Liverpool Bay CCS Ltd

HYNET CARBON DIOXIDE TRANSPORTATION AND STORAGE PROJECT - OFFSHORE

Environment Statement
Volume 2, chapter 10: Commercial Fisheries

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Liverpool Bay CCS Limited
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Offshore ES
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Glossary

Term	Meaning
Cumulative effects assessment	Assessment of the likely effects arising from the offshore components of the HyNet CO_2 Transportation and Storage System ('Proposed Development') alongside the likely effects of other development activities in the vicinity of the Proposed Development.
Effect	The consequence of an impact.
Environmental Impact Assessment	A statutory 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, which fulfils the assessment requirements of the EIA Directive and EIA Regulations, including the publication of an Environmental Statement (ES).
Impact	A change that is caused by an action.
Magnitude	Size, extent, and duration of an impact.
Maximum Design Scenario	The maximum design parameters of each Proposed Development asset (both on and offshore) considered to be a worst case for any given assessment but within the range of the Project Description Envelope.
Mitigation Measure	Measure which would avoid, reduce, or remediate an impact.
Non-statutory stakeholder	Organisations with whom the regulatory authorities may choose to engage who are not designated in law but are likely to have an interest in a proposed development.
Project	The HyNet Carbon Dioxide Transportation and Storage Project.
Proposed Development	The offshore components of the Project which are subject of this Environmental Statement, as described in volume 1, chapter 3.
Residual Impact	Residual impacts are the final impacts that occur after the proposed mitigation measures have been put into place, as planned.
Scoping Opinion	Sets out the Secretary of State's response to the Applicants Scoping Report and contains the range of issues that the Secretary of State, in consultation with statutory stakeholders, has identified should be considered within the EIA.
The Applicant	This is Liverpool Bay CCS Ltd.
Transboundary effects	Impacts from a project within one state affect the environment of another state(s).

Acronyms and Initialisations

Acronym/Initialisation	Description
AIS	Automatic Information System
CAA	Civil Aviation Authority
CBRA	Cable Burial Risk Assessment
CCS	Carbon capture and storage
CEA	Cumulative Effects Assessment
CSIP	Cable Specification and Installation Plan
DCF	Data Collection Framework
Defra	The Department for Environment, Food & Rural Affairs
DESNZ	The Department for Energy Security and Net Zero, preceded by the Department for Business, Energy, and Industrial Strategy (2016 to 2023) and the Department of Energy and Climate Change (2008 to 2016)
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EMF	Electromagnetic Field
EMSA	European Maritime Safety Agency

Acronym/Initialisation	Description
ES	Environmental Statement
EU	European Union
FIR	Fishing Industry Representative
FLCP	Fisheries Liaison and Coexistence Plan
FLO	Fisheries Liaison Officer
FLOWW	Fisheries Liaison with Offshore Wind and Wet Renewables group
FMP	Fisheries Management Plan
FO	Fibre Optic
GPS	Global Positioning System
HRA	Habitats Regulations Appraisal
ICES	International Council for the Exploration of the Sea
IFCA	Inshore Fisheries and Conservation Authority
JFS	Joint Fishery Statement
MCA	Maritime and Coastguard Agency
MCZ	Marine Conservation Zone
MDS	Maximum Design Scenario
MHWS	Mean High Water Springs
MMO	Marine Management Organisation
MPA	Marine Protected Area
MSC	Marine Stewardship Council
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NtM	Notice to Mariners
O&M	Operations and Maintenance
OP	Offshore Platform
OPRED	Offshore Petroleum Regulator for Environment & Decommissioning
PoA	Point of Ayr
RBS	Registration of Buyers and Sellers
RIAA	Report to Inform Appropriate Assessment
SAC	Special Area of Conservation
SAR	Swept Area Ratio
SPA	Special Protection Area
STECF	Scientific, Technical and Economic Committee for Fisheries
TCA	Trade and Cooperation Agreement
UK	United Kingdom
UKFEN	United Kingdom Fisheries Economic Network
UXO	Unexploded Ordnance
VMS	Vessel Monitoring System
WNMP	Welsh National Marine Plan

Units

Unit	Description
“	Inch (distance; equal to 0.0254 m)
%	Percent
£	Pound (currency)
km	Kilometres (distance)
km^2	Kilometres squared (area)
m	Metres (distance)
NM	Nautical Mile (distance; equal to 1.852 km)

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10 COMMERCIAL FISHERIES

10.1 Introduction

This chapter of the Offshore Environmental Statement (ES) presents the assessment of the likely significant effects (as per the 'EIA Regulations') on the environment of the Proposed Development on commercial fisheries. Specifically, this chapter considers the potential impacts from the construction, operation, and maintenance, and decommissioning of the offshore and intertidal components (seaward of the Mean High Water Springs (MHWS) mark) of the development area, which includes the pipelines and cables leading to MHWS.

Likely significant effect is a term used in both the 'EIA Regulations' and the Habitat Regulations. Reference to likely significant effect in this Offshore ES refers to 'likely significant effect' as used by the 'EIA Regulations'. This Offshore ES is accompanied by a Report to Inform Appropriate Assessment (RIAA) which uses the term as defined by the Habitats Regulations Assessment (HRA) Regulations.

The assessment should be read in conjunction with following linked ES chapters and supporting documentation:

- volume 2, chapter 7: Marine Biodiversity: where impacts on the ecology of fish and shellfish, including species of commercial interest, are assessed;
- volume 2, chapter 9: Shipping and Navigation: where impacts on the navigational safety aspects of fishing activity are assessed; and
- volume 2, chapter 12: Infrastructure and Other Users: where impacts on charter angling businesses are assessed.

Additional information on the baseline environment to support the commercial fisheries assessment includes:

- volume 3, appendix M: Commercial Fisheries Technical Report.

10.2 Purpose of this chapter

The primary purpose of the Offshore ES is outlined in volume 1, chapter 1. It is intended that the Offshore ES will provide the statutory and non-statutory stakeholders, with sufficient information to determine the likely significant effects of the Proposed Development on the receiving environment.

In particular, this commercial fisheries ES chapter:

- presents the existing environmental baseline established from desk studies, analysis of available fisheries data and consultation with stakeholders;
- identifies any assumptions and limitations encountered in compiling the environmental information;
- presents the likely significant environmental impacts on commercial fisheries arising from the Proposed Development and reaches a conclusion on the likely significant effects on commercial fisheries, based on the information gathered and the analysis and assessments undertaken; and
- highlights any necessary monitoring and/or mitigation measures which recommended to prevent, minimise, reduce or offset the likely significant adverse environmental effects of the Proposed Development on commercial fisheries.

This assessment has been undertaken with specific reference to the relevant legislation and guidance, of which the primary sources are the National Policy Statements (NPSs). Details of these, and the methodology used for the Environmental Impact Assessment (EIA) and Cumulative Effects Assessment (CEA), are presented in in volume 1, chapter 5: Environmental Impact Assessment Methodology and section 10.9 of this chapter.

10.3 Study area

The Proposed Development is located within the eastern portion of the International Council for the Exploration of the Sea (ICES) Division 7a (Irish Sea) statistical area; within the United Kingdom (UK) Exclusive Economic Zone (EEZ) waters. For the purpose of recording fisheries landings, ICES Division 7a is divided into statistical rectangles which are consistent across all Member States operating in the Irish Sea.

The Proposed Development is located within ICES rectangles 35E6 and 36E6, which represent the commercial fisheries study area for the EIA, as shown in Figure 10.1. Note that the Eni development area, area of project physical work and proposed infrastructure occupy only a portion of these ICES rectangles in terms of surface areal overlap.

In total, the development area of the Proposed Development (shown as red line boundary in Figure 10.1) overlaps with 12.5% of the commercial fisheries study area, and the area of Proposed Development physical work (shown as the black dashed line) overlaps with 1.43% of the commercial fisheries study area.

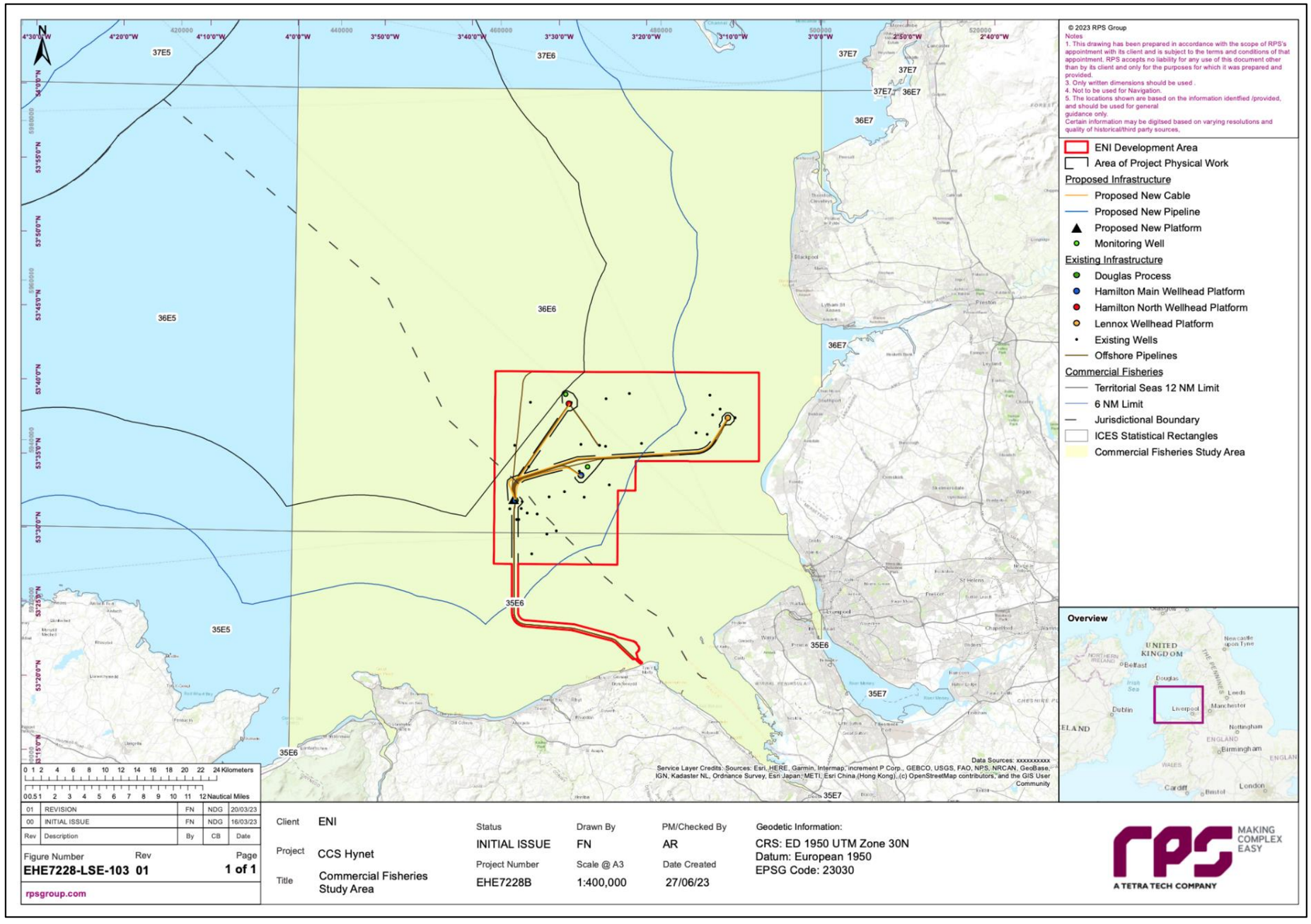

Figure 10.1: Commercial Fisheries Study Area (ICES Rectangles 35E6 And 36E6)

10.4 Policy and Legislative Context

The policy context for the HyNet Carbon Dioxide Transportation and Storage Project - Offshore is set out in volume 1, chapter 2. The Department for Energy and Climate Change (now the Department for Energy Security and Net Zero (DESNZ)) published a number of NPSs in relation to energy infrastructure, which were designated by the Secretary of State for Energy and Climate Change in July 2011.

In the case of the Proposed Development, none of the energy NPSs directly apply. Where this is the case, section 105 of the PA2008 applies and applications will be tested against 'important and relevant' matters, which are typically local adopted planning policies and the National Planning Policy Framework (NPPF).

However, the following NPSs may still be important and relevant considerations in assessing the Proposed Development:

- Overarching National Policy Statement for Energy (EN-1); and
- National Policy Statement for Gas Supply Infrastructure and Gas and Oil Pipelines (EN-4).

NPS EN-4 applies to nationally significant infrastructure pipelines which transport natural gas or oil. However, it is noted that NPS EN-4 may also be useful in identifying impacts to be considered in applications for pipelines intended to transport other substances and therefore it has been reviewed for relevance to commercial fisheries.

The North West Inshore and North West Offshore Marine Plan (Defra, 2021) supports maximising possibilities for the co-existence and co-operation of marine sectors. The Plan includes policies relevant to aquaculture (NW-AQ-1), commercial fisheries (NW-FISH-2, NW-FISH-3) and co-existence (NW-CO-1).

Table 10.1 presents a summary of legislation and policies of relevance for the commercial fisheries and aquaculture assessment.

Table 10.1: Summary Of Legislation And Policy Provisions Relevant To Commercial Fisheries

Relevant Legislation and Policy	Relevance to the assessment
UK Fisheries Act (2020)	The UK Fisheries Act (2020) (23 Nov 2020) sets out a series of objectives for management of commercial fisheries as follows — (a) the sustainability objective, (b) the precautionary objective, (c) the ecosystem objective, (d) the scientific evidence objective, (e) the bycatch objective, (f) the equal access objective, (g) the national benefit objective, and (h) the climate change objective. The Joint Fishery Statement (JFS) was published in November 2022 and outlines commitments for delivery of Fisheries Management Plans (FMPs) for delivery by UK fisheries administrators. Of particular note for the region is the development 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 is expected by 2024.
UK Marine Policy Statement (2011)	The UK Marine Policy Statement sets out high-level objectives for the UK marine space, including achieving a sustainable marine economy and identifies a wide range of relevant marine uses. It requires the marine environment and its resources to be used to maximise sustainable activity, prosperity and opportunities for all.

