Partners in UK offshore wind

MONA OFFSHORE WIND PROJECT

Preliminary Environmental Information Report

Volume 2, chapter 11: Commercial fisheries

Image of an offshore wind farm

April 2023
FINAL

Document status

Version	Purpose of document	Authored by	Reviewed by	Approved by	Review date
Rev01	First draft	MarineSpace	RPS		13/10/22
Rev02	Second draft	MarineSpace	RPS		23/11/22
Rev03	Third draft	MarineSpace	RPS		19/01/23
Rev04	Final	MarineSpace	RPS	bp/EnBW	03/02/23

Prepared by:

RPS

Prepared for:

Mona Offshore Wind Ltd.

Contents

Tables

Figures

List of Annexes

Glossary

Term	Meaning
Beam trawler	A vessel undertaking beam trawling, which is a fishing method of bottom trawling with a net that is held open by a solid metal beam, attached to two "shoes", consisting of solid metal plates, fixed to the ends of the beam.
Company Fisheries Liaison Officer	Primary contact for the Fishing Industry Representative (FIR) and Offshore Fisheries Liaison Officer (OFLO). Main point of contact for bp/EnBW for any commercial fisheries related queries.
Demersal fish	Demersal fish are species that live and feed on or near the seabed.
Demersal trawl	Demersal trawls consist of cone-shaped nets that are towed along the seabed to target demersal fish species. The mouth of the trawl is spread and held open by a pair of adjacent trawl doors.
Dredge	Dredges consist of rigid structures that target numerous species of shellfish through towing along the seabed. Dredges typically have an open-frame mouth with a collection bag.
Fisheries Industry Representative	Primary contact point within the fishing community, provider of feedback to the Company Fisheries Liaison Officer (CFLO) and Offshore Fisheries Liaison Officer (OFLO) and disseminator of Project information.
Fishing ground	An area of water or seabed targeted by fishing activity.
Fleet	A physical group of vessels sharing similar characteristics (e.g. nationality).
Gear type	The method/equipment used for fishing.
ICES statistical rectangles	Defined areas of sea used for fisheries statistics (1 degree longitude by 0.5 degree latitude, equalling approximately 30 by 30 nautical miles).
Inshore waters (England and Wales)	Mean High Water Springs (MHWS) to 12 nautical miles (nm) offshore.
Kilowatt	Engine power of a fishing vessel. This is used in the calculation of fishing effort for Vessel Monitoring Systems (VMS) data, whereby the time associated with the VMS report is multiplied by the engine power of the fishing vessel. Engine power with gross tonnage determines the size of fishing licence required and, therefore, allowable catch, discards and quotas.
Landings	Quantitative description of amount of fish returned to port for sale, in terms of value or weight.
Notice to Mariners	The United Kingdom Hydrographic Office's (UKHO) service of publications that contain all of the corrections, alterations and amendments to the UKHO worldwide charts and publications. These are published weekly and are available directly from the UKHO.
Offshore Fisheries Liaison Officer	Liaison between fishing vessels and clients, using local knowledge and fisheries experience to ensure offshore operations run smoothly and encourage co-operation. Provider of feedback to the CFLO and FIR.
Otter trawl	Otter trawls consist of a pair of otter boards (large rectangular boards) which holds open the mouth of a net.
Pelagic fish	Pelagic fish are species which live and feed within the water column.
Pelagic trawl	Pelagic trawls consist of nets which are used to catch fish in the water column, rather than on the seafloor.
Potter	A vessel undertaking potting, which is a method of fishing that uses pots (or creels) which are baited traps set down on the seabed to catch crabs and lobsters.
Safety zone	This includes defined safety zones (in accordance with the Maritime and Coastguard Agency) and advisory safety zones (recommended during construction and/or maintenance works).
Scallop dredger	A vessel undertaking scallop dredging, which is a fishing method to catch scallop using steel dredges with a leading bar fitted with a set of spring loaded, downward pointing teeth. Behind this toothed bar (sword), a mat of steel rings is fitted. A heavy net cover (back) is laced to the frame, sides and after end of the mat to form a bag.
Shellfish	For the purposes of this assessment, shellfish is considered a generic term to define molluscs and crustaceans.
Static gear	Gear that is set to catch fish or shellfish. This is a collective term and includes gear that remains static and is not towed, such as pots, traps and set nets.
Vessel Monitoring System	Satellite tracking system using a device on vessel which transmits the location, speed and course of the vessel.

Acronyms

Acronym	Description
AIS	Automatic Identification System
ANIFPO	Anglo-North Irish Fish Producers Organisation
BEIS	Department for Business, Energy and Industrial Strategy
Cefas	Centre for Environment Fisheries and Aquaculture Science
CFLO	Company Fisheries Liaison Officer
CIA	Cumulative Impact Assessment
COLREGS	The Convention on the International Regulations for Preventing Collisions at Sea 1972
DECC	Department of Energy and Climate Change (now BEIS)
dML	deemed Marine Licence
DPR	Daily Progress Report
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EU	European Union

Acronym	Description
EU STECF	European Union Scientific, Technical and Economic Committee for Fisheries
FIR	Fishing Industry Representative
ICES	International Council for the Exploration of the Sea
IFCA	Inshore Fisheries and Conservation Authority
ISEFPO	Irish South & East Fish Producers Organisation
LTMP	Long Term Management Plan
MCA	Maritime and Coastguard Agency
MCZ	Marine Conservation Zone
MDS	Maximum Design Scenario
MFPO	Manx Fish Producers Organisation
MHWS	Mean High Water Spring
MMO	Marine Management Organisation
MPA	Marine Protected Area
NFFO	National Federation of Fishermen's Organisations
NIFPO	Northern Ireland Fish Producers Organisation
NRW	Natural Resource Wales
OFLO	Offshore Fisheries Liaison Officer
PEIR	Preliminary Environmental Information Report
SAC	Special Area of Conservation
SFF	Scottish Fishermen’s Federation
SSC	Suspended Sediment Concentrations
SWFPA	The Scottish White Fish Producers Association Ltd
UK	United Kingdom
VMS	Vessel Monitoring System
WCSP	West Coast Sea Products Ltd
WFA	Welsh Fisherman’s Association
WFC	Whitehaven Fisherman’s Cooperative
WFPO	Western Fish Producers Organisation
WNMP	Welsh National Marine Plan

Units

Unit	Description
£	Pound sterling

Unit	Description
kW	Kilowatt (power)
kWh	Kilowatt hours
m	Metres
nm	Nautical mile (distance; 1nm = 1.852km)
t	Tonnes

11 Chapter 11 – Commercial fisheries

11.1 Introduction

11.1.1 Overview

11.1.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) presents the assessment of potential impacts of the Mona Offshore Wind Project on commercial fisheries. Specifically, this chapter considers the potential impact of the Mona Offshore Wind Project seaward of Mean High Water Springs (MHWS) during the construction, operations and maintenance, and decommissioning phases.

11.1.1.2 The assessment presented is informed by the following technical chapters:

- Volume 2, chapter 7: Benthic subtidal and intertidal ecology of the PEIR
- Volume 2, chapter 8: Fish and shellfish ecology of the PEIR
- Volume 2, chapter 12: Shipping and navigation of the PEIR
- Volume 2, chapter 14: Other sea users of the PEIR
- Volume 2, chapter 18: Socio-economics of the PEIR.

11.1.1.3 This chapter also draws upon information contained within volume 6, annex 11.1: Commercial fisheries technical report of the PEIR.

11.1.1.4 For the purposes of this chapter, commercial fishing is defined as any form of fishing activity where the catch is sold for taxable profit. Recreational rod and line fishers, as well as charter-angling operators, are also active in the region – potential impacts on these receptors are assessed in volume 2, chapter 18: Socio-economics and community of the PEIR.

11.1.2 Purpose of chapter

11.1.2.1 The primary purpose of the PEIR is outlined in volume 1, chapter 1: Introduction of the PEIR. In summary, the primary purpose of a final Environmental Statement is to support the Development Consent Order (DCO) application for the Mona Offshore Wind Project under the Planning Act 2008 (the 2008 Act). The PEIR constitutes the Preliminary Environmental Information for the Mona Offshore Wind Project and sets out the findings of the EIA to date to support the pre-application consultation activities required under the 2008 Act. The EIA will be finalised following completion of pre-application consultation and the Environmental Statement will accompany the application to the Secretary of State for Development Consent.

