Morecambe Offshore Windfarm: Generation Assets

Environmental Statement

Volume 5

Chapter 13 Commercial Fisheries (Tracked)

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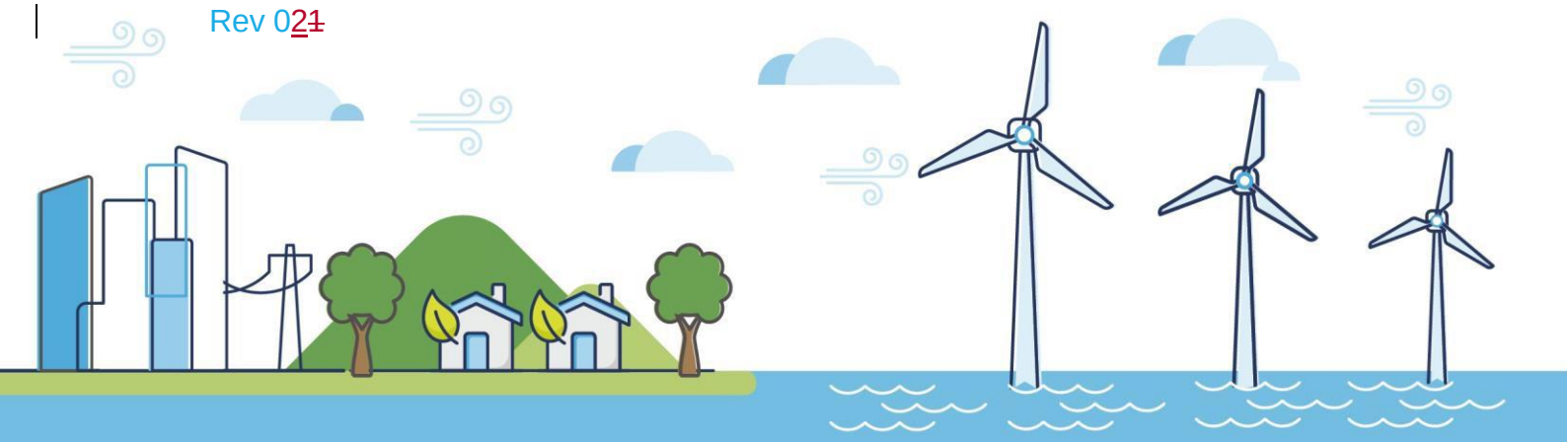

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Glossary of Acronyms

AIS	Automatic Identification System
ANIFPO	Anglo-North Irish Fish Producers Organisation
BAS	Burial Assessment Study
BEIS	Department of Business, Energy and Industrial Strategy[1]
CBRA	Cable Burial Risk Assessment
CEA	Cumulative Effects Assessment
Cefas	Centre for Environment, Fisheries and Aquaculture
CMS	Construction Method Statements
DCF	Data Collection Framework
DCO	Development Consent Order
DECC	Department of Energy and Climate Change[1]
DEFA	Department of Environment, Food and Agriculture
DEFRA	Department for Environment, Food & Rural Affairs
DESNZ	Department for Energy Security and Net Zero
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EMF	Electromagnetic Field
EMP	Ecological Management Plan
EMSA	European Maritime Safety Agency
EPP	Evidence Plan Process
EPS	European Protected Species
ES	Environmental Statement
ETG	Expert Topic Groups
EU	European Union
EUNIS	European Nature Information System
FLO	Fisheries Liaison Officer
GBS	Gravity Based Structures
GT	Gross Tonnage
IAIA	International Association for Impact Assessment
ICES	International Council for the Exploration of the Sea

[1] The Department of Energy and Climate Change (DECC) was merged with the Department for Business, Energy and Industrial Strategy (BEIS) in 2016. As of February 2023, BEIS is known as the Department for Energy Security and Net Zero (DESNZ).

IEMA	Institute of Environmental Management and Assessment
IFCA	Inshore Fisheries Conservation Authority
INNS	Invasive Non-Native Species
IoM	Isle of Man
LAT	Lowest Astronomical Tide
LSE	Likely Significant Effect
MCA	Maritime and Coastguard Agency
MCAA	Marine and Coastal Access Act
MCZ	Marine Conservation Zones
MFPO	Manx Fish Producers Organisation
MMO	Marine Management Organisation
MNR	Marine Nature Reserve
MPA	Marine Protected Areas
MPCP	Marine Pollution Contingency Plan
MPS	Marine Policy Statement
MU	Management Units
NFFO	National Federation of Fisherman's Organisations
NGC	National Grid Company plc
NGO	Non-Governmental Organisation
NPPF	National Planning Policy Framework
NPS	National Policy Statement
NRA	Navigational Risk Assessment
NRW	Natural Resources Wales
NSIP	Nationally Significant Infrastructure Project
NtM	Notice to Mariner
ONS	Office for National Statistics
OS	Ordnance Survey
OSP	Offshore substation platform
PDE	Project Design Envelope
PEIR	Preliminary Environmental Information Report
PEMP	Project Environment Management Plan
PINS	Planning Inspectorate
PLN	Port Letters and Numbers
RSPB	Royal Society for the Protection of Birds
SAC	Special Area of Conservation
SAR	Swept Area Ratio
SFF	Scottish Fishermen's Federation

SPA	Special Protection Area
SSC	Suspended sediment concentrations
SWFPA	Scottish White Fish Producers Association
TCA	Trade and Cooperation Agreement
UK	United Kingdom
VMS	Vessel Monitoring System
WTG	Wind turbine generator
ZoI	Zone of Influence

Glossary of Unit Terms

GBP	British pound sterling
km	Kilometre
m	Metre
nm	Nautical mile
t	Tonne

Glossary of Terminology

Applicant	Morecambe Offshore Windfarm Ltd
Application	This refers to the Applicant's application for a Development Consent Order (DCO). An application consists of a series of documents and plans which are published on the Planning Inspectorate's (PINS) website.
Beam trawlers	A method of bottom trawling with a net that is held open by a beam, which is generally a heavy steel tube supported by steel trawl heads at each end. Tickler chains or chain mats, attached between the beam and the ground rope of the net, are used to disturb fish and crustaceans that rise up and fall back into the attached net.
Demersal	Living on or near the seabed.
Demersal trawl	A fishing net used by towing the trawl along or close to the seabed.
European Union Data Collection Framework	An EU framework for the collection and management of fisheries data.
Evidence Plan Process (EPP)	A voluntary consultation process with specialist stakeholders to agree the approach, and information to support, the Environmental Impact Assessment (EIA) and Habitats Regulations Assessment (HRA) for certain topics. The EPP provides a mechanism to agree the information required to be submitted to PINS as part of the DCO Application. This function of the EPP helps Applicants to provide sufficient information in their application, so that the Examining Authority can recommend to the Secretary of State whether or not to accept the application for examination and whether an appropriate assessment is required.
Expert Topic Group (ETG)	A forum for targeted engagement with regulators and interested stakeholders through the EPP.
First sales value	The value obtained for fish or shellfish when it is sold for the first time.
Fish stock	Any natural population of fish, which is an isolated and self-perpetuating group of the same species.
Fishery	A group of vessel voyages which target the same species or use the same gear.
Fishing ground	An area of water or seabed targeted by fishing activity.
Fishing mortality	Mortality due to fishing; death or removal of fish from a population due to fishing.
Fleet	A physical group of vessels sharing similar characteristics (e.g. nationality).
Gear type	The method/equipment used for fishing.
Generation Assets (the Project)	Generation assets associated with the Morecambe Offshore Windfarm. This is infrastructure in connection with electricity production, namely the fixed foundation wind turbine generators (WTGs), inter-array cables, offshore substation platform(s) (OSP(s)) and possible platform link cables to connect OSP(s).
ICES statistical rectangles	Defined areas, 1 degree longitude x 0.5 degree latitude equalling approximately 30 x 30 nautical miles (nm) used for fisheries statistics.

In-row	The distance separating WTGs in the main rows.
Inter-array cables	Cables which link the WTGs to each other and the OSP(s).
Inter-row	The distance between the main rows.
Landfall	Where the offshore export cables would come ashore.
Landings	Quantitative description of the amount of fish returned to port for sale, in terms of value or weight.
Likely Significant Effect (LSE)	Meaning that there may be (as opposed to is likely to be) a significant effect of a proposal on the integrity of the site and its conservation objectives.
Marine Management Organisation (MMO)	A UK government department that license, regulate, and plan commercial fisheries activities in the seas around England, with jurisdiction from 0 to 12nm.
Metier	A homogenous subdivision, either of a fishery by vessel type or a fleet by voyage type.
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	The transmission assets for the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm. This includes the offshore substation platforms (OSP(s))[2], interconnector cables, Morgan offshore booster station, offshore export cables, landfall site, onshore export cables, onshore substations, 400kV cables and associated grid connection infrastructure such as circuit breaker infrastructure. Also referred to in this chapter as the Transmission Assets, for ease of reading.
National Federation of Fishermen's Organisations	A UK organisation comprised of members from Producers' Organisations, fishermen's groups and individuals, representing fishers in England, Wales, Northern Ireland, and the Channel Islands.
North West Inshore Fisheries and Conservation Authority	A UK authority that license, regulate, and plan commercial fisheries activities in the seas around England, with jurisdiction from 0 to 6nm. The North Western Inshore Fisheries and Conservation Authority district spans 850km of coastline, from the Welsh Border in the Dee Estuary to the Scottish Border in the Solway Firth.
Offshore substation platform(s)	A fixed structure located within the windfarm site, containing electrical equipment to aggregate the power from the WTGs and convert it into a more suitable form for export to shore.
Otter trawl	A net with large rectangular boards (otter boards) which are used to keep the mouth of the trawl net open. Otter boards are made of timber or steel and are positioned in such a way that the hydrodynamic forces,

[2] At the time of writing the Environmental Statement (ES), a decision had been taken that the offshore substation platforms (OSP(s)) would remain solely within the Generation Assets application and would not be included within the Development Consent Order application for the Transmission Assets. This decision post-dated the Preliminary Environmental Information Report (PEIR) that was prepared for the Transmission Assets. The OSP(s) are still included in the description of the Transmission Assets for the purposes of this ES as the Cumulative Effects Assessment (CEA) carried out in respect of the Generation/Transmission Assets is based on the information available from the Transmission Assets PEIR.

	acting on them when the net is towed along the seabed, pushes them outwards and prevents the mouth of the net from closing.
Pelagic	Of or relating to the open sea, species living in the water column.
Pelagic trawl	A net used to target fish species in the mid water column.
Platform link cable	An electrical cable which links one or more offshore substation platforms.
Safety Zones	An area around a structure or vessel which should be avoided, as set out in Section 95 of the Energy Act 2004 and the Electricity (Offshore Generating Stations) (Safety Zones) (Application Procedures and Control of Access) Regulations 2007.
Scallop dredge	A method to catch scallop using steel dredges with a leading bar fitted with a set of spring loaded, downward pointing teeth. Behind this toothed bar (sword), a matt of steel rings is fitted. A heavy net cover (back) is laced to the frame, sides and after end of the mat to form a bag.
Scour protection	Protective materials to avoid sediment being eroded away from the base of the foundations due to the flow of water.
Spawning	The act of releasing or depositing eggs (fish).
String	A series of static fishing gear (pots) joined together to form a single deployable line of pots.
Study area	This is an area which is defined for each EIA topic which includes the windfarm site as well as potential spatial and temporal considerations of the impacts on relevant receptors. The study area for each EIA topic is intended to cover the area within which an effect can be reasonably expected. For commercial fisheries a local study area and a regional study area has been defined.
Technical stakeholders	Technical consultees are considered to be organisations with detailed knowledge or experience of the area within which the Project is located and/or receptors which are considered in the EIA and HRA. Examples of technical stakeholders include MMO, local authorities, Natural England and Royal Society for the Protection of Birds (RSPB).
Total Allowable Catches	Total Allowable Catches (TACs) are catch limits, expressed in tonnes or numbers that are set for some commercial fish stocks.
Vessel Monitoring System	A system used in commercial fishing to allow environmental and fisheries regulatory organizations to monitor, minimally, the position, time at a position, and course and speed of fishing vessels.
Wind turbine generator (WTG)	A fixed structure located within the windfarm site that converts the kinetic energy of wind into electrical energy.
Windfarm site	The area within which the WTGs, inter-array cables, OSP(s) and platform link cables will be present.

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13 The future of renewable energy

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13 Commercial Fisheries

13.1 Introduction

13.1 This chapter of the Environmental Statement (ES) considers the potential effects of the proposed Morecambe Offshore Windfarm Generation Assets (the Project) on commercial fisheries. This chapter provides an overview of the existing environment, followed by an assessment of the potential effects and associated mitigation, where identified, for the construction, operation and maintenance and decommissioning phases.

13.2 The Project includes the Generation Assets to be located within the windfarm site (wind turbine generators (WTGs), inter-array cables, offshore substation platform(s) (OSP(s)) and possible platform link cables to connect OSP(s)). The Environmental Impact Assessment (EIA) of the transmission assets, including offshore export cables to landfall and onshore infrastructure, is part of a separate Development Consent Order (DCO) application as outlined in **Chapter 1 Introduction** (Document Reference 5.1.1).

13.3 This assessment has been undertaken with specific reference to the relevant legislation and guidance, of which the primary sources are the National Policy Statements (NPS). Details of these and the methodology used for the EIA and Cumulative Effects Assessment (CEA) are presented in **Chapter 6 EIA Methodology** (Document Reference 5.1.6) and **Section 13.4** of this chapter.

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

- **Chapter 10 Fish and Shellfish Ecology** (Document Reference 5.1.10) where impacts on the ecology of fish and shellfish, including species of commercial interest (i.e. fisheries resource) are assessed
- **Chapter 14 Shipping and Navigation** (Document Reference 5.1.14) where impacts on the navigational safety aspects of fishing activity are assessed
- **Chapter 17 Infrastructure and Other Users** (Document Reference 5.1.17) where impacts on charter angling businesses are assessed

13.5 Inter-relationships with these chapters are further described in **Section 13.8**.

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

- **Appendix 13.1 Commercial Fisheries Technical Report** Document Reference 5.2.13.1)

13.2 Consultation

13.7 Consultation regarding commercial fisheries has been undertaken in line with the general process described in **Chapter 6 EIA Methodology**. The key elements undertaken to inform this ES have included Scoping (Scoping Opinion from the Planning Inspectorate (PINS) received on 2nd August 2022 (PINS, 2022)), comments received on the Preliminary Environmental Information Report (PEIR) which was published for statutory consultation in April 2023, and consultation with fishing industry representatives, fishers and other fisheries stakeholders.

13.8 The feedback received throughout consultation with the fishing industry, the Scoping Opinion published by PINS, and stakeholder comments on the PEIR, have been considered in preparing this ES. The key consultation comments pertinent to commercial fisheries are shown in **Table 13.1**, alongside details of how the Project team has had regard to the comments and how these have been addressed within this chapter.

13.9 The consultation process is described further in **Chapter 6 EIA Methodology**. Full details on the consultation undertaken throughout the EIA process is presented in the Consultation Report (Document Reference 4.1) which is submitted as part of the DCO application. Details of consultation and liaison throughout all Project phases are provided in the Outline Fisheries Liaison and Co-existence Plan (FLCP) (Document Reference 6.3).

Table 13.1 Consultation responses received in relation to commercial fisheries and how these have been addressed in the ES

Consultee	Date	Comment	Response/where addressed in the ES
Scoping Opinion responses			
PINS (ref. 3.7.1)	2nd August 2022	Physical presence of infrastructure leading to gear snagging during construction: The Scoping Report does not provide a direct justification as to why this matter has been excluded from further assessment. It appears likely that as construction proceeds, there is an increasing risk that infrastructure would be present that could lead to gear snagging. Accordingly, the ES should include an assessment of this matter or provide a justification (for instance through explaining the relevant mitigation and how it has been secured) as to why likely significant effects (LSE) would not arise.	This impact has been scoped into the ES assessment for all phases of the Project (see **Section 13.6**).
PINS (ref. 3.7.2)	2nd August 2022	Baseline data: When using landings data, any conservation or management measures for species captured in the vicinity of the windfarm should be considered and acknowledged, as this may affect the species abundance and distribution within the windfarm area. The Applicant should make efforts to include, or otherwise account for, vessels excluded from the Vessel Monitoring Systems (VMS) data. Baseline data should also be as up to date as possible at the point of submission.	The technical report (**Appendix 13.1**) describes management and conservation measures for target species. It is acknowledged that VMS data does not provide a fully representative dataset for fishing activity, however data and information for vessels less than 15m in length has informed the assessment, including: ▪ Landing statistics for all vessel lengths ▪ Scouting data from geophysical surveys

Consultee	Date	Comment	Response/where addressed in the ES
			▪ Consultation with local and national fishing industry organisations, associations and individual fishers The baseline data presented is as up to date as possible, including landing statistics for the period 2016 to 2022.
PINS (ref. 3.7.3)	2nd August 2022	Future baseline: The ES should clearly explain how the future baseline has been derived from the existing baseline and identify sources of evidence on long term trends.	The future baseline is described in Section 4 of **Appendix 13.1**.
PINS (ref. 3.7.4)	2nd August 2022	Reduction in access to, or exclusion from established fishing grounds: The ES should provide a justification, with supporting evidence where available, as to the extent of fishing that is likely to be resumed within the array area once the Proposed Development is operational.	The assumptions for the extent of fishing resumption within the Project are detailed in **Table 13.2** in **Section 13.3**.
PINS (ref. 3.7.5)	2nd August 2022	Invasive non-native species [INNS]: The ES should assess the potential for the introduction of hard substrate and vessel movements to facilitate the spread of INNS (e.g. via ballast water and through accidents and spillages) and the potential for impacts upon commercial fisheries, where significant effects are likely to occur. Where significant effects are likely to occur, the ES should also consider the potential for climate change-related effects to facilitate the spread and exacerbate the impacts of INNS.	The risk of spread of INNS was not found to be significant in **Chapter 10 Fish and Shellfish Ecology**, considering embedded mitigation. No further potential impacts related to INNS are predicted for commercial fisheries.

Consultee	Date	Comment	Response/where addressed in the ES
PINS (ref. 3.7.6)	2nd August 2022	Potential mitigation measures: The Scoping Report states that where practicable, cable burial will be the preferred means of cable protection. The ES should include an assessment of the effects of cable protection from methods other than burial, based on the worst-case scenario which has been defined for the area of cable protection likely to be required.	The commercial fisheries assessment assumes up to 10% of the inter-array and platform link cabling would be protected (as well as protection required for crossings and at entry points to the WTGs/OSP(s)), thereby limiting fishing effort in these areas, as detailed in **Table 13.2** in **Section 13.3**. Impacts related to loss of or restricted access to fishing grounds within the Project are assessed within **Section 13.6**.
MMO	2nd August 2022	The MMO note that the Applicant is not proposing to undertake any fisheries specific surveys to inform the baseline characterisation. The MMO consider this to be acceptable given the available data and publications for the Project area.	Noted.
MMO	2nd August 2022	In relation to commercial fishing activity in the Eastern Irish Sea, this project will impact most significantly on the potting and dredging activity which is prominent in this area. It may also displace/disrupt fishing activity to other parts of the Irish Sea, potentially putting extra pressure on stocks. It may also, once constructed, provide habitat creation opportunities and nursery/feeding grounds for fish.	UK potting fleets and UK, Isle of Man (IoM) and Irish dredging fleets are assessed within the impact assessment. Displacement impacts are also assessed within **Section 13.6**. Potential for habitat creation and nursery and feeding grounds are considered within **Chapter 10 Fish and Shellfish Ecology.**

Consultee	Date	Comment	Response/where addressed in the ES
MMO	2nd August 2022	There is the possibility cables could be damaged by dredging activity if not buried and maintained sufficiently deep under the seabed.	A Cable Burial Risk Assessment (CBRA) would be undertaken post-consent to confirm the extent to which cable burial can be achieved. A target burial depth is 1.5m, with a burial range of 0.5m to 3m, where possible. Additional cable protection may be required, where burial is not possible (for up to 10% of inter-array and platform link cable length as well as protection required for crossings and at entry points to WTGs/OSP(s)). Cable protection options include mattresses and rock placement. The integrity of cable burial and cable protection would be regularly monitored during the operation and maintenance phase as outlined in the Outline Offshore Operation and Maintenance Plan (Document Reference 6.6).
Statutory consultation feedback on the PEIR			
MMO	30th May 2023	Chapter 13: Commercial Fisheries Table 13.2 (Chapter 13) demonstrates that once construction commences and even during the operational phase, many fishing vessels will be excluded from fishing within the windfarm site, even if it is deemed acceptable by the operator. The MMO recommend this be taken into account when considerations are made for the Fisheries Liaison and Coexistence Plan and justifiable disturbance payments.	The Outline FLCP, submitted with the DCO Application, includes the process for justifiable disturbance payments.

Consultee	Date	Comment	Response/where addressed in the ES
		Section 3.242 (Chapter 13) evidence that significant mitigation and liaison will be required to offset the impacts of spatial squeeze on commercial fishing industry. The relative contribution of this project towards the cumulative effect has been assessed as low, however the impact from all impacting projects must be taken into consideration, to ensure the viability of the fishing fleet in the Eastern Irish Sea.	The CEA is presented in **Section 13.7**. The CEA concluded significant effects in relation to loss of or restricted access to fishing grounds; displacement of fishing vessels and effect on the commercial species resource. It is recognised that the Project has a low contribution to this overall cumulative effect. The Applicant has committed to the development of and adherence to a FLCP, in accordance with the Outline FLCP, that provides the mechanism for the involvement in a potential regional commercial fisheries working group.
		General Comments - Major Comments - The MMO note that during the decommissioning methodology, it is said that the wind turbines will be cut below seabed level. As this plan involves leaving infrastructure in place, impacts should be assessed for post-decommissioning. This is because any infrastructure will remain a hazard to navigation and fishing gear, preventing future fishing activity in the area, beyond the lifespan of the windfarm.	Impacts during the decommissioning phase are assessed within **Section 13.6**, including consideration of gear snagging associated with Project infrastructure left in situ.

Consultee	Date	Comment	Response/where addressed in the ES
Territorial Sea Committee, Isle of Man (IoM) Government	2nd June 2023	It is noted that the cumulative effects will be thoroughly investigated. However, of particular importance and concern would be the habitats and species found within Isle of Man waters, particularly those protected under Manx law or identified as threatened or declining by the OSPAR Convention, and which may be affected by the proposed developments. Comments included below request the inclusion of relevant, island-based conservation organisations which may also have relevant information and data of interest to the project. Any marine developments within or adjacent to the Isle of Man territorial waters could potentially impact commercial fisheries in Manx waters so it would be appreciated if the relevant fishing organisations on the island were included as consultees via the appointed Fisheries Liaison Officer.	The IoM Government Fisheries Department and the Manx Fish Producers Organisation (MFPO) have been included as consultees receiving regular Project updates.
		In relation to the Assessment of Effects and Cumulative Effects Conclusions in the PEIR, the Isle of Man Government is concerned that the apparently limited coverage of Manx fleet interests in the baseline data (as outlined in detailed comments) may not adequately take into account the Isle of Man's fisheries interest within the regional study area. As such, the Territorial Sea Committee seeks reassurance that the comments made will be reviewed and a more comprehensive re-assessment of the Manx fisheries interests will undertaken prior to finalisation of the EIA document, with results provided to the Territorial Sea Committee for further consideration.	The Commercial Fisheries Technical Report (**Appendix 13.1**) has been updated with the data provided by the IoM Government, and the section on IoM fisheries has been extended (**Appendix 13.1, Section 3.3.8**). This updated baseline information has informed the assessment in **Section 13.6.**

Consultee	Date	Comment	Response/where addressed in the ES
		The IoM Government notes that the Regional Commercial Fisheries Zone for the project includes almost all of the Manx territorial sea (Figure 2.2) and that the Local Commercial Fisheries Study Area lies very close to the TS boundary, as such, Manx commercial fisheries should be comprehensively considered in the PEIR and future EIA assessments using the best available data. Unfortunately the technical report for this chapter appears not to have comprehensively considered the differences between UK and Manx waters, despite Manx waters representing a significant part of the regional study area. Please see below for details and, for an overview of Manx fisheries; https://www.gov.im/media/1363405/ch-41-fisheries.pdf For the latest information please see: https://www.gov.im/about-the-government/departments/environment-food-and-agriculture/environment-directorate/fisheries/sea-fisheries/ https://www.gov.im/fishing/conditions#accordion https://www.gov.im/about-the-government/departments/environment-food-and-agriculture/environment-directorate/fisheries/sea-fisheries/legislation-policy-guidance/	The Commercial Fisheries Technical Report (**Appendix 13.1**) has been updated with the data provided by the IoM Government, and the section on IoM fisheries has been extended to include information from the links provided (**Appendix 13.1**, **Section 3.3.8**).

Consultee	Date	Comment	Response/where addressed in the ES
		Table 2.1 – note that All Manx and UK-registered vessels operating mobile gear inside the territorial sea have a requirement to operate a VMS system. As such data for all vessels is available to inform this sector in Manx waters. Comments on data sources: ▪ Landings data from 2016-2021 should be stretched further back is possible. Many fisheries are cyclical, following 7-8 year recruitment cycles, and a hindcast analysis should attempt to acknowledge this in its timeframe. ▪ MMO only provide data for over-15 m. This is a significant issue in properly understanding the temporal/spatial extent of fishing activity in proposed development areas, particularly those such as Morecambe that could feasibly be being fished by some under-15 m vessels. ▪ Figure 3.12 is an example of potential under-representation of <15m vessels, which shows large, dredge-based Scottish vessels exceeding Manx vessels in terms of value. ▪ For comparison, Manx Government statistics indicate queen scallop landings into Manx ports, from all vessels, had a value in excess of £16m over the period 2011-2021 ▪ The use of AIS as a means to address the risk of underrepresentation of <15m is not considered adequate, noting that other concurrent PEIR processes have included observational data. In the absence of additional data sources, specific	It is understood that all Manx and UK-registered vessels operating in Manx waters are equipped with VMS. ▪ Cyclical nature of landings is understood. The Technical Report (**Appendix 13.1**) has been updated to present long term data for queen scallop landings from 2011 to 2022. ▪ It is correct that VMS data provided by the MMO covers vessels that are 15m and over in length. MMO landing statistics data covers all vessel lengths for IoM and UK-registered vessels. Freedom of Information requests were submitted to the MMO to request VMS data for vessels 12-15m in length, but the MMO confirmed that it was not possible to provide this dataset. ▪ Figure 3.12 in **Appendix 13.1** was sourced from landing statistics which includes all vessel lengths, including under 15m vessels. It represents data for all UK and Manx-registered vessels of all vessel lengths. ▪ For comparison, the MMO landing statistics data indicate a total value of queen scallops from the regional study area summed for 2011 to 2021 of £ 9.8 million for Manx vessels and £39.1 million for other UK vessels; this

Consultee	Date	Comment	Response/where addressed in the ES
		engagement with local Producer Organisations and fishing Industry representatives should be undertaken in relation to this issue.	represents an average annual value of £890,000 for Manx vessels and £3.5 million for other UK vessels. The data is reflective of the values indicated in the data provided by the IoM Government, which would cover an area wider than the Project commercial fisheries regional study area, but only represents landings in Manx ports. ▪ Note that the Project is located outside the 12 nm UK Territorial Seas Limit and thereby not routinely fished by smaller inshore vessels. The underrepresentation has been addressed by considering data sources that include all vessel lengths, including landings data. Observational scouting surveys were undertaken by the FLO during geophysical surveys and presented in Figure 4.15 of the Technical Report (**Appendix 13.1**).