Relevant Legislation and Policy	Relevance to the assessment
	It 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.
The Welsh National Marine Plan (WNMP; 2019)	Policy SAF-01b seeks to 'enable established activities to continue and thrive wherever possible' (paragraph 404). The Policy also recognises that much of Wales' fishing activity is often very localised and dependent upon a particular area or habitat. Unlike larger, more nomadic vessels with mobile gears, Welsh inshore vessels cannot easily relocate to other areas where the available space and catch opportunity is likely to be limited. The WNMP supports development proposals that will support and enhance sustainable fishing activities.
EC Directive (92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora (1992) **EC Directive (2009/147/EC) on the Conservation of Wild Birds (2009)** **Conservation of Offshore Marine Habitats and Species Regulations (2017)**	Defines the species, habitats and types of sites that receive legal protection and describes the protection that is afforded.
NW Inshore and Offshore Marine Plan: commercial fisheries policy NW-FISH-2	Commercial fisheries Policy NW-FISH-2: 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. NW-FISH-2 supports enhanced access for sustainable fishing activities and seeks to limit significant adverse impacts from other marine activities on access for fishing activities, enabling continued sustainable marine resource use and generating prosperous, resilient, and cohesive coastal communities. This policy covers not only fishing activity, but also the transit routes to and from sites and any berthing/beaching or landing/loading points.
NW Offshore Marine Plan: commercial fisheries policy NW-FISH-3:	Commercial fisheries Policy NW-FISH-3: Proposals that may have significant adverse impacts on essential fish habitat, including spawning, nursery and feeding grounds, and migratory routes, must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate adverse impacts so they are no longer significant. NW-FISH-3 enables sustainable use of marine resources within environmental limits, alongside productive fisheries, by requiring proposals to avoid impacts on essential fish habitats or, if avoidance of impacts is not possible, to manage impacts on essential fish habitats.
NW Offshore Marine Plan: co-existence policy NW-CO-1	Co-existence Policy NW-CO-1: Proposals that optimise the use of space and incorporate opportunities for co-existence and co-operation with existing activities will be supported. Proposals that may have significant adverse impacts on, or displace, existing 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 must state the case for proceeding.
NW Offshore Marine Plan: aquaculture policy NW-AQ-1	Aquaculture Policy NW-AQ-1: Proposals within existing or potential strategic areas of sustainable aquaculture production must demonstrate consideration of and compatibility with sustainable aquaculture production.

10.4.1 Other Relevant Information and Guidance

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

- Fisheries Liaison Guidelines - Issue 6 (UK Oil and Gas, 2015);
- Fishing and Submarine Cables - Working Together (International Cable Protection Committee, 2009).
- 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 and BERR, 2008);
- FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds (FLOWW, 2015);
- 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); and
- Guidelines for data acquisition to support marine environmental assessments of offshore renewable energy projects. Contract report: ME5403 (Cefas, 2012).

FLOWW guidance has been particularly important in shaping the process and procedures in establishing disruption settlements, when required. While the Proposed Development is not categorised as part of the FLOWW group, the FLOWW guidance is considered relevant in this instance due to the type of infrastructure (cables, offshore platforms and associated safety zones), together with well established procedures in the region that have been developed through of significant offshore windfarm development.

10.5 Consultation

Consultation in regard to commercial fisheries has been undertaken in line with the general process described in volume 1, chapter 5: Environmental Impact Assessment Methodology. The key elements to date for commercial fisheries have included scoping (Scoping Opinion from the Offshore Petroleum Regulator for Environment & Decommissioning (OPRED) received on 27 January 2023) and ongoing consultation with fishing industry representatives and other fisheries stakeholders via the Fisheries Liaison Officer (FLO).

The feedback received throughout this process, including the Scoping Opinion received from OPRED, has been considered in preparing the ES chapter. The key elements to date pertinent to commercial fisheries are shown in, and details how the Applicant has had regard to the comments and how these have been addressed within this chapter.

Table 10.2: Summary Of Key Consultation Of Relevance To Commercial Fisheries

Consultee	Comment	Response
OPRED	The following potential impact pathways for marine water and sediment quality which are not currently scoped-in, but which will require further consideration have been identified: bacterial release from sediments due to the proximity of designated bathing and shellfish waters; pipeline contents temperature effects; and impacts to Dissolved Oxygen and Phytoplankton as a result of elevated suspended sediment concentrations.	The potential impact pathways have been reviewed for consideration within volume 2, chapter 7: Marine Biodiversity. The potential impact on aquaculture receptors is assessed in section 10.11.
OPRED	Should trenching take place in the intertidal area, it is advised that bacterial release from sediments is assessed due to the potential proximity to designated bathing and shellfish waters.	The potential for bacteria release from sediments displaced due to trenching has been reviewed for consideration within volume 2, chapter 7: Marine Biodiversity.
OPRED	It is recommended that potential impacts of Electromagnetic Fields (EMFs) from the cables are scoped into the assessment for fish and shellfish receptors.	Embedded mitigation includes MM2 Suitable implementation and monitoring of Cable Protection and MM3 Development and adherence to a Cable Specification and Installation Plan post consent which will include cable burial where possible (in accordance with the specific policies set out in the North West Inshore and North West Offshore Coast Marine Plans (Defra, 2021)) and cable protection, as necessary. See volume 3, appendix E. The significance of this effect is considered to be negligible, and this impact remains scoped out of assessment.
OPRED	Section 3.4.1.1: Pipeline Contents Temperature Increase, the intention to undertake further studies to understand the effects of heat from the Proposed Development is noted. It is advised that the potential effects on fish receptors are also considered and that this impact is scoped into the assessment for fish and shellfish receptors.	The potential for temperature increase and effects of pipeline heat has been reviewed for consideration within volume 2, chapter 7: Marine Biodiversity.
OPRED	Section 3.5: Offshore Construction Phase - Offshore Power and Fibre Optic (FO) Cables. Clarification regarding the target cable burial depth is requested. It is advised that, if a minimum cable burial depth cannot be met due to ground condition, the cable should (generally) be protected by rock armouring in order to reduce the risk of navigational hazards.	Embedded mitigation includes MM2 Suitable implementation and monitoring of Cable Protection and MM3 Development and adherence to a Cable Specification and Installation Plan post consent which will include cable burial where possible (in accordance with the specific policies set out in the North West Inshore and North West Offshore Coast Marine Plans (Defra, 2021)) and cable protection, as necessary. See volume 3, appendix E. The locations of rock placement (where employed) will be communicated to the commercial fishing industry.

10.6 Methodology to Inform the Baseline

10.6.1 Data Sources

The data sources that have been collected and used to inform this commercial fisheries assessment are summarised in Table 10.3. As well as UK data sources, data has been sourced from European fisheries bodies. Relevant literature from a number of additional sources has also been reviewed and are referenced throughout as appropriate.

Table 10.3: Key Sources Of Commercial Fisheries Data

Source, Author, and Year	Summary	Coverage of the commercial fisheries study area
UK annual fisheries landings statistics Marine Management Organisation (MMO), 2011 to 2021	Fisheries landings data for registered fishing vessels landing to their home nation ports.	UK national dataset providing full coverage of the commercial fisheries study area.
UK Vessel Monitoring System (VMS) data MMO, 2016 to 2020	VMS data for fishing vessels greater than 15 m in length. Note that UK vessels ≥12 m in length have VMS on board, however, to date, the MMO provide amalgamated VMS datasets for ≥15 m vessels only. VMS data sourced from MMO displays the first sales value (£) of catches. Note that the most recent data has been presented in this Scoping Report, but that longer term datasets will be analysed within the ES.	UK national dataset providing full coverage of the commercial fisheries study area.
European Union (EU) annual fisheries landings statistics Scientific, Technical and Economic Committee for Fisheries (STECF), 2004 to 2016	Fisheries landings data for registered fishing vessels landing to their home nation ports.	European-wide dataset providing full coverage of the commercial fisheries study area.
EU VMS data ICES, 2016 to 2020	VMS data for fishing vessels greater than 12 m in 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 12 m 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.	European-wide dataset providing full coverage of the commercial fisheries study area.
Fishing vessel route density data European Maritime Safety Agency (EMSA), 2021	Fishing vessel route density, based on vessel Automatic Information System (AIS) positional data. AIS is required to be fitted on fishing vessels ≥15 m length. Note that the most recent data has been presented in this Scoping Report, but that longer term datasets will be analysed within the ES.	European-wide dataset providing full coverage of the commercial fisheries study area.
Key species stock assessments ICES, various publication dates	Assessments of the status of commercially targeted fish and shellfish stocks.	Varying spatial coverage, in most cases providing full coverage of the commercial fisheries study area.
ICES, 2019	Scallop dredge grounds in the Irish Sea mapped by ICES Working Group on Scallops	Irish Sea dataset providing full coverage of the commercial fisheries study area

Source, Author, and Year	Summary	Coverage of the commercial fisheries study area
FishMap Môn project, 2013	Fishing intensity for nine gear types in a defined project area off the north Wales coastline.	Welsh dataset providing partial coverage of the commercial fisheries study area.
Welsh Government, 2019	Fishing activity for mobile and static gear in Welsh waters.	Welsh dataset providing partial coverage of the commercial fisheries study area.
Defra, 2023	Marine planning tool to explore aquaculture production and strategic areas of sustainable aquaculture production.	English and Welsh dataset providing full coverage of the commercial fisheries study area.

10.6.2 Data Analysis

Landings statistics for UK registered vessels were obtained from the MMO with the following parameters: year; month; gear type; ICES rectangle; species; live weight (tonnes) and first sales value (£) across a six-year period (2016 to 2021); a longer period was analysed for queen scallop landings (2011 to 2021) to allow any cyclical trends to be identified. Landing statistics have been analysed through excel.

Landings data for all species are collected via the European Union (EU) logbooks scheme and recorded by ICES statistical rectangle and stored in the EU Data Collection Framework (DCF) database, accessible through the EU Joint Research Committee. Landings data has been collated for all EU Member States for the ICES statistical rectangle that overlap the commercial fisheries study area. Landing statistics were collated across five years (2012 to 2016). Landing statistics include all landings by that country's nationally registered vessels into all ports. The following parameters were examined: year; season (quarter); gear type; ICES rectangle; species; effort (hours fished); and live weight (tonnes).

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 ≥15 m registered to the UK, including all gear types. VMS data for UK vessels have been analysed for 2016 to 2020. VMS and other spatial data sources have been analysed through ArcMap v10.8.4.

10.6.3 Data Limitations

Limitations of landings data include the spatial size of ICES rectangles which can misrepresent actual activity across the Proposed Development and care is therefore required when interpreting the data. A further limitation of landings data is the potential under-reporting of landings associated with potting vessels, which may occur as a result of estimating catches (as opposed to accurate weighing) and not reporting catches that fall below the acceptable limit as defined within the UK Registration of Buyers and Sellers (i.e. when purchases of first sale fish direct from a fishing vessel are wholly for private consumption, and less than 30 kg is bought per day). 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, 2021). The RBS legislation is applicable to licenced fishing vessels of all lengths and requires name and PLN of the vessel which landed the fish to be recorded in relation to each purchase. For the 10 m and under sector, landing statistics are recorded on sales notes provided by the registered buyers (MMO, 2021). 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, 2021).

In addition to RBS sales notes data, the Catch App was implemented in early 2022 for under 10 m vessels registered in England and Wales. The Catch App requires vessel owners / skippers to submit catch records for under 10 m vessels operating in UK waters. Data from 2022 onwards is being incorporated into the MMO iFISH database to form a more robust and verified record of landings by the under 10 m fleet. This data is expected to be incorporated into the 2022 annual fisheries statistics, published in autumn 2023.

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 landings data is no longer available by ICES rectangle. Data at a scale of ICES division (i.e. the whole of the Irish Sea) is less useful to understand fishing activity specific to the area overlapping the study area.

Limitations of VMS data are primarily focused on the coverage being limited to vessels ≥15 m for MMO data. 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 does not include vessels typically operating in inshore areas (i.e. which typically comprises of vessels <15 m in length).

Data limitations have been managed by ensuring accurate interpretation of the data and clear understanding of its scope, together with cross-referencing between data sources. As data form only part of the evidence base, the limitations identified are not considered to significantly affect the certainty or reliability of the impact assessment.

10.6.4 Potential receptors

The fishery receptors identified that may experience likely significant effects for commercial fisheries are outlined in Table 10.4. These receptors have been identified based on desktop analysis of baseline data.

Table 10.4: Receptors Requiring Assessment For Commercial Fisheries

Fishery/fleet group	Receptors included within group
Potting fleet (i.e. vessels fishing with pots and traps)	Welsh and English vessels targeting whelk, brown crab, lobster, and common prawn
Passive netting fleet (i.e. vessels fishing with nets), including fixed and drift netting	Welsh and English vessels targeting mixed demersal species including bass, flounder, and thornback ray
Dredging fleet (i.e. vessels fishing with dredges)	English, Scottish, Northern Irish, and Welsh vessels targeting king scallop and queen scallop

10.7 Existing baseline description

This section presents the existing baseline for commercial fisheries, using the most recent datasets available at the time of writing (2012 to 2016 for EU DCF data; 2016 to 2021 for MMO data; 2016 to 2020 for MMO VMS data).

This section provides an overview of all landings from the commercial fisheries study area (i.e. ICES rectangles 35E6 and 36E6) followed by analysis on a fishery-by-fishery basis, where details on the nationality of vessels, species caught, and location of fishing activity is provided.

This section should be read in conjunction with volume 3, appendix M: Commercial Fisheries Technical Report, which provides an extended description of baseline conditions, including fishing gear and vessel characteristics, profiles of fishing activity on a country basis and spatial activity mapping of fishing activity across the study area.

10.7.1 Overview of landings data from the study area

An annual average value of £4.8 million was landed by all UK vessels for the years 2016 to 2021 from the study area ICES rectangles 35E6 and 36E6 (based on data from MMO, 2022). Data are presented for the annual (2016 to 2021) landed weight and value by UK vessels in Figure 10.2 and Figure 10.3 respectively, indicating that landings are dominated by shellfish species. A longer timeline of landings data is available in volume 3, appendix M for specific species that show cyclical trends in catches, specifically scallop species.

Landings data sourced from the EU DCF database indicates that the only non-UK fishery present in the study area is Irish vessels dredging for scallop and Belgian beam trawlers targeting sole and plaice. The data suggests that landings by Irish and Belgian vessels from the study area are small and predominately occur outside the 12 NM boundary and therefore outside the area of project physical work.

MMO landings data for ICES rectangles 36E6 and 36E5 indicates that landings are dominated by shellfish species, namely whelk *Buccinum undatum*, queen scallop *Aequipecten opercularis*, king scallop *Pecten maximus*, and lobster *Homarus gammarus*.