11.1.2.2 The PEIR forms the basis for statutory consultation, which will last for 47 days and conclude on 4 June 2023. At this point, comments received on the PEIR will be reviewed and incorporated (where appropriate) into the Environmental Statement, which will be submitted in support of the application for Development Consent, scheduled for quarter one of 2024.

11.1.2.3 Specifically, this PEIR chapter:

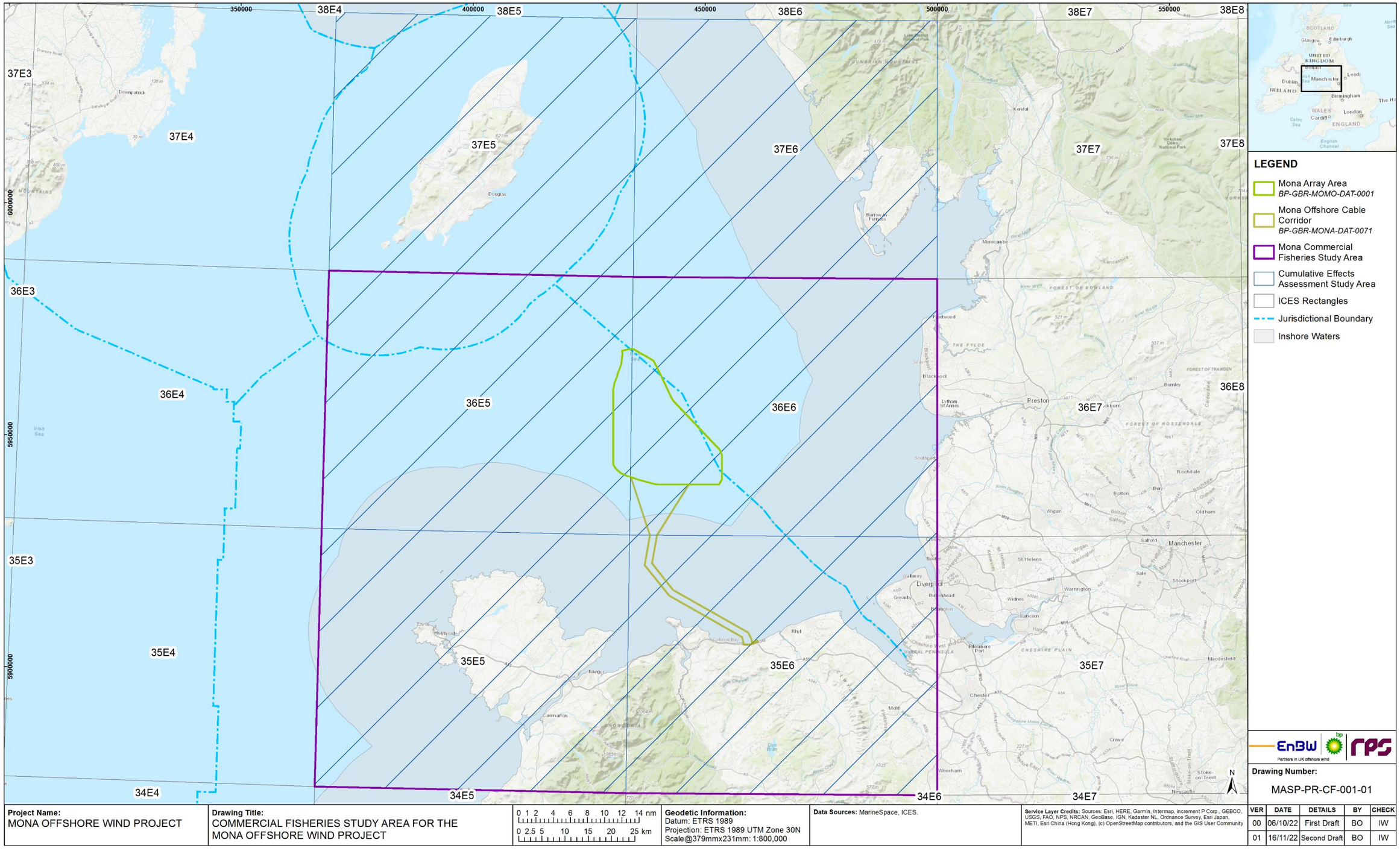
- Presents the existing environmental baseline established from desk studies, site-specific surveys and consultation with key commercial fisheries stakeholders
- Identifies any assumptions and limitations encountered in compiling the environmental baseline information
- Presents the potential environmental effects of the Mona Offshore Wind Project on commercial fisheries, based on the information gathered and the analysis and assessments undertaken as part of the EIA process undertaken to date
- Highlights any necessary monitoring and/or mitigation measures which could prevent, minimise, reduce or offset the possible environmental effects of the Mona Offshore Wind Project on commercial fisheries.

11.1.3 Study area

11.1.3.1 The Mona Offshore Wind Project is located within the International Council for the Exploration of the Sea (ICES) Division VIIa (Irish Sea) statistical area, which is divided into statistical rectangles for the purpose of recording fisheries landings. The Mona Array Area (illustrated on Figure 11.1) will be located within ICES Rectangle 36E5 and 36E6, and the Mona Offshore Cable Corridor (also illustrated Figure 11.1) will be located within 35E6 and 36E6. The Mona Array Area is predominantly in Welsh territorial waters, with a small overlap with English territorial waters, whereas the Mona Offshore Cable Corridor is located wholly within Welsh territorial waters (Figure 11.1).

11.1.3.2 A broad commercial fisheries study area has been defined for the purposes of this PEIR chapter, to provide a wider regional context to the current fisheries activity, and to ensure that potential impacts (e.g. displacement of fishing vessels) from the Mona Offshore Wind Project on commercial fisheries are fully assessed. Therefore, for the purposes of this PEIR chapter, the commercial fisheries study area is defined as ICES Rectangles 35E5, 35E6, 36E5 and 36E6.

11.1.3.3 Given the operational ranges of the fishing fleets active in the region, and considering feedback from consultation, the study area for the Cumulative Effects Assessment (CEA) for commercial fisheries is larger than the commercial fisheries study area used. This larger cumulative commercial fisheries study area is defined by ICES rectangles 35E5, 35E6, 35E7, 36E5, 36E6, 36E7, 37E5, 37E6 and 37E7. This wider study area will ensure that relevant regional fishing grounds, for a range of different fishing fleets, are fully assessed as part of the CEA.



LEGEND

- Mona Array Area *BP-GBR-MOMO-DAT-0001*
- Mona Offshore Cable Corridor *BP-GBR-MONA-DAT-0071*
- Mona Commercial Fisheries Study Area
- Cumulative Effects Assessment Study Area
- ICES Rectangles
- Jurisdictional Boundary
- Inshore Waters

Drawing Number: MASP-PR-CF-001-01

VER	DATE	DETAILS	BY	CHECK
00	06/10/22	First Draft	BO	IW
01	16/11/22	Second Draft	BO	IW

Project Name: MONA OFFSHORE WIND PROJECT

Drawing Title: COMMERCIAL FISHERIES STUDY AREA FOR THE MONA OFFSHORE WIND PROJECT

0 1 2 4 6 8 10 12 14 nm
0 2.5 5 10 15 20 25 km

Geodetic Information:
Datum: ETRS 1989
Projection: ETRS 1989 UTM Zone 30N
Scale@379mmx231mm: 1:800,000

Data Sources: MarineSpace, ICES.

Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Figure 11.1: Commercial fisheries study area.

11.2 Policy context

11.2.1 National Policy Statements

11.2.1.1 Planning policy on renewable energy infrastructure is presented in volume 1, chapter 2: Policy and legislation of the PEIR. Planning policy relevant to offshore renewable energy Nationally Significant Infrastructure Projects (NSIPs), is contained in the Overarching National Policy Statement (NPS) for Renewable Energy Infrastructure (EN-3, DECC, 2011b). EN-3 includes specific policy statements for commercial fisheries. A review of the Overarching NPS for Energy (EN-1; DECC, 2011a) has been undertaken and there are no specific references to commercial fisheries within this document.

