 2021) advises that fishing vessels should avoid fishing activity near either side of submarine cables in order to minimise the risk of damage as much as possible.
252. Notwithstanding this, sub-sea cables are widespread throughout the North Sea, providing power and telecommunications links, and it is understood that fishing does take place in the vicinity of sub-sea cables (Kingfisher Information Service - Offshore Renewable & Cable Awareness (KIS-ORCA) 2019). The Applicant is a member of FLOWW and is actively working with fishing industry representatives to facilitate coexistence in relation to fishing and cables.

14.7.2.2.1 Receptor Sensitivity

253. The UK mobile gear fisheries are considered to have moderate to high levels of alternative fishing grounds, are deemed to be of low vulnerability and high recoverability. The sensitivity of these receptors is therefore, considered to be **low**. Non-UK trawl fisheries are considered to have extensive alternative fishing grounds, are deemed to be of very low vulnerability and high recoverability. The sensitivity of these receptors is therefore, considered to be **negligible**. The UK potting fishery is deemed to be of medium vulnerability and medium recoverability. The sensitivity of the receptor is therefore, considered to be **medium**.

14.7.2.2.2 Impact Magnitude

254. For the purposes of this assessment, and in line with embedded commitments set out in **Section 14.4.3**, it is assumed that fishers will be well informed of the location and integrity of the offshore export cables, i.e. locations of protection, details of routine cable integrity surveys and location and schedule for any maintenance works. Based on this knowledge it is expected that they will seek to exploit grounds across the offshore export cables. The assessment therefore assumes that fishing will resume within the vicinity of the export cables, and that fishers will comply with MGN661 (MCA, 2021).
255. Notices to Mariners will be issued in advance of any maintenance works as per commitments in **Table 14-4** Potting vessels may be required to temporarily relocate pots during maintenance works, although such works are likely to be infrequent.
256. The impact is predicted to be of local spatial extent and of short-term duration for maintenance works that may be required along the export cables. It is predicted that the impact will affect the receptor directly. Given that fishing is likely to resume across the majority of the offshore ECC, the magnitude is considered to be **low (adverse)** for all fisheries. It is observed that fishing gear targeting pelagic species does not normally come into contact with the seabed and therefore the presence of the offshore ECC will not affect potential fishing opportunities for pelagic trawl and demersal seine fisheries.

14.7.2.2.3 Effect Significance

257. Embedded mitigation measures include advance notification of planned maintenance activities to fishers and ongoing liaison throughout the operation and maintenance phase as discussed in **Table 14-4** (Commitment IDs CO11, CO14 and CO15). Taking account of these measures, the residual effect is set out immediately below, noting that the effect in all cases will be direct and long-term.
258. UK potting fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

259. UK scallop dredge fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
260. UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
261. UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor (adverse)** significance, which is **not significant** in EIA terms.
262. UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
263. UK demersal seine fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
264. Non-UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **negligible**, and the magnitude of impact is **low (adverse)**. The effect is of **negligible adverse** significance, which is **not significant** in EIA terms.
265. Non-UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **negligible**, and the magnitude of impact is **low (adverse)**. The effect is of **negligible adverse** significance, which is **not significant** in EIA terms.
266. Non-UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **negligible**, and the magnitude of impact is **low adverse**. The effect is of **negligible adverse** significance, which is **not significant** in EIA terms.

14.7.2.3 Displacement leading to gear conflict and increased fishing pressure on adjacent / alternative grounds (CF-O-03)

267. Loss of access or exclusion from fishing grounds during operation and maintenance of the Project may lead to increases in fishing effort in other areas that may already be exploited thereby leading to gear conflict and increased pressure on adjacent fishing grounds.

14.7.2.3.1 Receptor Sensitivity

268. The sensitivity of the commercial fisheries receptors is similar to that presented for construction (see **Section 14.7.1.3.1**), summarised as **medium** for the UK potting fishery, **negligible** for non-UK trawl fisheries and **low** for all other fisheries.

14.7.2.3.2 Impact Magnitude

269. During the operation and maintenance phase it is assumed that fishing will resume within the offshore ECC for all gears and within the Array Area for all fishing fleets able to fish there under the terms of the Dogger Bank SAC byelaw.
270. On this basis the magnitude of impact of displacement during the operational and maintenance phase is expected to be similar or more likely lower than the magnitude assessed during construction. The magnitude of displacement impacts for all UK fisheries is considered to be **low (adverse)**, and for all non-UK fisheries is considered to be **negligible (adverse)**.

14.7.2.3.3 Effect Significance

271. Embedded mitigation measures include advance notification of planned maintenance activities to fishers and ongoing liaison throughout the operation and maintenance phase as discussed in **Table 14-4** (Commitment IDs CO11, CO14 and CO15). Taking account of these measures, the residual effect is set out immediately below, noting that the effect in all cases will be direct and long-term.
272. UK potting fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
273. UK scallop dredge fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
274. UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
275. UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
276. UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
277. UK demersal seine fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

278. Non-UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **negligible**, and the magnitude of impact is **negligible (adverse)**. The effect is of **negligible adverse** significance, which is **not significant** in EIA terms.
279. Non-UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **negligible**, and the magnitude of impact is **negligible (adverse)**. The effect is of **negligible adverse** significance, which is **not significant** in EIA terms.
280. Non-UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **negligible**, and the magnitude of impact is **negligible (adverse)**. The effect is of **negligible adverse** significance, which is **not significant** in EIA terms.

14.7.2.4 Displacement or disruption of commercially important fish and shellfish resources (CF-O-04)

281. Habitat loss, electro-magnetic field (EMF) effects and noise disturbances during the operation and maintenance phase may disrupt or displace commercially important fish and shellfish populations from the Offshore Development Area. This section assesses the subsequent effect for the owners of fishing vessels, where commercially important stocks may be disturbed or displaced to a point where normal fishing practices would be affected.

14.7.2.4.1 Receptor Sensitivity

282. The sensitivity of the commercial fisheries receptors is the same as that presented for construction, summarised as **medium** for the UK potting fishery, and **low** for all other fisheries.

14.7.2.4.2 Impact Magnitude

283. Detailed assessments of the following potential operation and maintenance impacts have been undertaken in **Chapter 11 Fish and Shellfish Ecology**:
- Temporary habitat loss / physical disturbance;
 - Habitat loss / alteration;
 - Increased suspended sediment and sediment-redeposition;
 - Remobilisation of contaminated sediments if present;
 - Underwater noise and vibration;
 - Changes in fishing pressure;
 - EMF effects;
 - Sediment heating from export cables; and

- Introduction of hard substrate.

284. The fish and shellfish ecology assessment found all operation and maintenance impacts to be of negligible to minor adverse significance for all fish and shellfish receptors. The potential effect on resources is not expected to be beyond what could be discernible from baseline conditions for fish and shellfish resources.
285. The magnitude of impact is predicted to be of regional spatial extent, of relevance to national and international fishing fleets, of long-term duration and to affect the receptor directly. The magnitude is therefore considered to be **low (adverse)** for all species and all potential resource impacts.

14.7.2.4.3 Effect Significance

286. The residual effect is set out immediately below, noting that the effect may be of long-term duration.
287. UK potting fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
288. UK scallop dredge fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
289. UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
290. UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
291. UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
292. UK demersal seine fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
293. Non-UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

294. Non-UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

295. Non-UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

14.7.2.5 Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity (CF-O-05)

296. This section assesses the likely significant effects arising from Project related vessel traffic and changes to shipping patterns as a result of any potential navigational channels leading to interference with fishing activity (reduced access) during operation and maintenance phase.

14.7.2.5.1 Receptor Sensitivity

297. The sensitivity is as described for construction, summarised as **medium** for the UK potting fishery and **low** for all other commercial fisheries receptors.

14.7.2.5.2 Impact Magnitude

298. The maximum number of vessels on site at one time during the operation and maintenance period is 16.

299. As per the construction phase, Project vessels will be managed by marine coordination, carry AIS and be compliant with relevant Flag State regulations. Also, safety zones will be applied for including up to 500m around structures where vessels are undertaking major maintenance work.

300. The magnitude of impact of interference of fishing activity due to the presence and transiting of maintenance vessels during the operation and maintenance phase is decreased compared to in the construction phase given that fewer Project vessels will generally be on-site at any time, noting the much longer duration of the operation and maintenance phase. Based on the low level of Project related vessel activity across a long time period, the magnitude is therefore, considered to be **low (adverse)** for all fisheries.

14.7.2.5.3 Effect Significance

301. Embedded mitigation measures include advance notification of planned maintenance activities to fishers and ongoing liaison throughout the operation and maintenance phase (see **Section 14.4.3**). Taking account of these measures, the residual effect is set out immediately below, noting that the effect in all cases will be direct and intermittent over the long-term.

302. UK potting fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

303. UK scallop dredge fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

304. UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

305. UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

306. UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

307. UK demersal seine fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

308. Non-UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

309. Non-UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

310. Non-UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

14.7.2.6 Additional steaming to alternative fishing grounds (CF-O-07)

311. A detailed Navigational Risk Assessment (NRA) (**Volume 2, Appendix 15.2 Navigation Risk Assessment**) has been undertaken and is discussed in **Chapter 15 Shipping and Navigation**, which includes full consideration of commercial fishing vessels while transiting (e.g. from a collision and allision perspective). This assessment focuses on the likely significant effects arising from longer steaming distances to alternative fishing grounds that would have otherwise been targeted within the Offshore Development Area.