Landings by ICES rectangle and UK country are depicted in Figure 10.4, indicating that for 36E6, landings are predominately by Scottish and English vessels, and for 35E6 landings are predominately by Welsh and English vessels. that landings from the study area have historically been dominated by shellfish species. Landings for Scottish vessels peaked in 2016, associated with a peak in queen scallop landings. For English vessels, a peak is seen in 2019, associated with whelk landings. Local fleets and landings by each nation are described in more detail in more detail in volume 3, appendix M.

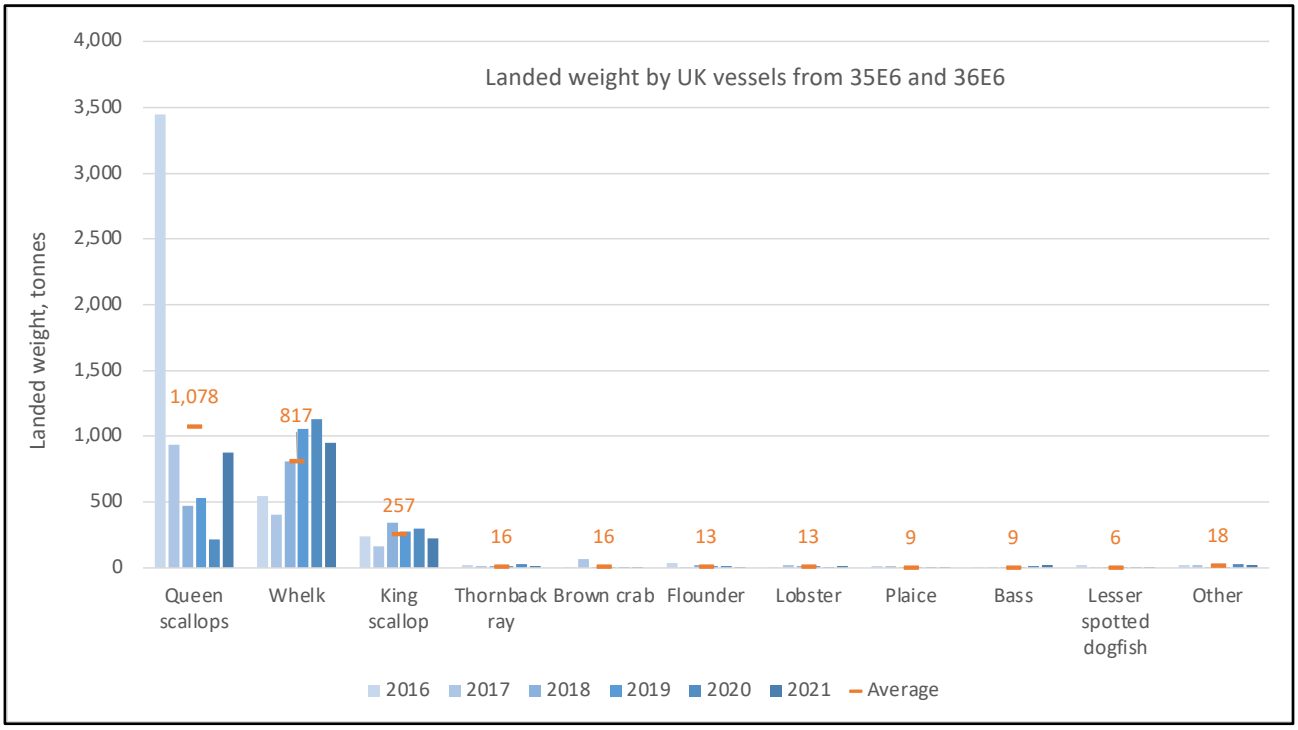

Figure 10.2: Key Species By Annual Landed Weight (Tonnes) (2016 To 2021) From The Commercial Fisheries Study Area (ICES Rectangles 35E6 And 36E6) (Data Source: MMO, 2022)

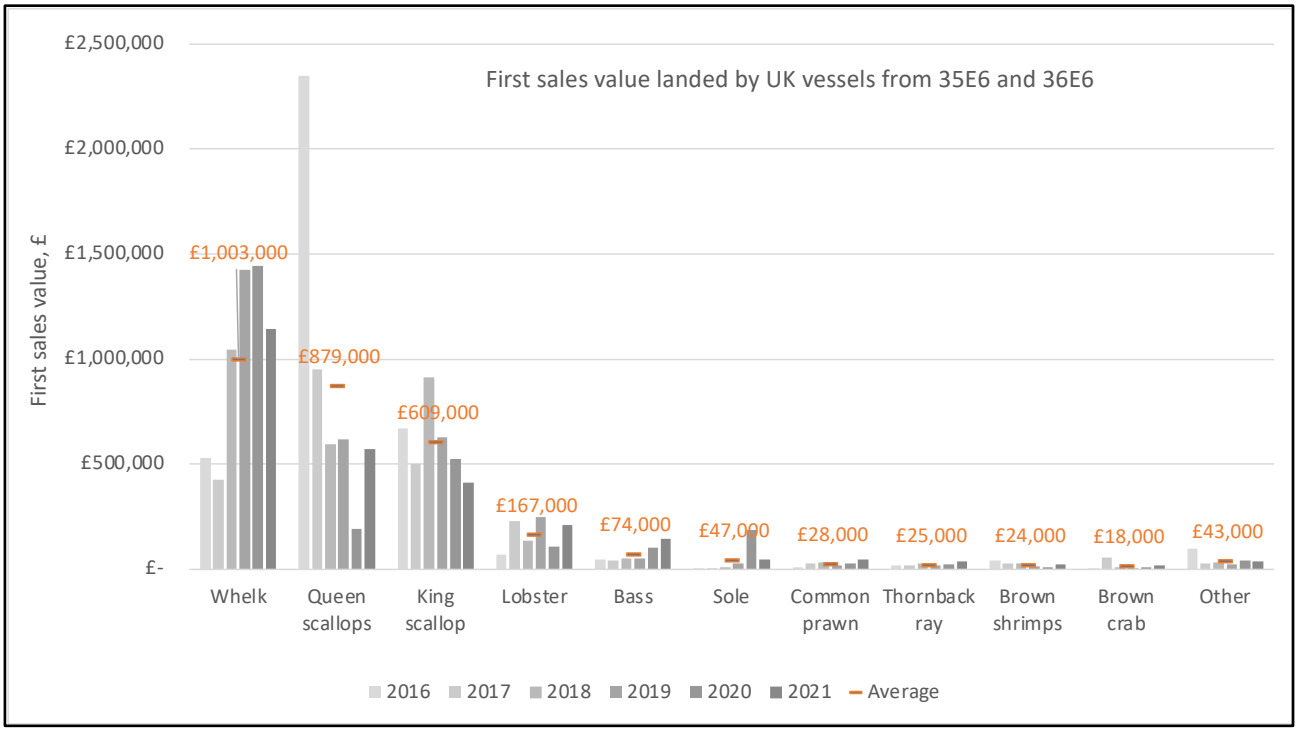

Figure 10.3: Key Species By Annual Landed Value (GBP) (2016 To 2021) From The Commercial Fisheries Study Area (ICES Rectangles 35E6 And 36E6) (Data Source: MMO, 2022)

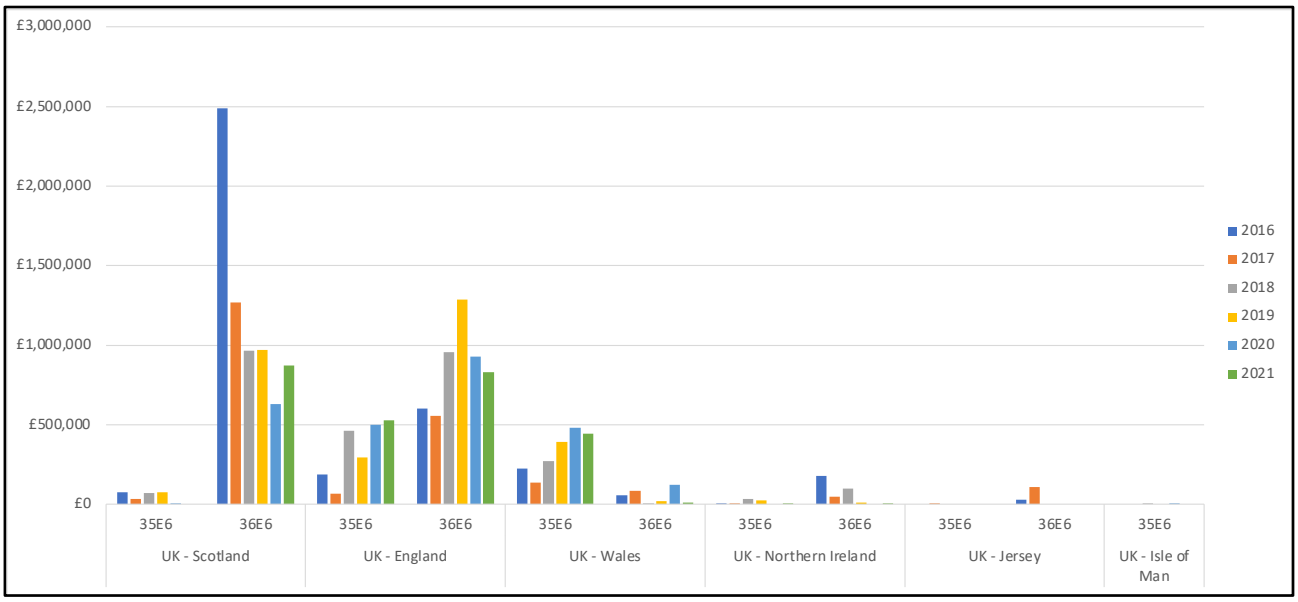

Figure 10.4: Annual Landed Value (GBP) 2010 To 2020 By Species Group From The Study Area (35E6 And 36E6) (MMO, 2021)

10.7.2 Potting fishery

In the commercial fisheries study area (35E6 and 36E6), landings by vessels using pots and traps are exclusively undertaken by the UK fleet, primarily by English and Welsh vessels (Figure 10.5). An average of 615 tonnes of whelk are landed annually from the study area, and whelk are also the most valuable species targeted by the potting fishery, with an annual average landed value of £770,000. The potting fishery also targets lobster, landing an average of 8 tonnes per year, crab *Cancer pagurus* landing 5 tonnes per year, and common prawn *Palaemon serratus* landing just over 1 tonne per year from the study area. The value of landings targeted by the potting fleet have increased across recent years, reflecting both an increase in the volume of shellfish species landed from the study area, and increases in shellfish prices.

Landings statistics indicate that the majority of landings from the study area are made by potting vessels over 10 m length. It is understood that the majority of potting vessels targeting whelk are over 10 m in length, which is corroborated by the landings' statistics. Vessels under 10 m deploying pots typically target lobster in the study area. VMS data showing activity by vessels ≥ 15 m length actively fishing using pots and traps is presented in volume 3, appendix M for 2016 to 2020 and indicates potting activity in the northern portion of the Development Area and in inshore areas, around the 6 NM boundary. The mapping also indicates static gear activity across the study area, outside of the Development Area and specifically in the northern portion of ICES rectangle 36E6.

Figure 10.5: Potting Fishery Landings Profile From The Commercial Fisheries Study Area (ICES Rectangles 35E6 And 36E6) (Data Source: MMO, 2022)

10.7.3 Dredge fishery

In the commercial fisheries study area landings by vessels using dredges are almost exclusively undertaken by the UK fleet, in this case comprised primarily of Scottish vessels over 10 m length, as well as landings by vessels registered to Northern Ireland, Isle of Man, England and Wales (Figure 10.6). The dredge fishery targets scallops – primarily king scallop but also lesser volumes of queen scallop – with minimal landings of other commercial species.

Annual landings by the dredge scallop fishery are highly variable, with lower catches from the study area from 2019 to 2021, compared with a relative peak in 2016, which had a total first sales value of £7 million. This variability reflects the somewhat cyclable nature of king and queen scallop fisheries, where certain grounds are more productive in certain years and are therefore targeted on a cyclable basis.

Scallop dredging is an activity which is generally engaged by larger (>10 m vessel length) vessels due to the engine capacity required to tow this heavy fishing gear. VMS data showing activity by vessels ≥ 15 m length actively fishing using dredge is presented in volume 3, appendix M for 2016 to 2020 and indicates significant activity within the western portion of the Development Area for all years analysed. Scallop grounds are widespread throughout much of the eastern Irish Sea, with the VMS data indicating distinct fishing grounds to the west and north-west of the Proposed Development.