11.2.1.2 NPS EN-3 includes guidance on those matters that are to be considered in any assessment of an offshore renewable energy project. These are summarised in Table 11.1 below. NPS EN-3 also highlights a number of factors relating to the determination of an application and in relation to mitigation. These are summarised in Table 11.2 below.

11.2.1.3 Table 11.1 refers to the current NPSs, specifically NPS EN-1 (DECC, 2011a) and NPS EN-3 (DECC, 2011b). If the NPSs are updated prior to the application for Development Consent, the revised NPSs will be fully considered in relation to commercial fisheries within the Environmental Statement.

Table 11.1 Summary of the NPS EN-3 provisions relevant to commercial fisheries.

NPS EN-3 provision	How and where considered in the PEIR
The construction and operation of offshore windfarms can have both positive and negative effects on fish and shellfish stocks (paragraph 2.6.122 of NPS EN-3).	Potential impacts to fish stocks arising from the Mona Offshore Wind Project have been assessed in volume 2, chapter 8: Fish and shellfish ecology of the PEIR. Potential impacts on the commercial fisheries that target the fish stocks are assessed in section 11.8.6.4 of this Chapter.
Whilst the footprint of the offshore windfarm and any associated infrastructure may be a hindrance to certain types of commercial fishing activity, such as trawling and longlining, other fishing activities may be able to take place within operational windfarms without unduly disrupting or compromising navigational safety. Consequently, the establishment of a windfarm can increase the potential for some activities, such as potting, where this would not compromise any safety zone in place. The Planning Inspectorate should consider adverse or beneficial impacts on different types of commercial fishing on a case-by-case basis (paragraph 2.6.123 of NPS EN-3).	Potential impacts to commercial fisheries have been described in section 11.8, and cumulative effects are described in section 11.9.
In some circumstances, transboundary issues may be a consideration as fishermen from other countries may fish in waters within which offshore windfarms are sited (paragraph 2.6.124 of NPS EN-3).	Transboundary issues have been described in section 11.11, where consideration has been given to both UK and non-UK fishing fleets.
Early consultation should be undertaken with statutory advisors and with representatives of the fishing industry which could include discussions of impact assessment methodologies (paragraph 2.6.127 of NPS EN3).	Consultation with relevant stakeholders (local, regional, national and international) has been undertaken for the Mona Offshore Wind Project and is summarised in section 11.3, with further information in volume 6, annex 11.1: Commercial fisheries technical report of the PEIR and the Consultation Report, which will be submitted as part of the DCO application.
Where a number of offshore wind farms have been proposed within an identified zone, it may be beneficial to undertake such consultation at a zonal, rather than a site-specific, level (paragraph 2.6.128 of NPS EN-3).	Cumulative impacts have been assessed in section 11.10. Consultation has taken place with a wide range of local, regional, UK and non-UK fisheries stakeholders active in the wider region, not only within and around the Mona Offshore Wind Project.
The assessment by the applicant should include detailed surveys of the effects on fish stocks of commercial interest and any potential reduction in such stocks, as well as any likely constraints on fishing activity within the project's boundaries. Robust baseline data should have been collected and studies conducted as part of the assessment. (paragraph 2.6.129 of NPS EN-3).	Volume 2, chapter 8: Fish and shellfish ecology of the PEIR outlines the potential impacts on fish stocks, including those of commercial interest. Baseline fisheries activity data has been collated from official sources and through consultation, as described in section 11.6 and volume 6, annex 11.1: Commercial fisheries technical report of the PEIR. Likely constraints associated with the Mona Offshore Wind Project are assessed in section 11.6.
Where there is a possibility that safety zones will be sought around offshore infrastructure, potential effects should be included in the assessment on commercial fishing (paragraph 2.6.130 of NPS EN-3).	Implications from the implementation of safety zones have been presented in section 11.8. There will be temporary 500m safety zones around the major construction vessels and any future major operations and maintenance vessel activities. Safety Zones are included within the PDE and have been considered within volume 2, chapter 12: Shipping and navigation and volume 6, annex 12.1: Navigational Risk Assessment of the PEIR.
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). Exclusion of certain types of fishing may make an area more productive for other types of fishing. The assessment by the Applicant should include surveys of the effects on fish stocks of commercial interest and the potential reduction or increase in such stocks will result from the presence of the windfarm development and of any safety zones (paragraph 2.6.131 of NPS EN-3).	

Table 11.2: Summary of NPS EN-3 policy on decision making relevant to commercial fisheries.

NPS EN-3 provision	How and where considered in the PEIR
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 2.6.132 of NPS EN-3).	The potential impacts arising from the Mona Offshore Wind Project will be discussed with statutory bodies during consultation. The Applicant is, and will continue to, take steps to minimise the effects upon the industry in the area through appropriate mitigation, where required (see section 11.7).

NPS EN-3 provision	How and where considered in the PEIR
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 (paragraph 2.6.132 of NPS EN-3).	The Applicant has considered the extent to which the Mona Offshore Wind Project will overlap with recognised fishing grounds and has carried out consultation with fishing stakeholders, in order to fully understand any potential impacts (see section 11.3). The results of this assessment are presented in this chapter (see section 11.8).
The Secretary of State should be satisfied that the Applicant has sought to design the proposal having consulted representatives of the fishing industry with the intention of minimising the loss of fishing opportunity taking into account effects on other marine interests (paragraph 2.6.133 of NPS EN-3).	The Applicant has committed to a consultation programme with commercial fisheries stakeholders to ensure that the project design can, where possible, promote co-existence (see section 11.3).
Any mitigation proposals should result from the Applicant having detailed consultation with relevant representatives of the fishing industry (paragraph 2.6.134 of NPS EN-3).	Consultation is an important aspect of the assessment of potential impacts on commercial fisheries for the Mona Offshore Wind Project and any related mitigation. The consultation programme with UK and international fisheries stakeholders is ongoing and has already included discussion on potential mitigation via fisheries input to array design and layouts (see section 11.3).
Mitigation should be designed to enhance, where reasonably possible, any potential medium and long-term positive benefits to the fishing industry and commercial fish stocks (paragraph 2.6.135 of NPS EN-3).	Mitigation measures are presented in section 11.7.
The Secretary of State will need to consider the extent to which disruption to the fishing industry, whether short term during 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 2.6.136 of NPS EN-3).	A range of mitigation options will be explored with the fishing industry representatives and stakeholders of the fishing community, where disruption is anticipated (see section 11.7 and 11.8).

11.2.2 Welsh National Marine Plan

11.2.2.1 The Welsh National Marine Plan (WNMP) was published in November 2019 and introduces a framework to support sustainable decision making for the marine environment. The WNMP includes policies specific to the renewable energy sector.

11.2.2.2 The following key objectives of the WNMP are of direct relevance to commercial fisheries:

- Objective 4: “Provide space to support existing and future economic activity through managing multiple uses, encouraging the co-existence of compatible activities, the mitigation of conflicts between users and, where possible, by reducing the displacement of existing activities”
- Objective 11: “Maintain and enhance the resilience of marine ecosystems and the benefits they provide in order to meet the needs of present and future generations”.

11.2.2.3 Key provisions are set out in Table 11.3 along with details as to how these have been addressed within the assessment.

Table 11.3: Welsh National Marine Plan policies of relevance to commercial fisheries.