Consultee	Date	Comment	Response/where addressed in the ES
		Based on the relative distance from the Isle of Man, and the typical fishing patterns of the Manx fleet, it is acknowledged as likely that the Morecambe site will have limited direct impact upon Manx vessels; however, the displacement effects, particularly in relation to queen scallops, could have significant impacts upon important grounds elsewhere in the regional study area. The EIA should fully consider the displacement effects, and in the context of cumulative impacts of adjacent windfarm developments, and the potential for increased fishing area in nearby grounds within the eastern Irish Sea if the EIA determines that existing activity is indeed likely to be displaced. It appears that the majority of existing dredge activity (targeting molluscs) is toward the southern end of the site, and so mitigation of this impact may be possible through array configuration.	Displacement effects have been considered within **Section 13.6**. The active fleets across the Project target whelk via potting. Through consultation (with Scottish Fishermen's Federation (SFF), Scottish White Fish Producers Association (SWFPA), scallop fleets at Kirkcudbright, IoM PO and IoM Government) and through evidence of landings statistics, VMS data and scallop ground mapping (International Council for the Exploration of the Sea (ICES) Scallop Working Group), it is understood that the Project is not routinely targeted by scallop dredgers, but may occasionally be targeted. Based on this, it has been assessed that the effect of exclusion on scallop dredgers due to presence of the Project is not significant. Limited displacement is therefore expected for scallop dredgers due to not being able to access the windfarm site. However, given consideration of other planned developments the cumulative assessment does assess a significant impact for displacement for Manx and UK scallop dredgers as detailed in **Section 13.7**.

Consultee	Date	Comment	Response/where addressed in the ES
		For clarity, please ensure that reference to IoM-registered vessels is clearly stated if they are included in UK-registered vessels data, otherwise requests for such clarity will continue to be made. It is important to the Isle of Man Government that it is evident that the Manx fleet has been appropriately considered as part of this process.	Noted and updated within the Technical Report (**Appendix 13.1**) and throughout this chapter.
		As the Isle of Man is not part of the UK, the assessment must also be considered in the context of a separate/neighbouring jurisdiction, with its own legislative system, and in terms of transboundary effects. It should be recognised that legislation may be different but also that international treaty and convention commitments may be relevant to the Isle of Man.	Noted and updated, with further detail added to Section 3.3.8 of **Appendix 13.1.**
		3.2.1 Scallop dredge: please note that Isle of Man vessels typically do not target queen scallops using a dredge, and that queen scallops are not caught in Manx waters using a dredge. As such, in the context of the regional study area, it should be recognised that both gear types are used to catch scallop species, and that fleet characteristics and spatial considerations are relevant.	Noted, queen scallop has been added to the list of species targeted by demersal otter trawl in Technical Report Section 3.2 of **Appendix 13.1.**

Consultee	Date	Comment	Response/where addressed in the ES
		Queen scallop It is also noted that research information and stock assessments being used as an indicator for wider Irish sea stocks, must consider gear differences, and that queen scallops are only fished for around 4 months in Manx waters (in part due to preferred use of trawl gear), compared to around 9 months of fishing for queen scallop in UK waters. So there are other contributing factors to stock assessment and trends that must be considered before making comparisons. Please note latest data on queen scallop stock is available http://sustainable-fisheries-iom.bangor.ac.uk/documents/government-reports/scallop/2022/QSC_StockAdvice_Report_2022_Final.pdf See also: http://sustainable-fisheries-iom.bangor.ac.uk/communications.php.en There are significant management measures in place for queen scallops in the Manx territorial sea, including catch limits and a 55mm MLS, contrary to information contained in this section. For details please see IoM licence conditions: https://www.gov.im/fishing/conditions#accordion	Noted and information has been updated in the Technical Report Section 3.2 of **Appendix 13.1.**

Consultee	Date	Comment	Response/where addressed in the ES
		King scallop For latest scallop stock status report in Manx waters please see : http://sustainable-fisheries-iom.bangor.ac.uk/documents/government-reports/scallop/2022/SCESurveyReport2022_Final.pdf There are catch limits in place for king scallops in Manx waters. For details please see IoM licence conditions: https://www.gov.im/fishing/conditions#accordion 3.2.2 Pots and Traps Table 3.3 appears to have completely excluded Manx static gear vessels operating within the regional study area, including within the IoM territorial sea. For example Manx data (2018-2021) on landings (all vessels) and value into the IoM indicates the following; Please address this oversight accordingly. Please note, in Manx territorial sea the following MLS apply; Whelk = 75 mm Lobster = 90 mm Brown crab = 140 mm For details on licencing and management measures in place please see; https://www.gov.im/fishing/conditions#accordion	Noted and information has been updated in the Technical Report Section 3.2 of **Appendix 13.1.** In relation to Manx potting, this fleet is not active across the windfarm site and therefore impacts are restricted to cumulative effects in the regional study area as assessed in **Section 13.7**.

Consultee	Date	Comment	Response/where addressed in the ES
		3.2.6 Demersal otter trawl This section, and Figure 3.7, appears to have completely excluded queen scallop from this gear type, which is predominantly caught in Manx water using otter trawl. See Figure 3.28, which shows otter trawl activity in Manx waters not associated with the species mentioned in 3.2.6. This is a significant oversight and should be corrected. Queen scallop: fishing activity map (otter trawl) based on EU VMS data (2018-2022) from Citrix (available from MMO) merged with NestForms data (held by DEFA, IoM Government). Alternatively, EU logbook data from Citrix (available from MMO) could be used in place of NestForm data.	Noted and updated. The information provided by the IoM Government has been added to the Technical Report (**Appendix 13.1**), specifically fishing activity mapping within the IoM territorial waters. Note that the correct reference for Figure 3.28 has been updated to Figure 4.11 in the Technical Report (**Appendix 13.1**).
		3.3. Fishing Activity Assessment As noted above, the use of >12 and > 15m vessel data is unlikely to provide a comprehensive assessment. For example, Figure 3.25 shows limited static gear activity in Manx waters, however, data plotted recently by IoM Government shows much more static gear activity for the Manx territorial sea area; Data on smaller Manx static gear vessels could be obtained from various sources, including Isle of Man Government, MFPO or Manx fishermen directly.	Noted and understood. The information provided by the IoM Government has been added to the Technical Report (**Appendix 13.1**), specifically fishing activity mapping within the IoM territorial waters. Note that the correct reference for Figure 3.25 has been updated to Figure 4.5 in the Technical Report (**Appendix 13.1**).

Consultee	Date	Comment	Response/where addressed in the ES
		Crab and lobster commercial fishery activity data (2010 to 2021) (static gear) based on pot hauls (as a proxy for fishing effort/activity)). Data is obtained from monthly shellfish activity forms, but which does not contain EU logbook data from larger U.K. vessels (I.e. U.K. vessels fishing in 38E5), and so is not comprehensive. It is not known whether this data is available on Citrix (i.e. from MMO), or whether only DEFA holds it. Whelk commercial fishery activity map (2010 to 2021)(static gear) based on pot hauls (as a proxy for fishing effort/activity)). Data is obtained from monthly shellfish activity forms, but which does not contain EU logbook data from larger U.K. vessels (I.e. U.K. vessels fishing in 38E5), and so is not comprehensive. It is not known whether these data is available on Citrix (i.e. from MMO), or whether only DEFA holds it.	
		Where in Figure 3.30 is Manx-registered vessel data, which contains UK, Northern Irish and Irish vessels? Manx vessels significantly target scallops in the regional study area, especially within the territorial sea; so their apparent exclusion questions the comprehensiveness of the baseline and consequent assessment.	Note that the correct reference for Figure 3.30 has been updated to Figure 4.14 in the Technical Report (**Appendix 13.1**). Figure 4.14 of **Appendix 13.1** ~~has been~~presents data mapped by the ICES Scallop Working Group. It has been confirmed with the IoM government that that the UK grounds include IoM vessels. Manx vessels have been included in the impact assessment (**Section 13.6)** and CEA (**Section 13.7**). The CEA concludes a significant impact for UK (including Manx) scallop dredgers in relation to displacement and effects on scallop resource. See

Consultee	Date	Comment	Response/where addressed in the ES
			Section 13.7.
		King scallop: fishing activity map (dredge) based on EU VMS data (2017/18-2021/22) from Citrix merged with NestForms data (held by DEFA, IoM Government). Alternatively, EU logbook data from Citrix (available from MMO) could be used in place of NestForm data.	Noted and understood. The information provided by the IoM Government has been added to the Technical Report (**Appendix 13.1),** specifically fishing activity mapping within the IoM territorial waters.
		3.3.8 Isle of Man Fisheries Activity Assessment As noted above, this section appears to be less than comprehensive. Due to the importance of the fishing industry to the Manx economy and territorial sea, and their inclusion within the regional study area for this development proposal, the Isle of Man Government requests that this section is reviewed, and assessed accordingly within the technical report and PEIR.	Noted. Section 3.3.8 of **Appendix 13.1** has been updated to include the information provided by the IoM Government which has informed the impact assessment (**Section 13.6**) and CEA (**Section 13.7**).
		5 Summary As above, this section does not reflect the appropriate inclusion of the Isle of Man within the regional study area. In fact, it is not mentioned at all in the summary, which is surprising considering the territorial sea comprises a significant area of fishing activity and is largely within the regional study area.	Noted and the ES has been updated to explicitly define Manx and UK vessels and incorporate the information and data provided by the IoM Government.

Consultee	Date	Comment	Response/where addressed in the ES
		PEIR 13.15- 13.16 and 13.17 When dealing with potential interactions with non-EU jurisdictions, it may be necessary to consider the equivalent of species and area protections. For the Isle of Man, which is not, and has never been an EU member state, please refer to the Wildlife Act 1990 for legal protection within Manx waters. Manx Marine Nature Reserves have specific fisheries management measures applied and, as noted above, specific management measures apply to Manx waters which should be considered in terms of displacement effects. For example, it cannot be assumed that displaced vessels from the array area can fish in Manx waters (thereby concentrating displacement in a reduced UK waters area. Similarly, displacement into Manx waters must be considered in the context of Manx legislation, policies and strategies eg. the recently adopted LTMP for scallops, which fundamentally restricts access in favour of economic benefit to licenced vessels, whose numbers are broadly matched to track record and stock status; https://www.gov.im/media/1376550/ltmp-10-260522.pdf https://www.gov.im/media/1376551/sf-04-2022-capacity-reduction-programme-king-scallop-v2.pdf https://www.gov.im/media/1376552/sf-05-2022-grandfather-rights-king-scallop-260522.pdf Legislative and fisheries management and policy objectives within a non-UK jurisdiction inside the Regional fisheries study area should at least be acknowledged, even if found not to be significant in EIA	Noted and included in the Technical Report (**Appendix 13.1, Section 3.3.8,** which has informed the impact assessment (**Section 13.6**) and CEA (**Section 13.7**).

Consultee	Date	Comment	Response/where addressed in the ES
		terms. See Chapter 1.2 of the Manx Marine Environmental Assessment: https://www.gov.im/media/1363391/ch-12-legislative-system.pdf	
		13.22 Please confirm that Isle of Man-registered vessels have been included in landing statistics.	It is confirmed that IoM registered vessels have been included in the landing statistics. For EU (including UK) VMS data is it understood that IoM vessels are included in the UK dataset.
		13.4.6 Assumptions and Limitations Please see comments above on the Technical Report relevant to this consideration. 13.42: as noted elsewhere, it is understood that MMO VMS data is not limited to >15m vessels. Manx data, which is dominated by <15m vessels is available on the MMO database.	Noted and included in the Technical Report (**Appendix 13.1**).
		13.5.2 Description of Fishing Fleets etc Please see comments above on the Technical Report relevant to this consideration, in particular the absence/limited inclusion of Manx-related otter trawl and static gear activity. Table 13.12: ditto, as it has a complete absence of Isle of Man reference within the regional study area.	Noted and section has been updated in the Technical Report (**Appendix 13.1, Section 3.3.8)** which has informed the impact assessment (**Section 13.6**) and CEA (**Section 13.7**). In addition, **Table 13.12** includes reference to Manx fleets. Demersal otter trawl has been updated to include queen scallops as a target species.

Consultee	Date	Comment	Response/where addressed in the ES
		13.6 Assessment of Effects Table 13.13 – no reference to queen scallop as target species for otter trawl. Overall, the Isle of Man Government is concerned that the apparently limited coverage of Manx fleet interests the baseline data (outlined above), and therefore the resultant effects assessment, does not adequately take into account the Isle of Man's fisheries interest within the regional study area. As such, the TSC seeks reassurance that the comments made will be reviewed and a more comprehensive re-assessment of the Manx fisheries interests will be undertaken prior to finalisation of the EIA document, with results provided to the Territorial Sea Committee for further consideration.	Noted and it is confirmed that both the Technical Report (**Appendix 13.1**) and this chapter have been updated to explicitly state inclusion of IoM vessels within the data and to incorporate the information and data provided by the Isle of Man Government.
		13.7 Cumulative Effects Please also note Crogga gas project: https://www.crogga.im/ And a likely second electricity interconnector between IoM and UK. Contact Manx Utilities Authority for details.	Noted and included in the CEA presented in **Section 13.7**.
		Overall, the Isle of Man Government is concerned that the apparently limited coverage of Manx fleet interests the baseline data (outlined above), and therefore the resultant effects assessment, does not adequately take into account the Isle of Man's fisheries interest within the regional study area. As such, the TSC seeks reassurance that the comments made will be reviewed and a more comprehensive re-assessment of the Manx fisheries interests will undertaken prior to finalisation of the EIA document, with results	Noted and information has been updated in the Technical Report (**Appendix 13.1**) and this chapter to explicitly refer to IoM vessels separately within the impact assessment (**Section 13.6**) and CEA (**Section 13.7**).

Consultee	Date	Comment	Response/where addressed in the ES
		provided to the Territorial Sea Committee for further consideration.	
North West Inshore Fisheries Conservation Authority	2nd June 2023	*Fisheries Liaison Officer communication* It is vital that a Fisheries Liaison Officer (FLO) establishes and maintains effective communications between the project and fishers at all stages to fully inform fishers of all developments, activities and works associated with this project. Currently it is unclear which fisheries interests in the North West have been contacted in relation to this project and how the project intends to cooperate with fishers as the project continues. Should assistance in identifying relevant fisheries be required, please contact the science team on the contact details above.	The Applicant confirms that a FLO is in place who maintains regular communication with the local fishermen's associations. Face-to-face meetings were held at Annan, Blackpool, Conwy, Kirkcudbright and Whitehaven in September 2023. Regular emails are also issued to a wide network, including Notice to Mariners (NtMs).
		Displacement of fishing activity mitigation As mitigation for the reduction in access to, or exclusion from, established fishing grounds and displacement to alternative fishing grounds (particularly for the UK potting fleet), it is noted that a Fisheries Liaison and Co-existence Plan (FLCP) will be created with justifiable disturbance payments. The NWIFCA recognises that this co-ordination is highly important, and the project must ensure continued communication with fishers to ensure appropriate mitigation. If assistance with communicating with industry members or identifying the fishing activity in affected areas is required, please contact the science team on the contact details above.	Noted. The Outline FLCP has been submitted with the DCO Application and includes the process for justifiable disturbance payments.

Consultee	Date	Comment	Response/where addressed in the ES
		Interaction with commercial shellfisheries Several commercially important shellfish beds (cockle and mussel) are located on the North West coastline in proximity to the proposed transmission cable route. Commercial mussel and cockle beds are located at Lytham and the mouth of the River Ribble, and these are designated shellfish waters. The work has the potential to interfere with these fisheries. We are unable to provide comment at this time as the information relating to precise locations and methodologies of the project is unavailable. Therefore, we ask that we are consulted once the proposal for these works has been developed. NWIFCA hold important information regarding fishing activity in the area which could be of benefit in future impact assessments for the work.	It is noted that this comment is more applicable to the Transmission Assets, not the Project (Generation Assets). A 'combined' assessment considering both the Project and the Transmission Assets has however been provided within the CEA (**Section 13.7.3.1**) so effects to the inshore fishery are considered together.
		Concerns of commercial fishers There are local fishers with commercial interest in a number of species in the area, specifically Sole, Plaice, Bass and Mullet. This includes an inshore fleet operating from Lytham. These fishers must be contacted and consulted and NWIFCA can assist with this if necessary.	The Applicant confirms that the FLO is in contact with Lytham fishers, however the Project effects to the inshore fisheries are largely restricted to effects on targeted species which are assessed in **Chapter 10 Fish and Shellfish Ecology**.
		Cumulative impact NWIFCA welcomes the cumulative impact assessment and the continued discussion with developers in the region related to potential mitigation solutions for commercial fisheries.	Noted. The CEA is presented in **Section 13.7**.

Consultee	Date	Comment	Response/where addressed in the ES
		The NWIFCA expects continued communication between the Applicant, NWIFCA, fishers and experts throughout planning, construction, operation and decommissioning of the Project to ensure that any issues arising will be resolved in a timely manner and in a way that is acceptable to all parties. We would like to be consulted on final methodologies to ensure fisheries and fisheries interests are protected.	Noted, further stakeholder consultation has been undertaken since the publication of the PEIR as outlined in the meetings taken place below. The Outline FLCP has been submitted with the DCO Application, and includes on ongoing consultation and liaison.
NFFO and Welsh Fisherman's Association (WFA)	4th June 2023	Commercial Fisheries The following comments are in reference to the Commercial Fisheries chapter of the PEIR, Volume 3, Chapter 13 and the Commercial Fisheries Technical Report, Appendix 13.1. This chapter characterises the commercial fishing industry well and effort has been made to describe the fisheries using a variety of sources, there is however, a lack of stakeholder information used that has been presented for other developments in the region. However, there remain issues with how those data have been interpreted and used to assess the impacts to the diverse fishing fleets that are the current users of the area.	Noted, further stakeholder consultation has been undertaken since the publication of the PEIR as outlined in the meetings taken place below. Additional information gathered has been reflected in the Technical Report **(Appendix 13.1)** and this chapter within the impact assessment (**Section 13.6**) and CEA (**Section 13.7**).
		The PEIR only identified the static gear sector as requiring any form of mitigation. The impact to the diverse fishing activity of mobile gear types is assessed as minor adverse at worse, due to their ability to operate within the wind farm post construction or operate elsewhere. There is minimal evidence to date of mobile gear operating within other wind farm array areas. This will be compounded by the extensive, parallel offshore	The impact assessment (**Section 13.6**) was informed by baseline data which indicated that the active fisheries within the windfarm site were focused on potting for whelk. The impact assessment (**Section 13.6**) during construction (when fishing vessels would be temporarily excluded from

Consultee	Date	Comment	Response/where addressed in the ES
		wind developments in the region, limiting the available fishing areas in the region. Therefore, it must be assumed that mobile gear fisheries will face a loss of earnings through loss of access to grounds and having to steam to new fishing grounds, this significant impact needs to be reassessed as part of the PEIR.	construction areas) also concluded a Project-alone minor adverse effect following mitigation for the UK potting fleet. The impact assessment (**Section 13.6**) and CEA (**Section 13.7**) assessed impacts on a fleet by fleet basis including the mobile sectors.
		It is welcomed that fisheries a Fisheries Liaison and Co-Existence Plan will be developed with stakeholders. We would like to ensure that all relevant stakeholders can feed into this development, including the fishing fleets from devolved administrations that operate in the area. Whilst there is a commitment to follow FLOWW Guidelines (2014/5) for liaison and disruption agreements, these are under review, and we would like to see this acknowledged within the PEIR and a commitment made to follow the most up to date guidelines.	Noted and agreed. The Applicant is committed to following the procedures as outlined in the FLOWW guidance documents (2014 and 2015; and future updates to this guidance). The Outline FLCP has been submitted with the DCO Application.
		We feel that the assumption that displacement effects during construction for all the different fishing mobile gear sectors will be “negligible” is vastly overoptimistic. These are the dominant gear types used in the area, but the only mitigation discussed is for the static gear sector. The only justification for this seems to be that fishers can disperse into other areas. This is not the case, especially in regions such as this, with extensive existing offshore developments, alongside legislative and conservation restrictions and two other wind farm developments being constructed. Displacing a diverse fishing fleet into an already crowded marine space will have an impact on	The impact assessment for displacement within the PEIR and within the ES did not conclude negligible effects. The impact assessment (**Section 13.6**) found a Project-alone moderate adverse (pre mitigation) effect to the potting fleet for displacement during construction; and minor for all other fleets except pelagic which was negligible. The assessment (**Section 13.6**) is informed by the current levels of fishing activity. While scallop dredging is widespread in the

Consultee	Date	Comment	Response/where addressed in the ES
		those fishing businesses that is likely to be far from negligible.	region, activity is not focused across the windfarm site. The assessment remains valid.
		For the dredge sector, operating in the west of the development area, an estimated economic loss to businesses of ~15% (value derived from figures presented in 13.51 and 13.80) is considered during the construction phase as “minor adverse” and no mitigation suggested, this again contravenes the NW Marine Plan, NW-FISH-2, to avoid, minimise and mitigate with regards to commercial fisheries. Up to a 15% loss of revenue with no attempt to minimise or mitigate for impacts is not acceptable and will place those fishing businesses at risk.	The impact to the dredge sector is presented in **Section 13.6** and does not include a percentage calculation for economic loss. It is understood that this comment is of relevance to a different development within the region. The impact assessment (**Section 13.6**) found a Project-alone moderate adverse (pre-mitigation) effect to the potting fleet for loss of access due to displacement.
		The commercial fisheries in the region will be expected to see a vastly changing landscape through the lifespan of the Morecambe project. The spatial squeeze on fisheries due to offshore developments in the region is already extensive in the Eastern Irish Sea and facing three developments running in parallel. There is also the likelihood of further restrictions with regards to the potential ban on all mobile gear within MCZs. There are also factors associated with the renegotiation of the Trade and Cooperation Agreement (TCA) that will affect opportunities in the region. Whilst these elements are acknowledged in the PEIR as possible factors, they are not accounted for in the assessments.	The CEA presented in **Section 13.7** includes consideration of other windfarm developments and designated sites. This concludes a significant effect for the potting and scallop dredging fleets in relation to exclusion, displacement and resource effects. The Applicant has committed to the development of and adherence to a FLCP, in accordance with the Outline FLCP, that provides the mechanism for the involvement in a potential regional commercial fisheries working group as well as monitoring of fishing activity data as presented in **Section 13.11**.

Consultee	Date	Comment	Response/where addressed in the ES
		It is recognised that the PEIR attempts to characterise a commercial fisheries baseline by analysing many different data sources to describe and analyse the commercial fisheries impact, however including stakeholder expertise can enhance the understanding of commercial fisheries further. The limitations of the data are well understood and described, with confidence levels assigned to the different data sources. However, the assumptions made, and subsequent impacts assessed from these data, do not seem to be influenced by their pedigree or the confidence levels assigned, leading to a “minor/negligible” or “no significant effect” in all cases.	The impact assessment presented in **Section 13.6** identified significant Project-alone effects during the construction phase (for potting exclusion and displacement) that require additional mitigation to reduce the residual impact to ‘minor adverse’. The CEA presented in **Section 13.7** identified significant effects for potting and scallop dredge fleets based on reduced access, displacement and scallop resource impacts. The Applicant has committed to the development of and adherence to a FLCP, in accordance with the Outline FLCP, that provides the mechanism for the involvement in a potential regional commercial fisheries working group, as well as monitoring of fishing activity as presented in **Section 13.11**.
		Many of our concerns may be offset by sufficient monitoring of impacts to receptors, however details on such are lacking from the PEIR, only a commitment to develop an IPMP is stated (13.263). Additionally, synergising assessments from neighbouring Round Four wind farm developments (that have assessed the impacts to the regions commercial fisheries very differently) will further aid in truly assessing impacts and mitigating for such.	The CEA is presented in **Section 13.7**. The Applicant has committed to the development of and adherence to a FLCP, in accordance with the Outline FLCP, that provides the mechanism for the involvement in a potential regional commercial fisheries working group, as well as monitoring of fishing activity as presented in **Section 13.11**.

Consultee	Date	Comment	Response/where addressed in the ES
		In fisheries management, a precautionary principle is employed where there is uncertainty or a paucity of relevant data. This does not seem to be the case for impact assessments. Limitations of data are acknowledged but do not seem to influence the outcomes of assessed impacts, a flaw in the methodological design and interpretation.	Data limitations have influenced the overall assessment, particularly for under 15m vessels not included within VMS data. Landing statistics are considered to have higher confidence due to inclusion of all vessel lengths; this, coupled with stakeholder consultation, has been vital in informing the assessment and impact significance presented in **Section 13.6** and the CEA presented in **Section 13.7**.
		Whilst we appreciate the difficulties in assessing impacts with limited data sources, we feel that the analysis is affected by these shortcomings, and this needs to be accounted for in the methodology. The development of the Morecambe Offshore Wind farm will have an impact on the diverse fishing fleets operating in the area, this PEIR underestimates these impacts on nearly every receptor assessed.	The impact assessment presented in **Section 13.6** identified significant Project-alone effects during the construction phase (for potting exclusion and displacement) that require additional mitigation to reduce the residual impact to 'minor adverse'. The CEA presented in **Section 13.7** identified significant effects for potting and scallop dredge fleets based on reduced access, displacement and scallop resource impacts. The Applicant has committed to the development of and adherence to a FLCP, in accordance with the Outline FLCP, that provides the mechanism for the involvement in a potential regional commercial fisheries working group, as well as monitoring of fishing activity as presented in **Section 13.11**.

Consultee	Date	Comment	Response/where addressed in the ES
Morecambe Bay Fisherman's Association	2nd June 2023	Concern raised in relation to the decommissioning phase of the project. Concern raised regarding potential for barrier effect for migration of, bass, mullet, hounds, salmon, seatrout, cockle and spat.	The ES has assessed impacts throughout the lifetime of the Project, including decommissioning. For commercial fisheries, decommissioning impacts are considered to be similar to construction impacts, which were found to be significant, requiring additional mitigation to reduce the residual impact to minor, as presented in **Section 13.6** and **Section 13.7**. However, the detail and scope of the decommissioning works would be determined in accordance with the relevant legislation and guidance at the time. Migration of fish species (and barrier effects) are considered within **Chapter 10 Fish and Shellfish Ecology.**
		Concern raised in relation to the long term socioeconomics of three projects will be detrimental to the local fishing fleets.	The CEA presented in **Section 13.7** includes consideration of the Mona and Morgan Offshore Wind Projects.
SFF	2nd June 2023	Thank you for sharing this consultation opportunity with SFF. Hereby, SFF file a 'nil response' on this consultation.	Noted.
Informal meetings			
Department of Environment, Food and Agriculture (DEFA) – Fisheries Division (IoM	25th October 2022	Query as to whether fisheries data sources include Isle of Man (IoM) activity, for both over and under 15m length vessels.	The IoM vessels are included in MMO landing statistics and MMO VMS data. Landing statistics include both over and under 15m length vessels, whilst MMO VMS data includes only vessels 15m and over. Where possible, landings data has been presented specific to the nation a

Consultee	Date	Comment	Response/where addressed in the ES
Government) and ~~Manx Fish Producers' Organisation~~MFPO			vessel is registered, including IoM, in particular see **Plate 13.1** in **Section 13.5.1**.
	25th October 2022	Query as to whether IoM fisheries will be captured in the stand-alone project assessment or considered in relation to transboundary effects. Concern is raised that a displacement effect is likely to be experienced by IoM fishing interests in terms of displaced vessels coming into IoM grounds, particularly from a cumulative perspective.	The existing environment **Section 13.5** confirms that IoM vessels are included in the baseline data sources, in particular see **Plate 13.1** in **Section 13.5.1**. Transboundary effects consider displacement into the IoM Exclusive Economic Zone (EEZ), **Section 13.8**. The CEA is presented in **Section 13.7** and includes consideration of displacement.
	25th October 2022	It is advised that landings data shown over 8 to 9 year period is welcomed, because queen scallop show 7 to10 year cyclical variations that will only be captured over this time series, as a minimum. Noted that king scallop is slightly different; typical 2 to 3 year cyclical variation, and less significant variation. The annual April to June seasonal closure of queen scallop fishery in the Irish Sea is also highlighted.	Noted. Landings data for queen scallop from the regional study area is presented for the period 2011 to 2022 in **Appendix 13.1**.
	25th October 2022	Information is requested regarding the effect of wind farm development on queen scallop populations, noting this as an area of concern of IoM fisheries stakeholders. Potential connectivity between different scallop grounds in Irish Sea in terms of larval supply and the recruitment process should be considered.	Ecological effects on fish and shellfish stocks are considered in **Chapter 10 Fish and Shellfish Ecology**, and associated impacts are considered in this chapter in **Section 13.6** and **Section 13.7**. The IoM Government has been invited and attended the Fish and Shellfish Ecology Expert Topic Group (ETG)

Consultee	Date	Comment	Response/where addressed in the ES
			meetings.
SFF and Scottish White Fish Producers Association (SWFPA)	28th October 2022	Confirmation that, as shown by the baseline data analysed, the scallop fishery is important in this area. Noted that the nomadic fleet is increasingly being pushed out of other grounds and so consideration of cumulative effects is very relevant. Some of the vessels in the area will likely be from the nomadic fleet, with some from Kirkcudbright being more locally based.	The dredge activity has been described within the existing environment (**Section 13.5**), together with a more detailed description in **Appendix 13.1**.
	28th October 2022	Concern around cumulative effects was raised, noting that while working group forums are a helpful tool, the planning process should be seeking to address this. Currently there is no Government position on how to determine when cumulative development has reached a threshold; this is lacking and should be addressed.	The CEA is presented in **Section 13.7**. The Applicant is committed to continued discussion with other project developers in the region to ensure a consistent approach to liaison, including through the Outline FLCP and participation in a Commercial Fisheries Working Group, as well as monitoring of fishing activity at a regional level as presented in **Section 13.11**.
Anglo-North Irish Fish Producers Organisation (ANIFPO)	2nd November 2022	Noted that all available data sources have been accessed and that the windfarm site is not located within key fishing grounds for the Northern Irish fleet, but that the wider region is of importance.	Noted.