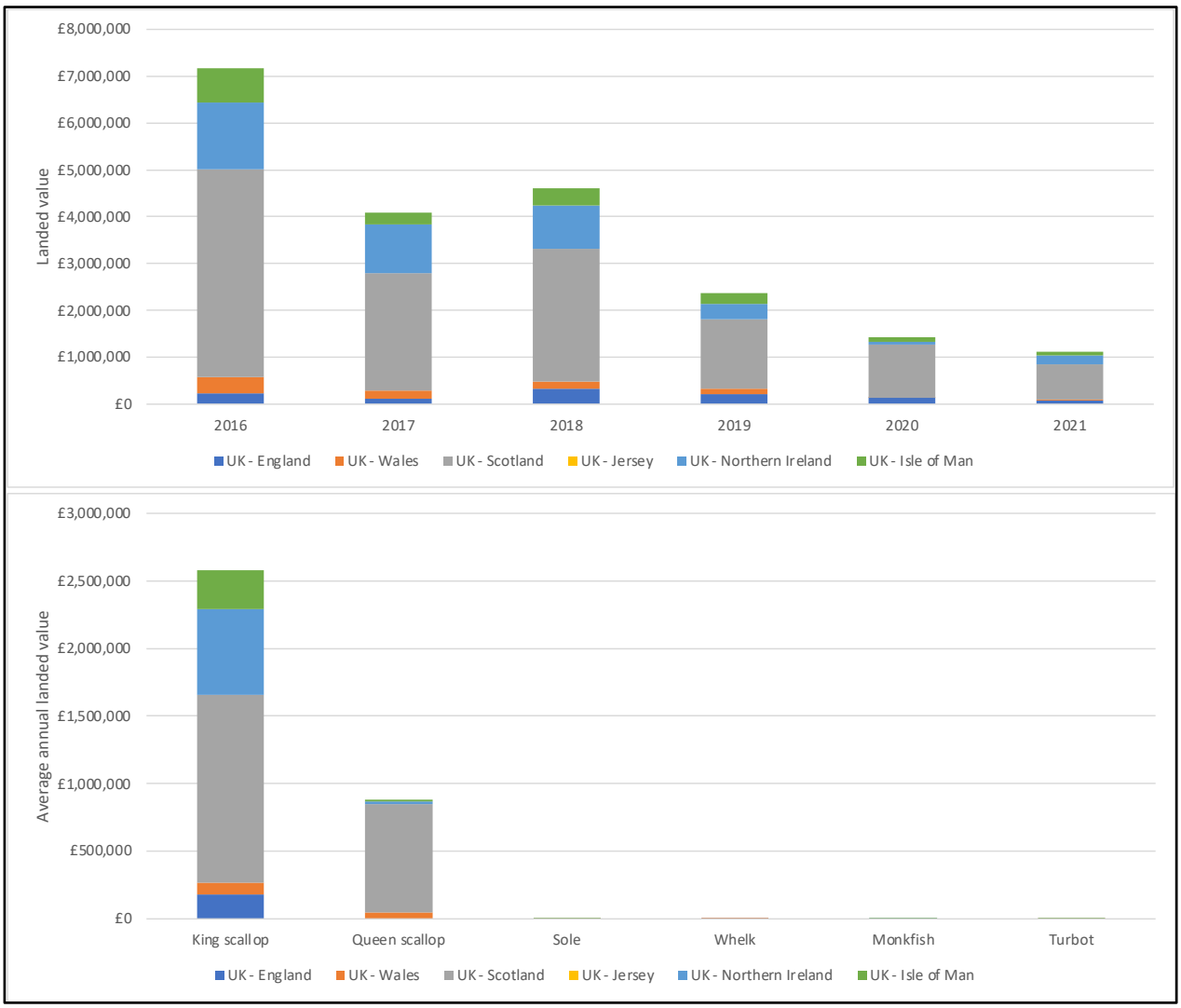

Figure 10.6: Dredge Fishery Landings Profile From The Commercial Fisheries Study Area (ICES Rectangles 35E6 And 36E6) (Data Source: MMO, 2022)

10.7.4 Otter trawl fishery

In the commercial fisheries study area landings by vessels using otter trawl are comprised primarily of Northern Irish and Manx vessels over 10 m length. The Northern Irish otter trawl fishery has targeted herring, likely by pelagic otter trawl, as well as demersal otter trawl for queen scallop, king scallop and nephrops (Figure 10.7). The demersal otter trawl fishery by Manx vessels targets queen scallop over sandy / muddy areas, using tickler chains to encourage queen scallops to swim up into the water column (out of the sediment) to enable capture within the trawl net.

Landings are relatively lower value that the dredge fishery, at an average annual first sales value of £170,000. VMS data corroborates this, with minimal activity within the area of project physical work (see volume 3, appendix M).

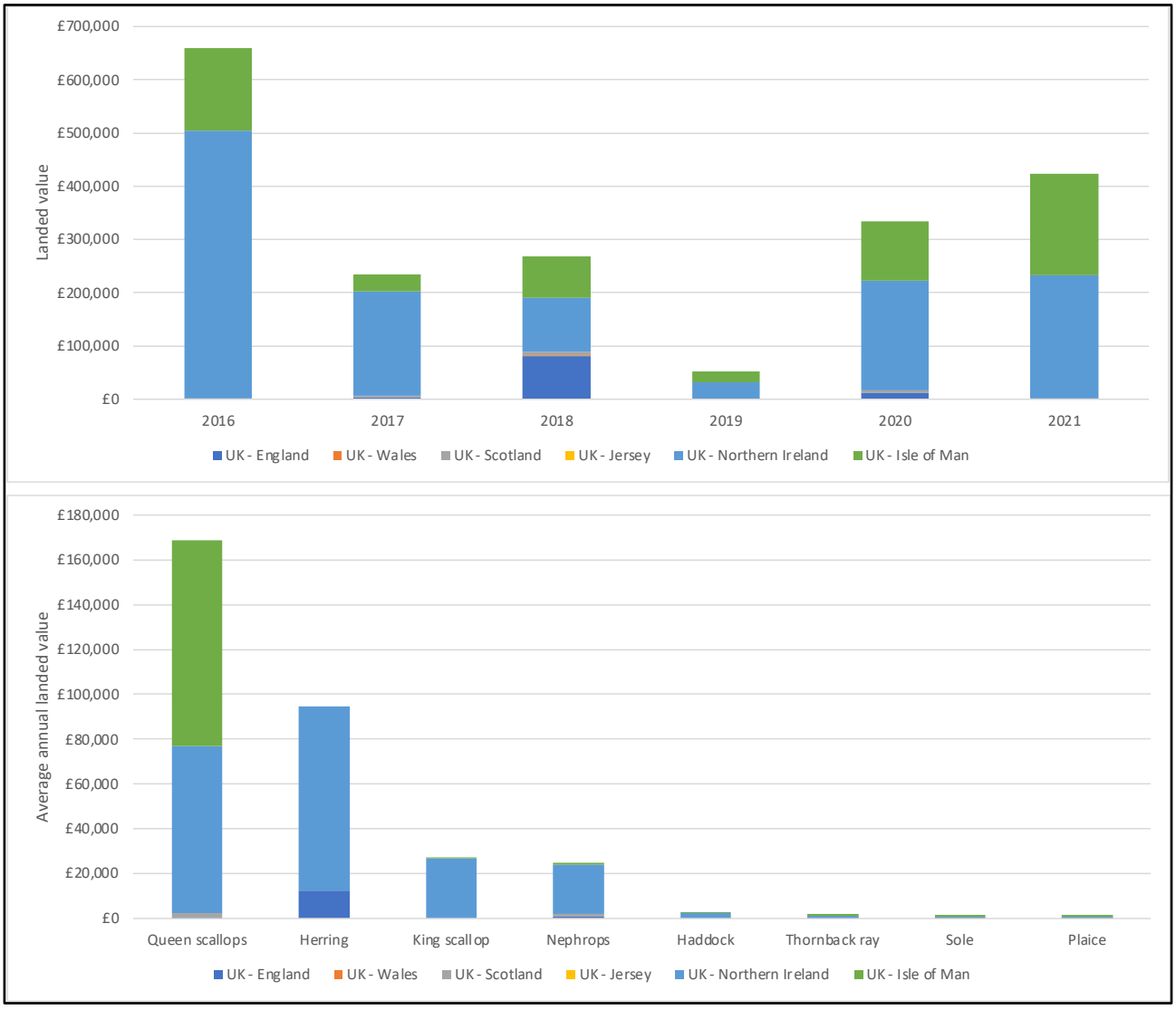

Figure 10.7: Otter Trawl Fishery Landings Profile From The Commercial Fisheries Study Area (ICES Rectangles 35E6 And 36E6) (Data Source: MMO, 2022)

10.7.5 Beam trawl fishery

In the commercial fisheries study area landings by vessels using beam trawl are comprised of English and Belgian vessels. Landings by The English fleet have been low from 2016 to 2018, but increased in 2020 and 2021 to an average of £130,000 in first sales value (Figure 10.8). The English beam trawlers travel from the south-west coast of England to target grounds that run along the 12 NM boundary for sole and plaice. The Belgian beam trawlers fish a similar area. Sole is the most value species caught by beam trawlers in this area, followed by thornback ray *Raja clavata*.

VMS data indicates activity within ICES rectangle 36E6, primarily to the north of the Proposed Development. Notable activity is seen within the Development Area by UK beam trawling vessels in 2020 (See volume 3 appendix M).

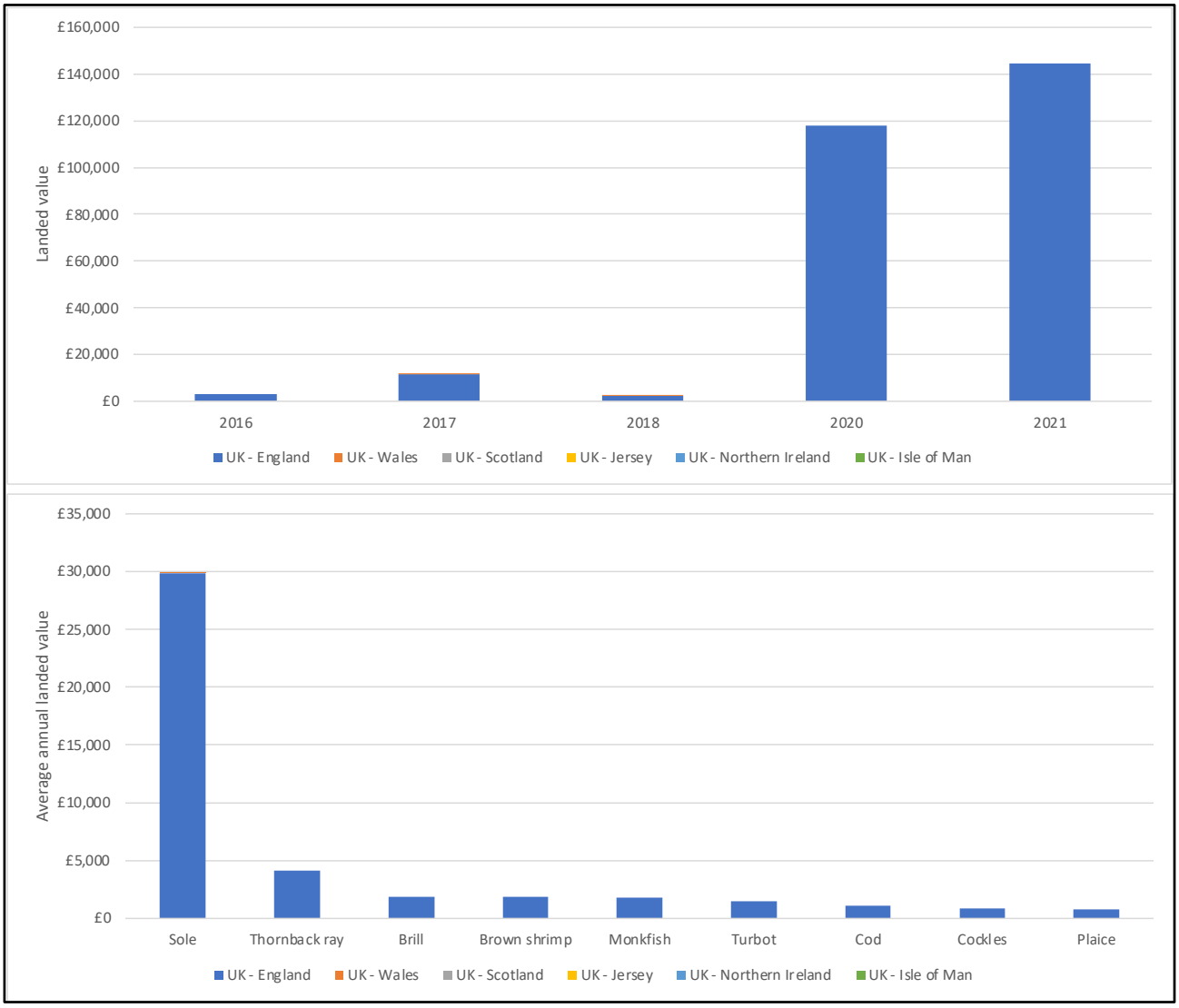

Figure 10.8: Beam Trawl Fishery Landings Profile From The Commercial Fisheries Study Area (ICES Rectangles 35E6 And 36E6) (Data Source: MMO, 2022)

10.7.6 Passive netting fishery

In the commercial fisheries study area, landings by vessels using fixed and drift nets are exclusively undertaken by the UK fleet, primarily by Welsh vessels (Figure 10.9), the majority of which are under 10 m length.

European sea bass *Dicentrarchus labrax* are the most valuable species landed from the study area by the passive netting fishery, with an annual average landed value of £29,000. An average of 1.3 tonnes of bass are landed annually from the study area, the majority of which are expected to have been caught close to shore. The passive netting fishery also targets thornback ray, landing an annual average of 4 tonnes, and flounder *Platichthys flesus,* landing an annual average of 6 tonnes.

Figure 10.9: Passive Netting Fishery Landings Profile From The Commercial Fisheries Study Area (ICES Rectangles 35E6 And 36E6) (Data Source: MMO, 2022)

10.7.7 Hook fishery

Based on MMO landing statistics, landings are made by gears using hooks, including handline, hook and line and long line gears. An average value of £17,000 is landed by gears using hooks. Primarily by English and Welsh vessels, under 10 m in length. The key species landed is bass, flounder and pollack. This fishery has developed since 2018, with a peak in value of £40,000 in 2021.

10.7.8 Aquaculture

Strategic areas of sustainable aquaculture production which have been identified for potential future aquaculture development overlap with the Commercial Fisheries Study Area, as shown in Figure 1.42 of volume 3, appendix M: Commercial Fisheries Technical Report. These strategic areas have been defined to take into account existing infrastructure and therefore avoid the infrastructure already *in situ* within the Proposed Development.

The strategic areas of sustainable aquaculture production support the implementation of the AQ-1 policies in the North West Inshore and North West Offshore Marine Plan and have been selected based on consideration of:

- Biological constraints; environmental conditions that influence growth of key species.
- Technical constraints; physical conditions that act as constraints on siting of aquaculture infrastructure.
- Planning constraints; other uses of the marine area.
- Additional considerations such as distance from shore.

The sustainable aquaculture production areas have been defined through consideration of the above criteria with the intention to identify areas in which conditions are most suitable for aquaculture, while minimising the potential for conflicts with other uses of the marine area.

Studying Figure 1.42 (of volume 3, appendix M), it is clear that the strategic aquaculture areas are adjacent to, but do not overlap any of the Proposed Development infrastructure.

Shellfish classification zones and bivalve classification areas are further described in volume 3, appendix M: Commercial Fisheries Technical Report, and do not overlap with the Proposed Development infrastructure.

10.7.9 Evolution of the baseline

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 changes to the export market due to the UK exit from the EU and the 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 development of Fisheries Management Plans for crab and lobster, whelk, king scallop and bass, changes in Inshore Fisheries and Conservation Authority (IFCA) Byelaws, new management for specific species where overexploitation has been identified, or changes in Total Allowable Catches 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 sustainably of fish and shellfish products, such as the Marine Stewardship Council (MSC) certification, industry is adapting to improve fisheries management and wider environmental impacts.

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 six years of key baseline data, and up to 10 years for certain species (see volume 3, appendix M). 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 all potential changes in commercial fisheries activity resulting from the withdrawal of the UK from the EU.