Policy	Key provisions	How and where considered in the PEIR
GOV_01: Cumulative effects	Proposals should demonstrate that they have assessed potential cumulative effects and, in order of preference: a) avoid adverse effects; and/or b) minimise effects where they cannot be avoided; and/or c) mitigate effects where they cannot be minimised. If significant adverse effects cannot be adequately addressed, proposals should present a clear and convincing justification for proceeding. Proposals that contribute to positive cumulative effects are encouraged.	Cumulative impacts on commercial fisheries are assessed in section 11.10.
GOV_02: Cross-border and plan compatibility	It seeks to ensure that development decisions contribute to the sustainable use of Welsh seas while optimizing benefits and minimizing adverse impacts on activities and interests in neighbouring jurisdictions.	Cross-border impacts on commercial fisheries are assessed in sections 11.8 and 11.11.
SAF_01: Safeguarding existing activity	Proposals likely to have significant adverse impacts upon an established activity must demonstrate how they will address compatibility issues with that activity.	Impacts on commercial fisheries that may arise from the Mona Offshore Wind Project have been assessed in this Chapter (section 11.8).
ECON_02: Co-existence	Proposals should demonstrate how they have considered opportunities for co-existence with other compatible sectors in order to optimize the value and use of the marine area and marine natural resources.	Co-existence impacts are assessed in volume 4, chapter 28: Socio-economics, and community and volume 2, chapter 15: Inter-related effects (offshore) of the PEIR.
ENV_07: Fish Species and Habitats	Proposals potentially affecting important feeding, breeding (including spawning and nursery) and migration areas or habitats for key fish and shellfish species of commercial or ecological importance should demonstrate how they, in order of preference: avoid adverse impacts on those areas; minimise adverse impacts where they cannot be avoided; mitigate adverse impacts where they cannot be minimised.	These impacts have been assessed in volume 2, chapter 8: Fish and shellfish ecology of the PEIR.
GOV_01: Cumulative effects	Proposals should demonstrate that they have assessed potential cumulative effects and, in order of preference: a) avoid adverse effects; and/or b) minimise effects where they cannot be avoided; and/or c) mitigate effects where they cannot be minimised. If significant adverse effects cannot be adequately addressed, proposals should present a clear and convincing justification for proceeding. Proposals that contribute to positive cumulative effects are encouraged.	Cumulative impacts on commercial fisheries are assessed in section 11.10.

11.2.3 North West Inshore and North West Offshore Coast Marine Plans

11.2.3.1 The assessment of potential impacts to commercial fisheries has also been made with consideration to the specific policies set out in the North West Inshore and North West Offshore Coast Marine Plans (MMO, 2021b). Key provisions contained within these plans are set out in Table 11.4, along with details as to how these have been addressed within this assessment.

Table 11.4: North West Inshore and North West Offshore Marine Plan policies of relevant to commercial fisheries.

Policy	Key provisions	How and where considered in the PEIR
NW-FISH-2: Fisheries	Proposals that may have significant adverse impacts on access for fishing activities must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate - adverse impacts so they are no longer significant. If it is not possible to mitigate significant adverse impacts, proposals should state the case for proceeding.	The Applicant is taking and will continue to take steps to minimise the potential impacts upon the fishing industry in the area through appropriate mitigation where required. Designed-in measures related to commercial fisheries are provided in section 11.7.
NW-FISH-3: Fisheries	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.	The Mona Offshore Wind Project assessment has considered the impacts on fish stocks in volume 2, chapter 8: Fish and shellfish ecology of the PEIR; the chapter includes potential impacts on habitats, spawning, nursery and feeding grounds, and migratory routes
NW-CE-1: Cumulative effects	Proposals which may have adverse cumulative effects with other existing, authorised, or reasonably foreseeable proposals must demonstrate that they will, in order of preference: a) avoid b) minimise c) mitigate – adverse cumulative and/or in-combination effects so they are no longer significant.	Cumulative impacts on commercial fisheries are assessed in section 11.10.
NW-CO-1: Co-existence	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	The Applicant is taking and will continue to take steps to minimise the impacts upon the fishing industry in the area through appropriate mitigation where required. Designed-in measures related to commercial fisheries are provided in section 11.7, and include a commitment to develop a Fisheries Co-existence and Liaison Plan, which will be submitted as part of the DCO application.

11.3 Consultation

11.3.1.1 The Applicant is committed to open, constructive, collaborative and solutions-focused consultation with commercial fisheries stakeholders. MarineSpace provides the role of Company Fisheries Liaison Officer (CFLO) on behalf of the Applicant.

11.3.1.2 Informal consultation has been undertaken with key local and regional fisheries stakeholders since June 2021, to date. It is intended that these consultations will continue over the consenting phase of the Mona Offshore Wind Project, to ensure that relevant information from fisheries stakeholders is presented within the final Environmental Statement. It is also intended to ensure consultation continues past the submission of the consent applications right through to any eventual construction and operations and maintenance phase of the Mona Offshore Wind Project.

11.3.1.3 In addition to stakeholder meetings focussed on the EIA process, fisheries stakeholders have also been engaged at a detailed level during offshore surveys associated with the Mona Offshore Wind Project, which have been undertaken in 2021 and 2022.

11.3.1.4 The Scoping Report for the Mona Offshore Wind Project was submitted in May 2022 to The Planning Inspectorate and Natural Resources Wales (NRW). Following consultation, the Scoping Opinion was received in June 2022, and responses relevant to commercial fisheries are outlined in Table 11.5.

11.3.1.1 A summary of the key issues specific to commercial fisheries raised during consultation activities undertaken to date is presented in Table 11.5. Table 11.5 also lists how these issues have been considered in the production of this PEIR chapter. Further detail is presented within volume 6, annex 11.1: Commercial fisheries technical report of the PEIR. Information from consultees has been used to inform the baseline in Section Table 11.5and volume 6, annex 11.1: Commercial fisheries technical report of the PEIR.