Consultee	Date	Comment	Response/where addressed in the ES
	2nd November 2022	Queried the potential effects on spawning grounds and the need to consider this in the Environmental Impact Assessment (EIA).	Potential effects for nursery and feeding grounds has been considered within **Chapter 10 Fish and Shellfish Ecology**.
	2nd November 2022	Noted that cumulative displacement will be a key issue regionally.	The CEA is presented in **Section 13.7**. The Applicant has committed to the development of and adherence to a FLCP, in accordance with the Outline FLCP, that provides the mechanism for the involvement in a potential regional commercial fisheries working group, as well as monitoring of fishing activity as presented in **Section 13.11**.
Local open face to face meetings (advertised to the fishing community) at Whitehaven/Work ington, Lancaster, Rhyl and Conwy	28 – 30th November 2022	Noted that cumulative displacement will be a key issue regionally.	The CEA is presented in **Section 13.7**. The Applicant has committed to the development of and adherence to a FLCP, in accordance with the Outline FLCP, that provides the mechanism for the involvement in a potential regional commercial fisheries working group, as well as monitoring of fishing activity as presented in **Section 13.11**.
Local open face to face meetings (advertised to the fishing community) at Annan, Blackpool, Conwy,	19th - 21st September 2023	Fishers were generally concerned about the cumulative impacts from all three windfarms and existing windfarms, and the loss of fishing grounds.	The CEA is presented in **Section 13.7**. The Applicant has committed to the development of and adherence to a FLCP, in accordance with the Outline FLCP, that provides the mechanism for the involvement in a potential regional commercial fisheries working group, as

Consultee	Date	Comment	Response/where addressed in the ES
Kirkcudbright and Whitehaven			well as monitoring of fishing activity as presented in **Section 13.11**.
North West Inshore Fisheries Conservation Authority (NWIFCA)	26th October	Discussion around comments provided on the PEIR as set out earlier in this table.	It is noted that this comment is more applicable to the Transmission Assets, not the Project (Generation Assets). A 'combined' assessment considering both the Project and the Transmission Assets has however been provided within the CEA (**Section 13.7.3.1**) so effects to the inshore fishery are considered together.
Fisheries Division (IoM Government)	23rd November 2023	Discussion around data to be added to the ES following comments provided on the PEIR.	This chapter and **Appendix 13.1** have been updated with data provided by the IoM Government.
NFFO	1st December 2023	Discussion around comments provided on the PEIR and concern in particular around data sets, cumulative impacts and appropriate mitigation.	This chapter and **Appendix 13.1** have been updated, noting the CEA is detailed in **Section 13.7.3.2**. Please refer to Project responses to the NFFO PEIR comments provided above.
ANIFPO and NIFPO	4th December 2023 and 5th February 2024	Discussion around concerns of displacement, cumulative effects on stocks (including herring) and a request for monitoring. The assumption of mobile gear active within the Project during the operational phase was also discussed. Discussions on effects to fish and shellfish, including piling, were also undertaken.	This chapter and **Appendix 13.1** have been updated, including assumption of active fishing during the operational phase in **Table 13.2**. Monitoring proposals are outlined in **Section 13.11**. The Applicant has committed to the development of and adherence to a FLCP, in accordance with

Consultee	Date	Comment	Response/where addressed in the ES
			the Outline FLCP, that provides the mechanism for the involvement in a potential regional commercial fisheries working group, as well as monitoring of fishing activity as presented in **Section 13.11**.
Belgium producer organisation Rederscentrale	6th December 2023	Discussion on location of Belgian beam trawl fleet activity which is understood to focus on grounds to the north and outside of the Project, which was corroborated by Rederscentrale.	This chapter and **Appendix 13.1** include consideration of the Belgian beam trawl fleet.
Western Fish Producers Organisation	1st February 2024	Discussion on activity of member vessels, including UK beam trawl fleet activity which is understood to be focused in areas outside of the Project, which was corroborated by the Western Fish Producers Organisation.	This chapter and **Appendix 13.1** include consideration of the UK beam trawl fleet.
Independent fisher	15th March 2024	Discussion on fishing activity across the wind farm site, proposed mitigation for the potting fleet and appropriate lines of communication.	The ES has described the UK potting fleet in **Section 13.5** and the Technical Report (**Appendix 13.1**) and assessed impacts in **Section 13.6** and **Section 13.7**. Details of additional mitigation and liaison are provided in the Outline FLCP.

13.3 Scope

13.3.1 Study area

13.10 The windfarm site (encompassing all Project infrastructure) is located in the Eastern Irish Sea and encompasses a seabed area of 87km^2. The nearest point from the windfarm site to shore (coast of northwest England) is approximately 30km from the Lancashire coast.

13.11 Fishing stocks are managed by the International Council for the Exploration of the Sea (ICES) division, and quotas for specific species are allocated per stock and ICES division, i.e. at a scale of ICES division 7a: Irish Sea. ICES rectangles are the smallest spatial unit used to collate commercial fisheries data; and it is considered appropriate to define the study areas using these.

13.12 The windfarm site is located wholly within ICES rectangle 36E6, which represents the local commercial fisheries study area for the EIA. Note that the windfarm site occupies only a portion (less than 3%) of the ICES rectangle. In order to understand fishing activity in waters adjacent to the Project, a regional commercial fisheries study area has been defined to include 36E6, together with surrounding ICES rectangles 37E6, 37E5, 36E5, 35E5 and 35E6. Baseline data has been gathered and analysed for the regional study area.

13.13 In summary, the study areas for commercial fisheries are shown in **Figure 13.1** and encompass:

- Local commercial fisheries study area: 36E6
- Regional commercial fisheries study area: 37E6, 37E5, 36E6, 36E5, 35E5 and 35E6

13.14 The cumulative effects assessment considers a wider study area, at the scale of the Irish Sea, to ensure appropriate consideration of the range of fishing grounds targeted by the fishing fleets under assessment.

13.3.2 Realistic worst-case scenario

13.15 The final design of the Project would be confirmed through detailed engineering design studies that would be undertaken post-consent to enable the commencement of construction. To provide a precautionary but robust impact assessment at this stage of the development process, realistic worst-case scenarios have been defined. The realistic worst-case scenario (having the most impact) for each individual impact is derived from the Project Design Envelope (PDE) to ensure that all other design scenarios would have less or the same impact. Further details are provided in **Chapter 6 EIA Methodology**. This approach is common practice for developments of this nature, as set out in PINS Advice Note Nine: Rochdale Envelope (2018).

13.16 The realistic worst-case scenarios for the commercial fisheries assessment are summarised in **Table 13.2**. These are based on the PDE described in **Chapter 5 Project Description**, which also provides details regarding specific activities and their durations. The envelope presented has been refined as much as possible between PEIR and ES, presenting a project description with design flexibility only where it is needed.

Table 13.2 Realistic worst-case scenarios for commercial fisheries

Impact	Worst-case scenario	Notes and rationale
Construction phase		
Impact 1: Reduction in access to, or exclusion from established fishing grounds	**Construction period:** 2.5 years **Safety Zones:** ▪ 500m radius from any Project construction activity above or below water would be applied for ▪ 50m Safety Zone would be applied for around partially completed Project structures or complete Project structures undergoing commissioning **WTG & OSP foundations:** ▪ 35 WTGs with Gravity Base Structure (GBS) foundations (including jack-up vessel footprint) = 303,625m^2 ▪ Two x OSPs with GBS foundations (including jack-up vessel footprint) = 17,350m^2 ▪ Anchoring for 35 WTGs and two OSPs = 26,640m^2 Total = **347,615m^2**	The worst-case 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 seabed area undergoing seabed preparation and exclusion zones around major activities. Roaming 500m safe passing distance for mobile installation vessels, which may, in exceptional circumstances, be increased to 1,000m dependant on the nature of the installation works. It is important to note that construction works are temporary and would not apply in full to all areas throughout the 2.5 year construction phase. Given the seabed preparation is the same per foundation for smaller and larger WTGs, the worst-case assumes 35 x smaller WTGs with GBS foundations. GBS foundations are assumed to have a diameter of 65m + 10m disturbance either side. The worst-case scenario is for two jack-up visits per WTG/OSP foundation in different positions over the construction period (each jack-up with 6 legs, each with a 250m^2 footprint). This equates to a total footprint of 1,500m^2 per jack-up vessel visit and 3,000m^2 over the construction period per WTG/OSP foundation. The worst-case scenario is for two anchor positions per foundation (including resetting), with up to 12

Impact	Worst-case scenario	Notes and rationale
		anchors per location. Each anchor width is estimated to be 6m, with an approximate seabed footprint of 30m^2 per anchor. It should be noted that, incrementally, there would be a reduction in access due to the presence of WTGs/OSPs and scour protection, cable crossings and cable protection, plus the temporary footprint of preparatory works. The permanent footprints are presented as Operational Impact 1 and are not repeated here.
	Inter-array and platform link cables: ▪ Inter-array cables = 1,750,000m^2 ▪ Platform link cables = 250,000m^2 Total = **2,000,000m^2**	The worst-case scenario for physical disturbance for cables is based on a maximum length of 70km of inter-array cables and 10km of platform link cables, with a 25m wide installation corridor in which cable preparation activities may take place (this encompasses pre-lay activities (e.g. boulder removal), trenching and spoil width).
	Cumulative area of seabed disturbance: 2,347,615m^2 (approximately 2.4km^2)	
Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	As per construction Impact 1.	This represents the maximum duration and extent of fishing exclusion throughout the construction phase and hence the greatest potential for displacement.
Impact 3: Displacement or disruption of commercially important fish and shellfish resources	Refer to the realistic worst-case scenario presented in Table 10.2 in **Chapter 10 Fish and Shellfish Ecology**.	The scenarios presented in the fish and shellfish ecology chapter 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, rather than any one impact in particular.

Impact	Worst-case scenario	Notes and rationale
Impact 4: Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity	Maximum number of return trips for the delivery of main components, installation and for support vessels per year: **2,583** Maximum number of vessels on site at any time: **37**	The maximum number of WTGs and associated infrastructure would lead to the highest level of construction activities and therefore highest level of construction vessel round trips. The maximum number of vessels transits and the maximum duration of the construction would result in the greatest potential for interference.
Impact 5: Physical presence of under construction infrastructure leading to gear snagging	As per Operational Impact 1.	This represents the maximum potential for interactions between infrastructure and fishing gear.
Impact 6: Additional steaming time to alternative fishing grounds for vessels that would otherwise fish within the Project windfarm site	As per Operational Impact 1.	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.
Operation and maintenance phase		
Impact 1: Reduction in access to, or exclusion from established fishing grounds	**Permanent reduction in access** Operational design life of 35 years. A minimum separation distance of up to 1,060m has been defined between adjacent WTGs within the same row, and 1,410m between each row.	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 (WTGs/OSPs, scour protection, cable crossings and cable protection for cables and entry to WTGs/OSPs) on the seabed, plus maintenance activities throughout the operational and maintenance phase and associated temporary safety zones.

Impact	Worst-case scenario	Notes and rationale
	WTGs and OSPs (and associated infrastructure) ▪ 35 x GBS WTGs with scour protection = 248,080m^2 ▪ Two GBS OSPs with scour protection = 14,176m^2 Total = **262,256m^2**	The worst-case scenario assumes 35 x WTGs and two x OSPs (each with a 65m diameter conical GBS foundation, plus scour protection extending 15m from foundations in all directions). The smaller the spacing between WTGs the greater the potential for vessels to have restricted access to the site.
	Inter-array and platform link cable protection ▪ Inter-array cables = 91,000m^2 ▪ Platform link cables = 13,000m^2 ▪ Entry to WTGs and OSPs = 45,500m^2 Total = **149,500m^2**	The worst-case is based on 70km of inter-array cables and 10km of platform link cables. Assumes 10% of cable length is unburied due to ground conditions with a 13m cable protection width at the base and 2m height. The worst-case for cable protection for the entry to WTGs and OSPs assumes 70 points of entry, each with a length of cable protection of 50m, width at the base of 13m. The seabed footprint of cable protection per entry point is 650m^2.
	Cable/pipeline crossings ▪ Inter-array cable/pipeline crossings (9) = 40,050m^2 ▪ Platform link cable/pipeline crossings (6) = 26,700m^2 Total = **66,750m^2**	The worst-case for cable/pipeline crossings is based on nine cable/pipeline crossings across inter-array cables and six cable/pipeline crossings across platform link cables. Assumes each crossing footprint is 4,450m^2 (17.8m width at the base, 250m length and 2.8m in height).
	Replacement scour material and cable protection: ▪ Scour protection = 13,950m^2	It is assumed that up to 10% of the total scour protection and cable protection material installed during construction would be required to be replaced or replenished during the operation and maintenance phase. It is assumed that all

Impact	Worst-case scenario	Notes and rationale
	▪ Cable protection including crossings and entries to WTGs/OSPs = 21,625m^2 Total = **35,575m^2**	replacement scour protection and cable protection material would be placed within the same footprint as outlined above.
	Cumulative permanent reduction in access: 514,081m^2 (approximately 0.51km^2)	
	Temporary reduction in access ▪ Jack-up vessel footprint every other year = 1,500m^2 **Cable repair/replacement and reburial** ▪ Average cable repair/replacement footprint per year = 2,000m^2 ▪ Average cable reburial footprint per year = 1,000m^2 **Anchoring** ▪ Average temporary anchor footprint per year = 720m^2 Total per year (noting jack-ups are only assumed every other year) = **5,220m^2** Total over operational period = **155,700m^2** Safety Zones: there would be Safety Zones of 500m radius from any major maintenance activity.	The worst-case scenario for jack-up deployments assumes the use of one jack-up vessel with a seabed footprint of 1,500m^2 (up to six legs, each with a footprint of up to 250m^2) every other year. The worst-case is based on an average of 200m of cable repaired/replaced every year and an average of 100m of cable reburied every year, with a 10m disturbance width. The worst-case for anchoring is anticipated to be on average one anchoring event per year. Disturbance is shown on average per year; however, repair/replacement and reburial activities could vary across years during the operation and maintenance phase and therefore an approximate total disturbance is shown for the operational lifetime, which is expected to be 35 years. Further detail on maximum temporary operation and maintenance footprints in the windfarm site and cable corridors is provided in Section 5.7 of **Chapter 5 Project Description.**

Impact	Worst-case scenario	Notes and rationale
	The assessment assumed that some fishing would resume around and between infrastructure within the windfarm where possible, with the exception of an assumed 50m operating distance from infrastructure, areas of cable protection that cannot be fished, and safety zones around infrastructure undergoing major maintenance or replacement. Furthermore, the individual decisions made by skippers with their own perception of risk would determine the likelihood of whether their fishing would resume within the windfarm. Inclement weather would be a significant contributor to this risk perception.	
Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	As per Operational Impact 1.	As per Operational Impact 1.
Impact 3: Displacement or disruption of commercially important fish and shellfish resources	Refer to the realistic worst-case scenario presented in Table 10.2 in **Chapter 10 Fish and Shellfish Ecology**.	The scenarios presented in **Chapter 10 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, rather than any one impact in particular.
Impact 4: Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity	**Standard year** ▪ Maximum vessel return trips per year: **384** ▪ Maximum vessels on site at any time: **3**	This represents the maximum number of vessels anticipated at the site in a standard and heavy maintenance year.

Impact	Worst-case scenario	Notes and rationale
	Heavy maintenance year (every 5 years) ▪ Maximum number vessel return trips per year: **832** ▪ Maximum number vessels on site at any time: **10**	
Impact 5: Physical presence of Project infrastructure, and potential exposure of that infrastructure, leading to gear snagging	As per Operational Impact 1.	This represents the maximum potential for interactions between infrastructure and fishing gear.
Impact 6: Additional steaming time to alternative fishing grounds for vessels that would otherwise fish within the windfarm site	As per Operational Impact 1.	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.
Decommissioning phase		
Impact 1: Reduction in access to, or exclusion from established fishing grounds	The decommissioning policy for the Project infrastructure is not yet defined however it is anticipated that structures above the seabed would be removed. The following infrastructure is likely be removed reused, or recycled where practicable: ▪ WTG's and foundations ▪ OSPs including topsides and foundations.	The detail and scope of the decommissioning works would be determined by the relevant legislation and guidance at the time. Decommissioning arrangements would be detailed in a Decommissioning Programme, which would be drawn up and agreed with the relevant authority, prior to decommissioning.
Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds		

Impact	Worst-case scenario	Notes and rationale
Impact 3: Displacement or disruption of commercially important fish and shellfish resources	The following infrastructure is likely to be decommissioned and could be left in situ depending on available information at the time of decommissioning: ▪ Inter array and platform link cables ▪ Scour protection ▪ Crossings and cable protection ▪ Part of the foundations (e.g. some foundation material below the seabed may be left in situ) 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.	For the purposes of the worst-case scenario, it is anticipated that the impacts would be comparable to those identified for the construction phase.
Impact 4: Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity		
Impact 5: Physical presence of Project infrastructure under decommissioning leading to gear snagging		
Impact 6: Additional steaming time to alternative fishing grounds for vessels that would otherwise fish within the windfarm site		

13.3.3 Summary of mitigation embedded in the design

13.17 This section outlines the embedded mitigation relevant to commercial fisheries, which has been incorporated into the design of the Project (as summarised in **Table 13.3**). Where other mitigation measures are proposed, these are detailed in the impact assessment (**Sections 13.6** to **13.8**).

Table 13.3 Embedded mitigation measures related to commercial fisheries

Parameter	Mitigation measures embedded into the design of the Project
Liaison and co-existence	The Applicant is committed to ongoing liaison with fishers throughout all stages of the Project, based upon Fishing Liaison with Offshore Wind and Wet Renewables Group FLOWW (2014, 2015) guidance and the following: ▪ Appointment of a company Fisheries Liaison Officer (FLO) to maintain effective communications between the Project and fishers ▪ 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 NtMs, Kingfisher Bulletin notifications and other navigational warnings to the fishing community, to provide advance warning of Project activities and associated Safety Zones and advisory safety distances Development, prior to construction, of a FLCP, in line with the Outline FLCP submitted with the DCO Application, setting out in detail the planned approach to fisheries liaison and means of delivering any other relevant mitigation measures. The Outline FLCP is considered to be embedded mitigation; the monetary value of disruption payments are considered to be additional mitigation that is implemented via processes defined in the Final FLCP.
Marking and lighting	The Applicant is committed to marking and lighting the Project 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 would also ensure the Project is adequately marked on nautical charts.
Dropped objects	The Applicant would ensure that any objects dropped (which may reasonably be expected to cause a hazard in the marine environment) on the seabed during works associated with the Project are reported and that objects are recovered where they pose a hazard to other marine users, where recovery is possible.
Cable burial	Cables would be buried where possible. The cable burial range would be between 0.5m and 3.0m below the seabed (with a target depth of 1.5m where ground conditions allow). A CBRA would also be required to confirm the extent to which cable burial can be achieved. Where it is not reasonably practicable to achieve cable burial, additional cable protection may be required.

Parameter	Mitigation measures embedded into the design of the Project
	Following industry best-practice the Applicant would seek to minimise the use of cable protection. In the instance that snagging does occur, the Applicant would work to the protocols laid out within the guidance 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.

13.4 Impact assessment methodology

13.4.1 Policy, legislation and guidance

13.4.1.1 National Policy Statements

13.18 The assessment of potential impacts on commercial fisheries has been made with specific reference to the relevant NPS. These are the principal decision-making documents for Nationally Significant Infrastructure Projects (NSIPs). Those relevant to the Project are:

- Overarching NPS for Energy (EN-1) (Department for Energy Security and Net Zero (DESNZ), 2023a)
- NPS for Renewable Energy Infrastructure (EN-3) (DESNZ, 2023b)

13.19 The specific assessment requirements for commercial fisheries, as detailed in the NPS EN-3, are summarised in **Table 13.4**, together with an indication of the section of the ES chapter where each is addressed. It is noted that commercial fisheries are not explicitly included within the requirements cited in NPS EN-1.

13.4.1.2 Other relevant policies and legislation

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

13.21 The North West (NW) Inshore and Offshore Marine Plan (Defra, 2021) supports maximising possibilities for the co-existence and co-operation of marine sectors. A summary of NW Inshore and Offshore Marine Plan policies, relevant to commercial fisheries, is provided in **Table 13.5**.

13.22 European Community (EC) Directive (92/43/EEC) on the Conservation of Natural Habitats and of Wild Fauna and Flora (the “Habitats Directive”) and EC Directive (2009/147/EC) on the Conservation of Wild Birds (the “Birds Directive”) defines the species, habitats and types of sites that receive legal protection, and describes the protection that is afforded. The Conservation of Habitats and Species (Amendment) (EU Exit) Regulations 2019 (2019 No. 579) set out the changes that apply now that the UK has left the European Union.

13.23 This is of relevance because Special Areas of Conservation (SAC) may include fisheries management measures, which are considered a cumulative effect, and have been considered in the CEA.

13.24 The Marine and Coastal Access Act 2009 (Section 126) states that Public Authorities are required to consider whether a project is capable of affecting a protected feature in a Marine Conservation Zone (MCZ). Section 147 defines protected features as any flora, fauna habitat or feature sought to be conserved. This may include fisheries management measures with Marine Conservation Zones, which are considered a cumulative effect and assessed in the CEA.

Table 13.4 NPS assessment requirements for commercial fisheries

NPS requirement	NPS reference	ES reference
NPS for Renewable Energy Infrastructure (EN-3)		
Any mitigation proposals should result from the applicant having detailed consultation with relevant representatives of the fishing industry, IFCAs, the MMO and the relevant Defra policy team in England and NRW and the relevant Welsh Government policy team in Wales.	Paragraph 2.8.250	Consultation with UK stakeholders from the fishing community has been undertaken throughout the pre-application phase and is on-going (see **Section 13.2**).
Mitigation should be designed to enhance where reasonably possible any potential medium and long-term positive benefits to the fishing industry, commercial fish stocks and the marine environment.	Paragraph 2.8.251	A range of commitments are presented within **Section 13.3.**
The Secretary of State should be satisfied that the site selection process has been undertaken in a way that reasonably minimises adverse effects on fish stocks, including during peak spawning periods and the activity of fishing itself.	Paragraph 2.8.318	The location of the windfarm considered a variety of constraints including fishing activity in order to minimise effects to marine users as far as possible. The effects arising from the Project have been, and would be, discussed with statutory bodies during pre- and post-application consultation. The Applicant is taking, and would continue to take, steps to minimise the effects upon the fishing industry in the area, through appropriate mitigation, where required. Commitments related to commercial fisheries and adopted as part of the Project are provided as embedded mitigation in **Section 13.3**. Details of the site selection process are provided in **Chapter 4 Site Selection and Assessment of Alternatives** (Document Reference 5.1.4). Changes in PDE from PEIR to ES include that the site boundary has been reduced in area by approximately

NPS requirement	NPS reference	ES reference
		30%. The proximity to fish spawning grounds is described in **Chapter 10 Fish and Shellfish Ecology**.
The Secretary of State should consider the extent to which the proposed development occupies any recognised important fishing grounds and whether the project would prevent or significantly impede protection of sustainable commercial fisheries or fishing activities. Where the Secretary of State considers the wind farm would significantly impede protection of sustainable fisheries or fishing activity at recognised important fishing grounds, this should be attributed correspondingly significant weight.	Paragraph 2.8.319 and 2.8.320	The extent to which the Project impacts on recognised and important fishing grounds has been considered within the ES assessment. Consultation with fishing stakeholders has been undertaken in order to fully understand any potential impacts (see **Section 13.2**). The results of the commercial fisheries assessment are presented in **Sections 13.6, 13.7** and **13.8**.
The Secretary of State should be satisfied that the applicant has sought to design the proposal having consulted the MMO or NRW in Wales, Defra or Welsh Government in Wales and representatives of the fishing industry with the intention of minimising the loss of fishing opportunity taking into account effects on other marine interests. Guidance has been jointly agreed by the renewables and fishing industries on how they should liaise with the intention of allowing the two industries to co-exist successfully.	Paragraph 2.8.322	The Applicant is taking, and would continue to take, steps to minimise the effects upon the fishing industry in the area, through fisheries liaison and consultation, and appropriate mitigation in line with FLOWW guidance (FLOWW, 2014, 2015). Commitments related to commercial fisheries, and adopted as part of the Project, are provided in **Section 13.3**.
The Secretary of State will need to consider the extent to which disruption to the fishing industry, whether short term during preconstruction (e.g. surveying) or construction or long term over the operational period, including that caused by the future implementation of any safety zones, has been mitigated where reasonably possible.	Paragraph 2.8.323	A range of embedded Project commitments are presented within **Section 13.3**. The results of the commercial fisheries assessment are presented in **Sections 13.6, 13.7** and **13.8,** including for the construction, operation and maintenance and decommissioning phases, together with further mitigations as required.