Following the withdrawal of the UK from the EU, the UK and the EU have agreed to a Trade and Cooperation Agreement (TCA), applicable on a provisional basis from 1 January 2021. The TCA sets out fisheries rights and confirms that from 1 January 2021 and during a transition period until 30 June 2026, UK and EU vessels will continue to access respective Exclusive Economic Zones (EEZs, 12 to 200 NM) to fish. In this period, EU vessels will also be able to fish in specified parts of UK waters between 6 to 12 NM.

25% of the EU's fisheries quota in UK waters will be transferred to the UK over the five-year transition period; the first 15% of this has already been transferred and distributed across the four nations of the UK with Wales receiving uplift for a variety of demersal and pelagic quota species (Defra, 2021). After the five-year transition there will be annual discussions on fisheries opportunities. Either party will be able to impose tariffs on fisheries where one side reduces or withdraws access to its waters without agreement. A party can suspend access to waters or other trade provisions where the other party is in breach of the fisheries provisions.

Across the wider Irish Sea it is not yet understood to what extent EU vessels currently fishing in the region will lose access to these grounds at a future point. In the Proposed Development study area, where there is limited activity by non-UK fishing vessels, it is also not fully clear how a future baseline scenario may evolve as a result of Brexit. Given the uplift in Welsh quota described above, it is possible that Welsh vessels will seek to exploit additional quota-species opportunities, including potential for future growth in trawling opportunities, though it is not clear to what extent this may become relevant to the study area where fleets primarily target non-quota shellfish species; without quota holdings, these vessels would be unlikely to be impacted by quota changes. Changes in access to waters are also unlikely to impact local fishing fleets.

10.8 Key Parameters for Assessment

10.8.1 Maximum Design Scenario

This section identifies the Maximum Design Scenario (MDS) upon which the commercial fisheries impact assessment is based. The assessment of the MDS for each receptor establishes the maximum potential adverse impact and as a result impacts of greater adverse significance would not arise should any other development scenario to that assessed within this Chapter be taken forward in the final scheme design.

The design parameters that have been identified to be relevant to commercial fisheries are outlined in Table 10.5.

Table 10.5: Maximum Design Scenario For Commercial Fisheries

Potential Effect	Maximum Adverse Scenario Assessed	Justification
Construction		
Loss or restricted access to fishing grounds	**Construction duration**: 2 years **Safety Zones**: • 500 m Safety Zones around construction activities = 0.79 km^2 per structure under construction at any one time. • Roaming 500 m safe passing distance for mobile installation vessels. **Eni Development Area** • 600.6 km^2 **Area of Project Physical Work** • 68.62 km^2 **Construction and/or repurpose of following infrastructure:** **Offshore platforms (OP)** • Douglas OP: topside length: 76.7 m and width: 45.6 m; • Lennox Wellhead OP: topside length: 33.9 m and width: 29.6 m; • Hamilton Main Wellhead OP: topside length: 27.8 m and width: 23.9 m; • Hamilton North Wellhead OP: topside length: 27.8 m and width: 23.9 m. **Wells** • CO_2 Injection Wells; • Monitoring Wells; and • Sentinel Wells. **Point of Ayr (PoA) Terminal-Douglas cable** • TOTAL: 34 km • 10% cable protection • Number of crossings: 8, each of 200 m length	This represents the maximum duration and extent of fishing exclusion throughout the construction phase and hence the greatest potential to restrict access to fishing grounds. The construction footprint comprises the full permanent seabed area of structures, cable crossings and cable protection. The impact area also incorporates exclusion zones around major activities. It is important to note that the temporal aspect of temporary works will not apply in full throughout the 2-year offshore construction phase, as activities will be completed sequentially.

Potential Effect	Maximum Adverse Scenario Assessed	Justification
	• Cable protection and crossing dimensions: height: 1 m; width: 5 m. • Material: freshly quarried rock and concrete mattresses • Burial depth: min: 2 m; max: 3 m • Burial technique: preferred method is plough. **Inter-OP Cables** • Douglas to Hamilton (12 km); • Douglas to Hamilton North (15 km); • Douglas to Lennox (35 km). • TOTAL: 62 km • Burial depth: min: 2 m; max: 3 m • Burial technique: preferred method is plough. • No cable protection anticipated. • Number of crossings: up to 10, each of 200 m length; height: 1 m; width: 5 m • Material: freshly quarried rock and concrete mattresses **Existing pipelines being reutilised and requalified.** • PL1030 (32.12 km) - Existing 20” sales gas pipeline between PoA and the Douglas OP; • PL 1039 (11.46 km) - Existing 20” gas pipeline between Douglas OP and Hamilton Main OP; • PL 1035 (32.05 km)- Existing 16” oil pipeline between Douglas OP and Lennox OP; • PL 1036A (31.58 km) - Existing 12” gas pipeline between Douglas OP and Lennox OP; and • PL 1041 (14.56 km)- Existing 14” gas pipeline between Douglas Process OP and Hamilton North OP. TOTAL: 121.77 km	
Impacts on commercially valuable fish and shellfish species/resources	See fish and shellfish ecology maximum design scenario presented in volume 2, chapter 7: Marine Biodiversity.	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

Potential Effect	Maximum Adverse Scenario Assessed	Justification
		commercially important species as considered in the maximum design scenario for the fish and shellfish chapter, rather than any one impact in particular.
Interference with fishing activity	**OPs and wells** • Maximum number of return trips for OPs and wells: 177 • Maximum number of vessels on site at any time: 23 **Cables and pipelines** • Maximum number of return trips for support vessels per year: 14 • Maximum number of vessels on site at any time: 17	This represents the highest level of construction vessel round trips. The maximum number of vessel transits and the maximum duration of the construction would result in the greatest potential for interference.
Temporary increases in steaming distances to fishing grounds	As for 'Loss or restricted access to fishing grounds' (see above).	This represents the maximum duration and extent of fishing exclusion throughout the construction phase and hence the greatest potential for additional steaming to alternative grounds.
Supply chain opportunities for local fishing vessels	As for 'Loss or restricted access to fishing grounds' (see above).	
Operation and maintenance		
Loss or restricted access to fishing grounds	**Safety Zones:** • 500 m Safety Zones around Ops = 0.79 km^2 per structure. • Temporary 500 m Safety Zones around infrastructure undergoing major maintenance. • 50 m radius pipeline corridor. **Infrastructure:** **Offshore platforms (OP)** • Douglas OP: topside length: 76.7 m and width: 45.6 m; • Lennox Wellhead OP: topside length: 33.9 m and width: 29.6 m; • Hamilton Main Wellhead OP: topside length: 27.8 m and width: 23.9 m; • Hamilton North Wellhead OP: topside length: 27.8 m and width: 23.9 m. **Wells** • CO_2 Injection Wells;	This 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 operational and temporary safety zones. The assessment assumes that fishing will resume within the Development Area where possible, with the exception of operational safety zones and temporary safety zones around infrastructure undergoing major maintenance or replacement.

Potential Effect	Maximum Adverse Scenario Assessed	Justification
	• Monitoring Wells; and • Sentinel Wells. **Point of Ayr (PoA) Terminal-Douglas cable** • TOTAL: 34 km buried with 10% cable protection and 8 crossings using freshly quarried rock and concrete mattresses **Inter-OP Cables** • TOTAL: 62 km buried with no cable protection and 10 crossings using freshly quarried rock and concrete mattresses **Maintenance procedures including:** **Cables and pipelines** • Inspections of the cable and pipelines and any cable protection, including at their entry into J-tubes on offshore structures. • Survey of seabed and cable protection (if present) • Repair and replacement of cable section. • Reburial of exposed cable section. **OP and foundations** • Inspections of foundations, above and below sea level. • Survey of seabed and assets. • Removal of marine growth from foundations, transition pieces, or access ladders. • Remove and replace anodes required for corrosion protection. • Application of paint or other coatings to protect the foundations from corrosion (internal/external), including surface preparation. • Removal and replacement of ancillary structures (e.g. access ladders and boat landings). • Modifications to/ replacement of J-tubes e.g. during inter-OP cable repair works. • Operational design life of 25 years	

Potential Effect	Maximum Adverse Scenario Assessed	Justification
Impacts on commercially valuable fish and shellfish species/resources	See fish and shellfish ecology maximum design scenario presented in Volume 2, Chapter 6.	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 fish and shellfish chapter, rather than any one impact in particular.
Interference with fishing activity	**Vessel activity:** • Total Operations and Maintenance (O&M) Vessel Movements (Return Trips) (TOTAL per year): 30 • Total O&M Vessel Numbers (max on site at any one time): 4	The maximum number of turbines and associated infrastructure will lead to the highest level of operation and maintenance activities and therefore highest level of operation and maintenance vessel round trips.
Temporary increases in steaming distances to fishing grounds	As for 'Loss or restricted access to fishing grounds' (see above).	This 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 grounds.
Loss or damage to fishing gear due to snagging gear on Proposed Development infrastructure	As for 'Loss or restricted access to fishing grounds' (see above).	This represents the maximum potential for interactions between infrastructure and fishing gear.
Supply chain opportunities for local fishing vessels	As for 'Loss or restricted access to fishing grounds' (see above).	
Decommissioning		
Loss or restricted access to fishing grounds	In the absence of detailed methodologies and schedules, decommissioning works and associated implications for commercial fisheries are considered analogous with those assessed for the construction phase.	As per construction
Impacts on commercially valuable fish and shellfish species/resources		
Interference with fishing activity		
Temporary increases in steaming distances to fishing grounds		
Supply chain opportunities for local fishing vessels		

10.8.2 Impacts scoped out of the Assessment

On the basis of the baseline environment and the Proposed Development Description outlined in chapter 3 of the Offshore ES, two impacts are proposed to be scoped out of the assessment for Commercial Fisheries and Aquaculture. This was either agreed with key stakeholders through consultation as discussed in chapter 5, or otherwise, the impact was proposed to be scoped out in the HyNet Carbon Dioxide transportation and Storage Project - Offshore Scoping Report (Eni, 2022) and no concerns were raised by key consultees. These impacts are outlined, together with a justification for scoping it out, in Table 10.6.

Table 10.6: Impacts Scoped Out Of The Assessment For Commercial Fisheries And Aquaculture (Tick Confirms The Impact Is Scoped Out)

Potential Impact	Phase			Justification
	C	O&M	D	
Displacement of fishing activity into other areas	✓	✓	✓	**All phase** Given that Liverpool Bay has historically been a site for offshore oil and gas, the displacement of fishing activities into other surrounding areas is unlikely. The Proposed Development will utilise pre-existing infrastructure and essentially turn the oil and gas OPs into a novel Carbon Capture and Storage (CCS) site, with little change to the surrounding marine environment. Where new infrastructure is being installed, it is being done so either within the existing operational footprint, or in proximity to the alignment of existing linear infrastructure.
Long-term increased steaming distances to fishing grounds during operation and maintenance	-	✓	-	**Operation and maintenance phase** Following construction of the Proposed Development, fishing vessels will be able to transit through and around the site as they have done so in the past. The presence of the CCS infrastructure and the associated development area should not have a direct effect on steaming distances to/from adjacent fishing grounds in the area.

10.9 Methodology for Assessment of Effects

The assessment methodology for commercial fisheries is consistent with the assessment methodology used for the assessment of likely significant environmental effects of the Proposed Development as set out in volume 1, chapter 5: Environmental Impact Assessment Methodology.

The method for determining the significance of effects is a two-stage process that involves defining the magnitude of the impacts and the sensitivity of the receptors. This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the sensitivity of receptors.

10.9.1 Magnitude

In assessing the magnitude of the impact, the value and vulnerability of the receptor, i.e. the fishing fleet under assessment, together with the reversibility of the impact, are considered. Due to the range in scale, value (in terms of both landings and income/profit) and operational practises, within the commercial fishing fleets assessed, specific economic criteria were not set for defining value within the categories of high, medium, or low. Instead, these classifications were based on judgement informed by the baseline characterisation. The definitions employed in assigning the magnitude of change are provided in Table 10.7.

Table 10.7: Magnitude Of Change Definitions

Magnitude	Definition
High	**Adverse** Impact is of long-term duration (e.g. greater than 8 years duration) and/or is of extended physical extent; and Impact is expected to result in one or more of the following: • substantial loss of target fish or shellfish biological resource (e.g. loss of substantial proportion of resource within commercial fisheries study area); and • substantial loss of ability to carry on fishing activities (e.g. substantial proportion of effort within commercial fisheries study area).
	Beneficial Impact is expected to result in one or more of the following: • large scale or major improvement of resource quality, measurable against biomass reference points; and • extensive restoration or enhancement of habitats supporting commercial fisheries resources.
Medium	**Adverse** Impact is of medium-term duration (e.g. less than 8 years) and/or is of moderate physical extent; and Impact is expected to result in one or more of the following: • partial loss of target fish or shellfish biological resource (e.g. moderate loss of resource within commercial fisheries study area); and • partial loss of ability to carry on fishing activities (e.g. moderate reduction of fishing effort within commercial fisheries study area).
	Beneficial Impact is expected to result in one or more of the following: • moderate improvement of resource quality; and • moderate restoration or enhancement of habitats supporting commercial fisheries resources.
Low	**Adverse** Impact is of short-term duration (e.g. less than 2 to 3 years) and/or is of limited physical extent; and Impact is expected to result in one or more of the following: • minor loss of target fish or shellfish biological resource (e.g. minor loss of resource within commercial fisheries study area); and • minor loss of ability to carry on fishing activities (e.g. minor reduction of fishing effort within commercial fisheries study area).
	Beneficial Impact is expected to result in one or more of the following: • minor benefit to or minor improvement of resource quality; and • minor restoration or enhancement of habitats supporting commercial fisheries resources.
Negligible	**Adverse** Impact is of very short-term duration (e.g. less than 1 year) and/or physical extent of impact is negligible; and Impact is expected to result in one or more of the following: • slight loss of target fish or shellfish biological resource (e.g. slight loss of resource within commercial fisheries study area); and • slight loss of ability to carry on fishing activities (e.g. slight loss of fishing effort within commercial fisheries study area).
	Beneficial Impact is expected to result in one or more of the following: • very minor benefit to or very minor improvement of resource quality; and • very minor restoration or enhancement of habitats supporting commercial fisheries resources.

10.9.2 Sensitivity

In assessing the sensitivity of the receptor, the operational range of the fishing fleets, together with the availability of alternative fishing grounds are considered. The definitions employed in assigning receptor sensitivity are provided in Table 10.8.