Table 11.5: Summary of key consultation issues relevant to commercial fisheries raised during consultation activities undertaken for the Mona Offshore Wind Project.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or were considered in this chapter
June 2021	Individual fishers from Fleetwood and Maryport; Irish South and East Fish Producers Organisation (ISEFPO); Manx Fish Producers Organisation (MFPO); National Federation of Fisherman's Organisations (NFFO); Welsh Fishermen's Association (WFA); Western Fish Producers Organisation (WFPO); and Whitehaven Fishermen's Cooperative (WFC) Consultation meeting.	• Concerns regarding array layout and co-existence during the operations and maintenance phase. Scallop vessel representatives stated that they would require greater spacing of wind turbines. • Concerns regarding cumulative impacts with other activities and developments in the region. • Concerns regarding impacts on fish stocks. • Long-term datasets were recommended where possible, particularly due to the dynamic nature of queen scallop beds.	• Feedback from consultees regarding fishing activity has been presented within the baseline and has fed into the design process where possible. Feedback from ongoing consultation on fishing activity will be detailed in the environmental statement submitted at Application. • Cumulative effects have been assessed in section 11.10. • Assessment of fish stocks has been assessed in volume 2, chapter 8: Fish and shellfish ecology of the PEIR. • Ten year datasets have been obtained for landings statistics and Vessel Monitoring System (VMS) data, as outlined in section 11.4.
June 2021	Scottish Fishermen's Federation (SFF); Scottish White Fish Producers Association (SWFPA); and West Coast Sea Products Ltd (WCSP) Consultation meeting.	• Concerns regarding array layout and co-existence during the operations and maintenance phase. Scallop vessels would require greater spacing of wind turbines.	• Feedback from consultees regarding fishing activity has been presented within the baseline and fed into the design process where possible. Feedback from ongoing consultation on fishing activity will be detailed in the environmental statement submitted at Application.
July 2021	Anglo North Irish Fish Producers Organisation (ANIFPO); Northern Ireland Fish Producers' Organisation (NIFPO); and Rederscentrale Consultation meeting.	• Concerns regarding array layout and co-existence during the operations and maintenance phase. Belgian vessel representatives stated that they would not fish between wind turbines, so preference for closer spacing to minimise overall area of sea affected by the Mona Array Area. • Concerns regarding cumulative and in-combination impacts with other activities and developments in the region. • Concerns regarding impacts on fish stocks.	• Feedback from consultees regarding fishing activity has been presented within the baseline and fed into the design process where possible. Feedback from ongoing consultation on fishing activity will be detailed in the environmental statement submitted at Application. • Cumulative effects have been assessed in section 11.10. • Assessment of fish stocks has been assessed in volume 2, chapter 8: Fish and shellfish ecology of the PEIR.
July 2021	NFFO Consultation meeting.	• Concerns regarding array layout and co-existence during the operations and maintenance phases. • Concerns regarding cumulative and in-combination impacts with other activities and developments.	• Feedback from consultees regarding fishing activity has been presented within the baseline and fed into the design process where possible. Feedback from ongoing consultation on fishing activity will be detailed in the environmental statement submitted at Application. • Cumulative effects have been assessed in section 11.10.
February 2022	MFPO, NFFO and WFC Consultation meeting.	• Concerns regarding the interconnectivity of scallop stocks in the region and potential impacts. • Discussion regarding inter-array cable layout (and burial depth) to allow scallop fishing during operations and maintenance phase.	• The impact on scallop stocks has been assessed in volume 2, chapter 8: Fish and shellfish ecology of the PEIR. • Information was collated from stakeholders on gear penetration depth. Cables will be buried where possible (target depth of 1m) and in areas where this is not achievable the cable will be protected (section 11.7). Loss of fishing grounds and snagging risk are assessed in section 11.8.
February 2022	ANIFPO, Rederscentrale and WFPO Consultation meeting.	• Concerns regarding cumulative and in-combination impacts with other activities and developments. • Concerns regarding impacts on fish stocks. • Concerns that VMS data does not capture smaller vessels.	• Cumulative effects have been assessed in section 11.10. • Assessment of fish stocks has been assessed in volume 2, chapter 8: Fish and shellfish ecology of the PEIR. • It is acknowledged that there is a lack of data for vessels <15m in length. To ensure that smaller vessels are represented in the baseline (section 11.4 and volume 6, annex 11.1: Commercial fisheries technical report of the PEIR), multiple datasets have been collated which capture vessels <15m in length. For example: consultation is being undertaken to better understand activity of vessels <15m in the region; site specific surveys are also collating information on all fishing vessels, such as the scouting potting surveys and marine traffic surveys, which include vessels <15m.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or were considered in this chapter
February 2022	SFF, SWFPA and WCSP Consultation meeting.	• Discussion regarding location of offshore booster substation to cause least disruption to fisheries. • Concerns that VMS and AIS data does not capture smaller vessels. • Concerns regarding impact to scallop grounds due to the array layout and export cable route.	• The offshore booster substation was removed from the PDE. • It is acknowledged that there is a lack of data for vessels <15m in length. See comment above regarding the same concern. • A fisheries questionnaire was issued to collate information from consultees regarding design principles and co-existence. Further meetings were also held in November and December 2022 to discuss. Feedback from consultees has been collated and fed into the design process where possible, which will be detailed in the environmental statement submitted at Application.
March 2022	Welsh Government (WG) Consultation meeting.	• Issues with VMS data not capturing smaller vessels.	• See comment above regarding the same concern.
June 2022	The Planning Inspectorate Scoping Opinion.	• The influence of noise impacts on commercial fisheries (i.e. as a result of impacts to targeted species) should be clearly explained and assessed within the Environmental Statement.	• This impact has been considered in section 11.8.7.
June 2022	The Planning Inspectorate Scoping Opinion.	• The Planning Inspectorate agrees that the following impact can be scoped out: increased steaming distances during the operations and maintenance phase (Mona Array Area).	• This impact is scoped out of the impact assessment (section 11.8).
June 2022	The Planning Inspectorate Scoping Opinion.	• The Planning Inspectorate agrees that the following impact can be scoped out: interference with fishing activity during the operations and maintenance phase (Mona Offshore Cable Corridor).	• This impact is scoped out of the impact assessment (section 11.8).
June 2022	The Planning Inspectorate Scoping Opinion.	• The Planning Inspectorate agrees that the following impact can be scoped out: increase in steaming distances (all phases) (Mona Offshore Cable Corridor).	• This impact is scoped out of the impact assessment (section 11.8).
June 2022	The Planning Inspectorate Scoping Opinion response.	• Displacement of fishing activity into other areas (Mona Array Area): • The Environmental Statement should clearly define the duration of temporary impacts and distinguish between true short term temporary effects and those that are longer term and reversible.	• The impact assessment (section 11.8) clarifies where a potential effect is short-term or longer-term, and the magnitude quantifies the duration of the impact.
June 2022	The Planning Inspectorate Scoping Opinion response.	• The Environmental Statement 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 Environmental Statement should also consider the potential for climate change-related effects to facilitate the spread and exacerbate the impacts of INNS.	• This impact is considered in volume 2, chapter 7: Benthic subtidal and intertidal ecology of the PEIR and section 11.8.
June 2022	The Planning Inspectorate Scoping Opinion response.	• Impacts from increased vessel activity: this aspect chapter of the Scoping Report does not propose to assess impacts from increased vessel activity, for example collision and allision risk. The Inspectorate expects appropriate cross reference to be made to the Shipping and navigation chapter of the Environmental Statement to ensure that all potential impacts on commercial fisheries are assessed.	• These impacts are considered in volume 2, chapter 12: Shipping and navigation of the PEIR and section 11.8.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or were considered in this chapter
June 2022	The Planning Inspectorate Scoping Opinion response.	• The impact on economic receptors: whilst the Inspectorate acknowledges the potential for positive economic impacts on employment and supply chain, the Environmental Statement should also identify and assess any negative economic impacts, for example to commercial fisheries, where significant effects are likely to occur.	• This has been considered as part of the impact assessment in section 11.8. The approach for considering potential impacts of the Mona Offshore Wind Project on commercial operators is set out within volume 2, chapter 18: Socio-economics of the PEIR.
June 2022	Isle of Man Department of Infrastructure Scoping Opinion response.	• Concerns in relation to trans-boundary stocks and reproductive connectivity between stocks in different jurisdictional areas.	• Trans-boundary effects on commercial fisheries receptors have been assessed in section 11.8; trans-boundary effects on fish and shellfish receptors have been assessed in volume 2, chapter 8: Fish and shellfish ecology of the PEIR.
June 2022	Isle of Man Department of Infrastructure Scoping Opinion response.	• Recommendation for a wider study area for commercial fisheries, and suggestion to include ICES rectangles 37E5 and 37E6, 35E5 and 35E6, with others potentially added following consultation.	• Following comments from the Isle of Man Department of Infrastructure, the commercial fisheries study area used for assessment in this report has been defined by ICES rectangles 35E5, 35E6, 36E5 and 36E6. The cumulative commercial fisheries study area consists of 35E5, 35E6, 35E7, 36E5, 36E6, 36E7, 37E5, 37E6 and 37E7. This is considered an appropriate extent for assessing the potential impacts on commercial fisheries receptors as a result of the Mona Offshore Wind Project and any cumulative impacts. Impacts on fish stocks have been assessed in volume 2, chapter 8: Fish and shellfish ecology of the PEIR; the fish and shellfish study area covers the east Irish Sea to account for the spatial and temporal variability of fish and shellfish populations.
November 2022	Individual static gear operator from Fleetwood Consultation meeting.	• Concerns regarding noise impacts on whelk. • Concerns regarding array layout and co-existence during the operations and maintenance phase. Static gear vessels lay gear in a north - south alignment within the Mona Array Area. Preference for equally spaced turbines in rows and as far apart as possible.	• Assessment of fish stocks has been assessed in volume 2, chapter 8: Fish and shellfish ecology of the PEIR. • Feedback from consultees regarding fishing activity has been presented within the baseline and fed into the design process where possible. Feedback from ongoing consultation on fishing activity will be detailed in the environmental statement submitted at Application.
November 2022	SFF, SWFPA and WCSP. Consultation meeting.	• Concerns regarding array layout and co-existence during the operations and maintenance phase. Noted higher density queen scallop ground in the central part of the Mona Array Area. Fishing vessels generally tow in a north – south orientation. • Discussion regarding inter-array cable layout and burial depth to allow scallop fishing during operations and maintenance phase. Gear penetration can vary between 0.05-0.25m. • Concerns regarding impacts on scallop stocks as a result of changes to tidal flow from the installation of wind turbines.	• Feedback from consultees regarding fishing activity has been presented within the baseline and fed into the design process where possible. Feedback from ongoing consultation on fishing activity will be detailed in the environmental statement submitted at Application. • Cables will be buried where possible (target depth of 1m) and in areas where this is not achievable the cable will be protected (section 11.7). Loss of fishing grounds and snagging risk are assessed in section 11.8. • Assessment of fish stocks has been assessed in volume 2, chapter 8: Fish and shellfish ecology of the PEIR. •
November 2022	MFPO Consultation meeting.	• Queries regarding array layout and co-existence during the operations and maintenance phase. Noted that the Manx fishing vessels only use approximately 100ft of cable, so are able to fish between turbines. • Discussion regarding inter-array cable layout and burial depth to allow scallop fishing during operations and maintenance phase. • Concerns regarding impacts on scallop stocks as a result of construction and changes to tidal flow from the wind turbines and foundations.	• Feedback from consultees regarding fishing activity has been presented within the baseline and fed into the design process where possible. Feedback from ongoing consultation on fishing activity will be detailed in the environmental statement submitted at Application. • Cables will be buried where possible (target depth of 1m) and in areas where this is not achievable the cable will be protected (section 11.7). Loss of fishing grounds and snagging risk are assessed in section 11.8. • Assessment of fish stocks has been assessed in volume 2, chapter 8: Fish and shellfish ecology of the PEIR.