NPS requirement	NPS reference	ES reference
Whilst the footprint of an offshore wind farm and any associated infrastructure may be a hindrance to certain types of commercial fishing activity such as trawling, other fishing activities, such as potting, may be able to take place within operational wind farms without unduly disrupting or compromising navigational safety.	Paragraph 2.8.156	The main fishing fleet in the windfarm site is potting and an assessment of operational effects, considering operational use of the windfarm site is provided in **Sections 13.6**.
Applicants should consider guidance on best practice for fisheries liaison, which has been jointly agreed by the renewables industry and fishing community.	Paragraph 2.8.159	Guidance such as this has been considered, as listed within **Section 13.4.1**.
In some circumstances, transboundary issues may be a consideration as fishing vessels from other coastal States may fish in waters within which offshore wind farms are sited. Applicants should seek advice from Defra in such circumstances.	Paragraph 2.8.160	Transboundary effects have been assessed as not significant (see **Section 13.8**). It is noted that while Irish and Belgian vessels operate within the regional study area, they do not specifically operate within the Project windfarm site.
Applicants should undertake early consultation with a cross-section of the fishing industry, as well as MMO, SNCBs, relevant Inshore Fisheries and Conservation Authorities (IFCAs), Defra and Welsh Government, to identify impacts, and actively encourage input from active fishers to provide evidence of their use of the area to support the impact assessments.	Paragraph 2.8.154	Consultation with representatives of the fishing industry has been undertaken throughout the pre-application phase and is ongoing. Engagement is summarised in **Section 13.2** and has informed the assessments set out in **Sections 13.6, 13.7** and **13.8**. Fisheries liaison for the grid connection to shore is also being conducted to support the separate consent process for the Transmission Assets.
Where any part of a proposal involves a grid connection to shore, appropriate inshore fisheries groups should also be consulted.	Paragraph 2.8.155	Consultation has been undertaken at a scale that seeks to capture fishing activity in the region, including in and around the Project. Engagement is summarised in **Section 13.2**. Fisheries liaison for the grid connection to shore is also being conducted to support the separate consent process for the Transmission Assets.

NPS requirement	NPS reference	ES reference
Applicants will be expected to undertake dialogue with the fishing industry during the planning and design of individual offshore wind farm proposals to maximise the potential for co-existence/co-location and reduce potential displacement.	Paragraph 2.8.158	Consultation with UK and international stakeholders from the fishing community has been undertaken during the pre-application phase and is on-going (see **Section 13.2**). This liaison would continue through the development of the Project as committed via the Outline FLCP.
Applicant assessments should include robust baseline data and detailed surveys of the effects on fish stocks of commercial interest, and any potential reduction or increase in such stocks that will result from the presence of the wind farm development and of any safety zones. The assessments should also provide evidence regarding any likely benefits or constraints on fishing activity within the project's boundaries.	Paragraph 2.8.157	Robust baseline datasets analysed include European Union (EU) and UK landings statistics and spatial data and published reports, supported by industry consultation, as described in **Section 13.2**. Where data sources allow, a five-year trend analysis has been undertaken, using the most recent annual datasets available at the time of writing (see **Table 13.6**). This time series was extended for queen scallop to better understand the cyclical nature of this fishery across a twelve-year period (2011 to 2022). Relevant site-specific surveys and publicly available surveys and data are detailed in **Section 13.4.2.** In addition, consultation with the fishing industry (see **Section 13.2**) has identified key concerns as well as available data and potential impacts, which have been taken into account within the commercial fisheries assessment (see **Sections 13.6, 13.7** and **13.8**).
Where the precise extents of potential safety zones are unknown, a realistic worst-case scenario should be assessed. Applicants should consult the Maritime and Coastguard Agency (MCA) as part of this process. Where the precise extents of potential safety zones are unknown, a realistic worst-case scenario should be assessed. Applicants should consult the MCA.	Paragraph 2.8.164	The need for safety zones has been considered by the Navigational Risk Assessment (NRA) completed for the Project. The risk assessment results have been taken into account within the commercial fisheries assessment (see **Sections 13.6, 13.7** and **13.8**). Consultation has also been undertaken with the MCA (see **Chapter 14 Shipping and Navigation.**

NPS requirement	NPS reference	ES reference
		It is assumed there would be safety zones of up to 500m around infrastructure under construction, decommissioning and major maintenance works.
The Secretary of State should be satisfied that the site selection process has been undertaken in a way that reasonably minimises adverse effects on fish stocks, including during peak spawning periods and the activity of fishing itself.	Paragraph 2.8.318	Relevant publicly available surveys, data and site-specific surveys are detailed in **Section 13.4.2**. In addition, consultation with the fishing industry (see **Section 13.2**) has identified key concerns as well as available data and potential impacts, which have been taken into account within the commercial fisheries assessment (see **Sections 13.6**, **13.7** and **13.8**). The assessment has considered the effects of disruption to commercially important fish and shellfish resources (see **Sections 13.6, 13.7** and **13.8**), with assessment of the ecology of fish and shellfish stocks provided in **Chapter 10 Fish and Shellfish Ecology**.

Table 13.5 Summary of NW Inshore and Offshore Marine Plan provisions relevant to commercial fisheries

Legislation/ policy	Key provisions	Section where comment addressed
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.	The Applicant is taking, and would continue to take, steps to minimise the effects upon the fishing industry in the area through appropriate mitigation, where required. A range of commitments are presented within **Section 13.3**. Where significant impacts have been identified, further mitigation has been proposed where possible to reduce the residual impact.
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.	The assessment has considered the effects on commercial fish stocks (**Section 13.6**). Impacts to spawning stocks are considered in detail in **Chapter 10 Fish and Shellfish Ecology**.
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 coexistence and co-operation with existing activities will be supported.	The Applicant is taking, and would continue to take, steps to minimise the effects upon the fishing industry in the area, through appropriate mitigation, where required and

Legislation/ policy	Key provisions	Section where comment addressed
	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.	possible. A range of commitments are presented within **Section 13.3**, together with the Outline FLCP that has been summited with the DCO Application and would be further developed post-consent.

13.25 In addition to the above, the following guidance documents have been used to inform the commercial fisheries assessment. These include:

- Good Practice Guidance for Assessing Fisheries Displacement (Xodus, 2022)
- Best Practice Guidance for Fishing Industry Financial and Economic Impact Assessments (United Kingdom Fisheries Economic Network (UKFEN) and Seafish, 2012)
- Fisheries Liaison with Offshore Wind and Wet Renewables group (FLOWW) Recommendations for Fisheries Liaison: Best Practice guidance for offshore renewable developers (FLOWW, 2014 and BERR, 2008)
- FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds (FLOWW, 2015)
- Damage to Gear Compensation Claim Forms (Marine Scotland, 2021)
- Guidance on completing Damage to Gear Compensation Claim Forms (Marine Scotland, 2021)
- Options and opportunities for marine fisheries mitigation associated with wind farms (Blyth-Skyrme, 2010a)
- Developing guidance on fisheries Cumulative Impact Assessment for wind farm developers (Blyth-Skyrme, 2010b)
- Cumulative impact assessment guidelines, guiding principles for cumulative impacts assessments in offshore wind farms (RenewableUK, 2013)
- Fishing and Submarine Cables - Working Together (International Cable Protection Committee, 2009)
- Guidance on preparing a Fisheries Management and Mitigation Strategy (“FMMS”) (draft) (Marine Scotland, 2020)
- Scoping Opinion (PINS, 2022) which included scoping responses from statutory consultees

13.4.2 Data and information sources

13.26 To provide site-specific and up to date information on which to base the impact assessment, the data sources listed in **Table 13.6** were used.

13.27 Site-specific surveys that informed the commercial fisheries assessment include:

- Scouting surveys undertaken from 2021 to 2022 during geophysical survey, recording the location of marker dhans/buoys associated with potting gear (Brown and May Marine, 2022)
- Marine traffic survey data during winter and summer period, comprising information on vessel movements, gathered by Automatic Identification

System (AIS) and radar (as detailed in **Appendix 14.1 Navigational Risk Assessment** (Document Reference 5.2.14.1) of **Chapter 14 Shipping and Navigation**)

13.28 It is noted that site-specific fish sampling surveys were not undertaken, based on discussions through the Project Evidence Plan Process (EPP), that concluded publicly available data sets were sufficient to undertake a robust assessment (see **Chapter 10 Fish and Shellfish Ecology** for the fish and shellfish ecology data sources).

13.29 Given the interconnected nature of the Project and the Morgan and Morecambe Offshore Wind Farms: Transmission Assets, the environmental information for the Transmission Assets PEIR has also been used to inform this chapter (Morgan Offshore Wind Limited and Morecambe Offshore Windfarm Ltd, 2023a).

Table 13.6 Existing data sources used in this chapter

Data source	Date	Data contents
Landing statistics		
Marine Management Organisation (MMO)	2016 – 2022 (data from 2010 onwards considered in analysis of long-term trends)	Landing statistics data for UK-registered vessels, with data query attributes for: landing year; landing month; vessel length category; ICES rectangle; vessel/gear type; port of landing; species; live weight (tonnes); and value. These landings statistics are published annually by the MMO and include vessels registered to the following UK administrations and British Crown Dependencies: England, Wales, Scotland, Northern Ireland, IoM, Guernsey and Jersey.
European Union (EU) Data Collection Framework (DCF) database	2012-2016	Landing statistics for EU (including UK) registered vessels with data query attributes for: landing year; landing quarter; ICES rectangle; vessel length; gear type; species; and, landed weight (tonnes).
Spatial activity data		
Brown and May Marine	2021 - 2022	Scouting survey data indicating location of potting gear sighted during geophysical surveys
NASH maritime	2022 and 2023	AIS and radar winter and summer surveys, detailed in **Appendix 14.1**.
MMO	2016 - 2020	VMS data for UK-registered vessels of 15m length and over.
ICES	2016 - 2020	VMS data for EU-registered vessels of 12m length and over. Data displays the surface Swept Area Ratio (SAR) of catches by different gear types. Surface SAR indicates the number of times in an annual period that a demersal fishing gear makes contact with (or sweeps) the seabed surface.

Data source	Date	Data contents
		Surface SAR provides a proxy for fishing intensity.
ICES	2019	Scallop dredge grounds in the Irish Sea mapped by ICES Working Group on Scallops.
European Maritime Safety Agency (EMSA)	2019 - 2022	Fishing vessel route density indicating number of routes per km^2

13.30 Landing 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 the period of 2016 to 2022.

13.31 Landings data for all species are collected via the EU logbooks scheme, and recorded by ICES statistical rectangle, and stored in the EU DCF database, accessible through the EU Joint Research Committee. Landings data has been collated for all EU Member States for the ICES statistical rectangles that overlap the commercial fisheries local and regional study areas. Landing statistics were collated across five years (2012 to 2016, which represents the most up to date data available at an ICES rectangle scale). 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).

13.32 VMS is a form of satellite tracking, using transmitters on board fishing vessels. Annual VMS data are collated by the MMO for all vessels ≥15m registered to the UK, including all gear types. VMS data for UK vessels have been analysed for 2016 - 2020, which represents the most up to date data available.

13.33 All EU fishing vessels (i.e. fishing vessels flying the flag of an EU Member State), and third-party fishing vessels operating in EU waters, that are ≥12m in length, are required to have a VMS on board. This reports the vessels' position to fisheries management authorities, in the case of EU fishing vessels, every two hours. Since 1 January 2012, this obligation has applied to vessels that are ≥12m in length (before 1 January 2012 it applied to vessels ≥15m in length, see Council Regulation (EC) No 1224/2009).

13.34 Through a European wide data call, ICES collated VMS data for vessels ≥12m that were operating mobile gear that has contact with the seabed. This VMS data set includes vessels registered to the following countries: Belgium, Denmark, France, Germany, the Netherlands, Ireland, Sweden and the UK. Data is amalgamated for all countries and is not available on a country-by-country basis; data has been analysed over a five-year period from 2016 to 2020, which represents the most up to date data available.

13.4.3 Impact assessment methodology

13.35 **Chapter 6 EIA Methodology** provides a summary of the general impact assessment methodology applied to the Project. The following key terms have been used in this assessment:

- **Impact** – used to describe a change via the Project (e.g. presence of Project infrastructure)
- **Receptor** – used to define the environment being exposed to the Impact (e.g. UK potting fleet targeting whelk)
- **Effect** – the consequence of an impact combining with a receptor, defined in terms of significance (exact significance ~~dependant~~dependent on magnitude of impact and the sensitivity of the receptor)
- **Adverse effect** – an alteration of the existing environment with negative implications for the affected receptor
- **Beneficial effect** – an alteration of the existing environment with positive implications for the affected receptor

13.36 The following sections outline the methodology used to assess the potential effects for commercial fisheries.

13.4.3.1 Definitions of sensitivity, value and magnitude

13.37 The method for determining the significance of effects is a two-stage process that involved defining the sensitivity of the receptors and the magnitude of the impacts. This section describes the criteria applied in this chapter to assign values to the sensitivity of receptors and the magnitude of potential impacts. In some instances, the value of the receptor may also have been taken into account within the assessment of impacts. In these instances, 'value' refers to the importance of the receptor in the area, in terms economic value of landings.

13.38 The definitions of sensitivity, value and magnitude for the purpose of the commercial fisheries assessment are provided in **Table 13.7**, **Table 13.8** and **Table 13.9.**

13.39 Due to the range in scale, value (in terms of both landings and income/profit) and operational practices within the commercial fishing fleets assessed, specific economic criteria were not set for defining economic value within the categories of high, medium or low within the definitions for value and magnitude. Instead, these classifications were based on judgement, informed by the baseline characterisation and consultation with the industry.

Table 13.7 Definitions of sensitivity for commercial fisheries receptors

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

Table 13.8 Definitions of value for commercial fisheries receptors

Value	Definition
High	The economic value of commercial landings is high and nationally/regionally significant e.g., a high proportion of target species is taken from this location relative to the rest of the region.
Medium	The economic value of commercial landings is medium and locally significant e.g., supporting local fishing vessel businesses.
Low	The economic value of commercial landings is low and not locally significant e.g., the area is not depended upon by local, regional or national fishing vessel businesses.
Negligible	The economic value of commercial landings is very low or minimal.

Table 13.9 Definition of impact magnitude

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 project area) ▪ Substantial loss of ability to carry on fishing activities (e.g. substantial proportion of effort within project area)

Magnitude	Definition
	(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 ▪ 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 project area) ▪ Partial loss of ability to carry on fishing activities (e.g. moderate reduction of fishing effort within project area)
	(Beneficial) Impact is expected to result in one or more of the following: ▪ Moderate improvement of resource quality ▪ Moderate restoration or enhancement of habitats supporting commercial fisheries resources
Low	(Adverse) Impact is of short-term duration (e.g. less than 2-3 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 project area) ▪ Minor loss of ability to carry on fishing activities (e.g. minor reduction of fishing effort within project area)
	(Beneficial) Impact is expected to result in one or more of the following: ▪ Minor benefit to or minor improvement of resource quality ▪ 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 project area) Slight loss of ability to carry on fishing activities (e.g. slight loss of fishing effort within project area)

Magnitude	Definition
	(Beneficial) Impact is expected to result in one or more of the following: ▪ Very minor benefit to or very minor improvement of resource quality ▪ Very minor restoration or enhancement of habitats supporting commercial fisheries resources

13.4.3.2 Effect significance

13.40 The potential significance of effect for a given impact, is a function of the sensitivity of the receptor and the magnitude of the impact (see **Chapter 6 EIA Methodology** for further details). A matrix was used (**Table 13.10**) as a framework, to determine the significance of an effect. Definitions of each level of significance are provided in **Table 13.11.** Impacts and effects may be deemed as being either positive (beneficial) or negative (adverse).

13.41 It is important that the matrix (and indeed the definitions of sensitivity and magnitude) is seen as a framework, to aid understanding of how a judgement has been reached, from the narrative of each effect assessment, and it is not a prescriptive formulaic method.

13.42 Potential effects have been described, followed by a statement of whether the effect is significant in terms of the EIA regulations. Potential effects identified within the assessment as major or moderate are regarded as significant in terms of the EIA regulations. Whilst minor effects (or below) are not significant in EIA terms in their own right, it is important to distinguish these, as they may contribute to significant effects cumulatively or through interactions.

13.43 Following initial assessment, if the effect does not require additional mitigation (or none is possible), the residual effect would remain the same. If, however, additional mitigation is proposed, an assessment of the post-mitigation residual effect is provided.

Table 13.10 Significance of effect matrix

	Adverse Magnitude				Beneficial Magnitude			
	High	Medium	Low	Negligible	Negligible	Low	Medium	High
High	*Major*	*Major*	*Moderate*	*Minor*	*Minor*	*Moderate*	*Major*	*Major*
Medium	*Major*	*Moderate*	*Minor*	*Minor*	*Minor*	*Minor*	*Moderate*	*Major*
Low	*Moderate*	*Minor*	*Minor*	*Negligible*	*Negligible*	*Minor*	*Minor*	*Moderate*
Negligible	*Minor*	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Negligible*	*Minor*

Table 13.11 Definition of effect significance

Significance	Definition
Major	Very large, or large change, in receptor condition, both adverse or beneficial, which are likely to be important considerations at a regional or district level, because they contribute to achieving national, regional or local objectives, or could result in exceedance of statutory objectives and/or breaches of legislation.
Moderate	Intermediate change in receptor condition, which are likely to be important considerations at a local level.
Minor	Small change in receptor condition, which may be raised as local issues.
Negligible	No discernible change in receptor condition.
No change	No impact, therefore, no change in receptor condition.

13.4.4 Cumulative effects assessment methodology

13.44 The CEA considers other plans, projects and activities that may impact cumulatively with the Project. As part of this process, the assessment considers which of the residual impacts assessed for the Project on its own have the potential to contribute to a cumulative effect. **Chapter 6 EIA Methodology** provides further details of the general framework and approach to the CEA. The CEA for commercial fisheries is provided in **Section 13.7**.

13.45 As described in **Chapter 1 Introduction**, the Transmission Assets associated with the Project are undergoing a separate consent process as part of the Morgan and Morecambe Offshore Wind Farms: Transmission Assets project. To enable impacts from the Project and the Transmission Assets to be considered together, a 'combined' assessment has been made within the cumulative assessment to identify any key interactions and additive effects (**Section 13.7.3.1**).

13.4.5 Transboundary effects

13.46 **Chapter 6 EIA Methodology** provides details of the general framework and approach to the assessment of transboundary effects.

13.47 The transboundary effects assessment for commercial fisheries is provided in **Section 13.8**.

13.4.6 Assumptions and limitations

13.4.6.1 Data limitations

13.48 Limitations of landings data include the spatial size of ICES rectangles, which can misrepresent actual activity across the Project windfarm site, 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. This 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 30kg is bought per day). While it is recognised that there is no statutory requirement for owners of vessels 10m and under to declare their catches, registered buyers are legally required to provide sales notes of all commercially sold fish and shellfish, due to the 2005 Registration of Buyers and Sellers of First-Sale Fish Scheme (RBS legislation) (MMO, 2021). The RBS legislation is applicable to licenced fishing vessels of all lengths and requires name and port letters and numbers (PLN) of the vessel which landed the fish, to be recorded in relation to each purchase. For the <10m 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).

13.49 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 (i.e. from 2017 onwards) 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 windfarm site.

13.50 Limitations of VMS data are primarily focused on the coverage being limited to vessels ≥15m 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 <15m in length). To assist in mitigating the risk of under-representing smaller inshore vessels, site-specific marine traffic survey data, comprising information on vessel movements gathered by AIS and radar, has been analysed alongside VMS data (detailed in **Appendix 14.1**).

13.51 Fishing vessel route density data from the EMSA is based on AIS data, representing activity for vessels with AIS (≥15m in length). A limitation of AIS data is that is does not distinguish between steaming and actively fishing; nevertheless, it provides corroboration for key fishing grounds and insight into transit routes to alternative fishing grounds.

13.52 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 and consultation with the fishing industry. 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 assessments in **Sections 13.6, 13.7** and **13.8**.

13.5 Existing environment

13.53 This section provides a brief overview of all landings from the local commercial fisheries study area (i.e. ICES rectangle 36E6) and the regional commercial fisheries study area (37E6, 37E5, 36E6, 36E5, 35E5 and 35E6) followed by a summary analysis on a fishery-by-fishery basis.

13.54 A detailed description of the existing environment within the local and regional study areas is provided within **Appendix 13.1**, which includes detailed landings statistics analysis, seasonality, fishing activity mapping, descriptions of fishing gear, vessel characteristics and profiles of the fishing activity on a country basis. To avoid duplication, this section provides a very brief overview and should be read in conjunction with **Appendix 13.1**. The future baseline is described in Section 4 of **Appendix 13.1**.

13.5.1 Overview of landings from the Study Areas

13.55 Landing statistics indicate that UK vessels registered in Scotland and England are the most active in the local study area. Vessels registered in the IoM are active in the regional study area, but do not catch fish or shellfish from the local study area (i.e., ICES rectangle 36E6) (refer to **Plate 13.1**, based on data from 2016 to 2022). Vessels registered in Ireland are active in the regional study area, specifically ICES rectangle 36E5, but have minimal catches recorded from the local study area (36E6).

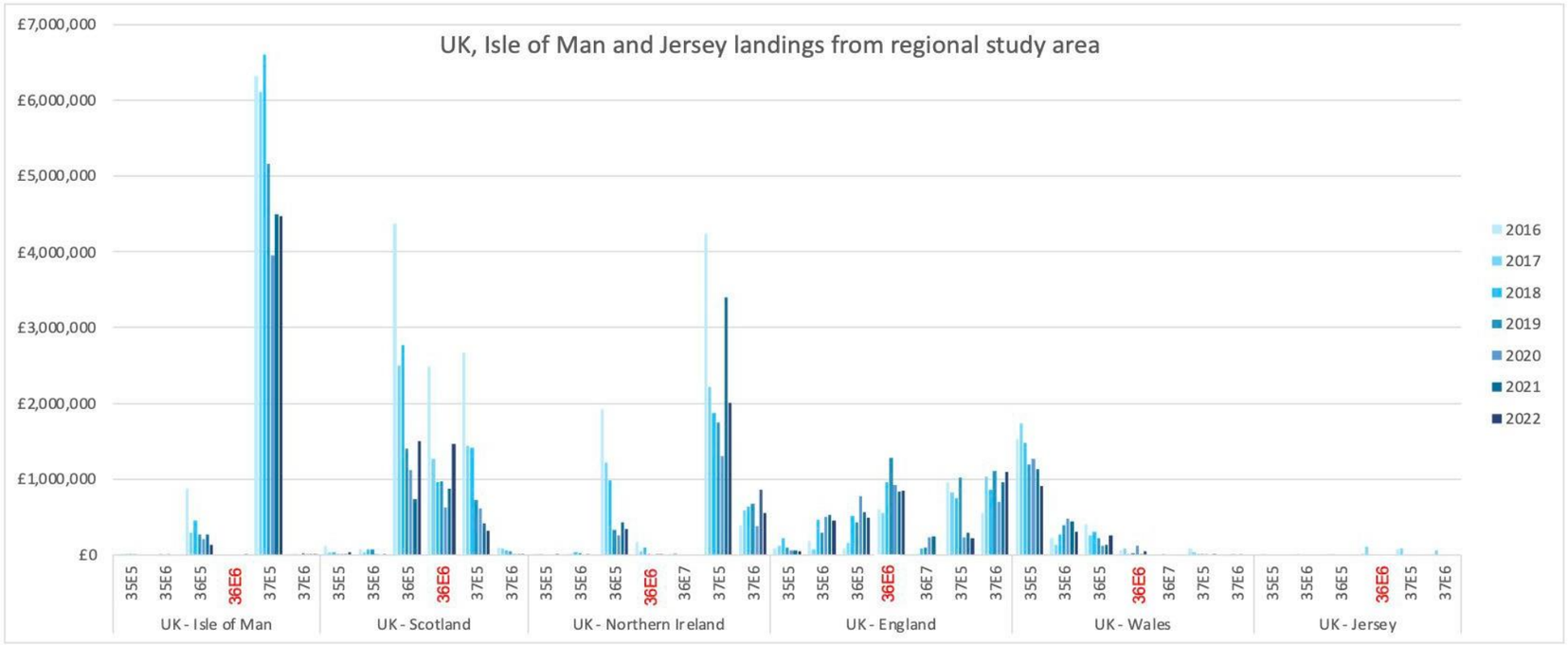
13.56 The MMO collate and provide publicly available datasets of commercial fisheries landing statistics for UK vessels include Crown Dependencies. The databases identify vessel nationality based on where the fishing vessels are registered including: England, Wales, Scotland, Northern Ireland, IoM and Jersey.

13.57 An annual average value of approximately £2.2 million was landed by all UK, IoM and Jersey vessels for the years 2016 to 2022 from the local study area (ICES rectangle 36E6, based on data from MMO, 2023). From the local study area (36E6), landings by UK (England, Scotland, Northern Ireland and Wales) vessels were recorded to occur each year during the period 2016 to 2022; landings by IoM vessels from 36E6 were only recorded to occur in 2022 and landings for Jersey vessels in 2016 and 2017. Data are presented for the annual (2016-2022) landed value and weight by UK vessels in **Plate**

13.2, indicating that landings were almost entirely of shellfish species, namely queen scallop *Aequipecten opercularis*, whelk *Buccinum undatum*, king scallop *Pecten maximus*, and lobster *Homarus gammarus.* MMO landings data for surrounding ICES rectangles (35E5-E7, 36E5-E7 and 37E5-E7), indicates that in the regional study area, landings were also dominated by these shellfish species.

13.58 Historic landings statistics sourced from the EU DCF database from 2012 to 2016 for all EU member states, indicate that the only non-UK vessels present in the regional study area were Irish dredge vessels targeting king and queen scallop in ICES rectangle 36E5 and Irish demersal otter trawl vessels targeting nephrops in ICES rectangle 37E6 (i.e., both outside the local study area). Landing statistics indicated that vessels registered in Belgium and Jersey catch small quantities from the region, including the local study area (36E6).

13.59 Further summary information is provided below on a fishery-by-fishery basis, with detailed analysis and description of the baseline data provided in **Appendix 13.1**.