Table 10.8: Sensitivity Of Receptor To Change

Sensitivity	Definition
High	Receptor is highly vulnerable to impacts that may arise from the Proposed Development and recoverability is long term or not possible. And/or: No alternative fishing grounds are available.
Medium	Receptor is generally vulnerable to impacts that may arise from the Proposed Development and recoverability is slow and/or costly. And/or: Low levels of alternative fishing grounds are available and/or fishing fleet has low operational range.
Low	Receptor is somewhat vulnerable to impacts that may arise from the Proposed Development and has moderate levels of recoverability. And/or: Moderate levels of alternative fishing grounds are available and/or fishing fleet has moderate operational range.
Negligible	Receptor is not generally vulnerable to impacts that may arise from the Proposed Development 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.

10.9.3 Significance

The significance of the effect upon commercial fisheries is determined by correlating the magnitude of the impact and the sensitivity of the receptor. The method employed for this assessment is presented in Table 10.9.

Table 10.9: Matrix To Determine Impact Significance

		Sensitivity of Receptor / Receiving Environment to Change			
		High	**Medium**	**Low**	**Negligible**
Magnitude of Change	**High**	Major	Major to Moderate	Moderate	Negligible
	Medium	Major to Moderate	Moderate	Minor to Moderate	Negligible
	Low	Moderate	Minor to Moderate	Minor	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

10.10 Embedded Mitigation

A number of embedded mitigation measures have been included to reduce the potential for impacts on commercial fisheries. These embedded mitigation measures will evolve over the development process and in response to consultation, as appropriate.

Mitigation measures that were identified and adopted as part of the evolution of the Proposed Development design (embedded into the Proposed Development design) and that are relevant to commercial fisheries are listed in Table 10.10. The assessment of impacts takes account of these measures.

Table 10.10: Embedded Mitigation Relating To Commercial Fisheries

Parameter	Mitigation Measures Embedded into the Proposed Development Design
Fisheries liaison	The Applicant is committed to ongoing liaison with fishermen throughout all stages of the Proposed Development, including the following: • Appointment of a company FLO and/or Fishing Industry Representatives (FIRs) to maintain effective communications between the Applicant and fishermen. • Appropriate liaison with relevant fishing interests to ensure that they are fully informed of development planning and any offshore activities and works. • Timely issue of notifications including Notice to Mariners (NtMs), Kingfisher Bulletin notifications and other navigational warnings to the fishing community to provide advance warning of Proposed Development activities and associated Safety Zones and advisory safety distances. • Development, prior to construction, of a Fisheries Liaison and Coexistence Plan (FLCP), setting out in detail the planned approach to fisheries liaison and means of delivering any other relevant mitigation measures.
Marking and lighting	The Applicant is committed to marking and lighting the Proposed Development in accordance with relevant industry guidance and as advised by relevant stakeholders including the Maritime and Coastguard Agency (MCA), Civil Aviation Authority (CAA) and Trinity House. The Applicant will also ensure the Proposed Development is adequately marked on nautical charts. It is expected that a lighting and marking plan will be secured within a Marine Licence condition.
Dropped objects	A dropped objects plan will be developed for reporting and recovery of dropped objects where they pose a potential hazard to other marine users and is anticipated to be secured within a Marine Licence condition.
Cable burial	The Applicant is committed to: • Suitable implementation and monitoring of cable protection informed by a Cable Burial Risk Assessment (CBRA). The cable will only be protected using external protection (e.g. rock berms) at third-party crossings. This minimises the risk of underwater allision with cable protection, anchor or fishing gear interaction with subsea cables and interference with magnetic position fixing equipment. • Development and adherence to a Cable Specification and Installation Plan (CSIP) post consent which will include cable burial where possible (in accordance with the specific policies set out in the North West Inshore and North West Offshore Coast Marine Plans (Defra, 2021)) and cable protection, as necessary. The CSIP will set out appropriate cable burial depth in accordance with industry good practice, minimising the risk of cable exposure. The CSIP will also ensure that cable crossings are appropriately designed to mitigate environmental effects, these crossings will be agreed with relevant parties in advance of CSIP submission. The CSIP will include a detailed Cable Burial Risk Assessment (CBRA) to enable informed judgements regarding burial depth to maximise the chance of cables remaining buried whilst limiting the amount of sediment disturbance to that which is necessary. Measures will seek to reduce the amount of EMF which benthic and fish and shellfish receptors are exposed to during the operations and maintenance phase by increasing the distance between the seabed surface and the surface of the cables.

10.11 Assessment of Significance

The principal receptors with respect to commercial fisheries are the fishing fleets operating in the Eni Development Area and commercial fisheries study area, defined as: country of vessel registration; fishing gear;

and target species. The specific features defined within these receptors as requiring further assessment are listed in Table 10.11.

Table 10.11: Commercial Fisheries Receptors Relevant To The Proposed Development

Receptor group (National fishing fleet)	Receptor (fishing fleet/gear)	Relevant features (main target species)	Operational area
UK and Crown Dependencies	Potting	Whelk, lobster, and brown crab	Operate in the Eni Development Area and commercial fisheries study area
	Dredge	Scallop and queen scallop	
	Fixed nets	Bass, thornback ray and flounder	
	Gear with hooks	Bass, pollack, mackerel	
	Beam trawl	Sole, thornback ray, plaice, and brown shrimp	
	Demersal otter trawl	Nephrops, thornback ray and plaice	Operate in the commercial fisheries study area
Irish	Dredge	Scallop and queen scallop	
Belgian	Beam trawl	Sole and thornback ray	
UK	Aquaculture	Strategic areas of aquaculture production and shellfish classified waters	The Eni Development Area and commercial fisheries study area

The potential impacts being assessed for the commercial fisheries receptors are outlined in Table 10.12 for the different phases of the Proposed Development: construction, operation and maintenance and decommissioning. These impacts align with those listed in the maximum design scenario (Table 10.5).

Table 10.12: Potential Impact Being Assessed For Commercial Fisheries

Potential impact	Phase		
	C	O&M	D
Loss or restricted access to fishing grounds	✓	✓	✓
Impacts on commercially valuable fish and shellfish species/resources	✓	✓	✓
Interference with fishing activity	✓	✓	✓
Temporary increases in steaming distances to fishing grounds	✓	✓	✓
Supply chain opportunities for local fishing vessels	✓	✓	✓
Loss or damage to fishing gear due to snagging gear on Proposed Development infrastructure		✓	

10.11.1 Loss or restricted access to fishing grounds

10.11.1.1 Construction

During construction of the Proposed Development, commercial fisheries will be prevented from fishing where construction and repurpose activities are taking place. In addition, Safety Zones of 500 m diameter will be sought around infrastructure undergoing construction/repurpose activities and a roaming 500 m safe passing

distance will be recommended for mobile installation vessels. The total offshore construction duration will be up to two years, with a number/range of construction activities being undertaken simultaneously across the Proposed Development as described in Table 10.5. The assessment assumes that fishing would not be restricted from activities within the entirety of the Eni Development Area (600 km^2) at any one time. The assessment assumes that fishing access restrictions would be specific to the area of project physical work (68.6 km^2) plus Safety Zones and roaming safe passing distances.

Magnitude

This impact will lead to a localised loss of access to fishing grounds and the fish and shellfish resources within these grounds for a range of fishing opportunities during the period of construction, which will directly affect fleets over a short-term duration (i.e. less than 5 years). The impact is predicted to be intermittent with localised exclusion surrounding construction activities.

The impact is of relevance to national fishing fleets and is described below on a fleet-by-fleet basis.

UK potting fishery: the UK potting fleet targets whelk and other shellfish species across a wide area from inshore grounds extending out into and beyond the Eni development area and commercial fisheries study area. VMS data indicates that vessels ≥15 m length, understood to be primarily targeting whelk, are active in the windfarm site and across extensive grounds to the north and north-west of the Proposed Development (see Figures 1.22 and 1.23 in volume 3, appendix M). Of note, VMS data for 2020 indicates an important area for UK potting vessels ≥15 m in the inshore area from approximately 3 to 6 NM and overlapping with the proposed new cable infrastructure.

An average annual first sales value of just over £1.2 million landings is taken from the commercial fisheries study area by UK potting vessels, predominantly made up of whelk (82% by value). Noting that the project area of physical work overlaps with approximately 1.43% of the commercial fisheries study area (35E6 and 36E6), and the Development Area overlaps with 12.5%; this equates to a pro-rata value of approximately £17,000 for the physical works area and £152,000 for the Development Area (based on uniform landings across the entire study area). While such a simplistic calculation brings higher level of uncertainty to the resulting figure, it does demonstrate the scale of the opportunity to fishing interests in the study area. During construction, potting vessels will be required to remove pots from areas under construction and either relocate or bring to shore depending on available grounds and fishing preferences. Potting fishermen will therefore experience loss of earnings for the time taken to relocate gear, and 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 unlikely that 100% of pots deployed by a single vessel will be impacted at any one time, it is understood that in this area specific potting grounds are 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. Furthermore, the value of the fishery described above is relative to the number of fishing businesses active in the area i.e. the total is split across relatively few fishing vessel owner businesses. Overall, the impact during construction is predicted to be of short-term duration, directly affecting a medium-value fishery and the magnitude is considered to be medium adverse for potting fisheries.

UK passive netting fishery: the UK passive netting fleet targets bass, thornback ray and variety of other demersal species using fixed nets. An average annual first sales value of ~£74,000 landings is taken specifically within the study area by English netting vessels. Limited spatial data is available for netting activity, though the majority of passive netting vessels are under 10 m length and expected to predominantly operate in inshore waters, from 0 to 12 NM. The pro-rata calculation relates to £1,000 from the area of physical work and £9,000 from the Development Area. Overall, the impact during construction is predicted to be of short-term duration, to directly affect the fishery which has a low value within the local study area and therefore, the magnitude is considered to be low adverse.

UK gear with hooks fishery: (including handline, gears with hooks and longline, where catch is sold for taxable profit) UK vessels deploying gear with hooks commercially target bass, with an average annual first

sales value of ~£40,000 landings is taken specifically within the study area. The pro-rata calculation relates to £500 from the area of physical work and £5,000 from the Development Area. Limited spatial data is available for this activity, though the majority of vessels deploying hooks are under 10 m length and expected to predominantly operate in inshore waters, from 0 to 12 NM. Overall, the impact during construction is predicted to be of short-term duration, to directly affect the fishery which has a low-medium value within the study area and therefore, the magnitude is considered to be low adverse.

UK dredge fishery: the UK dredging fleet target scallop and queen scallop across a relatively wide area offshore (outside 12 NM), and inshore (from 6 to 12 NM). An average annual first sales value of ~£1.5 million landings is taken specifically within the study area by UK dredging vessels. The pro-rata calculation relates to £20,000 from the area of physical work and £186,000 from the Development Area. VMS data from 2016 to 2020 consistently indicate dredging activity within the western section of the Development Area, between 6 to 12 NM, though the same data indicates that scallop grounds to the north-west of the Proposed Development are highly important to this fleet. Overall, the impact during construction is predicted to be of short-term duration, directly affecting a medium-value fishery in the regional scale, but a relatively low-value fishery within area of physical work and the magnitude is considered to be low adverse for UK dredge fisheries.

Irish dredge fishery: EU VMS data and ICES Scallop Working Group mapping indicate that Irish vessels do not routinely operate within or adjacent to the Proposed Development. Overall, the impact during construction is predicted to be of short-term duration, to directly affect the fishery which has a low value within the study area and therefore, the magnitude is considered to be low adverse for the Irish dredge fishery.

UK demersal otter trawl: activity for this fleet is very low in the study area (35E6 and 36E6), with annual landings of approximately £4,000 from the study area and no fishing visible within the Development Area for ≥12m, evidenced by VMS data (see Figure 1.24 in volume 3, appendix M). Areas with low levels of activity from demersal otter trawlers are noticed to the north and west of the Development Area, well outside the Proposed Development boundaries. Overall, the impact during construction is predicted to be of short-term duration, to directly affect the fishery which has a low value within the local study area and therefore, the magnitude is considered to be low adverse.

UK beam trawl: some activity for this fleet is noticed across the study area, with annual landings of £68,000 from the study area and UK beam trawlers from the south-west of England known to be entering the region and fishing between the 6 and 12 NM boundaries to target sole. This is evidenced by UK VMS data for 2020, which indicates activity from UK beam trawlers in the centre of the Development Area (see Figure 1.26 in volume 3, appendix M). The pro-rata calculation relates to £1,000 from the area of physical work and £8,500 from the Development Area. Beam trawlers are highly mobile, and operate across wide distances throughout the UK. In this area, sole is targeted in the spring months. Overall, the impact during construction is predicted to be of short-term duration, to directly affect the fishery which has a low value within the local study area and therefore, the magnitude is considered to be low adverse.

Belgian beam trawl: activity for this fleet is evidenced by VMS data to predominately occur north of the study area, with low levels recorded within the Eni Development Area (see Figure 1.25 in volume 3, appendix M). Overall, the impact during construction is predicted to be of short-term duration, to directly affect the fishery which has a low value within the local study area and therefore, the magnitude is considered to be low adverse.

Aquaculture production: the Proposed Development infrastructure does not overlap Strategic Areas of Sustainable Aquaculture Production, which are areas that have been identified for possible future aquaculture development. The Proposed Development does not overlap shellfish classified waters, or areas identified for mussel, pacific and native oyster production. Overall, the impact during construction is predicted to be of short-term duration, to not directly affect aquaculture production which has a low value within the local study area and therefore, the magnitude is considered to be low adverse.

Sensitivity

Inshore vessels including the UK potting, gear with hooks and passive netting fleets are typically <15 m in length and operate across more distinct areas of ground, typically 0 to 12 NM from shore. The operational

range of these vessels is lower relative to larger, more transient vessels, such as scallop dredgers and beam trawlers that typically operate across a wide range of grounds. The inshore vessels operating potting, passive netting and hook gear are typically day boats, often single handed and with a more limited operational range from home port. There are a number of UK potters active in this area that are >15 m in length and are represented within the VMS datasets. Similarly, these vessels operate within the local region and land to local home ports, typically undertaking three two-day trips per week, with up to five crew including skipper. Overall, the UK potting, gear with hooks and passive netting fleets are deemed to be of medium vulnerability, medium recoverability, with a relatively limited operational range within the region. The sensitivity of the receptors is therefore, considered to be medium**.**

The dredge fishery includes vessels that are operating across many distinct scallop grounds throughout the Irish Sea, primarily based from Scottish ports (including Kirkcudbright), as well as Welsh, Manx, and Irish ports. While this fleet is comprised of vessels typically >12m in length, operating across a moderate range with moderate to high levels of alternative grounds, the distinct patches of scallop grounds characterised by sandy gravel habitat and evidenced by VMS data can make this fleet less resilient to incremental loss of fishing grounds. The dredge fleets are deemed to be of medium vulnerability and medium recoverability, with relatively wide operational ranges and wide alternative fishing grounds within the region. The sensitivity of the receptors is therefore, considered to be low**.**

The other mobile fleets including beam trawl and demersal otter trawl targeting fish and shellfish resources across the study area are typically >15 m in length and operate across large areas of the Irish Sea, as well as waters around the UK (e.g. English Channel, West of Scotland, and the North Sea). Given adequate notification, it is expected that these vessels will be in a position to avoid construction areas. The beam trawl and demersal otter trawl 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**.**

The Proposed Development does not overlap areas of aquaculture production, or areas identified for future aquaculture production and therefore the sensitivity of this receptor is considered to be low.