Date	Consultee and type of response	Issues raised	Response to issue raised and/or were considered in this chapter
November 2022	Rederscentrale Consultation meeting.	• Queries regarding array layout and co-existence during the operations and maintenance phase. Noted that fishing between turbines of 1km is difficult due to safety reasons. Noted that Rederscentrale vessels do not fish within the Mona Array area; their fishing activity is mostly to the south of the Mona Array Area. • Discussion regarding inter-array cable layout and burial depth. Noted that Rederscentrale's beam trawl vessels that operate within the Irish Sea are using a newer gear technology which does not penetrate as deep into the seabed.	• Feedback from consultees regarding fishing activity has been presented within the baseline and fed into the design process where possible. Feedback from ongoing consultation on fishing activity will be detailed in the environmental statement submitted at Application. • Cables will be buried where possible (target depth of 1m) and in areas where this is not achievable the cable will be protected (section 11.7). Loss of fishing grounds and snagging risk are assessed in section 11.8.
November 2022	ANIFPO, NIFPO, WFA Consultation meeting.	• Concerns regarding array layout and co-existence during the operations and maintenance phase. Orientation of turbines in a north – south alignment would be preferable. • Concerns regarding timings of surveys to minimise impacts on fish stocks. • Concerns that VMS data does not capture smaller vessels.	• Feedback from consultees regarding fishing activity has been presented within the baseline and fed into the design process where possible. Feedback from ongoing consultation on fishing activity will be detailed in the environmental statement submitted at Application. • Assessment of fish stocks has been assessed in volume 2, chapter 8: Fish and shellfish ecology of the PEIR. • It is acknowledged that there is a lack of data for vessels <15m in length. To ensure that smaller vessels are represented in the baseline (section 11.4 and volume 6, annex 11.1: Commercial fisheries technical report of the PEIR), multiple datasets have been collated which capture vessels <15m in length. For example: consultation is being undertaken to better understand activity of vessels <15m in the region; site specific surveys are also collating information on all fishing vessels, such as the scouting potting surveys and marine traffic surveys, which include vessels <15m.
November 2022	ISEFPO Consultation meeting.	• Queries regarding array layout and co-existence during the operations and maintenance phase. • Discussion regarding inter-array cable layout and burial depth and concerns regarding snagging.	• Feedback from consultees regarding fishing activity has been presented within the baseline and fed into the design process where possible. Feedback from ongoing consultation on fishing activity will be detailed in the environmental statement submitted at Application. • Cables will be buried where possible (target depth of 1m) and in areas where this is not achievable the cable will be protected (section 11.7). Loss of fishing grounds and snagging risk are assessed in section 11.8.
November 2022	Individual fishing operators from Conwy	• Queries regarding co-existence during the operations and maintenance phase, particularly related to the Mona Offshore Cable Corridor, due to the areas of fishing activity. • Concerns regarding spatial squeeze on fishing vessels due to changes in ferry routes as a result of the Mona Array Area. • Concerns regarding impacts on fish stocks.	• Feedback from consultees regarding fishing activity has been presented within the baseline and fed into the design process where possible. Feedback from ongoing consultation on fishing activity will be detailed in the environmental statement submitted at Application. • Assessment of fish stocks has been assessed in volume 2, chapter 8: Fish and shellfish ecology of the PEIR.

11.4 Baseline environment

11.4.1 Methodology to inform baseline

11.4.1.1 To characterise the baseline environment for commercial fisheries within the commercial fisheries study area (see section 11.1.3) a range of data sources was collated and reviewed, in addition to feedback from project-specific consultation and site-specific surveys. Further information is included within volume 6, annex 11.1: Commercial fisheries technical report.

11.4.1.2 Where possible, data has been collated for a 10 year period, as consultation feedback has indicated that the scallop fisheries in the area of the Mona Array Area are cyclical, over periods of seven to eight years. Therefore, effort has been made to try and capture this cyclical pattern in the data analysis presented here.

11.4.2 Desktop study

11.4.2.1 Information on commercial fisheries activity within the commercial fisheries study area was collected through a detailed desktop review of existing studies and datasets (Table 11.6), feedback from consultation (Table 11.5) and site-specific surveys (Table 11.7). Limitations and assumptions of the datasets are summarised in section 11.4.7 and outlined in further detail in volume 6, annex 11.1: Commercial fisheries technical report of the PEIR.

Table 11.6: Summary of key desktop data sources/reports.

Title/Dataset	Source	Year	Author
Landing statistics by ICES Rectangle for UK and Isle of Man vessels.	Marine Management Organisation (MMO)	2010 to 2020	MMO
Landings statistics by port.	MMO	2010 to 2020	MMO
Landings statistics by ICES Rectangle for EU vessels.	European Union Scientific, Technical and Economic Committee for Fisheries (EU STECF)	2006 to 2016	EU STECF
VMS data for UK and Isle of Man vessels (≥15m).	MMO	2009 to 2020	MMO
VMS data for European mobile bottom contacting gear vessels (>12m).	ICES	2009 to 2020	ICES
Estimated relative fishing activity (Welsh waters).	Welsh National Marine Plan	2019	Welsh National Marine Plan
ICES scallop assessment working group.	ICES	2019	ICES
Sea Fishing Atlas of Wales.	Natural Resources Wales (NRW)	2010	NRW

Landing statistics

11.4.2.2 Species landing data is recorded by ICES Rectangle and collected via the EU logbook scheme. Landings data has been collated for the UK and EU Member states for all ICES Rectangles that overlap the Mona commercial fisheries study area, as illustrated in Figure 11.1.

11.4.2.3 Landings statistics were collated across a 10 year period from each country. Landing statistics include all landings by a country's nationally registered vessel into all ports. The following parameters were examined:

- Gear type
- Year
- ICES Rectangle
- Vessel length
- Species
- Landing port
- Value (£)
- Live weight (tonnes).

Vessel monitoring system data

11.4.2.4 VMS data from the period 2009 to 2020 was collated from the MMO and ICES to provide an overview of the spatial extent of fishing activity within the commercial fisheries study area. The MMO dataset only captures data for ≥15m vessels and the ICES dataset is from vessels >12m in length. Fishing effort was provided in kWh, which has been calculated by multiplying the time associated with each VMS report, by the engine power of the vessel concerned at the time of activity.

11.4.2.5 The ICES data analysed only includes mobile bottom contacting gear types, so pots and traps (static gear) were not included. Additional 2021 MMO and ICES data that is likely to become available in the foreseeable future will be assessed post PEIR.

11.4.3 Site-specific surveys

11.4.3.1 Data from a range of site-specific survey activities and/or offshore/remote observations has also been used to inform the commercial fisheries baseline environment (see Table 11.7 for further details). A summary of the surveys that have been used to inform the commercial fisheries baseline environment (and subsequent impact assessment) is outlined in Table 11.7. Information on these surveys is discussed further in volume 6, annex 11.1: Commercial fisheries technical report of the PEIR. Limitations and assumptions of this data are summarised in section 11.4.7, and outlined in further detail in volume 6, annex 11.1: Commercial fisheries technical report of the PEIR.