14.7.2.6.1 Receptor Sensitivity

312. The sensitivity is as described for construction, summarised as **medium** for the UK potting fishery and **low** for all other commercial fisheries receptors.

14.7.2.6.2 Impact Magnitude

313. The magnitude of impact of increased steaming times due to the presence of the Project during the operation and maintenance phase is expected to be the same or similar to that during construction for all commercial fishing fleets. While the operation and maintenance phase in longer duration (35 years) compared to construction, it is expected that fishing vessels will adjust to the presence of the Array Area over time and may choose to transit through it. It is predicted that the impact will affect the receptor directly. Based on the justifications above, the magnitude is therefore, as described for construction, summarised as **low** for all fisheries.

14.7.2.6.3 Effect Significance

314. Embedded mitigation measures include advance notification of planned maintenance activities to fishers and ongoing liaison throughout the operation and maintenance phase (see **Section 14.4.3**). Taking account of these measures, the residual effect is set out immediately below, noting that the effect in all cases will be direct and long-term.
315. UK potting fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
316. UK scallop dredge fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
317. UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

318. UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

319. UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

320. UK demersal seine fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

321. Non-UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

322. Non-UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

323. Non-UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

14.7.2.7 Physical presence of infrastructure leading to gear snagging (CF-O-09)

324. The physical presence of infrastructure on the seabed represents potential snagging points for fishing gear and could lead to damage to, or loss of, fishing gear. The safety aspects including potential loss of life as a result of snagging risk are assessed within **Chapter 15 Shipping and Navigation**.

325. All Project infrastructure will be cleared marked and charted as confirmed in **Table 14-4**. During operation and maintenance phase, a 500m safety zone will be present around structures undergoing major maintenance and associated vessels including those involved in any remedial repair work to cables.

326. Maintenance will include regular monitoring of cable burial integrity and condition of cable protection.

14.7.2.7.1 Receptor Sensitivity

327. Due to the nature and operation of mobile demersal gear (i.e. it is actively towed and directly penetrates the seabed with near continuous contact) there is increased vulnerability to this impact and the sensitivity is therefore considered to be **medium** for mobile gear fisheries (i.e. beam trawls, demersal trawls and dredges).

328. UK potters show a low vulnerability as the gear is placed, not towed and is less likely to penetrate the seabed. The sensitivity of the UK potting fishery is considered to be **low**.
329. Pelagic gear does not come into contact with the seabed and therefore has low vulnerability to snagging seabed infrastructure. The sensitivity of the UK and non-UK pelagic trawl and seine fleets is considered to be **negligible**.

14.7.2.7.2 Impact Magnitude

330. In the instance that snagging does occur, the Applicant will work to the protocols laid out within section 10 and 11 (Dealing with claims for loss or damage of gear) of the guidance produced by the FLOWW group and Recommendations for Fisheries Liaison: Best Practice Guidance for Offshore Renewable Developers (FLOWW, 20146).
331. Snagging poses a risk to fishing equipment and in extreme cases may potentially lead to capsize of vessel and crew fatalities, as well as damage to sub-sea infrastructure. Three phases of interaction are possible: initial impact of gear and sub-sea infrastructure; pullover of gear across sub-sea infrastructure; and snagging or hooking of gear on the sub-sea infrastructure. The snagging or hooking of fishing gear with infrastructure / cables on the seabed is the most hazardous to the vessel and crew due to the possibility of capsizing.
332. It is considered likely that fishers will operate appropriately (adhering to safety zones and exclusion zones and avoiding under construction infrastructure and cable protection at the defined locations) given adequate notification of the locations of any snagging hazards; and are highly likely to avoid the infrastructure and cable protection within the Offshore Development Area.
333. Based on the embedded mitigation measures that and the commitment to follow standard protocols should snagging occur, the magnitude is considered to be **low (adverse)** for all fleets.

14.7.2.7.3 Effect Significance

334. Embedded mitigation measures include appropriate marking and charting of all Project infrastructure and advance notification of planned maintenance activities (and cable exposures should any occur) to fishers and ongoing liaison throughout the operation and maintenance phase (see **Section 14.4.3**). Taking account of these measures, the residual effect is set out immediately below, noting that the effect in all cases will be direct and long-term.
335. UK potting fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

336. UK scallop dredge fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
337. UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **negligible**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
338. UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
339. UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
340. UK demersal seine fishery: Overall, it is predicted that the sensitivity of the receptor is **negligible**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
341. Non-UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **negligible**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
342. Non-UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
343. Non-UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

14.7.3 Potential Effects during Decommissioning

344. No decision has been made regarding the final decommissioning strategy for the offshore infrastructure, as it is recognised that regulatory requirements and industry best practice change over time.
345. Commitment ID CO21 (see **Volume 2, Appendix 6.3 Commitments Register**) requires an Offshore Decommissioning Programme to be prepared and agreed with the relevant authorities prior to the construction of the offshore works. This will ensure that decommissioning marine mammal impacts will be assessed in accordance with the applicable regulations and guidance at that time of decommissioning where relevant, with appropriate mitigation implemented as necessary to avoid significant effects.

346. The detailed activities and methodology for decommissioning will be determined later within the Project’s lifetime, but would be expected to include:
- Removal of all the wind turbine components and part of the foundations (those above seabed level);

• Removal of some or all of the array and export cables; and

• The Inter-Array and Offshore Export Cables will likely be cut at the cable ends and left in-situ below the seabed, and scour and cable protection would likely be left in-situ other than where there is a specific condition for its removal.
347. Whilst a detailed assessment of decommissioning impacts cannot be undertaken at this stage, for this assessment, it is assumed that decommissioning is likely to operate within the parameters identified for construction (i.e. any activities are likely to occur within the temporary construction working areas and require no greater amount or duration of activity than assessed for construction). The decommissioning sequence will generally be the reverse of the construction sequence. It is therefore assumed that decommissioning impacts would likely be of similar nature to, and no worse than, those identified during the construction phase.
348. It is not possible to provide details of the methods that would be used during decommissioning at this time. However, it is expected that the activity levels (with the exception of pile driving noise, which would not occur), and impacts would be comparable to construction.
349. During decommissioning, the potential effects on marine mammals are anticipated to be similar, or less, than the worst-case assessment for the construction phase, noting no piling (or UXO clearance) would be required. The overall level of effect would depend on the decommissioning methods used.

14.7.4 Additional Mitigation Measures

350. An Outline FLCP will be submitted with the DCO application, which will detail all measures relevant to commercial fisheries that will be secured in the plan. Indicative additional mitigation measures which are proposed to be included in the plan are set out in **Table 14-12**.

Table 14-12 Indicative Additional Mitigation Measures to be Included in the Outline FLCP

Measures to be Included: Cooperation agreements and associated payments	
Where residual impacts remain after minimisation and mitigation efforts have been considered for any construction phase temporary disruption to fishers, the Applicant may consider evidence-based commercial non-interference agreements with static gear fishers as a last resort, in line with FLOWW (2014) guidance and redrafting efforts.	

Measures to be Included: Cooperation agreements and associated payments
The Applicant will consider entering these agreements with those targeting fisheries upon which the Project has been identified to have a significant impact on within the ES.

14.8 Cumulative Effects

351. Cumulative effects are the result of the impacts of the Project acting in combination with the impacts of other proposed and reasonably foreseeable developments on receptors. This includes plans and projects that are not inherently considered as part of the current baseline.
352. The overarching framework used to identify and assess cumulative effects is set out in **Chapter 6 Environmental Impact Assessment Methodology**. The four-stage approach is based upon the Planning Inspectorate Advice (PINS, 2024b). The fourth stage of the process is the assessment stage, which is detailed within the sections below for potential cumulative effects on commercial fisheries receptors.

14.8.1 Screening for Potential Cumulative Effects

353. The first step of the CEA identifies which impacts associated with the Project alone, as assessed under **Section 14.7**, have the potential to interact with other plans and projects to give rise to cumulative effects. All potential cumulative effects to be taken forward in the CEA are detailed in **Table 14-13** with a rationale for screening in or out.

Table 14-13 Commercial Fisheries – Potential Cumulative Effects

Impact ID	Impact	Potential for Cumulative Effects	Rationale
Construction			
CF-C-02	Reduction in access to, or exclusion from established fishing grounds	Yes	Other offshore wind farm projects and fisheries management measures could have the potential to reduce access to fishing grounds. This could lead to the potential cumulative effect of temporary (during construction and decommissioning) loss or restricted access to fishing grounds.

Impact ID	Impact	Potential for Cumulative Effects	Rationale
CF-C-03	Displacement leading to gear conflict and increased fishing pressure on adjacent / alternative grounds	Yes	The loss of access to fishing grounds may lead to displacement at a cumulative level, where vessels are exploratory fishing and focusing effort in areas outside of cumulative developments. This could lead to the cumulative effect of incremental displacement.
CF-C-04	Displacement or disruption of commercially important fish and shellfish resources	Yes	Incremental disruption to fish and shellfish species could lead to cumulative displacement of the commercial resource. For example, offshore wind farms and other developments in the marine environment could act as aggregation devices, attracting a different assemblage of species or there could be barrier effects, with potential knock-on effects for commercially exploited resources.
CF-C-05	Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity	No	This impact is highly localised to specific projects and plans. Given the scale of Project alone effects, any cumulative, additive effects within the commercial fisheries cumulative Study Area would be negligible across projects.
CF-C-07	Additional steaming to alternative fishing grounds - all other fleets	No	This impact is highly localised to specific projects and plans. Given the scale of Project alone effects, any cumulative, additive effects within the commercial fisheries cumulative Study Area would be negligible across projects.
Operation			
CF-O-02	Reduction in access to, or exclusion from established fishing grounds	Yes	Other offshore wind farm projects and fisheries management measures could have the potential to reduce access to fishing grounds. This could lead to the potential cumulative effect of temporary (during construction and decommissioning) loss or restricted access to fishing grounds.