Significance of effect

UK potting fishery: overall, it is predicted that the sensitivity of the receptor is medium, and the magnitude is medium. The effect is of **moderate adverse** significance, which is significant in EIA terms.

UK dredge fishery: overall, it is predicted that the sensitivity of the receptor is medium, the value is low (within the Proposed Development), and the magnitude is low. The effect is of **minor adverse** significance, which is not significant in EIA terms.

UK gears with hooks and passive netting: overall, it is predicted that the sensitivity of the receptors is medium, the value is low, and the magnitude is low. The effect is of **minor adverse** significance, which is not significant in EIA terms.

UK demersal otter trawl, UK and Belgian beam trawl and Irish dredge: overall, it is predicted that the sensitivity of the receptors is low, the value is low, and the magnitude is low. The effect is of **minor adverse** significance, which is not significant in EIA terms.

UK aquaculture: overall, it is predicted that the sensitivity of the receptors is low, the value is low, and the magnitude is low. The effect is of **minor adverse** significance, which is not significant in EIA terms.

Additional mitigation

UK potting fleet: with respect to any justifiable disturbance payment, the procedures as outlined in the FLOWW guidance documents (2014 and 2015) will be followed and further defined within a FLCP. Specifically, this will consist of the provision of evidence and data, examples of which include (FLOWW 2015):

- Copy of certificate of registry for each vessel for which a claim is being made.
- Copy of a valid MCA certification or equivalent.

- Copy of the relevant vessel fishing licenses and entitlements for each vessel for which a claim is being made.
- Sight of vessels fishing charts and Global Positioning System (GPS) plotter records to provide clear historic evidence of potential disruption in the area of the operations.
- Evidence of sales notes where available for an agreed time period.
- Fishing accounts of the vessels concerned for an agreed time period.
- Fishing vessel or and/or fisheries landings data held by fisheries authorities. Due to the requirements of the Data Protection Act, for access to individual records a declaration will need to be completed in order for records to be released.
- It may be appropriate to validate sources of evidence not obtained directly from claimants in order to verify accuracy (for example, transcription errors may exist in official landings data).

Through the application of the FLCP, together with justifiable disturbance payments where relevant, the residual effect will, therefore, be of **minor adverse** significance, which is not significant in EIA terms.

10.11.1.2 Operation and maintenance phase

The assessment assumes that commercial fisheries will be prevented from actively fishing within the footprint of installed infrastructure within the Proposed Development and locations where areas of cable protection prevent fishing (i.e. for areas of cable where target burial was not possible and for cable crossings). The assessment assumes that safety zones of 500 m will be in place for surface infrastructure and subsurface wells during the operation phase, as well as for major maintenance activities, as set out in Table 10.5. Out with this footprint area of Proposed Development infrastructure and safety zones, the assessment assumes that fishing will be possible within the Eni Development Area.

Magnitude

This impact will lead to very localised loss of access to fishing grounds and the fish and shellfish resources within these grounds for a range of fishing opportunities during the operational and maintenance phase, which will directly affect fleets over a long-term duration, noting an operational design life of 25 years. The impact is predicted to be continuous with low reversibility for the lifetime of the Proposed Development and is of relevance to national fishing fleets.

Embedded mitigation relevant to commercial fisheries is outlined in Table 10.10, including measures to promote co-existence with fishers during the operation and maintenance phase. The FLCP will provide a framework for information dissemination and detail requirements for dropped object retrieval, cable burial and lighting and marking with the intention to ensure access to the Development Area during operational phase, with the exception of infrastructure and safety zones.

The description of the value and importance of the Proposed Development area to commercial fishing fleets presented for the construction phase is also applicable to the operational and maintenance phase.

It is expected that potting activity will resume within the Proposed Development during the operation and maintenance phase, with very localised loss of access related to safety zones and Proposed Development infrastructure. The overall magnitude is assessed as low adverse.

It is expected that all other commercial fishing receptors will resume fishing within the Proposed Development during the operation and maintenance phase, with very localised loss of access related to safety zones, Proposed Development infrastructure and cable protection. This localised loss of access is not expected to restrict the baseline operation of these commercial fisheries receptors. The overall magnitude is assessed as low adverse.

Sensitivity

The sensitivity of the commercial fisheries receptors is the same as that presented for construction summarised as medium for potting, passive netting and gears with hooks and low for all other fleets.

Significance of effect

UK potting, gear with hooks and passive netting fisheries: overall, it is predicted that the sensitivity of the receptor is medium, and the magnitude is low. The effect is of **minor adverse** significance, which is not significant in EIA terms.

All other fleets: overall, it is predicted that the sensitivity of the receptor is low, and the magnitude is low. The effect is of **minor adverse** significance, which is not significant in EIA terms.

10.11.1.3 Decommissioning

Significance of effect

The effects of decommissioning activities are expected to be the same or similar to the effects from construction. The residual significance of effect is therefore minor adverse for all fleets, which is not significant in EIA terms.

10.11.2 Impacts on commercially valuable fish and shellfish species/resources

Temporary noise and seabed disturbances during construction activities may displace commercially important fish and shellfish populations from the area. This section assesses the potential temporary subsequent impact 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.

10.11.2.1 Construction phase

Magnitude

Detailed assessments of the following potential construction impacts on fish and shellfish receptors have been undertaken in volume 2, chapter 7 Marine Biodiversity:

- Temporary habitat loss and/or disturbance;
- Subsea noise impacting fish and shellfish receptors;
- Increased suspended sediment concentrations and associated deposition;
- Long-term subtidal habitat loss; and
- Introduction of artificial habitat and colonisation of hard structures.

The following impacts have been scoped out of the fish and shellfish assessment:

- Effects of subsea noise on marine biodiversity from Unexploded Ordnance (UXO) detonation;
- Subsea noise from marine vessels during construction, operation and maintenance and decommissioning phases;
- Impacts to fish and shellfish ecology due to electromagnetic fields (EMFs); and
- Accidental pollution during construction, operation and maintenance, and decommissioning phases.

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 negligible significance is assessed for a species, a negligible magnitude is assessed for commercial fishing; where an effect of minor adverse significance is assessed for a species, a low magnitude

is assessed for commercial fishing, i.e. the overall significance for fish and shellfish ecology helps to determine the magnitude of the impact for commercial fishing fleets.

Details of the fish and shellfish ecology assessment are summarised in Table 10.13; justifications for this assessment will not be repeated in this chapter. Evidence, modelling and justifications for these assessments are provided in volume 2, chapter 7: Marine Biodiversity.

Table 10.13: Significance Of Effects Of Construction Impacts On Fish And Shellfish Species Relevant To Commercial Fisheries Receptors

Potential impact	Significance of effect
Temporary habitat loss and/or disturbance	Low adverse/negligible
Subsea noise impacting fish and shellfish receptors	Low adverse/negligible
Increased suspended sediment concentrations and associated deposition	Low adverse/negligible

The significance of effect is considered to be negligible to low adverse for all potential impacts on fish and shellfish resources. The magnitude of impact on commercial fisheries receptors is predicted to be of very localised spatial extent, of short-term duration and to relate to a low to negligible loss of commercial resources. The magnitude of impact to all commercial fisheries and aquaculture receptors is assessed to be low adverse.

Sensitivity

There is potential for fishing grounds beyond the immediate construction activities to be affected by these impacts, albeit at a localised scale. While exposure to the impact is likely during the short-term period of construction activities and commercial fleets targeting key species will be affected, including those targeting whelk and other shellfish species, the localised nature of these Proposed Development related construction activities will minimise the extent of the impact. It is also recognised that commercial fleets are not limited to grounds specifically within the project area of physical work, and a range of alternative fishing grounds are expected to be fishable, that would not experience any resource impacts.

Given the reliance on fishing grounds across the Eni Development area, together with the relatively low mobility of whelk, lobster and brown crab target species, the potting fleet is deemed to be of medium vulnerability and medium recoverability; the sensitivity is considered to be medium.

For all other fleets, due to the range of alternative areas targeted and the distribution of key commercial species throughout the Irish Sea, fleets are deemed to be of low vulnerability and high recoverability. The sensitivity of the receptor for all other fleets is therefore considered to be low.

For aquaculture production, given that the Proposed Development infrastructure does not overlap with the areas identified as potential future production areas, the sensitivity is considered to be low.

Significance of effect

All fleets: overall, it is predicted that the sensitivity of the receptor is medium for potting and low for all other fleets, and the magnitude is low. The effect is **minor adverse**, which is not significant in EIA terms.

10.11.2.2 Operation and maintenance phase

Magnitude

Permanent and temporary impacts from operation of the Proposed Development and maintenance activities may displace commercially important fish and shellfish populations from the area. This section assesses the potential subsequent impact 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.

The approach to this assessment follows that outlined for construction above, with details of the fish and shellfish ecology assessment summarised in Table 10.14.

Table 10.14: Significance Of Effects Of Construction Impacts On Fish And Shellfish Species Relevant To Commercial Fisheries Receptors

Potential impact	Significance of effect
Temporary habitat loss and/or disturbance	Low adverse/negligible
Long-term subtidal habitat loss	Low adverse/negligible
Introduction of artificial habitat and colonisation of hard structures	Low adverse/negligible

The significance of effect is considered to be negligible to low adverse for all potential impacts on fish and shellfish resources. The magnitude of impact on commercial fisheries receptors is predicted to be of very localised spatial extent, of short-term duration and to relate to a low to negligible loss of commercial resources. The magnitude of impact to all commercial fisheries and aquaculture receptors is assessed to be low adverse.

Sensitivity

The sensitivity of the commercial fisheries receptors is the same as that presented for construction summarised as medium for potting and low for all other fleets.

Significance of effect

All fleets: overall, it is predicted that the sensitivity of the receptor is medium for potting and low for all other fleets, and the magnitude is low. The effect is **minor adverse**, which is not significant in EIA terms.

10.11.2.3 Decommissioning

Significance of effect

The effects of decommissioning activities are expected to be the same or similar to the effects from construction. The effect is **minor adverse** for all fleets, which is not significant in EIA terms.

10.11.3 Interference with fishing activity

10.11.3.1 Construction phase

Magnitude

This assessment focuses on the potential impact of Proposed Development-related vessel traffic and changes to shipping patterns as a result of navigational routes leading to interference with fishing activity (i.e. reduced access) during construction.

Vessel movements (i.e. construction vessels transiting to and from areas undergoing construction works) related to the construction of the Proposed Development will add to the existing level of shipping activity in the regional study area (see volume 2, chapter 9 Shipping and Navigation for a full assessment of additional vessel movements). The maximum number of vessels return trips per year during the construction phase is estimated to be 191, with a maximum of 40 vessels on site at any time.

As part of the embedded mitigation measures, continuous liaison with the fishing industry will be undertaken including location and duration of construction activities; further details will be provided in a FLCP.

All fishing fleets are considered to be able to avoid vessel movements related to the Proposed Development construction. The impact is predicted to be of local spatial extent, short term duration, intermittent and high reversibility. The magnitude is therefore considered to be low adverse for all fishing fleets.

Sensitivity

Construction traffic is likely to constrain most potting and passive netting activity across established construction supply routes due to the vulnerability of the marker buoys (for gears left *in situ*) to the propellers of passing construction vessels. It is noted that shipping routes do currently exist in the vicinity of the Proposed Development, and that the construction vessels are likely to follow these existing routes where possible. The UK potting and passive netting fisheries are deemed to be of medium vulnerability and high recoverability. The sensitivity of these receptors is therefore, considered to be low-medium.

All other fishery fleets are expected to be in a position to avoid the Proposed Development construction traffic. Dredge, beam trawl and demersal trawl fisheries are deemed to be of negligible vulnerability and high recoverability. The sensitivity of the receptor is therefore, considered to be low for dredge, beam trawl, demersal trawl and hook fisheries.

Significance of effect

UK potting and passive netting fisheries: overall, it is predicted that the sensitivity of the receptor is low-medium, and the magnitude is low. The effect is of **minor adverse** significance, which is not significant in EIA terms.

All other fleets: overall, it is predicted that the sensitivity of the receptor is low, and the magnitude is low. The effect is of **minor adverse** significance, which is not significant in EIA terms.

10.11.3.2 Operation and maintenance phase

Significance of effect

The maximum number of vessels return trips per year during the operation and maintenance phase is estimated to be 30, with a maximum of 4 vessels on site at any time. While this is lower that the construction phase (191 return trips and maximum of 40 vessels at any time), the magnitude of effects is expected to be in the same or similar range to the effects described during construction. The significance of effect is therefore **minor adverse** for all fleets, which is not significant in EIA terms.

10.11.3.3 Decommissioning

Significance of effect

The effects of decommissioning activities are expected to be the same or similar to the effects from construction. The effect is **minor adverse** for all fleets, which is not significant in EIA terms.

10.11.4 Temporary increases in steaming distances to fishing grounds

10.11.4.1 Construction phase

Magnitude

Consideration of commercial fishing vessels is assessed in volume 2, chapter 9 Shipping and Navigation (including from a collision and allision perspective). This assessment focuses on the potential impact of longer steaming distances to alternative fishing grounds while construction processes are ongoing.

Details of the Proposed Development's construction activities will be promulgated in advance of, and during construction via the usual means (e.g. Notice to Mariners, Kingfisher bulletin) to ensure mariners are aware of

the ongoing works. Construction works will only necessitate minor deviations for fishing vessels transiting through the site during the construction phase. Localised impacts are anticipated but will be limited to the immediate area of construction activity and associated construction vessels. The magnitude is therefore, considered to be low adverse for all fishing fleets.

Sensitivity

The UK potting and passive netting fleets active in the study area operate across a range of grounds to haul and re-set different fleets of traps/pots/nets on a daily basis. Their normal operating range is expected to extend well beyond the 500 m exclusion zones that will be in place around active construction works and advisory safety distances around construction vessels. Given adequate notification it is expected that these vessels will be in a position to avoid construction areas with limited impact upon steaming times.