Table 11.7: Summary of site-specific survey data.

Title	Extent of survey	Overview of survey	Survey contractor	Date	Reference to further information
OFLO observations 2021	Mona Array Area plus 3km buffer. Morgan Array Area plus 3km buffer.	OFLO onboard the conventional geophysical and environmental survey vessel recorded observations of fishing vessels and fishing gear present.	NFFO	30 June to 18 September 2021	Volume 6, annex 11.1: Commercial fisheries technical report of the PEIR.
Winter vessel traffic survey	Mona Array Area	AIS, radar and visual observations collected as part of the 14 day marine traffic survey, required as part of the ongoing Navigational Risk Assessment (NRA).	NASH Maritime	05 to 19 December 2021	Volume 6, annex 11.1: Commercial fisheries technical report of the PEIR; volume 2, chapter 12: Shipping and navigation of the PEIR; volume 6, annex 12.1: Navigational Risk Assessment of the PEIR.
Scouting survey	Mona Offshore Cable Corridor	Recordings of static gear via a targeted scouting survey undertaken prior to geophysical and environmental survey work within the export cable corridor.	NFFO	06 to 13 March 2022	Volume 6, annex 11.1: Commercial fisheries technical report of the PEIR.
Summer vessel traffic survey	Mona Array Area	AIS, radar and visual observations collected as part of the 14 day marine traffic survey required as part of the ongoing NRA.	NASH Maritime	30 June to 14 July 2022	Volume 6, annex 11.1: Commercial fisheries technical report of the PEIR; volume 2, chapter 12: Shipping and navigation of the PEIR; volume 6, annex 12.1: Navigational Risk Assessment of the PEIR.
OFLO observations 2022	Mona Array Area plus buffer area, Morgan buffer area and Mona Offshore Cable Corridor	OFLO onboard the conventional geophysical and environmental survey vessel recorded observations of fishing vessels and fishing gear present.	NFFO	01 April to 10 July 2022	Volume 6, annex 11.1: Commercial fisheries technical report of the PEIR.
MarineSpace observations 2022	Commercial fisheries study area	Fisheries monitoring using AIS data.	MarineSpace	10 July – 30 November	Volume 6, annex 11.1: Commercial fisheries technical report of the PEIR.

11.4.4 Baseline environment

11.4.4.1 Characterisation of the baseline environment for commercial fisheries is based upon the volume 6, annex 11.1: Commercial fisheries technical report of the PEIR and has been undertaken using the data sources listed in section 11.4.2 alongside feedback from consultation (section 11.3). Limitations of the data have been discussed fully in the volume 6, annex 11.1: Commercial fisheries technical report of the PEIR.

Overview of landings data

11.4.4.2 Data compiled by both the MMO (MMO, 2020a) and EU STECF[1] (EU STECF, 2017) was reviewed for the most recently available 10 year period of landings (2010 to 2020 and 2006 to 2016 respectively). MMO and EU STECF datasets were filtered to show only landings from the commercial fisheries study area (ICES Rectangles 35E5, 35E6, 36E5 and 36E6). The Mona Array Area will be located in 36E5 and 36E6 (illustrated in Figure 11.1), and the Mona Offshore Cable Corridor will be located within 35E6 and 36E6 (also illustrated in Figure 11.1).

11.4.4.3 The MMO data indicate that over the period 2010 to 2020, shellfish was the most important species group in terms of landed weight and value for UK vessels (Figure 11.2 and Figure 11.3), with the highest landings from ICES Rectangle 36E5. Landings of demersal and pelagic species were considerably lower than shellfish. As expected, for UK vessels, the largest proportion of vessels was from the >10m class (Figure 11.3); these vessels were predominantly from England, the Isle of Man, Northern Ireland, Scotland and Wales. The smaller UK vessels were predominantly from Wales and England, reflecting the closer proximity of home ports to this fleet, with relatively small recordings of landings for Isle of Man, Scottish and Northern Irish vessels.

11.4.4.4 Dredges accounted for approximately 75% of total landings by UK vessels from the commercial fisheries study area. This indicates the importance of the queen and king scallop fisheries in the region. Pots and traps (targeting crab, lobster and whelk) were also of notable importance in the commercial fisheries study area and consisted mostly of vessels >10m in length.

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

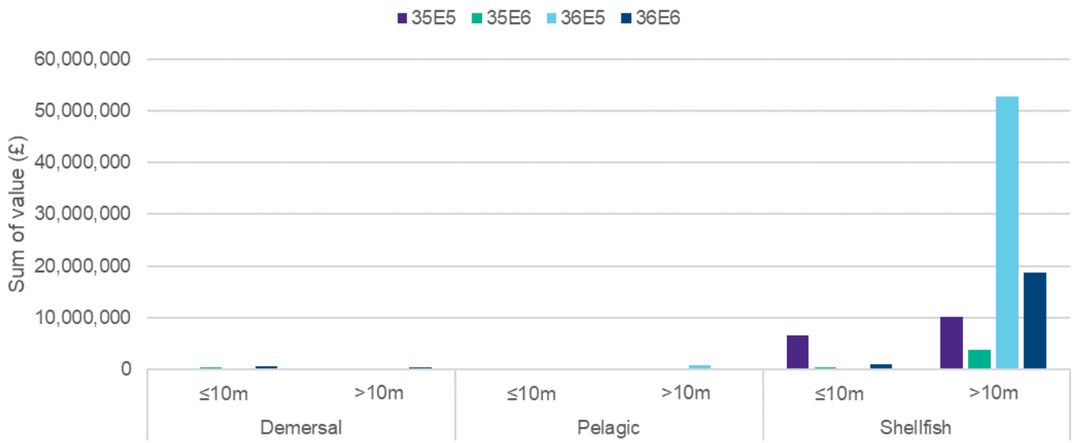


Figure 11.2: Sum of landed value (2010 to 2020) within the commercial fisheries study area, displayed by species group and vessel class (UK vessels)[2].

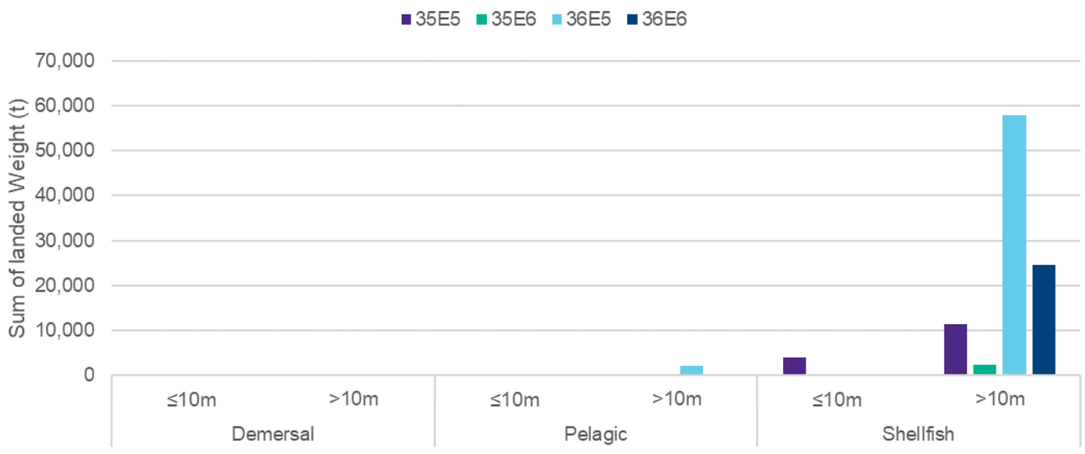


Figure 11.3: Sum of landed weight (2010 to 2020) within the commercial fisheries study area, displayed by species group and vessel class (UK vessels)[3].

11.4.4.5 The majority of total landings from non-UK vessels in the region were from vessels >15m in length, from Belgium, Ireland and the Netherlands (Figure 11.4). The majority of non-UK vessels were utilising dredges and beam trawls. Key species were king scallop, common sole, European plaice and thornback ray. There was a large variety of species caught by the Belgian and Irish fleets and, given the understanding that both fleets almost exclusively use beam and dredges, this suggests that other species may have been caught as bycatch during fishing for the main target species. Both beam and dredge gear types exhibit poor selectivity and hence tend to have high by-catch rates.