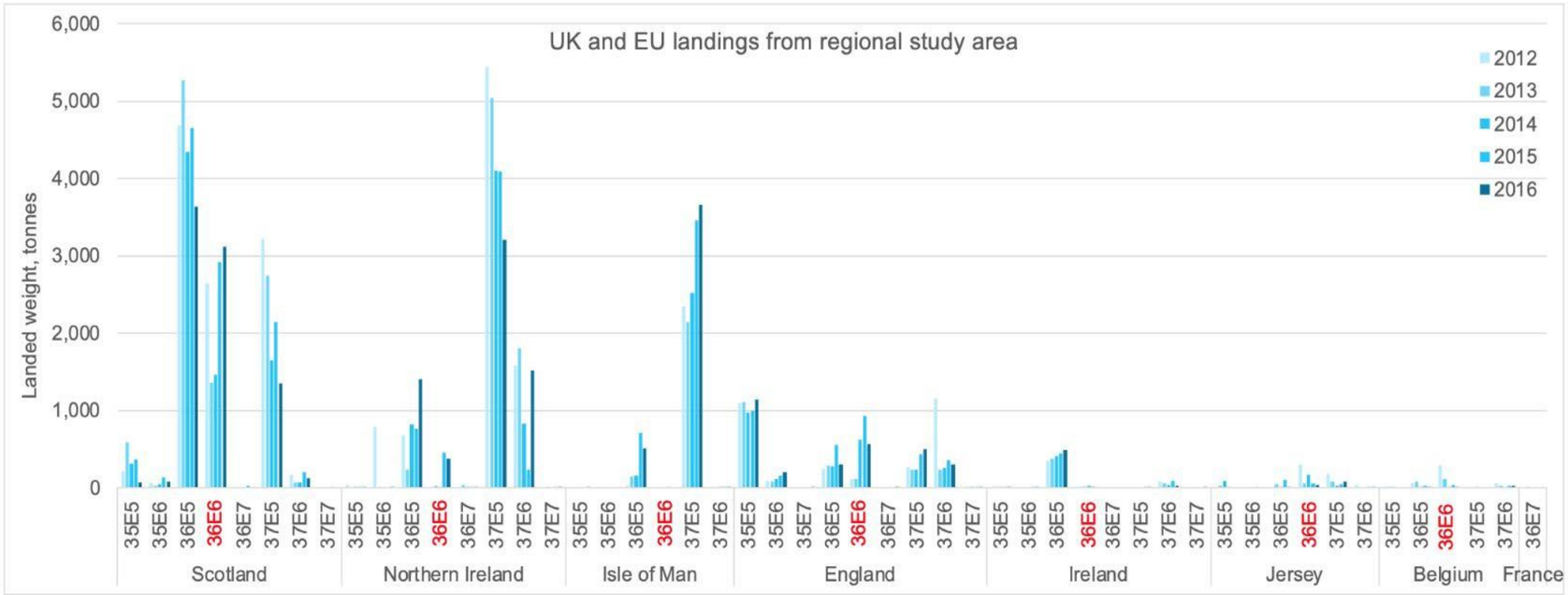


Plate 13.1 Landing value from regional study area (MMO, 2023; EU DCF, 2021

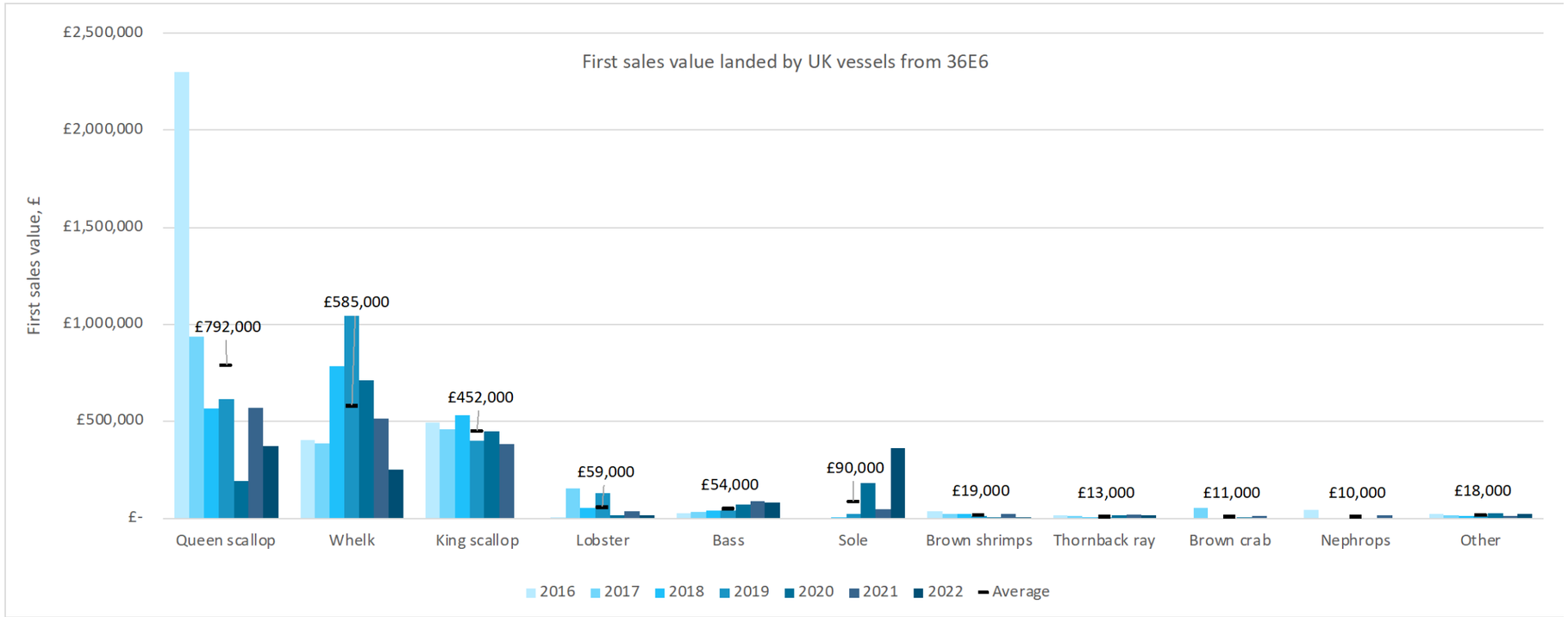


Plate 13.2 Key species by annual landed value (GBP) and weight (tonnes) (2016 to 2022) from the local study area (MMO, 2022)

13.5.2 Description of fishing fleets active in the study areas

13.5.2.1 Mobile gear

Dredge and demersal otter trawl fishery targeting scallop species

13.60 In the regional study area UK and IoM dredge and demersal otter trawl vessels target queen scallop, with a combined average annual value of £2.7 million from the regional study area (i.e. ICES rectangles 37E6, 37E5, 36E6, 36E5, 35E5 and 35E6; based on 7-year average from 2016-2022), compared to £790,000 from the local study area (i.e. ICES rectangle 36E6). Queen scallops are primarily caught by Scottish and Manx registered vessels, with smaller quantities by English, Welsh and Northern Irish vessels. Manx vessels principally target queen scallop using demersal otter trawls, while Scottish vessels principally deploy dredge gear. Landings of queen scallop in the local study area have declined substantially in recent years from over 3,000 tonnes (worth £2.3 million in first sales value) in 2016 to approximately 600 tonnes (£370,000) in 2022 (**Plate 13.2**). Landings of queen scallops from the regional study area occur year-round, though typically peak in the summer months.

13.61 King scallop are also targeted by dredge vessels, in the regional study area landings are predominately made by Scottish and Manx vessels, with a total combined UK and IoM first sales value of £7.6 million from the regional study area (based on 7-year average from 2016-2022), compared to £570,000 from the local study area (**Plate 13.2**). King scallop landings remained relatively consistent at around 200 tonnes per annum from 2016 to 2021, with a significant increase noted in 2022, with 525 tonnes landed from the local study area.

13.62 Activity mapping for queen scallop and king scallop dredge activity is shown in **Appendix 13.1** in Figures 4.1~~3.22~~, ~~3.26~~4.6, ~~and 3.30~~4.7, 4.14 and 4.18. Activity mapping for the queen scallop fishery is also included within the demersal otter trawl VMS data as shown in **Appendix 13.1** in Figures 4.3, ~~3.24~~4.10, ~~and~~ ~~3.28~~4.11 and 4.18. VMS data for UK and IoM vessels ≥15m and EU (including UK and IoM) vessels ≥12m using dredge gear indicate activity across the regional study area, and to a lesser extent in the local study area (i.e., ICES rectangle 36E6). Within 36E6, the VMS data shows activity to occur outside of the Project windfarm site, noticeable immediately south and to the west of the windfarm site. Mapping by the ICES Scallop Working Group (Figure 4.14) corroborates these VMS findings, indicating king scallop dredge activity is located outside and to the south and west of the windfarm site. Mapping for demersal otter trawl fishing activity indicates low intensity within the windfarm site, with activity focused in the northern ICES rectangles (37E5 and 37E6). Activity for queen scallop dredge is predominately located south and west of the Proposed Development, with a portion of overlap in the south-east corner (Figure 4.18).

13.63 Irish vessels target king scallop in ICES rectangle 36E5 (i.e., outside the local study area). Again, this is corroborated by activity mapping showing Irish activity outside and to the west of the windfarm site activity outside and to the west of the windfarm site (see Figure 4.14 in **Appendix 13.1**).

Beam trawl targeting flatfish and elasmobranch species

~~13.63~~13.64 In the regional study area UK (English) beam trawl vessels occasionally target sole and mixed demersal species, with an average annual value of £204,000 (40 tonnes, from regional study area) compared to £107,000 (16 tonnes) from the local study area (based on 7-year average from 2016-2022). Landings by beam trawls were very low from the local study area from 2016 to 2019 but rose to £220,000 in 2020 and £365,000 in 2022, with landings of sole, thornback ray, plaice and brown shrimp recorded from February to May.

~~13.64~~13.65 EU landing statistics indicate that the Belgium beam trawl fleet occasionally target the region, targeting sole and thornback ray, with average landings of 160 tonnes from the regional study area and 90 tonnes from the local study area.

~~13.65~~13.66 Activity mapping for beam trawl activity is shown in **Appendix 13.1** in Figures 4.2, 4.8 and 4.9. Beam trawl fishing intensity is low within the Project windfarm site with activity located both north (Figure 4.2) and south (Figure 4.9) of the array area. Furthermore activity mapping of EU (including UK) beam trawl is presented annually for the period 2012 to 2020 in Figures 4.19 and 4.20 of **Appendix 13.1**. Activity within the Proposed Development was low to negligible during the period from 2014 to 2019; moderate activity is noted during three years: 2012, 2013 and 2020, with the proposed Development located at the southern extent of the beam trawl targeted fishing ground.

~~13.66~~13.67 While occasional activity occurs by UK and Belgian beam trawl fleets across the region, the local study area, and windfarm site are not routinely targeted by these fleets.

Demersal otter trawl targeting nephrops and demersal finfish species

~~13.67~~13.68 Information for demersal otter trawls targeting queen scallop is provided above. In the regional study area, UK and IoM demersal otter trawl vessels target other species including nephrops and mixed demersal finfish species, with an average annual value of £2.2 million (from the regional study area), compared to £23,000 from the local study area (for these species, excluding queen scallop; based on 7-year average from 2016-2022). In the regional study area, nephrops are primarily caught by Northern Irish, Manx and English registered vessels, with smaller quantities by Scottish vessels.

~~13.68~~13.69 Activity mapping for demersal otter trawl activity is shown in **Appendix 13.1** in Figures 4.3, 4.10 and 4.11. Demersal otter trawl fishing intensity is low within the windfarm site, with activity located in the northern ICES rectangles

(37E5 and 37E6). EU landing statistics indicates demersal otter trawl activity by Irish vessels, also from ICES rectangle 37E6.

Pelagic otter trawl

~~13.69~~13.70 In the regional study area a seasonal herring fishery is targeted by UK pelagic otter trawl vessels from August to September, with an average annual value of £800,000 (from the regional study area), and no landings from the local study area. Activity mapping for pelagic otter trawl activity shown in **Appendix 13.1** in Figures 4.12 and 4.13 corroborates the very limited pelagic trawl activity in the regional study area.

13.5.2.2 Static gear

Potting fishery

~~13.70~~13.71 In the regional study area, UK and IoM potting vessels target whelk, lobster and brown crab with an average annual value of £6.2 million landed by Manx (37%), English (33%) and Welsh (27%) vessels. In comparison, £650,000 is landed by UK and IoM potting vessels from the local study area, with 93% of landings by English registered vessels. In the local study area, the principal species caught by potting vessels is whelk (89% of total value), followed by lobster (9%) and brown crab (2%).

~~13.71~~13.72 Whelk fisheries have typically been expanding around the UK in recent years as prices have increased and export to non-EU countries has grown. Whelk landings from the local study area indicate a seasonal peak across spring and summer months, though they are landed year-round. In recent years, approximately 480 tonnes of whelk has been landed from the local study area annually, with a first sales value of £580,000.

~~13.72~~13.73 Lobster is one of the highest value per kilogram and most commercially exploited shellfish species found in UK waters. Fishing activity typically peaks across summer months in the local study area, with a second peak in December. Landings from the local study area fluctuated across 2016 to 2022, peaking at ~16 tonnes in 2017 and being as low as ~0.5 tonne in 2022.

~~13.73~~13.74 Activity mapping for potting activity is shown in **Appendix 13.1** in Figures 4.4 and 4.5. VMS data shows potting activity for vessels ≥15m in length and is therefore not fully representative of the fleet. The UK VMS data (Figure 4.5, **Appendix 13.1**) indicates potting activity within and around the Project windfarm site. This is corroborated by scouting data (Figure 4.15, **Appendix 13.1**), which shows the presence of potting gear markers in the southern central portion of the windfarm site. It is understood through consultation and landings statistics for the local study area that whelk are the key species targeted in the windfarm site. Furthermore, monitoring of potting activity during 2024 by vessels that carry AIS, indicate activity within the Proposed Development, as well as numerous other fishing grounds targeted in the east Irish Sea (Figure 4.21, **Appendix 13.1)**. The fishing grounds indicated by AIS

monitoring and scouting data do not match exactly due to the different time periods of the data (2022 for scouting and 2024 for AIS monitoring) reflecting that potting grounds for whelk change year on year. This has been accounted for within the assessment based on the time period analysed (2011 to 2022 for landing statistics; 2016-2020 for VMS data; 2022 for scouting data and 2024 for AIS monitoring).

Fixed nets

~~13.74~~13.75 In the regional study area, UK and IoM vessels deploying fixed gill nets target bass, thornback ray and flounder with an average annual value (across the period 2016 to 2022) of £113,000 landed by English (70%) and Welsh (29%) vessels, with small quantities by Scottish and Manx vessels. In comparison, approximately £52,000 is landed via fixed nets from the local study area by English registered vessels. Landings are by vessels 10m and under in length that operate in inshore waters, typically remaining within the 12nm boundary.

Gears using hooks

~~13.75~~13.76 In the regional study area, UK and IoM vessels deploying gear using hooks target bass, pollack, mackerel, flounder and squid with an average annual value (across the period 2016 to 2022) of £85,000 landed by English (65%) and Welsh (23%) vessels, with small quantities by Scottish and Manx vessels. In comparison, approximately £19,000 is landed via gears with hooks from the local study area by English registered vessels. Landings are primarily by vessels 10m and under in length (98%) that operate in inshore waters, typically remaining within the 12nm boundary.

13.5.2.3 Summary

~~13.76~~13.77 A summary of the fishing fleets activity in the regional study area and local study areas is provided in **Table 13.12**.

Table 13.12 Summary of fishing fleets

Fishing fleet	Regional study area	Local study area
UK and IoM fishing fleets		
UK and IoM dredge and demersal otter trawl targeting scallop species	Scottish, Manx, Northern Irish, English and Welsh registered vessels, over 10m in length targeting queen scallop and scallop.	Scottish, Manx, Northern Irish, English and Welsh registered vessels, over 10m in length targeting queen scallop and scallop.
UK and IoM demersal otter trawl	Northern Irish, Manx, English and Scottish registered vessels, over and under 10m in length, targeting nephrops and mixed demersal species.	Low levels of activity from English and Northern Irish vessels, over and under 10m in length, targeting nephrops, thornback ray and plaice.

Fishing fleet	Regional study area	Local study area
UK and IoM potting	English, Manx and Welsh registered vessels, under and over 10m in length, targeting primarily whelk, but also lobster and brown crab.	English registered vessels, over 10m, targeting whelk; and under 10m targeting whelk, lobster and brown crab.
UK beam trawl	English registered vessels occasionally targeting the study areas for sole, thornback ray, plaice and brown shrimp.	
UK fixed nets	English and Welsh registered vessels (and small quantities by Manx and Scottish), under 10m in length, targeting bass, thornback ray and flounder.	Low levels of activity from English registered vessels, under 10m in length, targeting bass.
UK gear with hooks	English, Welsh and Manx registered vessels, under 10m in length, targeting bass, pollack, mackerel.	Low levels of activity from English registered vessels, under 10m in length, targeting bass.
UK pelagic trawl	Low levels of activity from Northern Irish registered vessels, over 10m in length, targeting herring.	No pelagic otter trawl activity.
Non-UK/IoM fishing fleets		
Irish dredge	Irish registered vessels, 15m and over in length targeting scallop.	No Irish dredge activity
Belgian beam trawl	Belgian registered vessels occasionally targeting the study areas for sole and thornback ray.	

13.6 Assessment of effects

13.6.1 Impact receptors

~~13.77~~13.78 The principal receptors with respect to commercial fisheries are the fishing fleets operating in the local study area and regional study area, defined as: country of vessel registration; fishing gear; and target species.

~~13.78~~13.79 The specific features defined within these receptors as requiring further assessment are listed in **Table 13.13.**

Table 13.13 Commercial fisheries receptors relevant to the Project

Receptor group (National fishing fleet)	Receptor (fishing fleet/gear)	Relevant features (main target species)	Closest distance from Project windfarm site
UK and IoM	Dredge and demersal otter trawl	Scallop and queen scallop	Operate in the local/regional study areas

Receptor group (National fishing fleet)	Receptor (fishing fleet/gear)	Relevant features (main target species)	Closest distance from Project windfarm site
	Potting	Whelk, lobster and brown crab	
	Demersal otter trawl	Nephrops, thornback ray and plaice	
	Beam trawl	Sole, thornback ray, plaice and brown shrimp	
	Fixed nets	Bass, thornback ray and flounder	
	Pelagic trawl	Herring	
Irish	Dredge	Scallop and queen scallop	
Belgian	Beam trawl	Sole and thornback ray	

13.6.2 Potential effects during construction

~~13.79~~13.80 The following impacts of the Project on commercial fisheries, as per the impacts listed in **Table 13.2**, have been assessed:

- Impact 1: Reduction in access to, or exclusion from established fishing grounds
- Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds
- Impact 3: Displacement or disruption of commercially important fish and shellfish resources
- Impact 4: Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity
- Impact 5: Physical presence of infrastructure under construction leading to gear snagging
- Impact 6: Additional steaming time to alternative fishing grounds for vessels that would otherwise fish within the windfarm site

~~13.80~~13.81 A description of the potential effects on commercial fisheries receptors caused by each identified impact is given below.

~~13.81~~13.82 Fishing fleets identified as UK include vessels registered to England, Scotland, Wales, Northern Ireland and the Crown Dependencies including IoM and Jersey.

13.6.2.1 Impact 1: Reduction in access to, or exclusion from established fishing grounds

Description of impact

~~13.82~~13.83 During construction of the Project, commercial fisheries would be prevented from fishing where construction activities are taking place. In addition, Safety Zones would be sought around significant infrastructure under construction. The total offshore construction duration would be up to two and a half years, with a number/range of construction activities being undertaken simultaneously across the site as described in Table 13.2

Sensitivity

~~13.83~~13.84 The UK and IoM potting gear with hooks and netting fleets are typically <15m in length and operate across more distinct areas of ground, typically 0 to 12nm from shore, but (particularly for potting in this area) also extending beyond 12nm, in areas that are already heavily exploited and are therefore more sensitive to disruption. The UK and IoM potting, gear with hooks and netting fleets are deemed to be of medium vulnerability and medium recoverability across the windfarm site. The sensitivity of the receptors is therefore, considered to be **medium**.

~~13.84~~13.85 The dredge and demersal otter trawl fishery targeting queen and king scallops includes vessels that are operating across many distinct scallop grounds throughout the Irish Sea, primarily based from Scottish ports (including Kirkcudbright), as well as IoM, Welsh 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 make this fleet less resilient to incremental loss of fishing grounds. The dredge and demersal otter trawl fleets targeting queen and king scallops are deemed to be of medium vulnerability and medium recoverability across the windfarm site. The sensitivity of the receptors is therefore, considered to be **medium**.

~~13.85~~13.86 The other UK and EU mobile fleets including beam trawl (targeting sole and thornback ray), demersal otter trawl (targeting nephrops and mixed demersal finfish), pelagic trawl (targeting herring) across the regional study area are typically >15m 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 would be in a position to avoid construction areas. The beam trawl

and demersal otter trawl fleets (targeting finfish, nephrops and elasmobranch) 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**. All pelagic gear fleets are considered to have an extensive operational range, be highly adaptive and resilient to change. The sensitivity of the pelagic fleet is considered to be **negligible**.

Magnitude

~~13.86~~13.87 This impact would 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 would 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.

~~13.87~~13.88 The impact is of relevance to national fishing fleets and is described below on a fleet-by-fleet basis.

~~13.88~~13.89 **UK and IoM dredge and demersal otter trawl fishery targeting scallop species**: these fleets target scallop and queen scallop across a relatively wide area offshore. An average annual first sales value of ~£790,000 landings have been taken specifically within the local study area by UK dredging vessels. Minimal landings have been recorded for IoM dredging and demersal otter trawl targeting queen scallops in the local study area (with zero landings from 2016 to 2021 and £1,400 worth of queen scallop landed from 36E6 in 2022). English, Scottish and Welsh vessels target scallop species using dredge. VMS data from 2016 to 2020 consistently indicate very limited dredging activity within the southern and eastern sections of the windfarm site, though the same data indicates that scallop grounds immediately south and to the southwest are highly important to this fleet. This is corroborated by ICES Scallop Working Group mapping which shows the key grounds to be south of the windfarm site (see Figures 4~~3~~.2~~6~~6 and 4~~3~~.7~~30~~ in **Appendix 13.1**). It is understood that existing oil and gas infrastructure (notably Calder CA1 located 0.9km to the west of the windfarm boundary and South Morecambe DP3 (recently decommissioned/removed within the windfarm boundary)) impede the potential fishing activity to some extent. Furthermore, UK Fishing Industry Mapping (FIM) data has indicated historic mobile activity across the windfarm site. 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 low-value fishery within the windfarm site and the magnitude is considered to be **low adverse** for UK and IoM dredge and demersal trawl scallop (queen and king) targeted fisheries.

13.90 **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 windfarm site (see Figures 4.13~~3.22, and 3.30~~4.14 and 4.16 in **Appendix 13.1**). 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** for the Irish dredge fishery.

13.91 **UK and IoM potting fishery**: the UK and IoM potting fleets target whelk and other shellfish species (brown crab and lobster) across a wide area from inshore grounds extending out into and beyond the windfarm site. VMS data indicates that UK vessels over 15m length, understood to be primarily targeting whelk, have been active in the windfarm site and across extensive grounds to the south and northwest of the site (see Figure 4.5 in **Appendix 13.1**). Landing statistics indicate minimal landings by IoM potting vessels from the local study area (zero landings from 36E6 from 2016 to 2022). Scouting data and consultation corroborates that UK potting activity occurs throughout the windfarm site (see Figure 4.15 in **Appendix 13.1**). An average annual first sales value of £650,000 landings is taken from the local study area by UK potting vessels (based on 7-year average, 2016-2022), predominantly made up of whelk (89% of value) and caught by English registered vessels (93% by value). Noting that the windfarm site overlaps with approximately 2.5% of this local study area, this equates to a pro-rata value of approximately £16,000 (based on uniform landings across the entire local study area). While such a simplistic calculation brings higher level of uncertainty to the resulting figure, it does demonstrate the scale of the potential opportunity within the windfarm site. During construction, potting vessels would 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 would 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 would 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 would be impacted to a higher extent and this has been accounted for within the assessment. 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 UK potting fisheries. For IoM potting vessels that do not routinely target the local study area, the magnitude is considered to be **low adverse**.

13.92 **UK and IoM demersal otter trawl (nephrops and finfish)**: activity for this fleet targeting nephrops and mixed demersal finfish species is very low in the local study area (36E6), with no fishing visible within the windfarm site, evidenced by VMS data (see Figures 4.10~~3.24~~ and ~~3.28~~4.11 in **Appendix 13.1**). Effort is focused on grounds located 40-50km to the north of the windfarm site. 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. For IoM demersal otter trawl (nephrops and finfish) vessels that do not routinely target the local study area, the magnitude is considered to be **low adverse**.

13.93 **UK beam trawl**: activity for this fleet is very low in the local study area, with no fishing visible within the site by UK vessels, evidenced by VMS data (see Figures 4.8 and 4.9 in **Appendix 13.1**). Occasional effort by UK beam trawlers in the region is focused on grounds located south of the windfarm site. 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**.

13.94 **Belgian beam trawl**: activity for this fleet is evidenced by VMS data to predominately occur north of the local study area, with low levels recorded within the windfarm site (see Figures 4.2, 4.19 and 4.20 in **Appendix 13.1**). 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**.

13.95 **UK netting fishery:** the UK netting fleet targets bass, flounder, thornback ray and variety of other demersal species using fixed nets. An average annual first sales value of ~£40,000 landings has been taken specifically within the local study area by English netting vessels. Limited spatial data is available for netting activity, though the majority of netting vessels are under 10m length and expected to predominantly operate in waters inshore of the windfarm site. 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**.

13.96 **UK gear with hooks fishery:** UK vessels deploying gear with hooks commercially target bass, with an average annual first sales value of ~£22,000 landings taken specifically within the local study area. Limited spatial data is available for this activity, though the majority of vessels deploying hooks are under 10m length and expected to predominantly operate in waters inshore of the windfarm site. 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**.

13.97 **Pelagic trawl:** pelagic trawling fleets are large vessels (typically >25m in length), targeting highly mobile species (e.g., herring) that consistently move/shoal during spawning migrations. Any activity by pelagic vessels within the windfarm site is highly likely to be a sporadic, transitory event. Highly mobile pelagic species, that move in shoals and are not associated with specific seabed habitats, are assumed to be available to catch across large areas i.e., if a shoal of herring cannot be caught within the site, this shoal is expected to move to an area where they can be caught. Therefore, while the access to the water column may be affected during construction; the

opportunity to catch pelagic fish is not lost. Moreover, the landings statistics indicate that very limited landings are taken by pelagic vessels from within the regional study area, with no activity recorded within the local study area or windfarm site. Overall, the impact during construction is predicted to be of short-term duration, and to not directly affect the fishery which has a very low value within the local study area. The magnitude is therefore considered to be **negligible.**

Significance of effect

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

13.99 **IoM potting fishery**: overall, it is predicted that the sensitivity of the receptor is medium, the value is low or minimal (within the windfarm site) and the magnitude is low. The effect is of **minor adverse** significance, which is not significant in EIA terms.

13.100 **UK and IoM dredge and demersal otter trawl queen and king scallop fishery**: overall, it is predicted that the sensitivity of the receptor is medium, the value is low (within the windfarm site) and the magnitude is low. The effect is of **minor adverse** significance, which is not significant in EIA terms.

13.101 **UK gears with hooks and 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.

13.102 **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.

13.103 **IoM demersal otter trawl (nephrops and finfish) fishery**: overall, it is predicted that the sensitivity of the receptor is medium, the value is low or minimal (within the windfarm site) and the magnitude is low. The effect is **minor adverse**, which is not significant in EIA terms.

13.104 **Pelagic fisheries:** overall, it is predicted that the sensitivity of the receptor is negligible, the value is low and the magnitude is negligible. The effect is of **negligible** significance, which is not significant in EIA terms.

Additional mitigation

13.105 **UK potting fleet**: with respect to any justifiable disturbance payment, the procedures as outlined in the FLOWW guidance documents (2014 and 2015; and future updates to this guidance), would be followed and further defined within the Final FLCP and would 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 would 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). Similarly, corroboration/validation of evidence provided by claimants may be possible via independent sources such as fishery officers, for example

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

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

Description of impact

13.107 Localised exclusion from fishing grounds during phased construction of the Project may lead to temporary increases in fishing effort in other areas that may already be exploited, thereby leading to gear conflict and increased fishing pressure on adjacent grounds.

13.108 In terms of the area impacted by construction activities within the windfarm site, in total a maximum of 2.4km^2 of seabed would be temporarily disturbed during construction. In addition, there would be 500m safety distance around infrastructure under construction and 500m safe passing distance around construction vessels.

Sensitivity

13.109 All mobile commercial fisheries fleets operating within the local study area are considered to have high availability of alternative fishing grounds (including current focus of effort), and an operational range that is not limited to the

windfarm site. All mobile fleets are deemed to be of low vulnerability and high recoverability. The sensitivity of mobile fleets is therefore, considered to be **negligible** for pelagic trawl and **low** for all other mobile fleets.

13.110 The UK and IoM potting, gear with hooks and netting fleets are typically <15 m in length and operate across more distinct fishing grounds, typically 0 to 12nm from shore, but (particularly for potting in this area) also extending beyond 12nm, in areas that are already heavily exploited and are therefore more sensitive to disruption. The UK potting gear with hooks and netting fleets are deemed to be of medium vulnerability and medium recoverability across the windfarm site. The sensitivity of the receptors is therefore, considered to be **medium**.