The UK dredge fleet targeting the local study area is expected to operate across wider areas of the Irish Sea and in the case of larger vessels, beyond this range. Given adequate notification it is expected that these vessels will be in a position to avoid construction areas with limited impact upon steaming times.

In relation to ground within the area of project physical work, all commercial fisheries fleets are considered to have medium to high availability of alternative fishing grounds and an operational range that is not limited to this Eni Development area. The sensitivity of the receptor is therefore, considered to be low for UK potting, gear with hooks and passive netting fishing fleets and negligible for all other fisheries.

Significance of effect

UK potting, gear with hooks and passive netting fisheries: overall, it is predicted that the sensitivity of the receptor is low, and the magnitude is low adverse. The effect is **minor adverse**, which is not significant in EIA terms.

All other fleets: overall, it is predicted that the sensitivity of the receptor is negligible, and the magnitude is low adverse. The effect is **negligible adverse**, which is not significant in EIA terms.

10.11.4.2 Decommissioning

Significance of effect

The effects of decommissioning activities are expected to be the same or similar to the effects from construction. The effect is **minor adverse** for UK potting, gear with hooks and passive netting fisheries, which is not significant in EIA terms and negligible adverse for all other fleets, which is not significant in EIA terms.

10.11.5 Supply chain opportunities for local fishing vessels

10.11.5.1 Construction phase

Magnitude

A range of employment opportunities may arise related to the Proposed Development construction, maintenance, and decommissioning activities, which require skill sets that align with the expertise, vessels and equipment owned by local fishing vessel businesses. Potential roles and supply chain opportunities include (but are not limited to):

- provision of guard vessel(s);
- skipper / Master of guard vessel;
- offshore FLO;
- onshore FLO;
- FIR;

- liaison management;
- scouting surveys;
- survey escort duties; and
- survey works (vessel and/or personnel).

These activities have a range of safety requirements for vessels and crew, including external vessel audits and compliance with vessel and crew certification schemes.

The opportunity exists for local fishing vessel owners to apply for specific roles or positions within the Proposed Development. Whether an appropriate position or role can be filled by a local fishing vessel owner would be determined on a case-by-case basis and would comply with competition law.

Overall, for all fleets, it is considered that the potential for supply chain opportunities for local fishing vessel owners would constitute a low (positive) magnitude.

Sensitivity

It is considered that all fishing vessel owners would have equal opportunity to decide whether the provision of supply chain related activities is a viable route for their business. The sensitivity of all commercial fisheries receptors is therefore, considered to be low (positive).

Significance of effect

All fleets: overall, it is predicted that the sensitivity of the receptor is low, and the magnitude is low. The effect is of **minor beneficial** significance, which is not significant in EIA terms.

10.11.5.2 Operation and maintenance phase

Significance of effect

The effects of operation and maintenance activities are expected to be similar or somewhat lower than construction, given the number of vessels expected to be on site at any one time, and the range of maintenance activities that are ongoing. Overall, the effect is **minor beneficial** for all fleets, which is not significant in EIA terms.

10.11.5.3 Decommissioning

Significance of effect

The effects of decommissioning activities are expected to be the same or similar to the effects from construction. The effect is **minor beneficial** for all fleets, which is not significant in EIA terms.

10.11.6 Loss or damage to fishing gear due to snagging gear on Proposed Development infrastructure

10.11.6.1 Operation and maintenance phase

Magnitude

The presence of cables and pipelines and associated cable protection, together with offshore platforms and wells (and associated scour protection) on the seabed represent 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 during the operation and maintenance phase are beyond the scope of this commercial fisheries assessment.

The Proposed Development embedded mitigation measures include adherence to FLOWW guidance, Safety Zones during maintenance, a commitment to cable burial as the preferred option for cable protection, and appropriate marking and charting of infrastructure.

In the instance that snagging does occur, the Applicant will work to the protocols laid out within the guidance produced by the FLOWW group and ''Recommendations for Fisheries Liaison: Best Practice'' guidance for offshore renewable developers, in particular section 9: Dealing with claims for loss or damage of gear.

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 subsea infrastructure. Three phases of interaction are possible:

- initial impact of gear and subsea infrastructure;
- pullover of gear across subsea infrastructure; and
- snagging or hooking of gear on the subsea 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.

It is considered likely that fishermen will operate appropriately (i.e. avoiding the indicated infrastructure and cable protection at the defined location) given adequate notification of the locations of any snagging hazards; and are highly likely to avoid the infrastructure and cable protection within safety zones.

Embedded mitigation details cable burial where possible, and a detailed Cable Burial Risk Assessment, the results of which will be communicated to fisheries stakeholders. Furthermore, the Applicant commits to follow standard protocols should snagging occur, the details of which will be provided in the FLCP. Maintenance will include regular monitoring of cable burial integrity and condition of cable protection, with reburial of exposed cable sections and repair/replacement of cable sections as necessary. Overall, given the relatively low area impacted by the Proposed Development, together with the embedded measures including safety zones, the magnitude is considered to be low adverse for all fleets.

Sensitivity

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 all mobile demersal fisheries.

UK potters, gear with hooks and netters show a low vulnerability as the gear is placed, not towed and is less likely to penetrate the seabed. The sensitivity of UK potters, netters and gears with hooks is considered to be low.

Significance of effect

UK potting, passive netting and gear with hooks fisheries: overall, it is predicted that the sensitivity of the receptor is low, and the magnitude is low adverse. The effect is **minor adverse**, which is not significant in EIA terms.

UK and Irish dredge, UK demersal otter trawl, UK, and Belgian beam trawl: overall, it is predicted that the sensitivity of the receptor is medium, and the magnitude is low adverse. The effect is **minor adverse**, which is not significant in EIA terms.

10.12 Cumulative Impact Assessment

There is potential for cumulative loss of access to fishing grounds as a result of activities associated with the Proposed Development and other plans and projects in the region.

All other impacts (related to disruption of resource, interference, snagging and additional steaming times) are considered to be highly localised with minimal pathway for cumulative effects.

Tier 1

For the potential cumulative loss of access to fishing grounds the following offshore windfarms (that are in various stages of the consenting process) are considered:

- Awel y Môr Offshore Windfarm
- Morecambe Offshore Windfarm
- Morgan Offshore Windfarm
- Mona Offshore Windfarm
- Morgan and Morecambe Offshore Wind Farms Transmission Assets
- Isle of Man Offshore Windfarm (Tier 2)
- Minesto Deep Green Phase1 Single DGU Unit
- Morlais renewable energy

Wind farms that are currently operational, but may continue to cause an impact to commercial fisheries are also included within the assessment, namely:

- Rhyl Flats Offshore Windfarm and associated maintenance works
- Gwynt y Mor Offshore Windfarm and associated maintenance works including pontoon at Mostyn

All of the offshore windfarms are considered to be Tier 1 projects, with exception of Isle of Man Offshore Windfarm which is Tier 2. The Isle of Man offshore Windfarm is Tier 2 because while the Scoping Report is not yet available in the public domain, the location of the array area is available and an understanding of the fisheries in operation across the Isle of Man Offshore Windfarm is possible based on the baseline characterisation undertaken for this Proposed Development. Given the similar nature of the effects of offshore wind farms, it is considered appropriate to assess the only Tier 2 project (Isle of Man Offshore Windfarm), together with the Tier 1 projects.

Landing statistics and VMS data indicate the importance of the Morgan, Mona, and Isle of Man offshore windfarm sites to the UK (including Isle of Man) scallop dredge fleets. UK potting vessels are known to operate across the Awel y Môr and Morecambe offshore windfarm sites. The installation of the Morgan and Morecambe Offshore Wind Farms Transmission Assets offshore export cable route is likely to affect UK potting fleets operating within the 12 and 6 NM boundaries across a short-term period.

Overall, the above windfarms, together with the Morgan and Morecambe Offshore Wind Farms Transmission Assets are expected to affect UK (including Isle of Man) fishing fleets that have already accommodated existing operational windfarms. This region contains a high level of existing offshore windfarms and a fishing sector that has undergone numerous mitigations and have repeatedly adapted their operations around expanding developments.

Potential cumulative effects are identified due to existing and potential Tier 1 and Tier 2 offshore wind farms that may affect all fishing fleets under assessment. However, the extremely localised and short-term impacts of the Proposed Development are predicted to add a **negligible** amount to the overall cumulative effects of offshore wind farms in the region for the fleets assessed.

Other projects included in the Tier 1 cumulative assessment are as follows:

- disposal sites at the following locations: Holyhead North, Broughton, Mostyn Breakwater, Shell Lagoon, Llanbedr, Burbo Bank Extension.
- Project Seagrass: Seagrass restoration;
- Ancala Water: Tidal Flap Valve Clearance;
- Hochtief UK Ltd: Boreholes; and

- Amalgamated Construction Ltd: Ground Investigation works

The localised, small-scale, temporary, and short duration of the above Tier 1 projects do not increase the level of cumulative impact significance. To conclude, the extremely localised and short-term impacts of the Proposed Development are predicted to add a **negligible** amount to the overall cumulative effects of Tier 1 projects in the region for the fleets assessed.

Tier 2

In addition to offshore windfarms, Marine Protected Areas (MPAs) have the potential to add to cumulative loss of access where management measures that restrict fishing are implemented to protect features within the designated site. The following MPAs are considered:

- West of Walney Marine Conservation Zone (MCZ);
- West of Copeland MCZ;
- Fylde MCZ;
- Luce Bay and Sands Special Area of Conservation (SAC);
- Liverpool Bay Special Protection Area (SPA);
- South Rigg MCZ; and
- North Channel SAC.

At present, it is not known whether additional management measures for any gear interaction with the other aforementioned SACs, SPAs or MCZs have been implemented, and therefore these designations are considered as part of the Tier 2 assessment.

Given that the MCZs and SACs cover a range of habitat features and based on a maximum design scenario for commercial fisheries; it is assumed that all mobile trawling and dredge gear with seabed contact will be subject to some form of restrictions in relation to MCZ and SAC sites protected for habitat features. Management measures for mobile gear in sites protected for mobile species, such as birds (SPA) or harbour porpoise (SAC) are considered less likely based on the limited risk these gears present to the feature species.

Potential cumulative effects are identified due to MPAs that may affect all fishing fleets under assessment. However, the extremely localised and short-term impacts of the Proposed Development are predicted to add a **negligible** amount to the overall cumulative effects of Tier 2 projects in the region for the fleets assessed.

10.13 Transboundary effects

Transboundary effects arise when impacts from a development within one state affect the environment of other states outside of the UK EEZ.

Due to the localised nature of any potential impacts and very limited foreign fishing fleet activity (some potential for Irish and Belgian vessels outside of 12 NM, but not specifically within the Proposed Development area of physical works), transboundary impacts are unlikely to occur.

Effects on biological resources could occur over a range of 10’s of kilometres and therefore potential for interaction is not expected to extend into the EEZs of the Isle of Man or the Republic of Ireland. Therefore, the potential transboundary impact of effects on commercial fish stocks in the waters of other states on commercial fisheries is concluded to be of negligible adverse significance and is therefore considered to be not significant in EIA terms.

Effects on commercial fishing fleets from the Republic of Ireland and Belgium, in terms of reduction in access to grounds within the Proposed Development, are unlikely given the lack of vessel activity within the Proposed Development area. The potential transboundary impact of constraints on foreign commercial fishing activities

is concluded to be of negligible adverse significance and is therefore considered to be not significant in EIA terms.

10.14 Inter-related effects

There are clear inter-relationships between the commercial fisheries topic and several other topics that have been considered within this EIA. Table 10.15 provides a summary of the principal inter-relationships and signposts to where those issues have been addressed.

Table 10.15: Commercial Fisheries Inter-relationships

Topic and description	Related chapter	Where addressed in this chapter
Loss or restricted access to fishing grounds	N/A	
Impacts on commercially valuable fish and shellfish species/resources	Impact magnitude informed by the assessment in volume 2, chapter 7 Marine Biodiversity	Section 10.11.2
Interference with fishing activity	Impact magnitude informed by the assessment in volume 2, chapter 9 Shipping and Navigation	Section 10.11.3
Temporary increases in steaming distances to fishing grounds	Impact magnitude informed by the assessment in volume 2, chapter 9 Shipping and Navigation	Section 10.11.4
Supply chain opportunities for local fishing vessels	N/A	
Loss or damage to fishing gear due to snagging gear on Proposed Development infrastructure	Impact magnitude informed by the assessment in volume 2, chapter 9 Shipping and Navigation	Section 10.11.6

10.15 Conclusion

Information on commercial fisheries within the commercial fisheries study area was collected through desk studies, analysis of available fisheries data and consultation with stakeholders.

The key commercial fisheries fleet métiers operating across the study area include (in no particular order):

- UK (primarily Scottish, but also some Northern Irish, English and Welsh) and Irish dredgers targeting king and queen scallops;
- UK (primarily English and Welsh) potters targeting shellfish, primarily whelk offshore, but also lobster and brown crab;
- UK (primarily English) and Belgian beam trawlers targeting sole, plaice and other demersal species, with localised inshore trawling targeting brown shrimp;
- UK inshore vessels (English) under 10 m length targeting a variety of demersal species (e.g. bass) using passive netting (fixed and drift) and gear with hooks; and
- UK strategic areas of sustainable aquaculture production, which have been identifed for potential future production.

Based on analysis of landings and spatial data, fishing activity across the Proposed Development is expected to be dominated by larger vessels potting for whelk, smaller inshore potting vessels targeting lobster and larger vessels dredging for king and queen scallops, with potential for occasional beam trawl activity.

During the construction and decommissioning phases the commercial fisheries assessment found moderate significant effects for the UK potting fleet related to the loss or restricted access to fishing grounds. Additional mitigation following FLOWW guidance, including justifiable, evidence-based disturbance payments lowers the residual impact to minor adverse and not significant in EIA terms.

During the construction and decommissioning phases the commercial fisheries assessment found all other impacts to all fleets to be minor adverse or lower and not significant in EIA terms.

During the operation and maintenance phase the commercial fisheries assessment found all impacts to all fleets to be minor adverse or lower and not significant in EIA terms.

The cumulative impact assessment found that the extremely localised and short-term impacts of the Proposed Development were predicted to add a negligible amount to the overall cumulative effects of offshore wind farms and MPAs in the region for the fleets assessed.

Transboundary effects related to the impact on biological resources in the Isle of Man and Republic of Ireland EEZs; and the impact of reduced access to grounds within the Proposed Development for non-UK fleets were concluded to be of negligible adverse significance.

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