Impact ID	Impact	Potential for Cumulative Effects	Rationale
CF-O-03	Displacement leading to gear conflict and increased fishing pressure on adjacent / alternative grounds	Yes	The loss of access to fishing grounds may lead to displacement at a cumulative level, where vessels are exploratory fishing and focusing effort in areas outside of cumulative developments. This could lead to the cumulative effect of incremental displacement.
CF-O-04	Displacement or disruption of commercially important fish and shellfish resources	Yes	Incremental disruption to fish and shellfish species could lead to cumulative displacement of the commercial resource. For example, offshore wind farms and other developments in the marine environment could act as aggregation devices, attracting a different assemblage of species or there could be barrier effects, with potential knock-on effects for commercially exploited resources.
CF-O-07	Additional steaming to alternative fishing grounds - all other fleets	No	This impact is highly localised to specific projects and plans. Given the scale of Project alone effects, any cumulative, additive effects within the commercial fisheries cumulative Study Area would be negligible across projects.
CF-O-09	Physical presence of infrastructure leading to gear snagging	No	This impact is highly localised to specific projects and plans. Given the scale of Project alone effects, any cumulative, additive effects within the commercial fisheries cumulative Study Area would be negligible across projects.

Decommissioning

There is insufficient information available on other plans and projects which could have a spatial and temporal overlap with the Project’s offshore decommissioning works. The details and scope of offshore decommissioning works will be determined by the relevant regulations and guidance at the time of decommissioning and provided in the Offshore Decommissioning Programme (see **Table 14-4**, Commitment ID CO21). This will include a detailed assessment of decommissioning impacts and appropriate mitigation measures to avoid significant effects, including cumulative effects.

For this assessment, it is assumed that cumulative decommissioning effects would be of similar nature to, and no worse than, those identified during the construction phase.

354. The range of potential cumulative impacts that are identified as relevant to CEA, is a subset of those considered for Project-alone impact assessment. This is because some of the potential impacts identified and assessed for the Project alone, are localised and temporary in nature. It is considered therefore, that these potential impacts have limited or no potential to interact with similar changes associated with other plans or projects. These have therefore not been taken forward for detailed assessment.

14.8.2 Screening for Other Plans / Projects

355. The second step of the CEA identifies a short-list of other plans and projects that have the potential to interact with the Project to give rise to significant cumulative effects during the construction and operation and maintenance phase. The short-list provided in **Table 14-14** has been produced specifically to assess cumulative effects on commercial fisheries receptors. The exhaustive list of all offshore plans and projects considered in the development of the Project's CEA framework is provided in **Volume 2, Appendix 6.4 Cumulative Effects Screening Report - Offshore**.
356. Developments that were fully operational (i.e. no construction activities ongoing) during baseline characterisation, including at the time of site-specific surveys, are considered as part of baseline conditions for the surrounding environment. It is assumed that any residual effects associated with these developments are captured within the baseline information. As such, these developments are not subject to further assessment within the CEA and excluded from the screening exercise presented in **Table 14-14**.
357. For developments that were not fully operational (i.e. some construction activities were still ongoing), including those in planning / pre-construction stages or under construction, during baseline characterisation and operational developments with potential for ongoing impacts, these are included in the screening exercise presented in **Table 14-14**.
358. The CEA includes designated sites as a project or plan in the context of commercial fisheries, as management measures such as seasonal and / or gear exclusions implemented to protect designated features in these sites may lead to reduced access for commercial fisheries, amongst other impacts. The Marine Protected Areas (MPAs) considered in the assessment include all SACs, Marine Conservation Zones (MCZs), Special Protected Areas (SPAs) and non-UK Sites of Community Importance (SCI) within the cumulative impact assessment Study Area.
359. The screening exercise has been undertaken based on available information on each plan or project as of 31st December 2024. Information has been obtained from:
- Marine Management Organisation Public Register ([Marine case management system - Public register - MCMS](#));
 - MD-LOT Marine Licence Applications Portal ([All applications | marine.gov.scot](#));

- Planning Inspectorate, National Infrastructure Planning Portal ([National Infrastructure Planning](#));
- East Riding of Yorkshire Council planning website ([Planning permission and building control](#));
- Hull City Council planning website ([www.hull.gov.uk / planning-applications / planning](#));
- 4C Offshore website ([Global Offshore Renewables Map | 4C Offshore](#));
- UK Offshore Wind Report 2023 ([UK Offshore Wind Report 2023](#));
- Offshore wind farm specific websites;
- The Crown Estate Aggregates Portal ([Aggregates Site Agreements \(England, Wales & NI\), The Crown Estate | The Crown Estate Open Data Portal](#));
- North Sea Transition Authority UKCS Lease Agreements ([UKCS Lease Agreements](#));
- Cefas UK Disposal Sites ([Cefas Data Portal - View](#));
- KIS-ORCA Infrastructure Map ([Map | KIS-ORCA](#));
- North Sea Transition Authority Offshore Activity Map ([Offshore Activity](#));
- UK Government EIA Submissions and Decisions ([EIA Submissions and Decisions - Search - GOV.UK](#));
- UKHO Military Practice Areas ([Additional Military Layers | ADMIRALTY](#)); and
- SCCS Global CCS Map ([Global CCS Map | SCCS Corporate](#)).

360. It is noted that further information regarding the identified plans and projects may become available between PEIR publication and DCO application submission or may not be available in detail prior to construction. The assessment presented here is therefore considered to be conservative, with the significance of cumulative effects expected to be reduced compared to those presented here. The short list of plans and projects will be updated at ES stage to incorporate more recent information at the time of writing.

361. Plans and projects identified in **Table 14-14** have been assigned a tier based on their development status, the level of information available to inform the CEA and the degree of confidence. A seven-tier system based on the guidance issued by Natural England and the Department of Environment, Food and Rural Affairs (Defra) has been adopted (Parker *et al.*, 2022).

362. The zone of influence (Zol) used to identify relevant plans and projects for the commercial fisheries CEA is central and southern North Sea (ICES Divisions 4b and 4c), considered to be representative of the fishing grounds exploited by the fleets active across the commercial fisheries Study Area.

CHAPTER 14 COMMERCIAL FISHERIES

Table 14-14 Short List of Plans / Projects for the Commercial Fisheries Cumulative Effects Assessment

Project / Plan	Development Type	Status	Tier	Construction / Operation Period	Closest Distance to Array Area (km)	Closest Distance to Offshore ECC (km)	Potential for Significant Cumulative Effects	Rationale
Aspen Offshore Wind Farm	Offshore Wind Farm	Future potential	7	Unknown	332.53	269.09	Yes	Offshore wind farms either under construction or planned, with potential for an overlap in cumulative impacts associated with construction activities and the operation and maintenance phase of the Project. There is a potential for cumulative impacts arising from reduction in access to fishing grounds, displacement and fisheries resource effects.
Beech Offshore Wind Farm	Offshore Wind Farm	Pre-planning	6	Unknown	298.31	241.86	Yes	
Bellrock Offshore Wind Farm	Offshore Wind Farm	Pre-planning	6	Construction 2026 – 2030 Operational from 2031	238.94	171.99	Yes	
Berwick Bank Offshore Wind Farm	Offshore Wind Farm	In Planning	4	Construction 2028 – 2029 Operational from 2030	272.36	188.96	Yes	
Blyth Demonstration Phases 2&3 Offshore Wind Farm	Offshore Wind Farm	Consented	3	Construction 2024 – 2025 Operational from 2026	251.61	144.01	Yes	
Bowdun Offshore Wind Farm	Offshore Wind Farm	Pre-planning	6	Construction 2029 – 2032 Operational from 2033	317.25	243.81	Yes	
Buchan Offshore Wind Farm	Offshore Wind Farm	Pre-planning	6	Unknown	360.05	289.41	Yes	
Campion Wind Offshore Wind Farm	Offshore Wind Farm	Pre-planning	6	Construction 2026 – 2030 Operational from 2031	263.26	198.93	Yes	
Cedar Offshore Wind Farm	Offshore Wind Farm	Future potential	6	Unknown	218.33	155.05	Yes	
Cenos Offshore Wind Farm	Offshore Wind Farm	Pre-Planning	6	Unknown	224.96	165.56	Yes	
Culzean Offshore Wind Farm	Offshore Wind Farm	Consented	3	Unknown	233.65	177.05	Yes	
Dogger Bank A Offshore Wind Farm (EN010021)	Offshore Wind Farm	Under construction	2	Construction to 2025 Operational from 2026	43.00	31.00	Yes	
Dogger Bank B Offshore Wind Farm (EN010021)	Offshore Wind Farm	Under construction	2	Construction to 2026 Operational from 2027	52.00	9.00	Yes	
Dogger Bank C Offshore Wind Farm	Offshore Wind Farm	Under construction	2	Construction to 2027 Operational from 2028	0.00	3.00	Yes	
East Anglia THREE Offshore Wind Farm (EN010056)	Offshore Wind Farm	Pre-construction	3	Construction to 2025 Operational from 2026	240.91	220.34	Yes	