Magnitude

13.111 **UK and IoM potting**: conflict over diminished grounds may occur if displaced vessels operating mobile gear (e.g. dredge or beam trawl) explore grounds traditionally fished by potters; and/or displaced potting gear is relocated into other actively fished potting grounds. Displacement of mobile gear may therefore increase the risk of interaction with potting gear. For mobile gear, displacement could be expected to be focused on alternative established grounds both in the vicinity of the windfarm site and throughout the Irish Sea, thereby reducing displacement onto potting grounds. However, it is understood through consultation that gear conflict between mobile and potting gear does occur in this region, and does impact fishing patterns (e.g., seasonally when pots are moved out of specific areas in anticipation of effort from scallop vessels), and the industry is concerned (as communicated through consultation, **Table 3.1**) that spatial restrictions due to the construction of the windfarm would increase such interaction.

13.112 When considering the impact of potters being displaced from the windfarm site into grounds already targeted by potters two scenarios are feasible:

- Alternative fishing grounds are available to relocate gear, in which case gear conflict and displacement effects would be low
- Alternative fishing grounds are not available as adjacent areas are already being fished by potters, in which case the gear already on the ground limits the level of displacement. While there remains potential for gear conflicts and increased fishing pressure to arise, appropriately mitigated exclusion impacts would limit this.

13.113 Taking all of these aspects into consideration, the magnitude of the displacement impact was assessed to be **medium adverse** for UK and IoM potters.

13.114 **UK and IoM dredge and demersal otter trawl (scallop) fishery**: these vessels have a relatively wide operational range and targets a range of

alternative grounds, including areas that are fished with much higher intensity than compared to the local study area. Despite this, displacement is a concern in this region which already has significant established infrastructure, including oil and gas infrastructure and other offshore windfarms. Displacement outside the windfarm site into key scallop grounds is also of concern, particularly noting the activity by both the potting and scallop dredge fleets. Overall, the magnitude of the displacement impact was assessed to be **medium adverse** for the UK and IoM dredge and demersal otter trawl (scallop) fishing fleet.

13.115 **UK gears with hooks and netting**: displacement from the windfarm site is not expected to affect the hook or netting fisheries since it is understood to predominantly take place in waters inshore of the windfarm site. The magnitude of displacement was assessed to be **low adverse**.

13.116 **UK and IoM demersal otter trawl, UK pelagic trawl, UK and Belgian beam trawl and Irish dredge fisheries**: displacement from the windfarm site is not expected to affect these fisheries since key fishing grounds and therefore activity is located outside of the windfarm site. The magnitude of displacement was assessed to be **low adverse**.

Significance of effect

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

13.118 **UK and IoM dredge and demersal otter trawl (scallop) fishery**: overall, it is predicted that the sensitivity of the receptor is low, the value is medium and the magnitude is medium. The effect is of **minor adverse** significance, which is not significant in EIA terms.

13.119 **UK gears with hooks and 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.

13.120 **UK and IoM 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.

13.121 **Pelagic fisheries**: overall, it is predicted that the sensitivity of the receptor is negligible, the value is low and the magnitude is low. The effect is of **negligible** significance, which is not significant in EIA terms.

Additional mitigation

13.122 **UK and IoM potting fleet**: **Paragraphs 13.105** to **13.106** detail the approach to ascertain justifiable disruption and cooperation agreements between the Applicant and commercial fishing vessel owners on an individual basis. To mitigate this displacement effect, emphasis would be focused on ensuring that the effect of reduced access is mitigated by removing that UK potting effort to

ensure that it is not moved or displaced elsewhere.

13.123 Through the application of cooperation agreements that appropriately mitigate reduced access by removing fishing effort to ensure displacement does not occur, the residual impacts would be of **minor adverse** significance, which is not significant in EIA terms.

13.6.2.3 Impact 3: Displacement or disruption of commercially important fish and shellfish resources

Description of impact

13.124 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.

Sensitivity

13.125 There is potential for fishing grounds beyond the immediate construction activities to be affected by these impacts. Exposure to the impact is likely and commercial fleets targeting key species would be affected, including those targeting whelk and other shellfish species.

13.126 Given the reliance on fishing grounds across the local study area, together with relatively low mobile target species, the potting fleet is deemed to be of medium vulnerability, medium recoverability and medium value; the sensitivity is considered to be **medium**.

13.127 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, high recoverability and medium-low value. The sensitivity of the receptor for all other fleets is therefore considered to be **low**.

Magnitude

13.128 Detailed assessments of the following potential construction impacts on fish and shellfish have been undertaken in **Chapter 10 Fish and Shellfish Ecology**:

- Temporary habitat loss/physical disturbance
- Increased suspended sediment concentrations (SSCs) and sediment re-deposition
- Underwater noise and vibration impacts to hearing sensitive species during foundation piling and other activities (seabed preparation, cable installation etc.)

- Barrier effects

13.129 With respect to the magnitude of this impact on commercial fisheries, the overall significance of the effect on fish and shellfish species has been considered (i.e. both the magnitude and sensitivity of fish and shellfish species have been considered to assess the magnitude of impact 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 has been assessed for a species, a negligible impact magnitude would be assessed for commercial fishing; similarly, where an effect of minor adverse significance has been assessed for a species, a low impact magnitude would be assessed for commercial fishing, i.e., the overall significance for fish and shellfish ecology (as set out in **Chapter 10 Fish and Shellfish Ecology**) has helped to determine the magnitude of the impact for commercial fishing fleets.

13.130 Details of the fish and shellfish ecology assessment are summarised in **Table 13.14**. Justifications for this assessment have not been repeated in this chapter, with evidence, modelling and justifications for these assessments provided in **Chapter 10 Fish and Shellfish Ecology**.

13.131 The impact is predicted to be of regional spatial extent, of relevance to national fishing fleets, and of short-term duration. It is predicted that the impact would affect the receptor directly through loss of resources. Based on the significance of effects on fish and shellfish species set out in **Table 13.14,** the magnitude of impact on commercial fisheries is considered to be **low adverse** for all potential impacts.

Table 13.14 Significance of effects of construction impacts on fish and shellfish species relevant to commercial fisheries receptors

Potential impact	Significance of effect
Temporary habitat loss/physical disturbance	Minor adverse
Increased SSCs and sediment re-deposition	Minor adverse/negligible adverse
Underwater noise and vibration impacts to hearing sensitive species during foundation piling and other activities (seabed preparation, cable installation etc.).	Minor adverse/negligible adverse
Barrier effects	Minor adverse/negligible adverse

Significance of effect

13.132 **All fleets**: 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 therefore assessed as **minor adverse**, which is not significant in EIA terms.

13.6.2.4 Impact 4: Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity

Description of impact

13.133 This assessment focuses on the potential impact of Project-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.

Sensitivity

13.134 Construction traffic is likely to constrain most potting and netting activity across established construction supply routes due to the vulnerability of the marker buoys to the propellers of passing construction vessels. The UK potting and netting fisheries are deemed to be of medium vulnerability, high recoverability and low-medium value. The sensitivity of these receptors is therefore, considered to be **medium**.

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

Magnitude

13.136 Vessel movements related to the construction of the Project (i.e. construction vessels transiting to and from areas undergoing construction works) would add to the existing level of shipping activity in the regional study area (see **Chapter 14 Shipping and Navigation** for a full assessment of additional vessel movements). It is noted that shipping routes currently exist in the vicinity of the Project, and that the construction vessels would likely follow these existing routes where possible.

13.137 As part of the embedded mitigation measures, continuous liaison with the fishing industry would be undertaken, including providing information on the location and duration of construction activities; further details have been provided in an Outline FLCP and would be further developed within the Final FLCP.

13.138 All fishing fleets are considered to be able to avoid Project construction vessel movements. The impact is predicted to be of regional spatial extent, short term duration, intermittent and high reversibility, and it is predicted that the impact would affect the receptor directly. The magnitude is therefore considered to be **low** adverse for all fisheries.

Significance of effect

13.139 **UK and IoM potting fishery**: overall, it is predicted that the sensitivity of the

receptor is medium, the value is medium and the magnitude is low. The effect is of **minor** adverse significance, which is not significant in EIA terms.

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

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

13.142 **Pelagic fisheries**: overall, it is predicted that the sensitivity of the receptor is negligible, the value is low and the magnitude is negligible. The effect is of **negligible** significance, which is not significant in EIA terms.

13.6.2.5 Impact 5: Physical presence of under construction infrastructure leading to gear snagging

Description of impact

13.143 Under-construction array and platform link cables and associated cable protection, together with under-construction WTG and OSP structures (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, are assessed within **Chapter 14 Shipping and Navigation**.

13.144 Throughout the construction phase, 500m Safety Zones would be enacted around construction activities and 50m Safety zones would be in place around incomplete structures. For structures that are complete and not yet operational, a 50m advisory safety distance has been assumed.

Sensitivity

13.145 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.

13.146 UK and IoM 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 and netters is considered to be **low**.

13.147 UK pelagic gear does not come into contact with the seabed and therefore has low vulnerability to snagging seabed infrastructure, although snagging infrastructure within the water column remains a possibility. The sensitivity of UK pelagic trawl is considered to be **low**.

Magnitude

13.148 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.

13.149 It is considered likely that fishers would operate appropriately (i.e. adhere to safety and exclusion zones, and avoid under-construction infrastructure and cable protection at the defined locations) given adequate notification of the locations of any snagging hazards which would be provided via NtMs as committed to in **Section 13.3.3**.

13.150 In the instance that snagging does occur, the Applicant would 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 11: Dealing with claims for loss or damage of gear.

13.151 The impact is predicted to be of regional spatial extent, short term duration, continuous (over construction phase) and with low reversibility. It is predicted that the impact would affect the receptor directly. Based on the embedded mitigation measures that would be implemented as part of the Project and the commitment to follow standard protocols should snagging occur, the magnitude is considered to be **low** adverse for all fleets.

Significance of effect

13.152 The Project embedded mitigation measures include adherence to FLOWW guidance, implementation of Safety Zones during construction, a commitment to cable burial as the preferred option for cable protection, and appropriate marking and charting of infrastructure under construction. Taking account of these measures, the residual effect on each fishery is set out immediately below, noting that the effect in all cases would be direct and temporary.

13.153 **UK and IoM potting, 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 of **minor** adverse significance, which is not significant in EIA terms.

13.154 **UK, IoM and Irish dredge, UK and IoM 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 of **minor** adverse significance, which is not significant in EIA terms.

13.155 **UK pelagic fishery**: overall, it is predicted that the sensitivity of the receptor

is **low** and the magnitude is **low** adverse. The effect is of **minor** adverse significance, which is not significant in EIA terms.

13.6.2.6 Impact 6: Additional steaming time to alternative fishing grounds for vessels that would otherwise fish within the windfarm site

Description of impact

13.156 A detailed NRA has been undertaken and discussed in **Chapter 14 Shipping and Navigation**. This included full consideration of commercial fishing vessels while transiting (e.g. from a potential collision or allision perspective).

13.157 This assessment focuses on the potential impact of longer steaming distances to alternative fishing grounds while construction processes are ongoing.

Sensitivity

13.158 The UK potting and netting fleets active in the local 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 500m safety zones that would be in place around active installation works and advisory safety distances around construction vessels. Given adequate notification it is expected that these vessels would be in a position to avoid construction areas with limited impact upon steaming times.

13.159 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 also expected that these vessels would be in a position to avoid construction areas with limited impact upon steaming times.

13.160 In relation to ground within the windfarm site, all commercial fisheries fleets are considered to have medium to high availability of alternative fishing grounds based on the regional baseline assessment of landings statistics and VMS data, and an operational range that is not limited to the windfarm site. The sensitivity of the receptor is therefore, considered to be **low** for UK potting, gear with hooks and netting fishing fleets and **negligible** for all other fisheries.

Magnitude

13.161 The impact is predicted to be of regional spatial extent, of relevance to UK and international fishing fleets, and of short-term duration. It is predicted that the impact would affect the receptor directly.

13.162 Details of the Project's construction activities would be promulgated in advance of, and during construction via the usual means (e.g., NtMs, Kingfisher bulletin) to ensure mariners are aware of the ongoing works. Construction works would only necessitate minor deviations for fishing vessels transiting through the site during the construction phase. Localised impacts are anticipated but would 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.

Significance of effect

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

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

13.6.3 Potential effects during operation and maintenance

13.165 The following impacts of the operation and maintenance phase of the Project on commercial fisheries, as per the impacts listed in **Table 13.2**, have been assessed:

- Impact 1: Reduction in access to, or exclusion from established fishing grounds
- Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds
- Impact 3: Displacement or disruption of commercially important fish and shellfish resources
- Impact 4: Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity
- Impact 5: Physical presence of Project infrastructure, and potential exposure of that infrastructure, leading to gear snagging
- Impact 6: Additional steaming time to alternative fishing grounds for vessels that would otherwise fish within the windfarm site

13.166 A description of the potential effects on commercial fisheries receptors caused by each identified impact is given below.

13.167 Fishing fleets identified as **UK** include vessels registered to England, Scotland, Wales, Northern Ireland and the Crown Dependencies including IoM and Jersey.

13.6.3.1 Impact 1: Reduction in access to, or exclusion from established fishing grounds

Description of impact

13.168 The assessment assumes that commercial fisheries would be prevented from actively fishing within the footprint of installed infrastructure within the Project windfarm site, together with associated safety zones for maintenance activities

and assumed safe operating distances, as set out in **Table 13.2**. Minimum WTG spacing is 1,060m between WTGs within a row (in-row) and 1,410m between rows of WTGs (inter-row) and the worst-case scenario includes for up to 35 WTGs and two OSPs with gravity-based foundations.

13.169 Outwith this footprint area, the assessment assumes that fishing would be possible within the windfarm site where WTG spacing and layout allow productive grounds to be targeted.

13.170 In addition, individual decisions made by the skippers of fishing vessels with their own perception of risk would determine the likelihood of whether their fishing would resume within the windfarm site, noting inclement weather would be a significant contributor to this risk perception. The type and dimension of fishing gear would also influence the potential opportunities within the array area. For example, twin-rigged trawl gears typically require a greater distance for safe operation and these gears are unlikely to target grounds in the vicinity of infrastructure.

Sensitivity

13.171 The sensitivity of the commercial fisheries receptors is the same as that presented for construction in **Section 13.6.2.1,** summarised as **medium** for potting, netting, gears with hooks, and dredge/demersal otter trawl scallop targeted fisheries, **negligible** for pelagic trawl and **low** for all other fleets.

Magnitude

13.172 This impact would lead to 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 would directly affect fleets over a long-term duration, noting an operational design life of 35 years. The impact is predicted to be continuous with low reversibility for the lifetime of the Project and is of relevance to national fishing fleets.

13.173 Embedded mitigation relevant to commercial fisheries is outlined in **Table 13.3**, including measures to promote co-existence with fishers during the operation and maintenance phase. The FLCP would provide a framework for information dissemination and would detail requirements for dropped object retrieval, cable burial and lighting and marking. The intention of these measures would be to ensure access to the windfarm site during operational phase, with the exception of an assumed operating distances from infrastructure (50m radius) and avoidance of cable protection materials.

13.174 The description of the value and importance of the local study area and windfarm site to commercial fishing fleets presented for construction in **Section 13.6.2.1** is also applicable to the operational and maintenance phase.

13.175 **UK and IoM potting fishery**: It is noted that there are existing wind farms in the east Irish Sea, which overlap with the operational range of fishing fleets

included in this assessment. Fishers have adapted their activities in response to the presence of these wind farms, including both operating within the arrays (for example, by adapting how and where gear is set), but also focusing effort outside the existing windfarm areas.

13.176 A recent study by Roach *et al*. (2018) investigated the effect of the construction and operation of the Westermost Rough offshore wind farm on established lobster fishing grounds (noting that this site lies approximately 8km off the Holderness coast in the East Riding of Yorkshire, in the North Sea). The study concluded that temporary closures of selected areas may be beneficial to lobster fisheries and should be considered as a management option for lobster fisheries and observed that:

- The temporary closure during the construction period offered some respite from fishing pressure for adult lobsters and led to an increase in abundance and size of lobster in the wind farm area
- Reopening of the site to fishing exploitation saw a decrease in catch rates and size structure, but this did not reach levels below that of the surrounding area
- Opening the site to exploitation allowed the fishery to recuperate some of the economic loss during the closure

13.177 The minimum spacing (1,060m in-row and 1,410m inter-row) for the planned WTGs and OSP(s) is expected to allow access to fishers within the windfarm site. Within the windfarm site, the worst-case scenario (**Table 13.2**) for permanent reduction in access equates to of loss of 0.51km^2, including foundations, scour protection, cable protection and cable/pipeline crossings. The total area of the windfarm site is 87km^2, leading to loss of 0.6% of the site due to presence of infrastructure and cable protection. Based on the spacing between infrastructure, together with the nature of the gear which is deployed set in strings, it is expected that potting activity would resume within the windfarm site during the operation and maintenance phase. Potting vessels are understood to operate within existing wind farms in the east Irish Sea, including Barrow Offshore Wind Farm (Gray *et al.*, 2016) which had a minimum turbine spacing of 500 m in-rows and 750 m inter-rows and Gwynt y Môr Offshore Wind Farm (informed by consultation), which had a minimum turbine spacing of 350 m and maximum of 1,000 m. Overall magnitude has been assessed as **low** adverse**.**

13.178 **UK netting and gears with hooks fisheries**: based on the predominance of netting located in inshore areas, and not within the windfarm site, the presence of Project infrastructure is not expected to restrict the baseline operation of netting and hooking activities and the magnitude has been assessed as **low** adverse**.**

13.179 **UK and IoM dredge and demersal otter trawl scallop targeted fishery**: the Project windfarm site is located to the north and east of well-established

scallop grounds, although seasonal activity is known to occur across the windfarm site. The design of the infrastructure layout (i.e., WTG minimum spacing of 1,060m in-row and 1,410m inter-row) is expected to allow some levels of dredge activity to resume within the windfarm site. This is informed by dredge activity within existing offshore wind farms, including Burbo Bank (Gray *et* al, 2016). The resumption of fishing, together with the concentration of existing effort outside the windfarm site leads to a conclusion of **low adverse** magnitude for these scallop dredge and demersal trawl fisheries during the operational and maintenance phase.

13.180 **All other fleets**: given the potential for resumption of fishing, coupled with the low levels of baseline activity in the local study area and within the windfarm site compared to higher intensity fishing grounds elsewhere in the regional study area, the magnitude has been assessed as **low** adverse**.**

Significance of effect

13.181 **UK and IoM potting fishery**: overall, it is predicted that the sensitivity of the receptor is medium, the value is medium and the magnitude is low. The effect is of **minor adverse** significance, which is not significant in EIA terms.

13.182 **UK and IoM dredge and demersal otter trawl (scallop) fishery**: overall, it is predicted that the sensitivity of the receptor is medium, the value is medium and the magnitude is low. The effect is of **minor adverse** significance, which is not significant in EIA terms.

13.183 **UK gears with hooks and 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.

13.184 **UK and IoM demersal otter trawl (nephrops and finfish), 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.

13.185 **Pelagic fisheries**: overall, it is predicted that the sensitivity of the receptor is negligible, the value is low and the magnitude is low. The effect is of **negligible adverse** significance, which is not significant in EIA terms.

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

Description of impact

13.186 Exclusion from fishing grounds during operation and maintenance of the Project may lead to increases in fishing effort in other areas that may already be exploited thereby leading to gear conflict. As defined in the Outline FLCP, maintenance activities would be communicated to the fishing industry via NtMs to allow fishing operators to be plan around maintenance works if necessary.

Sensitivity

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

Magnitude

13.188 The displacement effect was assessed over the operational life design life of the Project of 35 years.

13.189 Given that potting can resume across the windfarm site during the operation and maintenance phase, the magnitude of displacement impacts for UK potters is considered to be **low** adverse.

13.190 Given the low levels of fishing by mobile gears across the windfarm site, together with the assumption that potting would resume within the windfarm site, the magnitude of impact of displacement during the operational and maintenance phase is considered to be **low** adverse for all demersal trawl and dredge fleets and **negligible** for vessels deploying pelagic gear.

Significance of effect

13.191 **UK and IoM potting fishery**: overall, it is predicted that the sensitivity of the receptor is medium, the value is medium and the magnitude is low. The effect is of **minor adverse** significance, which is not significant in EIA terms.

13.192 **UK and IoM dredge and demersal otter trawl (scallop) fishery**: overall, it is predicted that the sensitivity of the receptor is low, the value is medium and the magnitude is low. The effect is of **minor adverse** significance, which is not significant in EIA terms.

13.193 **UK gears with hooks and 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.

13.194 **UK and IoM demersal otter trawl (nephrops and finfish), 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.

13.195 **Pelagic fisheries**: overall, it is predicted that the sensitivity of the receptor is negligible, the value is low and the magnitude is low. The effect is of **negligible** significance, which is not significant in EIA terms.

13.6.3.3 Impact 3: Displacement or disruption of commercially important fish and shellfish resources

Description of impact

13.196 Permanent and temporary impacts from the operation of the Project 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.

Sensitivity

13.197 All commercial fishing fleets are deemed to be of low vulnerability, high recoverability and medium-low value. The sensitivity of the receptor for all fleets is therefore considered to be low.

Magnitude

13.198 Detailed assessments of the following impacts have been undertaken in **Chapter 10 Fish and Shellfish Ecology**:

- Temporary and permanent habitat loss
- Increased SSCs
- Underwater noise and vibration
- Interactions of EMF
- Barrier effects
- Introduction of hard substrate

13.199 The approach to this assessment has followed the similar approach outlined for the construction phase, i.e. with respect to the magnitude of this impact on commercial fisheries, the overall significance of the effect on fish and shellfish species has been considered (i.e. both the magnitude and sensitivity of fish and shellfish species have been considered to assess the magnitude of impact 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 has been assessed for a species, a negligible impact magnitude would be assessed for commercial fishing; similarly where an effect of minor adverse significance has been assessed for a species, a low impact magnitude would be assessed for commercial fishing, i.e., the overall significance for fish and shellfish ecology (as set out in **Chapter 10 Fish and Shellfish Ecology**) has helped to determine the magnitude of the impact for commercial fishing fleets.

13.200 The impact is predicted to be of regional spatial extent, of relevance to national fishing fleets, and of short-term (maintenance activities) and long-term (operational impacts) duration. It is predicted that this impact would affect the commercial fisheries receptors directly through loss of resources. Based on the significance of effects on fish and shellfish species set out in **Table 13.15**, the magnitude of impact on commercial fisheries is considered to be **low** adverse in relation to the potential impacts.

Table 13.15 Significance of effects of operation and maintenance impacts on fish and

shellfish species relevant to commercial fisheries receptors

Potential impact	Significance of effect
Temporary and permanent habitat loss	Minor adverse/negligible adverse
Increased SSCs and sediment re-deposition	Minor adverse/negligible adverse
Underwater noise and vibration	Negligible adverse
Interactions of EMF	Minor adverse/negligible adverse
Barrier effects	Minor adverse
Introduction of hard substrate	Minor adverse/negligible adverse

Significance of effect

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

13.6.3.4 Impact 4: Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity

Significance of effect

13.202 The maximum number of vessel return trips per year during the operation and maintenance phase is estimated to be 832 return vessel trips during a heavy maintenance year (typically every 5 years, with a standard year estimated to be 384 return vessel trips), with a maximum of 10 vessels on site at any time. While this is lower that the construction phase (2,583 return trips and maximum of 37 vessels at any time), the magnitude of effects are expected to be in the same or similar range to the effects described during construction (see **Section 13.6.2.4**). The significance of effect is therefore **negligible adverse** for pelagic trawl and **minor adverse** for all other fleets, which is not significant in EIA terms.

13.6.3.5 Impact 5: Physical presence of Project infrastructure, and potential exposure of that infrastructure, leading to gear snagging

Description of impact

13.203 The presence of inter-array and platform link cables and associated cable protection, together with any WTG and OSP structures (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 assessed within **Chapter 14 Shipping and Navigation**.

Sensitivity

13.204 As described for construction in **Section 13.6.2.5,** the sensitivity of mobile demersal fleets is considered to be **medium** and the sensitivity of the mobile pelagic fleet and static fleets (potting, hooks and netting) considered to be **low**.

Magnitude

13.205 The Project 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.

13.206 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.

13.207 It is considered likely that fishers would 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 (which would be provided via NtMs as committed to in **Section 13.3.3**); and are highly likely to avoid the infrastructure and cable protection within the windfarm site.

13.208 In the instance that snagging does occur, the Applicant would 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 11: Dealing with claims for loss or damage of gear.

13.209 During the operational and maintenance phase the key risks of snagging are related to snagging buried cables that have become comprised (i.e., unburied); snagging cable protection materials and snagging Project infrastructure. The Developer is committed to regular and routine monitoring and inspection of cable burial integrity and condition of cable protection. If damage is identified, the cable burial and protection would be rectified. The maintenance worst-case assumption for cables is for up to 200m of cables repaired/replaced and 100m of cables reburied every year. Such activities are not expected to take place every year, but provided as worst-case annual scenarios for potential maintenance over the operational and maintenance phase. In relation to cable burial, embedded mitigation commits to a target burial depth of cables to 1.5m where possible, with a CBRA undertaken to determine where additional cable protection is necessary. The Project description includes for up to 70km of inter-array cables and 10km of platform link cables and assumes 10% of this cable length would require cable protection. In addition, cable protection would be required for cable crossing

locations and at entry points to WTGs and OSP(s).

13.210 Overall, given the relatively low area impacted by the Project, together with the embedded measures, the magnitude is considered to be **low adverse** for all fleets.

Significance of effect

13.211 **UK and IoM potting, UK 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 therefore assessed as **minor adverse**, which is not significant in EIA terms.

13.212 **UK, IoM and Irish dredge, UK and IoM 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 therefore assessed as **minor adverse**, which is not significant in EIA terms.

13.213 **UK pelagic fishery**: overall, it is predicted that the sensitivity of the receptor is low and the magnitude is low adverse. The effect is therefore assessed as **minor adverse**, which is not significant in EIA terms.

~~13.6.3.9~~13.6.3.6 Impact 6: Additional steaming time to alternative fishing grounds for vessels that would otherwise fish within the windfarm site

Description of impact

13.214 A detailed NRA has been undertaken (discussed further in **Chapter 14 Shipping and Navigation**). This included full consideration of commercial fishing vessels while transiting (e.g. from a potential collision and allision perspective).

13.215 This assessment focuses on the potential impact of longer steaming distances to alternative fishing grounds during the operation and maintenance phase.

Sensitivity

13.216 The sensitivity of commercial fishing fleets to this impact is expected to be the same or similar to that for construction (see **Section 13.6.2.6**) and is considered to be low for UK and IoM potting, UK gears with hooks and netting fishing fleets and **negligible** for all other fleets.

Magnitude

13.217 During the operation and maintenance phase, fishing would be possible across the Project windfarm site, with the exception of:

- The footprint of installed infrastructure (and a 50m advisory safe

operating distance from WTG/OSP(s) at the surface)

- Safety Zones around infrastructure undergoing major maintenance
- Advisory safety distances around vessels undertaking major maintenance activities.

13.218 Such activities would be communicated through NtMs and Kingfisher Bulletins with ample warning provided.

13.219 It is understood that the individual decisions made by the skippers of fishing vessels with their own perception of risk would determine the likelihood of whether their fishing would resume within the windfarm site. As such, it is acknowledged that whilst additional steaming to alternative grounds would not be necessary, skippers may choose to steam to grounds outside of the windfarm site.

13.220 Overall, the area impacted by the Project infrastructure is relatively low, based on a permanent loss due to surface infrastructure of 0.51km^2, within the windfarm site of 87km^2. Furthermore, it is understood that the windfarm site forms only part of a wider area that is routinely fished, and that transit to these alternative grounds is routine within normal fishing operations as different grounds are targeted on a rotational basis. The magnitude is considered to be **low** adverse for all fishing fleets.

Significance of effect

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

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

13.6.4 Potential impacts during decommissioning

13.223 The following impacts of the decommissioning phase of the Project on commercial fisheries, as per the impacts listed in **Table 13.2**, have been assessed:

- Impact 1: Reduction in access to, or exclusion from established fishing grounds
- Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds
- Impact 3: Displacement or disruption of commercially important fish and shellfish resources
- Impact 4: Increased vessel traffic associated with decommissioning

activities within fishing grounds leading to interference with fishing activity;

- Impact 5: Physical presence of infrastructure under decommissioning leading to gear snagging
- Impact 6: Additional steaming time to alternative fishing grounds for vessels that would otherwise fish within the windfarm site

13.224 A description of the potential effects on commercial fisheries receptors caused by each identified impact is given below.

13.225 Fishing fleets identified as **UK** include vessels registered to England, Scotland, Wales, Northern Ireland and the Crown Dependencies including IoM and Jersey.

~~13.6.4.4~~13.6.4.1 Impact 1: Reduction in access to, or exclusion from established fishing grounds

Significance of effect

13.226 The effects of decommissioning activities are expected to be the same or similar to the effects from construction (see **Section 13.6.2.1**). Upon application of additional mitigation, the residual significance of effect is therefore **minor adverse** for the potting and dredge fleets (subject to additional mitigation), **negligible** for pelagic trawl and **minor adverse** for all other fleets, which is not significant in EIA terms for all fleets.

~~13.6.4.5~~13.6.4.2 Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds

Significance of effect

13.227 The effects of decommissioning activities are expected to be the same or similar to the effects from construction (see **Section 13.6.2.2**). Upon application of additional mitigation, the residual significance of effect is therefore **minor adverse** for the potting fleet (subject to additional mitigation), **negligible** for pelagic trawl and **minor** adverse for all other fleets, which is not significant in EIA terms for all fleets.

~~13.6.4.6~~13.6.4.3 Impact 3: Displacement or disruption of commercially important fish and shellfish resources

Significance of effect

13.228 The effects of decommissioning activities are expected to be the same or

similar to the effects from construction (see **Section 13.6.2.3**). The significance of effect is therefore **minor adverse** for all fleets, which is not significant in EIA terms.

~~13.6.4.7~~13.6.4.4 Impact 4: Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity

Significance of effect

13.229 The effects of decommissioning activities are expected to be the same or similar to the effects from construction (see **Section 13.6.2.4**). The significance of effect is therefore negligible to **minor adverse** for all fleets, which is not significant in EIA terms.

~~13.6.4.8~~13.6.4.5 Impact 5: Physical presence of Project infrastructure under decommissioning leading to gear snagging

Significance of effect

13.230 The effects of decommissioning activities are expected to be the same or similar to the effects from construction (see **Section 13.6.2.5**). The significance of effect is therefore **minor adverse** for all fleets, which is not significant in EIA terms.

~~13.6.4.9~~13.6.4.6 Impact 6: Additional steaming time to alternative fishing grounds for vessels that would otherwise fish within the windfarm site

Significance of effect

13.231 The effects of decommissioning activities are expected to be the same or similar to the effects from construction (see **Section 13.6.2.6**). The significance of effect is therefore **minor adverse** for the potting, netting and gear with hook fleets and **negligible adverse** for all other fleets, which is not significant in EIA terms for all fleets.

13.7 Cumulative effects

13.232 In order to undertake the CEA, and as per the PINS advice note (PINS, 2019), the potential for cumulative effects has been established considering each Project-alone effect (and the Zone of Influence (ZoI) of each impact) alongside the list of plans, projects and activities that could potentially interact. These stages are detailed below.

13.7.1 Identification of potential cumulative effects

13.233 Part of the cumulative assessment process is the identification of which individual impacts assessed for the Project have the potential for a cumulative effect on receptors (impact screening). This information is set out in **Table**

13.16. Screening considered the ZoI of the impacts and the plans and projects identified in **Table 13.18** (presented in **Figure 13.2**). Impacts for which the residual significance of effect was assessed in the Project-alone assessment as 'negligible', or above, were considered in the CEA screening (i.e. only those assessed as 'no change' are not taken forward as there is no potential for them to contribute to a cumulative effect).

Table 13.16 Potential cumulative effects (impact screening)

Impact	'Project-alone' effect significance	Potential for cumulative effect	Rationale
Construction phase			
Impact 1: Reduction in access to, or exclusion from established fishing grounds	Not Significant (Minor adverse)	Yes	Other developments in the Irish Sea have the potential to reduce access to fishing grounds.
Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	Not Significant (Minor adverse)	Yes	Incremental displacement effects across the region can lead to cumulative effects.
Impact 3: Displacement or disruption of commercially important fish and shellfish resources	Not Significant (Minor adverse)	Yes	Incremental disruption to largely sedentary shellfish species may have wider stock effects.
Impact 4: Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity	Not Significant (Minor adverse)	No	Highly localised nature of the impact. Given the scale of Project-alone effects there would be no interaction of effects, additive effects across the study area would be negligible across projects.
Impact 5: Physical presence of under construction infrastructure leading to gear snagging	Not Significant (Minor adverse)		
Impact 6: Additional steaming time to alternative fishing grounds for vessels that would otherwise fish within the windfarm site	Not Significant (Minor adverse)		
Operation and maintenance phase			
Impact screening as per construction above.			
Decommissioning phase			
Impact screening as per construction above.			

13.7.2 Identification of other plans, projects and activities

13.234 The identification and review of other plans, projects and activities that may result in cumulative effects for inclusion in the CEA (described as 'project screening') was undertaken alongside an understanding of Project-alone effects. This included consideration of the relevant details of each project, including current status (e.g. under construction), planned construction period, distance to the Project, status of available data and rationale for including or excluding from the assessment.

13.235 For the potential effects for commercial fisheries, other planned developments were screened into the assessment based on a CEA study area of the Irish Sea, to ensure appropriate coverage of relevant fishing grounds.

13.236 Only those developments that fall within the commercial fisheries CEA study area have the potential to result in cumulative effects with the Project. All other developments falling outside the commercial fisheries CEA study area are excluded from this assessment.

13.237 Details of the CEA screening for commercial fisheries are provided as follows:

- The rationale for screening CEA projects is presented in **Table 13.17**.
- Developments screened into the CEA for commercial fisheries are presented in **Table 13.18** (**Figure 13.2**[3]).
- A summary of the projects screened, and their based on PINS Guidance Note 17 Cumulative effects assessment relevant to nationally significant infrastructure projects, is provided in **Table 13.19**.

13.238 All projects considered for CEA across all topics have been identified within **Appendix 6.1** (Document Reference 5.2.6.1) of **Chapter 6 EIA Methodology** which forms an exhaustive list of plans, projects and activities relevant to the Project.

[3] Note, in some instances where there is not a downloadable project location boundary in the public domain they are not presented in **Figure 13.2**.

Table 13.17 Rationale coding for CEA screening process

Code	Rationale
a	Included as part of baseline – not included in CEA
b	Part of baseline, but has ongoing impact and is therefore relevant to CEA – screened into assessment
c	Potential cumulative effect exists – screened into assessment
d	Low confidence in data – screened out of assessment
e	No temporal overlap – screened out of assessment
f	No pathway for effect – screened out of assessment

*Table 13.18 Summary of projects considered for the CEA in relation to commercial fisheries (projects with (*) are not presented on **Figure 13.2**)*

Project	Status (at the time of assessment)	Construction/ decommissioning period	Distance to the Project (km)	Screened in (Y/N)	Rationale
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	Pre-application stage. PEIR published in October 2023	2026 – 2029	0 (adjacent)	Y	c
Carbon Capture Storage Area (CCSA) (EIS Area 1)	Licences awarded in 2023 (see Morecambe Net Zero Cluster Project below)	Unknown	0	Y	c
Morecambe Net Zero Cluster Project (carbon storage cluster)(*)	Early planning				
South Morecambe DP3 (gas platform)	Decommissioned	N/A	0	N	e
EXA Atlantic (formerly GTT Hibernia Atlantic) telecommunication cable	Operational	N/A	0 (bisects the windfarm site)	N	a

Project	Status (at the time of assessment)	Construction/ decommissioning period	Distance to the Project (km)	Screened in (Y/N)	Rationale
Vodafone Lanis 1 telecommunication cable	Operational	N/A	0 (along the southern boundary of the windfarm site)	N	a
Havhingsten telecommunication cable	Operational	N/A	0.6	N	a
Calder CA1 platform (and other oil and gas platforms)	Operational	N/A	0.9	N	a
Proposed second IoM to UK interconnector(*)	Pre-planning/concept	Unknown	Unknown	Y	c
Rockabill telecommunication cable	Operational	N/A	1.7	N	a
Sirius South telecommunication cable	Operational	N/A	2.1	N	a
Hibernia 'C' Atlantic	Operational	N/A	2.5	N	a
Gateway Gas Storage Project	On hold	N/A	4.1	Y	c
IoM Interconnector	Operational	N/A	4.6	N	a
South Morecambe DP4 (gas platform)	Decommissioned	N/A	5.1	N	e
ESAT 2 cable	Operational	N/A	5.4	N	a
Carbon Capture Storage Licence (CS004)[4]	Licensed in 2020	Unknown	7.5	Y	c
Liverpool Bay aggregate production area (Area 457)	Open	N/A	9.7	N	a

[4] Licence area linked to the HyNet North West project. Applications for the HyNet Carbon Dioxide pipeline and HyNet North West Hydrogen Pipeline projects encompass onshore works only and there are no specific details of associated offshore works, however it is possible existing infrastructure would be used.

Project	Status (at the time of assessment)	Construction/ decommissioning period	Distance to the Project (km)	Screened in (Y/N)	Rationale
Mona Offshore Wind Project	Pre-application stage. PEIR submitted 2023.	2026 – 2029	10.0	Y	c
West of Duddon Sands Offshore Windfarm	Operational	N/A	12.9	Y	b
Morgan Offshore Wind Project Generation Assets	Pre-application stage. PEIR published 2023	2026 – 2029	16.7	Y	c
Site Y Disposal Area	Open	N/A	16.8	N	a
Walney Extension IV Offshore Windfarm	Operational	N/A	18.8	Y	b
Walney I Offshore Windfarm	Operational	N/A	20.3	Y	b
Barrow Offshore Windfarm	Operational	N/A	21.0	Y	b
IS205 Barrow D Disposal Area	Open	N/A	22.7	N	a
Walney II Offshore Windfarm	Operational	N/A	22.7	Y	b
Size Z Disposal Area	Open	N/A	23.9	N	a
Liverpool Bay aggregate exploration and option area (Area 1808)	Open	N/A	25.7	N	a
Walney Extension 3 Offshore Windfarm	Operational	N/A	26.4	Y	b
Ormonde Offshore Windfarm	Operational	N/A	27.0	Y	b
Awel y Môr Offshore Wind Farm	Consent granted 2023.	2027 – 2030	28.9	Y	c
Gwynt y Môr Offshore Wind Farm	Operational	N/A	28.9	Y	b
Hilbre Swash aggregate production area	Open	N/A	29.0	N	a
Burbo Bank and Extension Offshore Windfarm	Operational	N/A	29.1 – 33.4	Y	b

Project	Status (at the time of assessment)	Construction/ decommissioning period	Distance to the Project (km)	Screened in (Y/N)	Rationale
Morecambe Bay: Lune Deep Disposal Area	Open	N/A	30.1	N	a
North Hoyle Offshore Windfarm	Operational	N/A	36.3	Y	b
Morecambe Bay Tidal Lagoon(*)	Pre- planning/concept	Unknown	39.5	Y	c
Rhyl Flats Offshore Windfarm	Operational	N/A	40.0	Y	b
Duddon Estuary Tidal Lagoon(*)	Pre- planning/concept	Unknown	42.6	Y	c
Mooir Vannin Offshore Windfarm	Pre-application stage. Scoping Submitted 2023.	2030-2032	43.7	Y	c
Port of Mostyn Tidal Lagoon(*)	Pre- planning/concept	Unknown	48.2	Y	c
Crogga Gas Project(*)	Pre-planning/concept	Unknown	49 (approx.)	Y	c
Colwyn Bay Tidal Lagoon(*)	Pre- planning/concept	Unknown	50.2	Y	c
Mersey Tidal Power(*)	Pre- planning/concept	Unknown	53.6	Y	c
West Anglesey Demonstration Zone (Morlais)	Consented	Expected to be operational by 2027	83.1	Y	c
Havhingsten/CeltixConnect-2 (CC-2)	Operational	N/A	83.2	N	a
Holyhead Deep tidal phase 1	Operational	N/A	86.0	Y	a
Holyhead extension tidal(*)	Consented	Unknown	86.0	Y	c
Robin Rigg Offshore Windfarm(*)	Operational	N/A	100.7	Y	b
Solway Firth-Venturi Enhanced Turbine Technology (VETT) bridge(*)	Pre- planning/concept	Unknown	125.4	Y	c
Bardsey sound tidal	Withdrawn 2023	N/A	132.0	N	f

Project	Status (at the time of assessment)	Construction/ decommissioning period	Distance to the Project (km)	Screened in (Y/N)	Rationale
North Irish Sea Array Offshore Windfarm(*)	Early planning	Expected to be operational in 2028	138.0	Y	c
Setanta Wind Park Offshore Windfarm(*)	Pre- planning/concept	Unknown	139.0	Y	c
Strangford Lough Array	Operational	N/A	142.0	Y	b
Clogher (Cooley point) Head Offshore Windfarm(*)	Pre- planning/concept	Unknown	146.0	Y	c
Codling Wind Park Offshore Windfarm(*)	Early planning	Expected to be operational in 2029	154.0	Y	c
Oriel Offshore Windfarm(*)	Early planning	Unknown	155.0	Y	c
Dublin Array Offshore Windfarm(*)	Early planning	Expected to be operational in 2028	155.6	Y	c
Arklow Bank Phase 1 Offshore Windfarm(*)	Operational	N/A	176.2	Y	b
South Irish Sea Array Offshore Windfarm(*)	Pre- planning/concept	Unknown	177.0	Y	c
Kilmichael Point Offshore Windfarm(*)	Pre- planning/concept	Unknown	182.0	Y	c
Arklow Bank Phase 2 Offshore Windfarm(*)	Early planning	Unknown	186.1	Y	c
Strumble Head Tidal Energy Project(*)	Pre- planning/concept	Unknown	215.6	Y	c
Ramsey Sound tidal demonstrator	Early planning	Unknown	239 (approx.)	Y	c
Pembrokeshire Demonstrator Zone(*)	Early planning	Unknown	254 (approx.)	Y	c

Project	Status (at the time of assessment)	Construction/ decommissioning period	Distance to the Project (km)	Screened in (Y/N)	Rationale
Designated sites					
Liverpool Bay SPA	Designated	N/A	0 (adjacent)	Y	c
Fylde MCZ	Designated	N/A	8.2	Y	c
West of Walney MCZ	Designated	N/A	12.8	Y	c
West of Copeland MCZ	Designated	N/A	31.5	Y	c
Langness Marine Nature Reserve (MNR)	Designated	N/A	60.1	Y	c
Little Ness MNR	Designated	N/A	63.7	Y	c
Laxey Bay MNR	Designated	N/A	65.0	Y	c
Douglas Bay MNR	Designated	N/A	65.2	Y	c
Ramsey Bay MNR	Designated	N/A	68.7	Y	c
Baie ny Carrickey MNR	Designated	N/A	72.0	Y	c
Calf and Wart Bank MNR	Designated	N/A	76.2	Y	c
Port Erin Bay MNR	Designated	N/A	78.7	Y	c
Niarbyl Bay MNR	Designated	N/A	79.3	Y	c
West Coast MNR	Designated	N/A	81.5	Y	c
North Channel SAC	Designated	N/A	102.9	Y	c
South Rigg MCZ	Designated	N/A	104.5	Y	c
Luce Bay and Sands SAC	Designated	N/A	107.0	Y	c
Clyde Sea Sill MPA	Designated	N/A	164.4	Y	c
South Arran MPA	Designated	N/A	196.7	Y	c

Table 13.19 Summary of projects screened into CEA by assessment Tier (PINS Guidance note 17)

Tier	Projects
Existing (operational) projects	Offshore wind farms: Arklow Bank Phase 1, Barrow, Burbo Bank Extension, Burbo Bank, Gwynt y Môr, North Hoyle, Ormonde, Rhyl Flats, Robin Rigg, Walney Extension 3, Walney Extension IV, Walney I, Walney II, West of Duddon Sands. Tidal projects: Holyhead Deep, Strangford Lough
1 & 2	Offshore windfarms: Morgan and Morecambe Offshore Wind Farms: Transmission Assets, Arklow Bank Phase 2, Awel y Môr, Dublin Array, Mona Offshore Wind Project, Morgan Offshore Wind Project: Generation Assets, Mooir Vannin Offshore Wind Farm, North Irish Sea Array, Codling Wind Park and Oriel. Tidal projects: Morlais, Holyhead extension
3	Oil and gas/cable and pipeline/storage projects: Capture Storage Area (EIS Area 1), Gateway Gas Storage Project, Carbon Capture Storage Licence Area (CS004), second IoM interconnector, Crogga gas project Offshore wind farms including: Setanta Wind Park, Clogher Head/ Cooley Point, Kilmichael Point. Tidal projects including: Strumble Head Tidal, Ramsey sound demonstrator, Solway Firth VETT, Mersey tidal project, Colwyn Bay Tidal Lagoon, Mostyn tidal lagoon, Duddon Estuary Tidal Lagoon, Pembrokeshire demonstrator. Marine Protected Areas (MPAs) including Special Areas of Conservation (SACs), Special Areas of Protection (SPAs) and Marine Conservation Zones (MCZ): West of Walney MCZ, West of Copeland MCZ, Fylde MCZ, Luce Bay and Sands SAC, Liverpool Bay SPA, South Arran MPA, Clyde Sea Sill MPA, South Rigg MCZ, North Channel SAC and IoM MNRs.

13.7.3 Assessment of cumulative effects

13.239 Having established the residual effects from the Project with the potential for a cumulative effect, along with the other relevant plans, projects and activities, the following sections provide an assessment of the level of cumulative effect that may arise. These have been detailed per impact where the potential for cumulative effects have been identified (in line with **Table 13.16**).

13.240 Given the interconnected nature of the Project and the Morgan and Morecambe Offshore Wind Farms: Transmission Assets, a separate 'combined' assessment of these has been provided within the CEA (**Section 13.7.3.1**). Thereafter, the cumulative assessment considers all plans, projects and activities screened into the CEA (**Section 13.7.3.2**).

13.7.3.1 Cumulative assessment – the Project and Transmission Assets (combined assessment)

13.241 While the Transmission Assets[5] are being considered in a separate ES as part of a separate DCO application (combined with the Morgan Offshore Wind Project transmission assets), given the functional link, a 'combined' assessment has been made considering both the Project and Transmission Assets for the purposes of cumulative assessment. This provides an assessment including impact interactions and additive effects and thus any change in the significance of effects as assessed separately.

13.242 The Transmission Assets PEIR (Morgan Offshore Wind Limited and Morecambe Offshore Windfarm Ltd, 2023a) informs the assessment.

13.243 Only the marine elements of the Transmission Assets would interact with the Project in relation to commercial fisheries, including:

- Export cables adjoining the Morgan Offshore Wind Project Generation Assets and the Project and making landfall south of Blackpool
- Booster station required for the Morgan Offshore Wind Project Generation Assets
- OSP(s) (for the Project and Morgan Offshore Wind Project Generation Assets)

13.244 The following (project-alone) impacts were concluded in the Transmission Assets PEIR (Morgan Offshore Wind Limited and Morecambe Offshore Windfarm Ltd, 2023):

- Loss or restricted access to fishing grounds – **negligible** to **minor adverse** effect (not significant in EIA terms)
- Displacement of fishing activity into other areas – **negligible adverse** effect (not significant in EIA terms)
- Loss or damage to fishing gear due to snagging – **negligible** to **minor adverse** effect (not significant in EIA terms)
- Potential impacts on commercially important fish and shellfish resources – defined in the Transmission Assets Fish and Shellfish Ecology assessment as **negligible** to **minor adverse** effect (not significant in EIA terms)

[5] As the Transmission Assets includes infrastructure associated with both the Project and the Morgan Offshore Wind Project Generation Assets, it should be noted that the combined assessment considers the transmission infrastructure for both the Project and the Morgan Offshore Wind Project Generation Assets (and includes all infrastructure as described in the Transmission Assets PEIR).

- Supply chain opportunities for local fishing vessels: **negligible** to **minor beneficial** effect (not significant in EIA terms)

13.245 The Morgan and Morecambe Offshore Wind Farms: Transmission Assets PEIR included a CEA for the Scottish west coast scallop vessels. No other fishing fleet was included in the Transmission Assets CEA because negligible impacts were concluded for all other Transmission Assets alone impacts for all other fleets.

13.246 The Transmission Assets PEIR identified that the Scottish west coast scallop vessels receptor group is less active within the Project windfarm site than within the Transmission Assets Red Line Boundary and so cumulative effects are limited.

13.247 The assessment for the Transmission Assets does not raise the combined Project and Transmission Assets impacts above that already assessed for the Project-alone assessment, given the separation of fleets impacted by each project (Transmission Assets would largely impact the inshore fishery) and the short-term period of construction where impacts would be greatest. Overall, the combined residual impacts associated with the Project and the Transmission Assets are assessed to be **negligible** to **minor adverse** effect (not significant in EIA terms) for all impacts and all fleets.

13.248 Impacts to fish and shellfish populations (fisheries resources) are detailed in **Chapter 10 Fish and Shellfish Ecology**, however no significant effects have been identified.

13.7.3.2 Cumulative assessment – All plans and projects

13.249 Based on the impacts (**Table 13.16**) and other plans and projects (**Table 13.19**) identified, where required, a detailed cumulative assessment was undertaken considering all relevant information from the Project and other plan and projects (including the Transmission Assets).

Reduction in access to, or exclusion from established fishing grounds (all phases)

Existing projects

13.250 There is potential for cumulative reduction in access to or exclusion from established fishing grounds as a result of construction activities associated with the Project and other projects. For the purposes of this ES, this additive impact has been assessed within the Irish Sea, which is considered to be representative of the fishing grounds exploited by the fleets active across the regional study area.

13.251 The existing tidal projects are localised to lagoons and inshore estuaries where additional cumulative effects are not predicted for the fleets assessed

(UK and IoM dredge and demersal otter trawl (scallop) fishery, UK and IoM potting and all other fleets).

13.252 Fifteen offshore windfarms have been included in the assessment, including projects located approximately 13-27km north and 28km south of the Project windfarm site. These projects are currently operational, and throughout their construction provided a range of mitigation directly to commercial fishing businesses. Fishers have adapted their activities in response to the presence of these wind farms, including both operating within the arrays (for example, by adapting how and where gear is set), but also focusing effort outside the existing windfarm areas.

13.253 The windfarms are located in areas where scallop dredgers, demersal otter trawls, beam trawls and potting activity were likely to have been operated, with varying degrees of effort. Overall, the commercial fishing fleets have adapted to the presence of the windfarms and adjusted practices to allow fishing businesses to continue operation.

13.254 The sensitivity of the UK and IoM scallop dredge, potting, otter trawling and beam trawling fleets is judged to be **medium** and the magnitude of impact was assessed as **low adverse,** this is due to the adaptation of fishers to the existing wind farms in the region and continued operation of their businesses. Therefore, the significance of effect from the reduced access, or exclusion from established grounds from the installation of the Project cumulatively with the existing projects is **minor adverse**, which is not significant in EIA terms.

13.255 The sensitivity of all other fleets is judged to be **low** and the magnitude of impact was assessed as **low adverse** due to the lower levels of activity in the local study area. Therefore, the significance of effect from the reduced access, or exclusion from established grounds from the installation of the Project cumulatively with existing projects is **minor adverse**, which is not significant in EIA terms.

Tiers 1 and 2

13.256 The tidal projects included in Tier 1 and 2 are expected to be extremely localised and additional cumulative effects are not predicted for the fleets assessed.

13.257 The Tier 1 and 2 assessment includes 10 offshore windfarms, notably Morgan and Mona Offshore Wind Projects (approximately 10-16km west of the Project windfarm site), Mooir Vannin Offshore Wind Farm (within IoM territorial waters) and Awel y Môr Offshore Wind Farm located approximately 29km to the south. Landing statistics and VMS data indicate the importance of the Morgan and Mona Offshore Wind project site locations to the UK and IoM dredge and demersal otter trawl (scallop) fleets. UK potting vessels are known to operate across the Awel y Môr windfarm site, having been displaced from

Gwynt y Môr windfarm site and other existing windfarms. The Mooir Vannin windfarm Scoping Report states king scallop as the most important fishery species targeted within IoM territorial waters. The installation of the Morgan and Morecambe Offshore Wind Farms Transmission Assets offshore export cable route is likely to interact with UK inshore fleets operating within the 12 and 6nm boundaries across a short-term period.

13.258 It is noted that commitments are being made as part of the Morgan Offshore Wind Project Generation Assets and the Mona Offshore Wind Project, however these are not yet fully detailed or implemented and are therefore not considered within the CEA. Likewise for other Tier 2 projects, assessment and mitigations have not been fully established.

13.259 Overall, the Tier 1 and 2 windfarms, together with the Transmission Assets are expected to affect UK and IoM fishing fleets that have already accommodated existing operational windfarms (as described above). This region contains a high level of existing offshore windfarms and a fishing sector that has undergone previous mitigations and have repeatedly adapted their operations around expanding developments. There is a limit to what can be tolerated by the commercial fishing industry, while remaining commercially viable.

13.260 Given the grounds targeted across the region, including within Tier 1 and 2 projects, the sensitivity of the UK and IoM dredge and demersal otter trawl (scallop) fishery and the UK and IoM potting fleets is judged to be **medium**, and the magnitude of impact was assessed as **medium/low adverse**. Therefore, the significance of effect from the reduced access or exclusion from established grounds when considering the installation of the Project cumulatively with existing and Tier 1 and 2 projects is expected to be **moderate adverse** for UK dredge fishery and UK potting fleet during the construction and decommissioning phases, which is significant in EIA terms. During operation and maintenance there would be some access (notably potting) within the windfarm site and thus there would be minimal contribution to cumulative effects.

13.261 While an overall moderate adverse cumulative impact has been assessed for UK dredge fishery and UK potting fleet during the construction and decommissioning phases, it is highlighted that the relative contribution of the Project to this cumulative effect is low based on the relative footprint and location of the Project and level of fishing activity within the site compared to other existing, Tier 1 and 2 projects and given Project-alone mitigation measures.

13.262 The sensitivity for all other fleets was assessed as **low** and given the lower level of activity across the region, the magnitude of the impact was assessed as **low adverse.** Therefore, the significance of effect from the reduced access,

or exclusion from established grounds from the installation of the Project cumulatively with the existing and Tier 1 and 2 projects is considered to be **minor adverse** for all other fleets, which is not significant in EIA terms.

13.263 The Applicant is committed to ongoing communication with other developers including the Morgan and Mona Offshore Wind Projects, the Transmission Assets and the Mooir Vannin Offshore Wind Farm project developers. The Applicant would seek to liaise with these projects in order to develop a consistent approach in fisheries liaison, coexistence and mitigation.

Tier 3

13.264 The carbon capture and gas storage projects, cable and pipeline, oil and gas and tidal projects included in Tier 3 are expected to be extremely localised. It is noted that the carbon capture storage project overlaps with the wind farm site and is likely to cause localised exclusion.

13.265 Limited information is available for Tier 3 offshore wind projects.

13.266 The CEA includes consideration of designated sites as a project or plan in the context of commercial fisheries, as management measures implemented to protect designated features in these sites may lead to reduced access for commercial fisheries, amongst other impacts. The MPAs considered in the assessment include all Scottish MPAs, IoM MNRs, SACs, MCZs, SPAs and non-UK SCIs within 200km of the Project. While all sites are designated, the management measures have not yet been designed or implemented and it is not known to what extent different fishing fleets would be restricted; MPAs are therefore considered in Tier 3.