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Project / Plan	Development Type	Status	Tier	Construction / Operation Period	Closest Distance to Array Area (km)	Closest Distance to Offshore ECC (km)	Potential for Significant Cumulative Effects	Rationale
Dogger Bank South East Offshore Wind Farm (EN010125)	Offshore Wind Farm	Application Submitted	4	Construction 2026 – 2032 Operational from 2033	70.62	46.31	Yes	
Dogger Bank South West Offshore Wind Farm (EN010125)	Offshore Wind Farm	Application Submitted	4	Construction 2026 – 2032 Operational from 2033	78.60	16.09	Yes	
East Anglia ONE NORTH Offshore Wind Farm (EN010077)	Offshore Wind Farm	Consented	3	Construction 2024 – 2027 Operational from 2028	280.15	229.21	Yes	
East Anglia TWO Offshore Wind Farm (EN010078)	Offshore Wind Farm	Consented	3	Construction 2026 – 2028 Operational from 2029	295.68	232.76	Yes	
Five Estuaries Offshore Wind Farm (EN010115)	Offshore Wind Farm	Application Submitted	4	Construction 2028 – 2029 Operational from 2030	329.28	262.86	Yes	
Flora Offshore Wind Farm (00010686)	Offshore Wind Farm	Pre-Planning	6	Unknown	353.42	283.64	Yes	
Forthwind Offshore Wind Farm	Offshore Wind Farm	Consented	3	Construction 2024 Operational from 2025	375.61	286.42	Yes	
Green Volt Offshore Wind Farm (00010230)	Offshore Wind Farm	Consented	3	Construction 2025 – 2026 Operational from 2027	362.01	297.36	Yes	
Hornsea 3 Offshore Wind Farm (EN010080)	Offshore Wind Farm	Pre-construction	3	Construction 2025 – 2026 Operational from 2027	105.68	106.61	Yes	
Hornsea Project Four Offshore Wind Farm (EN010098)	Offshore Wind Farm	Consented	3	Construction 2025 – 2029 Operational from 2030	133.58	31.1	Yes	
Inch Cape Offshore Wind Farm (00010140)	Offshore Wind Farm	Pre-construction	3	Construction 2024 – 2025 Operational from 2026	330.78	247.28	Yes	
Judy Offshore Wind Farm	Offshore Wind Farm	Future potential	7	Unknown	169.69	114.75	Yes	
Morven Offshore Wind Farm	Offshore Wind Farm	Pre-planning	6	Unknown	248.79	174.18	Yes	
Muir Mhòr Offshore Wind Farm	Offshore Wind Farm	Pre-planning	6	Unknown	313.22	245.79	Yes	

CHAPTER 14 COMMERCIAL FISHERIES

Project / Plan	Development Type	Status	Tier	Construction / Operation Period	Closest Distance to Array Area (km)	Closest Distance to Offshore ECC (km)	Potential for Significant Cumulative Effects	Rationale
Sofia Offshore Wind Farm (EN010051)	Offshore Wind Farm	Under construction	2	Construction to 2026 Operational from 2027	17.75	22.79	Yes	
Outer Dowsing Offshore Wind Farm (EN010130)	Offshore Wind Farm	Submitted	4	Construction 2026 – 2029 Operational from 2030	170.14	76.76	Yes	
Norfolk Vanguard East Offshore Wind Farm (EN010079)	Offshore Wind Farm	Consented	3	Construction 2026 Operational from 2027	209.74	204.39	Yes	
Norfolk Vanguard West Offshore Wind Farm (EN010079)	Offshore Wind Farm	Consented	3	Construction 2026 Operational from 2027	212.23	185.29	Yes	
North Falls Offshore Wind Farm (EN010119)	Offshore Wind Farm	Submitted	4	Construction 2027 - 2029 Operational from 2030	333.36	254.03	Yes	
Ossian Offshore Wind Farm (EN0210006)	Offshore Wind Farm	Application submitted	4	Construction 2026 - 2029 Operational from 2030	160.46	159.97	Yes	
Norfolk Boreas Offshore Wind Farm (EN010087)	Offshore Wind Farm	Consented	3	Unknown	188.68	192.37	Yes	
Salamander Offshore Wind Farm (00010807)	Offshore Wind Farm	Submitted	4	Unknown	363.01	293.52	Yes	
Seagreen Phase 1A Offshore Wind Farm	Offshore Wind Farm	Consented	3	Construction 2025 - 2026 Operational from 2027	320.81	241.12	Yes	
Sheringham Shoal Extension Offshore Wind Farm (EN10109)	Offshore Wind Farm	Consented	3	Construction 2026 - 2032 Operational from 2033	223.87	107.65	Yes	
Dudgeon Extension Offshore Wind Farm (EN10109)	Offshore Wind Farm	Consented	3	Construction 2026 - 2032 Operational from 2033	202.2	101.25	Yes	

Project / Plan	Development Type	Status	Tier	Construction / Operation Period	Closest Distance to Array Area (km)	Closest Distance to Offshore ECC (km)	Potential for Significant Cumulative Effects	Rationale
Aminth Energy Interconnector	Electricity Interconnector	In Planning	7	Construction 2027 - 2032 Operational from 2033	10.00	25.00	Yes	Cables and pipelines either under construction or planned, with potential for an overlap in cumulative impacts associated with construction activities and the operation and maintenance phase of the Project. There is a potential for cumulative impacts arising from reduction in access to fishing grounds, displacement and fisheries resource effects.
Dogger Bank A export cable (EN010021)	Cables	Under Construction	2	Construction 2024 - 2026 Operational from 2025	63.00	0.00		
Dogger Bank B export cable (EN010021)	Cables	Under Construction	2	Construction 2024 - 2026 Operational from 2025	67.00	0.00	Yes	
Dogger Bank C export cable	Cables	Under Construction	2	Construction 2024 - 2026 Operational from 2026	20.00	0.00	Yes	
Dogger Bank South export cable (EN010125)	Cables	Pending Approval	4	Construction 2025 - 2032 Operational from 2033	73.00	0.00	Yes	
Eastern Green Link (EGL 2)	Interconnector	Pre-construction	3	Construction 2025 - 2029 Operational from 2030	356.00	283.000	Yes	
Eastern Green Link (EGL 3) (EN0210003)	Interconnector	In Planning	6	Unknown	165.00	0.00	Yes	
Eastern Green Link (EGL 4) (EN0210003)	Interconnector	In Planning	6	Unknown	172.00	0.00	Yes	
Hornsea Project Four export cable (EN010098)	Cables	Consented	1	Construction 2025 - 2030 Operational from 2031	134.00	0.00	Yes	
Hornsea Project Three export cable (EN010080)	Cables	Consented	3	Construction 2025 - 2028 Operational from 2029	106.00	106.00	Yes	
National Grid HND Bootstrap	Pipeline	In Planning	7	Unknown	N / A	N / A	Yes	
Northern Endurance pipeline	Pipeline	In Planning	4	Unknown	150.00	0.00	Yes	
Sofia export cable (EN010051)	Cables	Under Construction	2	Construction 2024 - 2027 Operational from 2028	33.00	0.00	Yes	

Project / Plan	Development Type	Status	Tier	Construction / Operation Period	Closest Distance to Array Area (km)	Closest Distance to Offshore ECC (km)	Potential for Significant Cumulative Effects	Rationale
Eastern Green Link 1 (EGL1)	Cables	Consented	3	Construction 2025 - 2029 Operational from 2030	254.00	116.00	Yes	
Ossian Wind Farm Export Cable (EN0210006)	Cables	In Planning	7	Unknown	144.24	0.00	Yes	
Inner Dowsing, Race Bank and North Ridge Special Area of Conservation (SAC) byelaw 2022 (bottom towed fishing, use of pots and anchored nets and lines)	Designated site with confirmed fishing restrictions	Enacted management measure	1	2022	221.4	76.6	Yes	Fisheries management measures, where there is a potential for cumulative impacts arising from reduction in access to fishing grounds and displacement and fisheries resource effects.
Dogger Bank SAC byelaw 2022 (bottom towed fishing)	Designated site with confirmed fishing restrictions	Enacted management measure	1	2022	0.00	0.00	Yes	
Marine Protected Areas Bottom Towed Fishing Gear byelaw 2023 (applicable to MPAs including Farnes East Marine Conservation Zone; Haisborough, Hammond and Winterton SAC and North Norfolk Sandbanks and Saturn Reef SAC (bottom towed fishing)	Designated sites with confirmed fishing restrictions	Enacted management measure	1	2023	142.4	88.2	Yes	
UK Government prohibition of the fishing of sandeels within English waters of ICES Area 4 (North Sea), with this measure applying to all vessels of any nationality, effective from 26 March 2024	Confirmed fishing restriction	Enacted management measure	1	2024	0.00	0.00	Yes	

Project / Plan	Development Type	Status	Tier	Construction / Operation Period	Closest Distance to Array Area (km)	Closest Distance to Offshore ECC (km)	Potential for Significant Cumulative Effects	Rationale
SACs: North Norfolk Coast, The Wash and North Norfolk Coast, Southern North Sea Marine Conservation Zones (MCZs): Cromer Shoal Chalk Beds, Markham's Triangle, Holderness Inshore and Holderness Offshore Special Protection Areas (SPAs): The Wash, North Norfolk Coast, Greater Wash and Humber Estuary	Designated sites with possible fishing restrictions to protect designated features (or where management measures were in place during the baseline study period)	Potential management measure	7	Unknown	39.10	Overlaps	Yes	

363. Each plan or project in **Table 14-14** has been considered on a case-by-case basis. Only plans and projects with potential for significant cumulative effects with the Project are taken forward to a detailed assessment, which are screened based on the following criteria:
- There is potential that a pathway exists whereby an impact could have a cumulative effect on a receptor;
 - The impact on a receptor from the Project and the plan or project in consideration has a spatial overlap (i.e., occurring over the same area);
 - The impact on a receptor from the Project and the plan or project in consideration has a temporal overlap (e.g. occurring at the same time);
 - There is sufficient information available on the plan or project in consideration and moderate to high data confidence to undertake a meaningful assessment; and
 - There is some likelihood that the residual effect (i.e., after accounting for mitigation measures) of the Project could result in significant cumulative effects with the plan or project in consideration.
364. The CEA for commercial fisheries has identified a total of 55 plans and projects, not including fisheries management measures, where significant cumulative effects could arise in combination with the Project. A detailed assessment of cumulative effects is provided in the section below.

14.8.3 Assessment of Cumulative Effects

14.8.3.1 Cumulative Impact 1: Reduction in access to, or exclusion from established fishing grounds (CF-C-02, CF-O-02)

365. There is potential for cumulative reduction in access to or exclusion from established fishing grounds as a result of construction activities associated with the Project and other developments. This additive impact has been assessed within the central and southern North Sea, which is considered to be representative of the fishing grounds exploited by the fleets active across the Study Area.
366. The effect from cable and pipeline infrastructure projects is expected to be extremely localised in nature, with no additional cumulative effect on the fleets active across the Study Area.

367. 35 offshore wind farms are included in the assessment. The wind farms most proximate to the Project are the Dogger Bank C, Sofia, Dogger Bank A, Dogger Bank B, Dogger Bank South West, Dogger Bank South East, and Hornsea Four (within 50km of the Project). All other offshore wind farms are located over 50km from the Project. Overall and based on experience to date, it is considered that the fishing industry will continue to adapt to fixed foundation offshore wind farm projects, with mitigation at individual project level and resumption of fishing during the operation and maintenance phase. Several floating offshore wind farms are included in the CEA (e.g. Ossian, Muir Mhor, Green Volt). It is understood that it is assumed that fishing will not resume within these floating projects during all their phases, but that these projects are either located in areas that are not expected to cause disruption to commercial fishing fleets or have developed project-specific mitigation to avoid impacts.
368. Also identified as relevant to CEA are fisheries management measures within the network of UK designated Marine Protected Areas (MPAs). A network of Marine Conservation Zones (MCZs), SACs and Special Protection Areas (SPAs) and their associated fisheries management measures – enacted through byelaws - have the potential to have cumulative impacts on commercial fisheries.
369. Of specific note based on proximity to the Project and overlap with the Array Area is the Dogger Bank SAC Bottom Towed Fishing Gear byelaw 2022, which restricts certain forms of fishing in the specified area. In 2024 the MMO also implemented byelaws with prohibitions on bottom contact fishing gear within nine MPAs (MMO, 2024). A regulatory assessment of the proposed Dogger Bank SAC byelaw (MMO, 2022) reported that 16 distinct UK fishing vessels used the byelaw area annually, and that the ‘impacts [of byelaw fishing restrictions] are likely to be ongoing as opposed to one-off but are expected to be mitigated by use of other available fishing grounds. It is observed that any effect of management measures being implemented within MPAs is unmitigable by the Applicant.
370. The potential for incremental loss of fishing grounds is recognised in an ABPmer (2022) spatial squeeze in fisheries report, which focused on assessment of mobile fishing gears in response to present and future scenarios for restricted access due to Marine Protected Areas (MPAs) and offshore developments including offshore wind farms and cables. The ABPmer study found that the spatial footprint of activities and policies that constrain mobile trawling gear types represents 23% of the UK EEZ area for the ‘present’ scenario (i.e. as of 2022). It is noted, however, that the scenarios for loss within the ABPmer (2022) report treat all areas equally, i.e. the report does not distinguish between areas that can actually be utilised (and are currently targeted) for fishing.

371. The ‘future 2030’ scenario predicted 36% of the UK EEZ would be restricted to trawling and the ‘future 2050’ worst-case scenario predicted 49% of the UK EEZ would be restricted, with an area greater than 30,000km² occupied by the renewable offshore wind sector. The ‘future 2050’ worst-case scenario assumes mobile fishing would be restricted within all wind farms, which is noted to not necessarily be the case, but becomes the likely scenario for floating developments.

372. The ABPmer (2022) report highlights that the fishing industry has adapted to the ‘present’ scenario, based on the majority of restrictions being linked to nature conservation restrictions in waters deeper than 800m, together with offshore wind farms sited in areas not previously intensively trawled.

14.8.3.1.1 Receptor Sensitivity

373. Based on the operating ranges of the receptors and availability of alternative fishing grounds, the UK potting fishery is deemed to be of medium vulnerability and have medium recoverability and considered to have **medium** sensitivity.

374. Mobile fleets are deemed to be of low vulnerability, medium recoverability and to have high levels of alternative fishing grounds. The sensitivity of these receptors is considered to be **low**.

14.8.3.1.2 Cumulative Impact Magnitude

375. UK potting fishery: It is not anticipated that the inshore UK potting fleet operating in the nearshore offshore ECC will target grounds in other project or plan areas. The offshore potting fleet involving larger vessels may target grounds in other project areas. The UK potting fleet operating further offshore also demonstrates some vulnerability to cumulative impacts of exclusion where Project construction activity overlaps with construction activity in other offshore wind farms. Any effect will be short-term and temporary and fishing will be able to resume once construction activities are complete. The cumulative impact on the UK potting fleet is predicted to be of regional spatial extent, short-term duration and intermittent. It is predicted that the impact will affect the receptor directly. The magnitude is considered to be **low adverse** for the UK potting fleet.

376. UK scallop dredge fishery: It is possible that the UK dredge fishery that may operate in a portion of the offshore ECC will target grounds in other project areas. It is noted that there is a bottom-towed gear exclusion in Dogger Bank SAC as of 2022. Mobile gear fleets typically operate over wide areas and are not restricted to the footprint of the Offshore Development Area and other project / plan areas. Where a cumulative impact may affect the receptor, it will be direct and of regional spatial extent. The magnitude of impact is considered to be **low adverse** for the UK dredge fleet.

377. UK pelagic trawl fishery: It is possible that the UK pelagic trawl fishery that may operate occasionally in the Offshore Development Area will target grounds in other project areas. Mobile gear fleets typically operate over wide areas and are not restricted to the footprint of the Offshore Development Area. Data indicates limited UK pelagic trawl activity within Offshore Development Area boundaries. Where a cumulative impact may affect the receptor, it will be direct and of regional spatial extent. The magnitude of impact is considered to be **low adverse**.

378. UK demersal trawl fishery: It is possible that the UK demersal trawl fishery that may operate in the Offshore Development Area will target grounds in other project areas. It is noted that there is a bottom-towed gear exclusion in Dogger Bank SAC associated with the introduction of a 2022 byelaw; it is expected that the fishery will have already adapted to the presence of this restriction. Mobile gear fleets typically operate over wide areas and are not restricted to the footprint of the Offshore Development Area. Where a cumulative impact may affect the receptor, it will be direct and of regional spatial extent. The magnitude of impact is considered to be **low adverse**.

379. UK beam trawl fishery: It is possible that the UK beam trawl fishery that may operate in the Offshore Development Area will target grounds in other project areas. It is noted that there is a bottom-towed gear exclusion in Dogger Bank SAC associated with the introduction of a 2022 byelaw; it is expected that the fishery will have already adapted to the presence of this restriction. Mobile gear fleets typically operate over wide areas and are not restricted to the footprint of the Offshore Development Area. Where a cumulative impact may affect the receptor, it will be direct and of regional spatial extent. The magnitude of impact is considered to be **low adverse**.

380. UK demersal seine fishery: It is possible that the UK demersal seine fishery that may operate in the Offshore Development Area will target grounds in other project areas. It is noted that there is a bottom-towed gear exclusion in Dogger Bank SAC associated with the introduction of a 2022 byelaw; it is expected that the fishery will have already adapted to the presence of this restriction. Mobile gear fleets typically operate over wide areas and are not restricted to the footprint of the Offshore Development Area. Where a cumulative impact may affect the receptor, it will be direct and of regional spatial extent. The magnitude of impact is considered to be **low adverse**.

381. Non-UK pelagic trawl fishery: It is possible that the EU pelagic trawl fleet which may operate very sporadically in the Offshore Development Area will target grounds in other project areas. Mobile gear fleets typically operate over very wide areas and are not restricted to the footprint of the Offshore Development Area. Data indicates limited EU pelagic trawl activity within Offshore Development Area boundaries. Where a cumulative impact may affect the receptor, it will be direct and of regional spatial extent. The magnitude of impact is considered to be **low adverse**.

382. Non-UK demersal trawl fishery: It is possible that the EU demersal trawl fishery that may operate in the Offshore Development Area will target grounds in other project areas. It is noted that there is a bottom-towed gear exclusion in Dogger Bank SAC associated with the introduction of a 2022 byelaw; it is expected that the fishery will have already adapted to the presence of this restriction. Mobile gear fleets typically operate over wide areas and are not restricted to the footprint of the Offshore Development Area. Where a cumulative impact may affect the receptor, it will be direct and of regional spatial extent. The magnitude of impact is considered to be **low adverse**.

383. Non-UK beam trawl fishery: It is possible that the EU beam trawl fishery that may operate in the Offshore Development Area will target grounds in other project areas. It is noted that there is a bottom-towed gear exclusion in Dogger Bank SAC associated with the introduction of a 2022 byelaw; it is expected that the fishery will have already adapted to the presence of this restriction. Mobile gear fleets typically operate over wide areas and are not restricted to the footprint of the Offshore Development Area. Where a cumulative impact may affect the receptor, it will be direct and of regional spatial extent. The magnitude of impact is considered to be **low adverse**.