13.267 From the network of MPAs in the region, based on the activity of the commercial fishing fleets under assessment, those of specific note are:

- West of Walney MCZ (388km^2) protected for sea-pen and burrowing megafauna communities, and subtidal mud and sand
- West of Copeland MCZ (158km^2) protected for subtidal coarse and mixed sediments and subtidal sand
- Fylde MCZ (261km^2) protected for subtidal mud and sand
- Luce Bay and Sands SAC (488km^2) protected for a range of habitats including sandbanks and reefs
- Liverpool Bay SPA (2,528km^2) protected for a range of bird species
- South Arran MPA (280km^2) protected for a range of habitats including burrowed mud, kelp, maerl, seagrass and the species ocean quahog
- Clyde Sea Sill MPA (712km^2) protected for marine geology features, a range of sand and coarse sediment communities and the black guillemot

- South Rigg MCZ (141km^2) protected for a range of habitats including subtidal coarse sediments, mixed sediments, sand and mud
- North Channel SAC (1,604km^2) protected for harbour porpoise
- IoM MNRs (total area 430.75km^2)

13.268 Management in MPAs can take several different forms, including introducing voluntary measures, use of the existing planning and licensing framework, specific byelaws and orders.

13.269 The North West IFCA has implemented a range of Byelaws that restrict activity within the 6nm district, including permit conditions associated with the use of dredge and a size limit for vessels. The MMO implemented a bottom towed prohibition byelaw for the West of Walney MCZ in 2014. Marine Scotland implemented a seasonal closure to the South Arran MPA for bottom contact gear in 2022.

13.270 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. 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 gear with seabed contact would 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.

13.271 The IoM has a range of NMRs within inshore waters which have restrictions for commercial mobile fishing gear (dredgers and trawlers) as well as static gear (pots).

13.272 The magnitude and sensitivity are considered to be as described in the Tier 1 and 2 assessment. It is noted there is high uncertainty related to the scale of management measures to be implemented within designated sites.

13.273 The significance of effect from the reduced access, or exclusion from established grounds from the installation of the Project cumulatively, together with the existing and Tier 1, 2 and 3 projects is therefore **moderate adverse** during construction and decommissioning for UK dredge fishery and UK potting fleet, which is significant in EIA terms. While an overall moderate adverse cumulative effect has been assessed, it is highlighted that the relative contribution of the Project to this cumulative effect is low based on the relative footprint and location of the Project and level of fishing activity within the site compared to other existing and Tier 1, 2 and 3 projects.

13.274 The effect of the MPAs is unmitigable by the Project and this impact would remain significant for mobile trawling and dredge fleets without the small cumulative contribution from the Project.

Displacement leading to gear conflict and increased fishing pressure on established fishing grounds (all phases)

Existing projects

13.275 The effect of displacement during construction leading to gear conflict and increased fishing pressure is directly correlated to the previous impact of reduced access to fishing grounds (i.e. if there is no reduction in access, then there would be no displacement). There is a **low** magnitude of impact for reduced access to fishing grounds from existing projects and therefore displacement is not expected. As such the magnitude of impact of displacement was assessed as **minor** for all fleets.

13.276 The sensitivity of the receptors is consistent with the assessment of reduced access to fishing grounds. The sensitivity of the UK and IoM scallop dredge, potting, otter trawling and beam trawling fleets is judged to be **medium** and the magnitude of impact was assessed as **low adverse**. The significance of effect from displacement leading to gear conflict and increased fishing pressure from the installation of the Project cumulatively with existing projects is therefore **minor adverse**, which is not significant in EIA terms.

13.277 The sensitivity of all other fleets is judged to be **low** and the magnitude of impact was assessed as **low adverse**. Therefore, the significance of effect from displacement was assessed to be **minor adverse**, which is not significant in EIA terms.

Tier 1 & 2

13.278 As above, the effect of displacement leading to gear conflict and increased fishing pressure is directly correlated to the previous impact of reduced access to fishing grounds (i.e. if there is no reduction in access, then there would be no displacement). The CEA for existing and Tier 1 & 2 projects concludes a medium magnitude of impact for reduced access to fishing grounds for UK and IoM dredge and demersal otter trawl (scallop) gear and UK and IoM potting gear and therefore potential for displacement affecting these fleets is expected. As such the magnitude of impact of displacement during construction and decommissioning was assessed as **medium adverse** for the UK and IoM dredge and demersal otter trawl (scallop) gear and UK and IoM potting gear. The magnitude of impact for all other fleets and fisheries is **low adverse**.

13.279 The sensitivity of the receptors is consistent with the assessment of reduced access to fishing grounds and is therefore **medium** for UK and IoM dredge

and demersal otter trawl (scallop) fishery and UK and IoM potting fleets and **low** for all other commercial fishing fleets.

13.280 The maximum sensitivity of receptors in the area is **medium** and the magnitude has been assessed as **medium adverse** for UK and IoM dredge and demersal otter trawl (scallop) fishery and UK and IoM potting fleets and **minor adverse** for all other fleets. Therefore, the significance of effect during construction and decommissioning from the displacement of commercial fisheries leading to gear conflict and increase pressure from the installation of the Project cumulatively with the existing and Tier 1 and 2 projects is **moderate adverse** for the UK and IoM dredge and demersal otter trawl (scallop) fishery and UK and IoM potting fleets, which is significant in EIA terms, and **minor adverse** for all other fleets and phases, which is not significant in EIA terms.

Tier 3

13.281 Per the rationale provided in paragraphs **13.264** to **13.274,** the additional Tier 3 projects do not raise the magnitude of impact above that of Tier 1 and 2 projects in terms of reduced access. Therefore, the significance of effect from the displacement of commercial fisheries leading to gear conflict and increase pressure from the installation of the Project cumulatively with the existing, 1, 2 and 3 projects is **moderate adverse** for the UK and IoM dredge and demersal otter trawl (scallop) fishery and the UK and IoM potting fleets, which is significant in EIA terms, and **minor adverse** for all other fleets, which is not significant in EIA terms.

13.282 While an overall moderate adverse cumulative impact was assessed, it is highlighted that the relative contribution of the Project to this cumulative effect for UK and IoM dredge and demersal otter trawl (scallop) fishery and UK and IoM potting fleets is low based on the relative footprint and location of the Project and level of fishing activity compared to other existing and Tier 1, 2 and 3 projects, and negligible for all other fleets.

Displacement or disruption of commercially important fish and shellfish resources (all phases)

13.283 Cumulative effects for fish and shellfish ecology have been assessed in **Chapter 10 Fish and Shellfish Ecology** covering the following effects:

- Increased SSCs
- Habitat loss and disturbance
- Noise (and associated barrier effects)
- Introduction of hard substrate

13.284 All of the above cumulative effects on the populations of fish and shellfish receptors were found not to be materially elevated from Project-alone effects in EIA terms, although it is noted that there would be additional effects.

13.285 Concern has been raised by commercial fisheries stakeholders on the cumulative effect on sedentary species of queen scallops, particularly in relation to Tier 1, 2 and 3 projects, including Morgan, Mona and Mooir Vannin offshore windfarms.

13.286 Two key aspects when considering this cumulative effect in relation to the Project are that:

- It has been observed that the Project windfarm site is not located in grounds heavily targeted for queen scallops
- Fish and shellfish ecology ES assessments, and associated mitigation, are not yet available for the Morgan, Mona and Mooir Vannin offshore windfarm developments, and so it is not possible to draw conclusions on their potential impact on queen scallop stocks

13.287 Concern has also been raised by commercial fisheries stakeholders with regard to the cumulative effect of construction on herring spawning activity; specifically in the area immediately northeast of the IoM. Concern was raised about the knock-on effects to the wider pelagic fishery which targets herring outside the regional study area, but within the Irish Sea; specifically noting that quota is set at the Irish Sea level.

13.288 The Fish and Shellfish Ecology CEA considered the cumulative effect of multiple project construction simultaneously and concluded that there would not be a significant impact on the herring spawning or herring stock.

13.289 The inshore fisheries local to Lytham St Annes and Liverpool have raised concern particularly in relation to effects from underwater noise. Effects to fish resources are assessed in detail in **Chapter 10 Fish and Shellfish Ecology** with no significant impacts identified.

13.290 A precautionary **medium** magnitude and **medium** sensitivity was assessed for the UK and IoM dredge and demersal otter trawl (scallop) fishery; a **low** magnitude and **low** sensitivity was assessed for all other fleets during construction. The significance of effect from displacement or disruption of commercially important fish and shellfish resources during construction of the Project cumulatively with the existing and Tier 1, 2 and 3 projects is therefore assessed as **moderate adverse** during construction and decommissioning for the UK and IoM dredge and demersal otter trawl (scallop) fishery, which is significant in EIA terms. The significance of effect was assessed as **minor adverse** for all other fleets, which is not significant in EIA terms.

13.291 It is noted that the Fish and Shellfish Ecology Chapter does not find a significant cumulative impact on the king or queen scallop stock, while the commercial fisheries assessment concludes a significant cumulative effect. Further justification for the significant cumulative effect on the commercial fisheries scallop resource is provided as follows:

- The commercial fisheries assessment is focused on the local level variation in scallop resource i.e., at specific fishing grounds targeted by scallop fleets within the local and regional study areas. This is in comparison to the fish and shellfish ecology assessment that considers the impact at a stock level for the wider Irish Sea.
- Furthermore, the abundance of scallops at a local level may be affected by increased fishing pressure due to displacement effect.

13.292 While the Project contribution to effects is considered low, the Applicant remains open to engage with the project developers for these sites as the respective fish and shellfish ecology assessments progress. The Applicant has committed to the development of and adherence to a FLCP, in accordance with the Outline FLCP, that provides the mechanism for the involvement in a potential regional commercial fisheries working group, as well as monitoring of fishing activity as presented in **Section 13.11**.

13.8 Transboundary effects

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

13.294 Due to the localised nature of any potential impacts and very limited foreign fishing fleet activity (some potential for Irish and Belgian vessels within the regional study area, but not specifically within the Project windfarm site), transboundary impacts are unlikely to occur.

13.295 Effects on biological resources could occur over a range of tens of kilometres and could therefore interact with the following states: Republic of Ireland and IoM. Based on the minor to negligible residual significance of disruption to commercial species during all phases of the Project, it is expected that the impact on stocks in Irish and IoM waters is low. This is informed by the location of the main king scallop and queen scallop grounds, which are found in both Irish and IoM waters. The potential transboundary impact of effects on commercial fish stocks in the waters of other states on commercial fisheries is therefore concluded to be of **minor adverse** significance and is considered to be not significant in EIA terms.

13.296 Effects on commercial fishing fleets from the Republic of Ireland and Belgium, in terms of reduction in access to grounds within the Project and displacement into alternative grounds, are unlikely given the lack of vessel activity within the

Project windfarm site. 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.

13.9 Inter-relationships

13.297 There are clear inter-relationships between the commercial fisheries topic and several other topics that have been considered within this ES. **Table 13.20** provides a summary of the principal inter-relationships and sign-posts to where those issues have been addressed in the relevant chapters.

Table 13.20 Commercial fisheries inter-relationships

Topic and description	Related chapter	Where addressed in this chapter
Impact 1: Reduction in access to, or exclusion from established fishing grounds	N/A	
Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	N/A	
Impact 3: Displacement or disruption of commercially important fish and shellfish resources	Impact magnitude informed by the assessment in **Chapter 10 Fish and Shellfish Ecology**	**Sections 13.6.2.3, 13.6.3.3** and **13.6.4.3**
Impact 4: Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity	Impact magnitude informed by the assessment in **Chapter 14 Shipping and Navigation**	**Sections 13.6.2.4, 13.6.3.4** and **13.6.4.4**
Impact 5: Physical presence of infrastructure leading to gear snagging	Impact magnitude informed by the assessment in **Chapter 14 Shipping and Navigation**	**Sections 13.6.2.5, 13.6.3.5** and **13.6.4.5**
Impact 6: Additional steaming time to alternative fishing grounds for vessels that would otherwise fish within the windfarm site	Impact magnitude informed by the assessment in **Chapter 14 Shipping and Navigation**	**Sections 13.6.2.6, 13.6.3.6**, and **13.6.4.6**

~~13.16~~13.10 Interactions

13.298 The impacts identified and assessed in this chapter have the potential to interact with each other. The areas of potential interaction between impacts are presented in **Table 13.21**, **Table 13.22** and **Table 13.23**. These provide a screening tool for which impacts have the potential to interact.

13.299 The impacts have been assessed relative to each development phase (i.e. construction, operation and maintenance or decommissioning) to see if (for example) multiple construction impacts affecting the same receptor could increase the level of impact upon that receptor. However, it is also noted that interactions have been, as appropriate considered within the assessment. For example, the reduction in access to fishing ground results in displacement effects.

13.300 Following this, a lifetime assessment was undertaken, which considered the impact interactions identified, as well as effects on receptors across all development phases (**Table 13.24**).

Table 13.21 Interaction between impacts - screening (construction phase effects)

	Potential Interaction between construction phase impacts					
	Impact 1: Reduction in access to, or exclusion from established fishing grounds	Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	Impact 3: Displacement or disruption of commercially important fish and shellfish resources	Impact 4: Increased vessel traffic leading to interference with fishing activity	Impact 5: Physical presence of under construction infrastructure leading to gear snagging	Impact 6: Additional steaming time to alternative fishing grounds
Impact 1: Reduction in access to, or exclusion from established fishing grounds		Yes	No	Yes	No	Yes
Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	Yes		No	Yes	No	Yes
Impact 3: Displacement or disruption of commercially important fish and shellfish resources	No	No		No	No	No

	Potential Interaction between construction phase impacts					
	Impact 1: Reduction in access to, or exclusion from established fishing grounds	Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	Impact 3: Displacement or disruption of commercially important fish and shellfish resources	Impact 4: Increased vessel traffic leading to interference with fishing activity	Impact 5: Physical presence of under construction infrastructure leading to gear snagging	Impact 6: Additional steaming time to alternative fishing grounds
Impact 4: Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity	Yes	Yes	No		No	Yes
Impact 5: Physical presence of under construction infrastructure leading to gear snagging	No	No	No	No		No
Impact 6: Additional steaming time to alternative fishing grounds for vessels that would otherwise fish within the windfarm site	Yes	Yes	No	Yes	No	

Table 13.22 Interaction between impacts - screening (operation and maintenance phase effects)

	Potential interaction between operation and maintenance phase impacts					
	Impact 1: Reduction in access to, or exclusion from established fishing grounds	Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	Impact 3: Displacement or disruption of commercially important fish and shellfish resources	Impact 4: Increased vessel traffic leading to interference with fishing activity	Impact 5: Physical presence of infrastructure leading to gear snagging	Impact 6: Additional steaming time to alternative fishing grounds
Impact 1: Reduction in access to, or exclusion from established fishing grounds		Yes	No	Yes	No	Yes
Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	Yes		No	Yes	No	Yes
Impact 3: Displacement or disruption of commercially important fish and shellfish resources	No	No		No	No	No
Impact 4: Increased vessel traffic associated with the	Yes	Yes	No		No	Yes

	Potential interaction between operation and maintenance phase impacts					
	Impact 1: Reduction in access to, or exclusion from established fishing grounds	Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	Impact 3: Displacement or disruption of commercially important fish and shellfish resources	Impact 4: Increased vessel traffic leading to interference with fishing activity	Impact 5: Physical presence of infrastructure leading to gear snagging	Impact 6: Additional steaming time to alternative fishing grounds
Project within fishing grounds leading to interference with fishing activity						
Impact 5: Physical presence of infrastructure leading to gear snagging	No	No	No	No		No
Impact 6: Additional steaming time to alternative fishing grounds for vessels that would otherwise fish within the windfarm site	Yes	Yes	No	Yes	No	

Table 13.23 Interaction between impacts - screening (decommissioning phase effects)

	Potential Interaction between decommissioning phase impacts					
	Impact 1: Reduction in access to, or exclusion from established fishing grounds	Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	Impact 3: Displacement or disruption of commercially important fish and shellfish resources	Impact 4: Increased vessel traffic leading to interference with fishing activity	Impact 5: Physical presence of under construction infrastructure leading to gear snagging	Impact 6: Additional steaming time to alternative fishing grounds
Impact 1: Reduction in access to, or exclusion from established fishing grounds		Yes	No	Yes	No	Yes
Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	Yes		No	Yes	No	Yes
Impact 3: Displacement or disruption of commercially important fish and shellfish resources	No	No		No	No	No
Impact 4: Increased vessel traffic	Yes	Yes	No		No	Yes

	Potential Interaction between decommissioning phase impacts					
	Impact 1: Reduction in access to, or exclusion from established fishing grounds	Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	Impact 3: Displacement or disruption of commercially important fish and shellfish resources	Impact 4: Increased vessel traffic leading to interference with fishing activity	Impact 5: Physical presence of under construction infrastructure leading to gear snagging	Impact 6: Additional steaming time to alternative fishing grounds
associated with the Project within fishing grounds leading to interference with fishing activity						
Impact 5: Physical presence of under construction infrastructure leading to gear snagging	No	No	No	No		No
Impact 6: Additional steaming time to alternative fishing grounds for vessels that would otherwise fish within the windfarm site	Yes	Yes	No	Yes	No	

Table 13.24 Interaction between impacts – phase and lifetime assessment

Receptor	Highest significance of effect level				
	Construction	Operation and maintenance	Decomm-issioning	Phase assessment	Lifetime assessment
UK and IoM dredge targeting scallop and queen scallop UK and IoM potting targeting whelk, lobster and brown crab UK and IoM demersal otter trawl targeting queen scallop, nephrops, thornback ray and plaice UK beam trawl targeting sole, thornback ray, plaice and brown shrimp UK fixed nets targeting bass, thornback ray and flounder UK gear with hooks targeting bass, pollack, mackerel UK pelagic trawl targeting herring Irish dredge targeting scallop and queen scallop Belgian beam trawl targeting sole and thornback ray	Minor adverse	Minor adverse	Minor adverse	**No greater than individually assessed impact** The residual impacts are considered to be of negligible to minor adverse significance on the individual receptors. Given that the impacts are minor and that each impact would be managed with standard and best practice methodologies it is considered that there would either be no interactions, or that these would not result in greater impact than assessed individually.	**No greater than individually assessed impact** The residual impacts are considered to be of negligible to minor adverse significance on the individual receptors. Given that the impacts are minor and that each impact would be managed with standard and best practice methodologies it is considered that there would either be no interactions, or that these would not result in greater impact than assessed individually.

Receptor	Highest significance of effect level				
	Construction	Operation and maintenance	Decomm-issioning	Phase assessment	Lifetime assessment
Commercially important fish and shellfish resources	Minor adverse	Minor adverse	Minor adverse	**No greater than individually assessed impact** The residual impacts are considered to be of negligible to minor adverse significance on the individual receptors. Given that the impacts are minor and that each impact would be managed with standard and best practice methodologies it is considered that there would either be no interactions, or that these would not result in greater impact than assessed individually.	**No greater than individually assessed impact** The residual impacts are considered to be of minor adverse significance of effect on the individual receptors. Given that the magnitudes are minor and that each impact would be managed with standard and best practice methodologies it is considered that there would either be no interactions or that these would not result in greater impact during the lifetime of the project than assessed individually.

~~13.17~~13.11 Potential monitoring requirements

13.301 Monitoring requirements are described in the draft In Principle Monitoring Plan (IPMP), submitted alongside the DCO Application, and would be further developed and agreed with stakeholders, prior to construction, based on the IPMP and taking account of the final detailed design of the Project.

13.302 The IPMP includes for the monitoring of commercial fisheries data pre, during and post-construction. The aim of commercial fisheries monitoring would be to understand variations in commercial fisheries activity in response to the construction of the windfarm and use this to inform updates to the FLCP. The key objectives would be to:

- Collate data on commercial fisheries landings and activity by ICES rectangle, including landing statistics and VMS data with the objective to extend the baseline assessment provided within the EIA and Commercial Fisheries Technical Report
- Collate data on commercial fisheries landings by port on a monthly basis
- Collate such other sources of evidence of commercial fisheries activity as may be reasonably available on a regular basis
- Monitor available data and evidence to better understand any variations and patterns in commercial fisheries activity

~~13.18~~13.12 Assessment summary

13.303 During the construction and decommissioning phases the commercial fisheries assessment found moderate significant effects for the UK potting fleet related to reduction in access and the UK and the IoM potting fleets for displacement impacts. Additional mitigation (for UK potting fleets) following FLOWW guidance (and future updates to this guidance), including justifiable, evidence-based disturbance payments lowers the residual impacts to minor adverse and not significant in EIA terms.

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

13.305 The cumulative impact assessment found moderate significant effects during the construction and decommissioning phases for the UK and IoM dredge and demersal otter trawl (scallop) fishery and the UK and IoM potting fleets related to reduction in access and/or displacement impacts. The inclusion of the Mona, Morgan and Mooir Vannin offshore windfarms together with MPAs (and anticipated management for mobile gears within MPAs) are the main factors raising the cumulative effect to be significant in EIA terms. It is noted that Mooir Vannin construction is currently understood to be after the Project construction period, however, as there may be overlap with survey activities and construction could occur immediately after the Project it has been considered. MPA related management is in response to protecting environmental sensitive

features and therefore the cumulative effect of MPAs is unmitigable by the Project. The contribution of effects from the Project is considered low, however the Applicant has committed to the development of and adherence to a FLCP, in accordance with the Outline FLCP, that provides the mechanism for the involvement in a potential regional commercial fisheries working group, as well as monitoring of fishing activity at a regional level as presented in **Section 13.11**.

13.306 **Table 13.25** presents a summary of the assessment of significant effects, highlighting where further mitigation measures are proposed, the resulting residual impacts and cumulative effects on commercial fisheries receptors.

Table 13.25 Summary of potential effects on commercial fisheries

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
Construction and decommissioning phase							
Impact 1: Reduction in access to, or exclusion from established fishing grounds	UK dredge	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	Significant (Moderate adverse)
	IoM dredge and demersal otter trawl (scallop) fishery	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	As per Project-alone
	UK potting	Medium	Medium	Significant (Moderate adverse)	Yes	Not Significant (Minor adverse)	Significant (Moderate adverse)
	IoM potting	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	As per Project-alone
	UK and IoM demersal otter trawl (nephrops and finfish)	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	As per Project-alone

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
	UK beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK fixed nets	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK gear with hooks	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK pelagic trawl	Negligible	Negligible	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	
	Irish dredge	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	Belgian beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
Impact 2: Displacement leading to gear conflict and	UK and IoM dredge and demersal otter trawl (scallop) fishery	Low	Medium	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	Significant (Moderate adverse)

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
increased fishing pressure on adjacent grounds	UK and IoM potting	Medium	Medium	Significant (Moderate adverse)	Yes	Not Significant (Minor adverse)	Significant (Moderate adverse)
	UK and IoM demersal otter trawl (nephrops and finfish)	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	As per Project-alone
	UK beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK fixed nets	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK gear with hooks	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK pelagic trawl	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	
	Irish dredge	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
	Belgian beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
Impact 3: Displacement or disruption of commercially important fish and shellfish resources	UK and IoM dredge and demersal otter trawl (scallop) fishery	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	Significant (Moderate adverse)
	UK and IoM potting	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	As per Project-alone
	UK and IoM demersal otter trawl (nephrops and finfish)	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK fixed nets	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
	UK gear with hooks	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK pelagic trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	As per Project-alone
	Irish dredge	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	Belgian beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
Impact 4: Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity	UK and IoM dredge and demersal otter trawl (scallop) fishery	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	As per Project-alone
	UK and IoM potting	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK and IoM demersal otter	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
	trawl (nephrops and finfish)						
	UK beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK fixed nets	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK gear with hooks	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK pelagic trawl	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	
	Irish dredge	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	Belgian beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
Impact 5: Physical presence of	UK and IoM dredge and demersal otter	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	As per Project-alone

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
under construction infrastructure leading to gear snagging	trawl (scallop) fishery						
	UK and IoM potting	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK and IoM demersal otter trawl (nephrops and finfish)	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK beam trawl	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK fixed nets	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK gear with hooks	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK pelagic trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
	Irish dredge	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	Belgian beam trawl	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
Impact 6: Additional steaming time to alternative fishing grounds for vessels that would otherwise fish within the windfarm site	UK and IoM dredge and demersal otter trawl (scallop) fishery	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	As per Project-alone
	UK and IoM potting	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK and IoM demersal otter trawl (nephrops and finfish)	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	
	UK beam trawl	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
	UK fixed nets	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK gear with hooks	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK pelagic trawl	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	
	Irish dredge	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	
	Belgian beam trawl	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
Operation and maintenance phase							
Impact 1: Reduction in access to, or exclusion from established fishing grounds	UK and IoM dredge and demersal otter trawl (scallop) fishery	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	Not Significant (Minor adverse)
	UK and IoM potting	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK and IoM demersal otter trawl (nephrops and finfish)	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK fixed nets	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK gear with hooks	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
	UK pelagic trawl	Negligible	Negligible	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	
	Irish dredge	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	Belgian beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
Impact 2: Displacement leading to gear conflict and increased fishing pressure on adjacent grounds	UK and IoM dredge and demersal otter trawl (scallop) fishery	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	Not Significant (Minor adverse)
	UK and IoM potting	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK and IoM demersal otter trawl (nephrops and finfish)	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
	UK beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK fixed nets	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK gear with hooks	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK pelagic trawl	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	
	Irish dredge	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	Belgian beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
Impact 3: Displacement or disruption of commercially	UK and IoM dredge and demersal otter trawl (scallop) fishery	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	Not Significant (Minor adverse)

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
important fish and shellfish resources	UK and IoM potting	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK and IoM demersal otter trawl (nephrops and finfish)	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK fixed nets	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK gear with hooks	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK pelagic trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	Irish dredge	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
	Belgian beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
Impact 4: Increased vessel traffic associated with the Project within fishing grounds leading to interference with fishing activity	UK and IoM dredge and demersal otter trawl (scallop) fishery	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	Not Significant (Minor adverse)
	UK and IoM potting	Low	Low	Not Significant (Minor adverse)	no	Not Significant (Minor adverse)	
	UK and IoM demersal otter trawl (nephrops and finfish)	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK fixed nets	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
	UK gear with hooks	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK pelagic trawl	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	
	Irish dredge	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	Belgian beam trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
Impact 5: Physical presence of under construction infrastructure leading to gear snagging	UK and IoM dredge and demersal otter trawl (scallop) fishery	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	Not Significant (Minor adverse)
	UK and IoM potting	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK and IoM demersal otter	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
	trawl (nephrops and finfish)						
	UK beam trawl	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK fixed nets	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK gear with hooks	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK pelagic trawl	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	Irish dredge	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	Belgian beam trawl	Medium	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
Impact 6: Additional steaming	UK and IoM dredge and demersal otter	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	Not Significant (Minor adverse)

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
time to alternative fishing grounds for vessels that would otherwise fish within the windfarm site	trawl (scallop) fishery						
	UK and IoM potting	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK and IoM demersal otter trawl (nephrops and finfish)	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	
	UK beam trawl	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	
	UK fixed nets	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK gear with hooks	Low	Low	Not Significant (Minor adverse)	No	Not Significant (Minor adverse)	
	UK pelagic trawl	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	

Potential impact	Receptor	Sensitivity	Magnitude	Significance of effects	Additional mitigation measures proposed	Residual effect	Cumulative residual effect
	Irish dredge	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	
	Belgian beam trawl	Negligible	Low	Not Significant (Negligible adverse)	No	Not Significant (Negligible adverse)	
Decommissioning phase							
As per construction phase.							

~~13.19~~13.13 References

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