14.8.3.1.3 Cumulative Effect Significance

384. Embedded mitigation measures such as advance notification of planned project activities to fishers and ongoing liaison with fishers through the lifetime of a project are industry-standard and expected to be applied across the multiple projects considered in the cumulative effects assessment (see **Section 14.4.3**). Taking account of these measures, the residual effect is set out immediately below, noting that the effect may be long-term.

385. UK potting fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the impact magnitude is **low (adverse)**. The effect is of **minor adverse** significance, which is not significant in EIA terms. The application of Project-specific mitigation relevant to this fleet during construction (see **Section 14.7.4**) limits the contribution from the Project to this potential effect.

386. UK scallop dredge fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

387. UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

388. UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

389. UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

390. UK demersal seine fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

391. Non-UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

392. Non-UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

393. Non-UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

14.8.3.2 Cumulative Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent / alternative grounds (CF-C-03, CF-O-03, CF-D-03)

394. The effect of displacement leading to gear conflict and increased fishing pressure is directly correlated to the previous impact of reduced access to fishing grounds (i.e., if there is no reduction in access, then there will be no displacement).

14.8.3.2.1 Receptor Sensitivity

395. The sensitivity of the receptors is consistent with the assessment of reduced access to fishing grounds. The sensitivity is therefore **medium** for the UK potting fishery and **low** for all other commercial fisheries receptors.

14.8.3.2.2 Cumulative Impact Magnitude

396. As described above in relation to reduced access effects, the magnitude is considered to be **low-medium (adverse)** for the UK potting fishery and **low (adverse)** for all other commercial fisheries receptors.

14.8.3.2.3 Cumulative Effect Significance

397. Embedded mitigation measures such as advance notification of planned project activities to fishers and ongoing liaison with fishers through the lifetime of a project are industry-standard and expected to be applied across the multiple projects considered in the cumulative effects assessment (see **Section 14.4.3**). Taking account of these measures, the residual effect is set out immediately below, noting that the effect may be long-term.
398. UK potting fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the impact magnitude is **low-medium (adverse)**. The effect is of **minor-moderate adverse** significance, which is **significant** in EIA terms. The application of Project-specific mitigation relevant to this fleet during construction (see **Section 14.7.4**) limits the contribution from the Project to this potential effect
399. UK scallop dredge fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
400. UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
401. UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
402. UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor (adverse)** significance, which is **not significant** in EIA terms.
403. UK demersal seine fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
404. Non-UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
405. Non-UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
406. Non-UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

14.8.3.3 Cumulative Impact 3: Displacement or disruption of commercially important fish and shellfish resources (CF-C-04, CF-O-04)

14.8.3.3.1 Receptor Sensitivity

407. There is potential for fishing grounds beyond the immediate construction activities associated with projects to be affected by these impacts. Exposure to the impact is likely and commercial fleets targeting key species may be affected.
408. There is potential for shellfish grounds beyond the immediate construction activities to be affected by increased suspended sediment and sediment deposition, potentially impacting potting and dredge fleets. The UK potting and scallop dredge fisheries are deemed to be of medium vulnerability and medium recoverability. The sensitivity of these receptors is therefore considered to be **medium**.
409. There is potential for fish species and particularly herring to be impacted by underwater noise generated during the construction phase, associated with pile installation. It is predicted that herring may be impacted up to several kilometres from the noise source, with potential impacts including mortality, injury and behavioural change across varying impact ranges (these potential ranges are detailed in **Chapter 11 Fish and Shellfish Ecology, Section 11.7**). The UK and EU trawl fisheries that may target herring and other fish species are active across relatively extensive fishing grounds throughout the central and southern North Sea and beyond and are deemed to be of low vulnerability and high recoverability. Due to the range of alternative areas targeted and the distribution of key commercial species throughout the North Sea, all other fleets are deemed to be of low vulnerability and high recoverability. The sensitivity is considered to be **low** for all other mobile fleets.

14.8.3.3.2 Cumulative Impact Magnitude

410. Detailed assessments of the following potential cumulative impacts have been undertaken in **Chapter 11 Fish and Shellfish Ecology**:
- Underwater noise and vibration; and
 - Habitat loss / alteration.
411. The approach to this assessment follows that outlined for the Project-alone assessment detailed in earlier sections. The impact is predicted to be of regional spatial extent and of relevance to national and international fishing fleets. It is predicted that the impact will affect the receptor directly through loss of resources. The magnitude is considered to be **low (adverse)** in relation to all potential cumulative impacts.

14.8.3.3.3 Cumulative Effect Significance

412. Residual effects are set out immediately below, noting that the effect in some cases may be long-term, for example in the case of cumulative habitat alteration disturbing commercially important fish and shellfish resources.
413. UK potting fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
414. UK scallop dredge fishery: Overall, it is predicted that the sensitivity of the receptor is **medium**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
415. UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
416. UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
417. UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
418. UK demersal seine fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
419. Non-UK pelagic trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
420. Non-UK demersal trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.
421. Non-UK beam trawl fishery: Overall, it is predicted that the sensitivity of the receptor is **low**, and the magnitude of impact is **low (adverse)**. The effect is of **minor adverse** significance, which is **not significant** in EIA terms.

14.9 Transboundary Effects

422. Transboundary effects arise when impacts from a development within one European Economic Area (EEA) state affects the environment of another EEA state(s). A screening of transboundary effects has been carried out by the Planning Inspectorate (PINS, 2024a). The screening exercise identified the following potential transboundary effects on commercial fisheries:
- ‘Loss of, or restricted access to, fishing grounds and potential displacement of fishing activity; presence of infrastructure leading to gear snagging; and
 - Indirect impacts through displacement of commercially important fish and shellfish resources.’
423. The following EEA States were screened in: Denmark, Sweden, Belgium, France, the Netherlands, Norway and Germany.
424. Effects on biological resources could occur over a range of tens of kilometres from the Project but are considered unlikely to interact with other EEA states other than the Netherlands (see **Chapter 11 Fish and Shellfish Ecology**). With no significant transboundary impacts predicted to result from the Project on fish and shellfish receptors, similarly no significant transboundary impact of effects on commercial fish stocks in the waters of other EEA States on commercial fisheries is predicted.
425. Effects on commercial fishing fleets could occur over a range of hundreds of kilometres from the Project and could therefore interact with the EEA States listed in the Planning Inspectorate screening exercise. Effects on these foreign commercial fishing fleets from EEA states, in terms of reduction in access to grounds within the Project and displacement into alternative grounds including other EEZs have been considered in the assessment presented in this chapter and were found to be **minor** for all non-UK EEA states. Therefore, the potential transboundary impact of constraints on foreign commercial fishing activities is concluded to be of **negligible** to **minor adverse** significance and is therefore considered to be **not significant** in EIA terms.

14.10 Inter-Relationships and Effect Interactions

14.10.1 Inter-Relationships

426. Inter-relationships are defined as effects arising from residual effects associated with different environmental topics acting together upon a single receptor or receptor group. Potential inter-relationships between commercial fisheries and other environmental topics have been considered, where relevant, within the PEIR. **Table 14-15** provides a summary of key inter-relationships and signposts to where they have been addressed in the relevant chapters.

Table 14-15 Commercial Fisheries – Inter-Relationships with Other Topics

Impact ID	Impact	Related EIA Topic	Where Assessed in the PEIR Chapter	Rationale
Construction				
CF-C-02	Reduction in access to, or exclusion from established fishing grounds	N / A		
CF-C-03	Displacement leading to gear conflict and increased fishing pressure on adjacent / alternative grounds	N / A		
CF-C-04	Displacement or disruption of commercially important fish and shellfish resources	Chapter 11 Fish and Shellfish Ecology	Section 14.7.1.4	Impact magnitude informed by the assessment in Chapter 11 Fish and Shellfish Ecology .
CF-C-05	Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity	Chapter 15 Shipping and Navigation	Section 14.7.1.5	Impact magnitude informed by the assessment in Chapter 15 Shipping and Navigation .

Impact ID	Impact	Related EIA Topic	Where Assessed in the PEIR Chapter	Rationale
CF-C-07	Additional steaming to alternative fishing grounds - all other fleets	Chapter 15 Shipping and Navigation	Section 14.7.1.6	Impact magnitude informed by the assessment in Chapter 15 Shipping and Navigation .
Operation				
CF-O-02	Reduction in access to, or exclusion from established fishing grounds	N / A		
CF-O-03	Displacement leading to gear conflict and increased fishing pressure on adjacent / alternative grounds	N / A		
CF-O-04	Displacement or disruption of commercially important fish and shellfish resources	Chapter 11 Fish and Shellfish Ecology	Section 14.7.2.4	Impact magnitude informed by the assessment in Chapter 11 Fish and Shellfish Ecology .
CF-O-05	Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity	Chapter 15 Shipping and Navigation	Section 14.7.2.5	Impact magnitude informed by the assessment in Chapter 15 Shipping and Navigation .
CF-O-07	Additional steaming to alternative fishing grounds - all other fleets	Chapter 15 Shipping and Navigation	Section 14.7.2.6	Impact magnitude informed by the assessment in Chapter 15 Shipping and Navigation .
CF-O-09	Physical presence of infrastructure leading to gear snagging	Chapter 15 Shipping and Navigation	Section 14.7.2.7	Impact magnitude informed by the assessment in Chapter 15 Shipping and Navigation .

Impact ID	Impact	Related EIA Topic	Where Assessed in the PEIR Chapter	Rationale
Decommissioning				
CF-D-02	Reduction in access to, or exclusion from established fishing grounds - Mobile gear fleets all other fleets	N / A		
CF-D-03	Displacement leading to gear conflict and increased fishing pressure on adjacent / alternative grounds	N / A		
CF-D-04	Displacement or disruption of commercially important fish and shellfish resources	Chapter 11 Fish and Shellfish Ecology	Section 14.7.3	Impact magnitude informed by the assessment in Chapter 11 Fish and Shellfish Ecology .
CF-D-05	Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity	Chapter 15 Shipping and Navigation	Section 14.7.3	Impact magnitude informed by the assessment in Chapter 15 Shipping and Navigation .
CF-D-07	Additional steaming to alternative fishing grounds	Chapter 15 Shipping and Navigation	Section 14.7.3	Impact magnitude informed by the assessment in Chapter 15 Shipping and Navigation .
CF-D-09	Physical presence of infrastructure leading to gear snagging	Chapter 15 Shipping and Navigation	Section 14.7.3	Impact magnitude informed by the assessment in Chapter 15 Shipping and Navigation .

14.10.2 Interactions

427. The impacts identified and assessed in this chapter have the potential to interact with each other. Potential interactions between impacts are identified in **Table 14-16**. Where there is potential for interaction between impacts, these are assessed in **Table 14-17** for each receptor or receptor group.

428. Interactions are assessed by development phase (“phase assessment”) to see if multiple impacts could increase the overall effect significance experienced by a single receptor or receptor group during each phase. Following from this, a lifetime assessment is undertaken which considers the potential for multiple impacts to accumulate across the construction, operation and decommissioning phases and result in a greater effect on a single receptor or receptor group. When considering synergistic effects from interactions, it is assumed that the receptor sensitivity remains consistent, while the magnitude of different impacts is additive.

14.11 Monitoring Measures

429. No monitoring measures have been proposed for commercial fisheries.

14.12 Summary

430. **Table 14-18** presents a summary of the preliminary results of the assessment of likely significant effects on commercial fisheries during the construction, operation and decommissioning of the Project.

Table 14-16 Commercial Fisheries – Potential Interactions between Impacts

	CF-C-02	CF-C-03	CF-C-04	CF-C-05	CF-C-07	CF-O-02	CF-O-03	CF-O-04	CF-O-05	CF-O-07	CF-O-09
CF-C-02		Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	No
CF-C-03	Yes		No	Yes	Yes	Yes	Yes	No	Yes	Yes	No
CF-C-04	No	No		No	No	No	No	Yes	No	No	No
CF-C-05	Yes	Yes	No		Yes	Yes	Yes	No	Yes	Yes	No
CF-C-07	Yes	Yes	No	Yes		Yes	Yes	No	Yes	Yes	No
CF-O-02	Yes	Yes	No	Yes	Yes		Yes	No	Yes	Yes	No
CF-O-03	Yes	Yes	No	Yes	Yes	Yes		No	Yes	Yes	No
CF-O-04	No	No	Yes	No	No	No	No		No	No	No
CF-O-05	Yes	Yes	No	Yes	Yes	Yes	Yes	No		Yes	No
CF-O-07	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes		No
CF-O-09	No	No	No	No	No	No	No	No	No	No	

Decommissioning

The details and scope of offshore decommissioning works will be determined by the relevant regulations and guidance at the time of decommissioning and provided in the Offshore Decommissioning Programme (see Commitment ID CO21 in **Volume 2, Appendix 6.3 Commitments Register**).

For this assessment, it is assumed that interactions during the decommissioning phase would be of similar nature to, and no worse than, those identified during the construction phase.

Table 14-17 Interaction Assessment – Phase and Lifetime Effects

Receptor	Impact ID	Highest Significance Level			Phase Assessment	Lifetime Assessment
		Construction	Operation	Decommissioning		
UK potting fishery UK scallop dredge fishery UK pelagic trawl fishery UK demersal trawl fishery UK beam trawl fishery UK demersal seine fishery Non-UK pelagic trawl fishery Non-UK demersal trawl fishery Non-UK beam trawl fishery	CF-C-02 CF-O-02	Minor Adverse	Minor Adverse	TBC – Assumed no greater than construction	Construction: No greater than individually assessed impact. Operation: No greater than individually assessed impact. Decommissioning: No greater than individually assessed impact.	No greater than individually assessed impact.
UK potting fishery UK scallop dredge fishery UK pelagic trawl fishery UK demersal trawl fishery UK beam trawl fishery UK demersal seine fishery Non-UK pelagic trawl fishery Non-UK demersal trawl fishery Non-UK beam trawl fishery	CF-C-03 CF-O-03	Minor Adverse	Minor Adverse	TBC – Assumed no greater than construction	Construction: No greater than individually assessed impact. Operation: No greater than individually assessed impact. Decommissioning: No greater than individually assessed impact.	No greater than individually assessed impact.
UK potting fishery UK scallop dredge fishery UK pelagic trawl fishery UK demersal trawl fishery UK beam trawl fishery UK demersal seine fishery Non-UK pelagic trawl fishery Non-UK demersal trawl fishery Non-UK beam trawl fishery	CF-C-04 CF-O-04	Minor Adverse	Minor Adverse	TBC – Assumed no greater than construction	Construction: No greater than individually assessed impact. Operation: No greater than individually assessed impact. Decommissioning: No greater than individually assessed impact.	No greater than individually assessed impact.

Receptor	Impact ID	Highest Significance Level			Phase Assessment	Lifetime Assessment
		Construction	Operation	Decommissioning		
UK potting fishery UK scallop dredge fishery UK pelagic trawl fishery UK demersal trawl fishery UK beam trawl fishery UK demersal seine fishery Non-UK pelagic trawl fishery Non-UK demersal trawl fishery Non-UK beam trawl fishery	CF-C-05 CF-O-05	Minor Adverse	Minor Adverse	TBC – Assumed no greater than construction	Construction: No greater than individually assessed impact. Operation: No greater than individually assessed impact. Decommissioning: No greater than individually assessed impact.	No greater than individually assessed impact.
UK potting fishery UK scallop dredge fishery UK pelagic trawl fishery UK demersal trawl fishery UK beam trawl fishery UK demersal seine fishery Non-UK pelagic trawl fishery Non-UK demersal trawl fishery Non-UK beam trawl fishery	CF-C-07 CF-O-07	Minor Adverse	Minor Adverse	TBC – Assumed no greater than construction	Construction: No greater than individually assessed impact. Operation: No greater than individually assessed impact. Decommissioning: No greater than individually assessed impact.	No greater than individually assessed impact.
UK potting fishery UK scallop dredge fishery UK pelagic trawl fishery UK demersal trawl fishery UK beam trawl fishery UK demersal seine fishery Non-UK pelagic trawl fishery Non-UK demersal trawl fishery Non-UK beam trawl fishery	CF-O-09	Minor Adverse	Minor Adverse	TBC – Assumed no greater than construction	Construction: No greater than individually assessed impact. Operation: No greater than individually assessed impact. Decommissioning: No greater than individually assessed impact.	No greater than individually assessed impact.

Table 14-18 Summary of Potential Effects Assessed for Commercial Fisheries

Impact ID	Impact and Project Activity	Embedded Mitigation Measures	Receptor	Receptor Sensitivity	Impact Magnitude	Effect Significance	Additional Mitigation Measures	Residual Effect
Construction								
CF-C-02	Reduction in access to, or exclusion from established fishing grounds (all other fleets) – installation activities and the physical presence of constructed infrastructure.	CO9 CO10 CO14 CO17 CO15 CO16 CO24 CO25	UK potting fishery	Medium	Low (adverse) (Array Area) Medium (adverse) (offshore ECC)	Minor adverse (Array Area) Moderate adverse (offshore ECC)	N / A (Array Area). Yes – implementation of evidence-based mitigation in line with FLOWW guidelines, following procedures to be set out within the outline Fisheries Liaison and Coexistence Plan (offshore ECC).	Minor adverse (Not significant)
			UK scallop dredge fishery	Low	Medium (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK pelagic trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK beam trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal seine fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK pelagic trawl fishery	Negligible	Negligible (adverse)	Negligible adverse	N / A	Negligible adverse (Not significant)
			Non-UK demersal trawl fishery	Negligible	Negligible (adverse)	Negligible adverse	N / A	Negligible adverse (Not significant)
			Non-UK beam trawl fishery	Negligible	Negligible (adverse)	Negligible adverse	N / A	Negligible adverse (Not significant)

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Impact ID	Impact and Project Activity	Embedded Mitigation Measures	Receptor	Receptor Sensitivity	Impact Magnitude	Effect Significance	Additional Mitigation Measures	Residual Effect
CF-C-03	Displacement leading to gear conflict and increased fishing pressure on adjacent / alternative grounds– construction activities, such as the presence of installation vessels and use of safety zones.	CO9 CO10 CO14 CO17 CO15 CO16 CO24 CO25 CO31	UK potting fishery	Medium	Low-medium (adverse)	Minor – moderate adverse	Yes – implementation of evidence-based mitigation in line with FLOWW guidelines, following procedures to be set out within the outline Fisheries Liaison and Coexistence Plan	Negligible adverse (Not significant)
			UK scallop dredge fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK pelagic trawl fishery	Low	Negligible (adverse)	Negligible adverse	N / A	Negligible adverse (Not significant)
			UK demersal trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK beam trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal seine fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK pelagic trawl fishery	Negligible	Negligible (adverse)	Negligible adverse	N / A	Negligible adverse (Not significant)
			Non-UK demersal trawl fishery	Negligible	Negligible (adverse)	Negligible adverse	N / A	Negligible adverse (Not significant)
			Non-UK beam trawl fishery	Negligible	Negligible (adverse)	Negligible adverse	N / A	Negligible adverse (Not significant)
CF-C-04	Displacement or disruption of commercially important fish and shellfish resources– construction activities, such as the presence of installation vessels and installation of the foundations and cables.	CO15 CO24 CO25	UK potting fishery	Medium	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK scallop dredge fishery	Medium	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK pelagic trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK beam trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal seine fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK pelagic trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK demersal trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK beam trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)

Impact ID	Impact and Project Activity	Embedded Mitigation Measures	Receptor	Receptor Sensitivity	Impact Magnitude	Effect Significance	Additional Mitigation Measures	Residual Effect
CF-C-05	Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity – movement of vessels associated with the Project.	CO7 CO9 CO10 CO11 CO12 CO14 CO15 CO16 CO17 CO24 CO25 CO31	UK potting fishery	Medium	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK scallop dredge fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK pelagic trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK beam trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal seine fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK pelagic trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK demersal trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK beam trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
CF-C-07	Additional steaming to alternative fishing grounds – construction activities, such as the presence of installation vessels and use of safety zones.	CO9 CO10 CO14 CO17 CO15 CO16 CO24 CO25 CO31	UK potting fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK scallop dredge fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK pelagic trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK beam trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal seine fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK pelagic trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK demersal trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK beam trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)

Impact ID	Impact and Project Activity	Embedded Mitigation Measures	Receptor	Receptor Sensitivity	Impact Magnitude	Effect Significance	Additional Mitigation Measures	Residual Effect
Operation and Maintenance								
CF-O-02	Reduction in access to, or exclusion from established fishing grounds (all other fleets)- O&M activities and the physical presence of constructed infrastructure.	CO7 CO9 CO11 CO12 CO14 CO17 CO15 CO16 CO25 CO28 CO31	UK potting fishery	Medium	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK scallop dredge fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK pelagic trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK beam trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal seine fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK pelagic trawl fishery	Negligible	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK demersal trawl fishery	Negligible	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK beam trawl fishery	Negligible	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
CF-O-03	Displacement leading to gear conflict and increased fishing pressure on adjacent grounds- O&M activities and the physical presence of constructed infrastructure.	CO9 CO14 CO17 CO15 CO16 CO25 CO28 CO31	UK potting fishery	Medium	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK scallop dredge fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK pelagic trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK beam trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal seine fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK pelagic trawl fishery	Negligible	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK demersal trawl fishery	Negligible	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK beam trawl fishery	Negligible	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)

Impact ID	Impact and Project Activity	Embedded Mitigation Measures	Receptor	Receptor Sensitivity	Impact Magnitude	Effect Significance	Additional Mitigation Measures	Residual Effect
CF-O-04	Displacement or disruption of commercially important fish and shellfish resources - EMF effects and noise disturbance as a result of the O&M.	CO15 CO24 CO25 CO28 CO31	UK potting fishery	Medium	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK scallop dredge fishery	Medium	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK pelagic trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK beam trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal seine fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK pelagic trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK demersal trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK beam trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
CF-O-05	Increased vessel traffic associated with the O&M of the Project within fishing grounds leading to interference with fishing activity- movement of vessels associated with the O&M phase of the Project.	CO14 CO17 CO15 CO25 CO28 CO31	UK potting fishery	Medium	Negligible-low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK scallop dredge fishery	Low	Negligible-low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK pelagic trawl fishery	Low	Negligible-low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal trawl fishery	Low	Negligible-low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK beam trawl fishery	Low	Negligible-low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal seine fishery	Low	Negligible-low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK pelagic trawl fishery	Low	Negligible-low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK demersal trawl fishery	Low	Negligible-low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK beam trawl fishery	Low	Negligible-low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)

Impact ID	Impact and Project Activity	Embedded Mitigation Measures	Receptor	Receptor Sensitivity	Impact Magnitude	Effect Significance	Additional Mitigation Measures	Residual Effect
CF-O-07	Additional steaming to alternative fishing grounds- movement of vessels associated with the Project and presence of constructed infrastructure.	CO9 CO14 CO17 CO15 CO16 CO25 CO28 CO31	UK potting fishery	Medium	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK scallop dredge fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK pelagic trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK beam trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal seine fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK pelagic trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK demersal trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK beam trawl fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
CF-O-09	Physical presence of infrastructure leading to gear snagging- physical presence of infrastructure.	CO7 CO9 CO11 CO12 CO14 CO15 CO16 CO17 CO25 CO28 CO31	UK potting fishery	Low	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK scallop dredge fishery	Medium	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK pelagic trawl fishery	Negligible	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal trawl fishery	Medium	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK beam trawl fishery	Medium	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			UK demersal seine fishery	Negligible	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK pelagic trawl fishery	Negligible	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK demersal trawl fishery	Medium	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)
			Non-UK beam trawl fishery	Medium	Low (adverse)	Minor adverse	N / A	Minor adverse (Not significant)

Impact ID	Impact and Project Activity	Embedded Mitigation Measures	Receptor	Receptor Sensitivity	Impact Magnitude	Effect Significance	Additional Mitigation Measures	Residual Effect
Decommissioning								
CF_D_02	Reduction in access to, or exclusion from established fishing grounds - Mobile gear fleets all other fleets – decommissioning activities, such as the presence of decommissioning vessels and use of safety zones.	CO21						
CF_D_03	Displacement leading to gear conflict and increased fishing pressure on adjacent / alternative grounds – decommissioning activities, such as the presence of decommissioning vessels and use of safety zones.							
CF_D_04	Displacement or disruption of commercially important fish and shellfish resources– decommissioning activities, such as the presence of decommissioning vessels and removal of infrastructure.							
CF_D_05	Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity – decommissioning activities, such as the presence of decommissioning vessels.							
			The details and scope of offshore decommissioning works will be determined by the relevant regulations and guidance at the time of decommissioning and provided in the Offshore Decommissioning Programme (see Commitment ID CO21 in Volume 2, Appendix 6.3 Commitments Register).					
			For this assessment, it is assumed that interactions during the decommissioning phase would be of similar nature to, and no worse than, those identified during the construction phase.					

Impact ID	Impact and Project Activity	Embedded Mitigation Measures	Receptor	Receptor Sensitivity	Impact Magnitude	Effect Significance	Additional Mitigation Measures	Residual Effect
CF_D_06	Additional steaming to alternative fishing grounds – decommissioning activities, such as the presence of decommissioning vessels.							
CF_D_07	Reduction in access to, or exclusion from established fishing grounds - Mobile gear fleets all other fleets – decommissioning activities, such as the presence of decommissioning vessels and use of safety zones.							
CF_D_09	Displacement leading to gear conflict and increased fishing pressure on adjacent grounds – decommissioning activities, such as the presence of decommissioning vessels and removal of infrastructure.							

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List of Acronyms

Acronym	Definition
AIS	Automatic Identification System
CAA	Civil Aviation Authority
CEA	Cumulative Effects Assessment
Cefas	Centre for Environment, Fisheries and Aquaculture Science
CLV	Cable Lay Vessel
CRA	Chemical Risk Assessment
DBD	Dogger Bank D
DCF	Data Collection Framework
DCO	Development Consent Order
Defra	Department for Environment, Food and Rural Affairs
DESNZ	Department for Energy Security and Net Zero
DML	Deemed Marine Licence
EEA	European Economic Area
EEZ	Exclusive Economic Zone
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
EMF	Electro-magnetic Field
EMSA	European Maritime Safety Agency
ESCA	European Subsea Cables Association
ES	Environmental Statement
EU	European Union
FLCP	Fisheries Liaison and Coexistence Plan
FLO	Fisheries Liaison Officer

Acronym	Definition
FLOWW	Fishing Liaison with Offshore Wind and Wet Renewables
FMP	Fisheries Management Plan
FPV	Fall Pipe Vessel
GIS	Geographic Information System
ICES	International Council for the Exploration of the Sea
IPC	Infrastructure Planning Commission
JFS	Joint Fishery Statement
MCA	Maritime and Coastguard Agency
MCZ	Marine Conservation Zone
MHWS	Mean High Water Springs
MMO	Marine Management Organisation
MPCP	Marine Pollution Contingency Plan
MPA	Marine Protected Area
MPS	Marine Policy Statement
NFFO	National Federation of Fishermen's Organisations
nm	Nautical Mile
NRA	Navigational Risk Assessment
NtM	Notice to Mariners
OCV	Offshore Construction Vessel
OSV	Offshore Supply Vessel
PEIR	Preliminary Environmental Information Report
PEMP	Project Environmental Management Plan
PINS	Planning Inspectorate
PLN	Port Letters and Numbers

Acronym	Definition
PSV	Platform Supply Vessel
RAM	Ability to Manoeuvre
RBS	Register of Buyers and Sellers
SAC	Special Area of Conservation
SAR	Swept Area Ratio
SFF	Scottish Fishermen's Federation
SOV	Service Operation Vessel
TAC	Total Allowable Catch
TCA	Trade and Cooperation Agreement
UK	United Kingdom
UKFEN	UK Fisheries Economic Network
UKHO	UK Hydrographic Office
VHF	Very High Frequency
VMS	Vessel Monitoring System