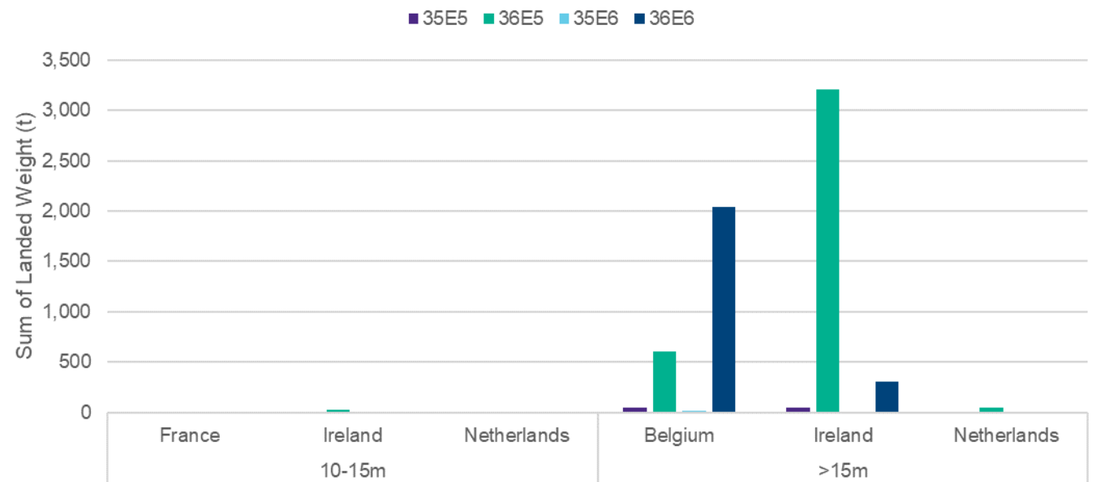


Figure 11.4: Sum of landed weight by vessel size class (2006-2016) within the commercial fisheries study area) (non-UK vessels)[4].

Seasonal temporal change

11.4.4.6 In terms of intra-annual variation, landings varied for all species/vessels over the period, with a clear seasonal pattern of highest weight/value of landings between March and November each year (Figure 11.5).

11.4.4.7 For the top five species landed by UK vessels within the commercial fisheries study area (Figure 11.5), the following were the key periods for highest weight and value:

- Queen scallop – July to September
- King scallop – November to May
- Herring – May to September
- Whelk – May to July
- Lobster – June to August.

11.4.4.8 For the non-UK fleet, based on data presented only by quarter, the periods January to March and October to December appear to be the most important in terms of landings, especially for species such king scallop, common sole and thornback ray. July to September was the least productive quarter, likely due to seasonal scallop

[2] MMO, 2020a

[3] MMO, 2020a

[4] EU STECF, 2017

closures in the area. Notably, Atlantic herring was only caught between July to September.

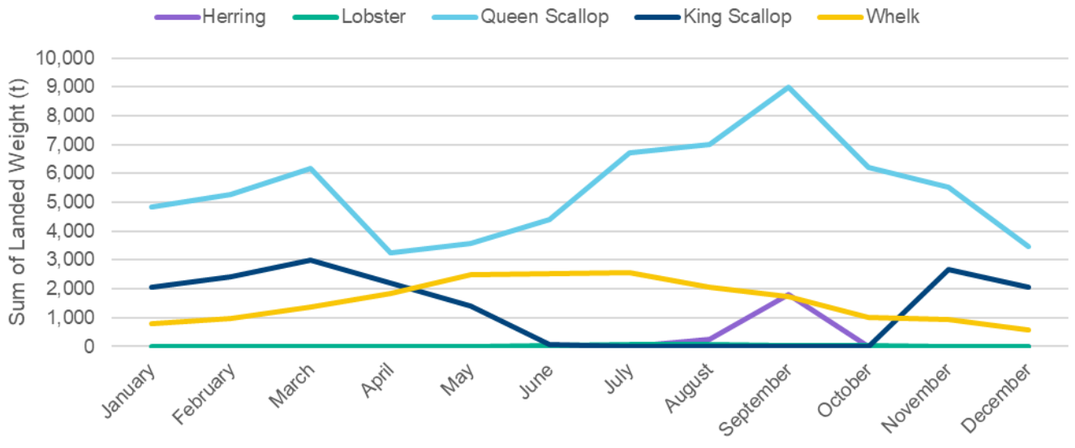


Figure 11.5: Seasonal trends in top five species by total landed weight (tonnes) from UK vessels across the commercial fisheries study area (2010 to 2020) [5].

Annual temporal change

11.4.4.9 In terms of annual variation for UK vessels between 2010 to 2020, landings varied for all species/vessels over the period, with a considerably lower weight/value of queen scallop landings during 2017 to 2020 than between 2010 to 2017 (Figure 11.6). Landings of whelk generally increased between 2011 to 2020. Landings of king scallop, herring and lobster scallop fluctuated yearly.

11.4.4.10 For the non-UK fleet, the EU STECF data showed that between 2006 to 2016, the year 2006 appeared to be the most important in terms of landings across the commercial fisheries study area. Landings of king scallop were significantly higher between 2010 to 2016 than the previous years, which aligns with feedback from project-specific consultation regarding the cyclical nature of the fishery.

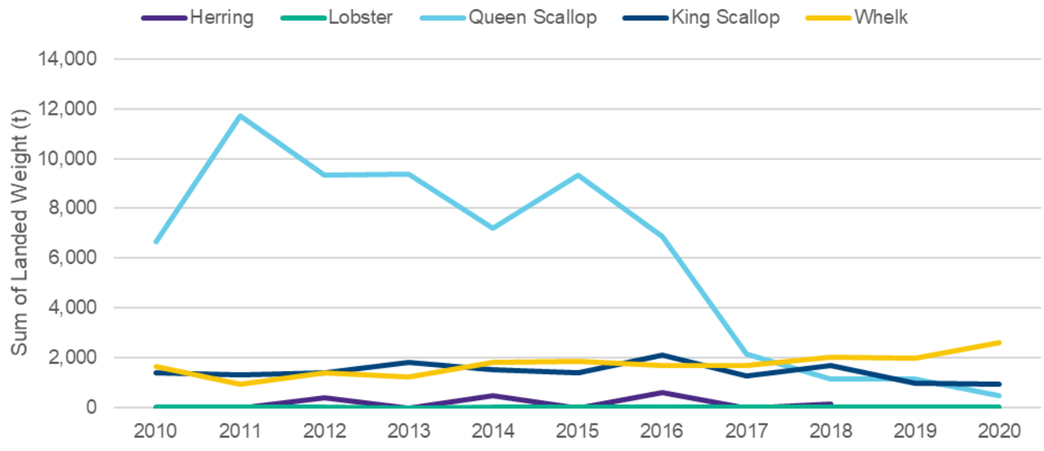


Figure 11.6: Annual trends in top five species by total landed weight (tonnes) from UK vessels across the commercial fisheries study area (2006 to 2016) [6].

Spatial distribution of fishing activity/effort

11.4.4.11 The spatial distribution of fishing activity/value in the commercial fisheries study area has been described within volume 6, annex 11.1: Commercial fisheries technical report of the PEIR, based on review and analysis of multiple datasets as well as direct consultation with individual skippers and fisheries organisations; relevant datasets are listed in Table 11.6. The datasets show that fishing occurs within parts of the Mona Offshore Cable Corridor and Mona Array Area to varying degrees. A summary of the key regional fisheries is provided below.

Static gear

11.4.4.12 Analyses of the MMO VMS data (2016 to 2020) for static gear vessels (MMO, 2021a), split by ICES sub rectangle, show that the spatial distribution of UK static gear vessels ≥15m varies yearly across the commercial fisheries study area.

11.4.4.13 Within the commercial fisheries study area during 2016 to 2020, UK static gear ≥15m vessels generally showed low to moderate levels of effort within the east of the Mona Array Area and none to low levels of effort within the remainder of the Mona Array Area (volume 6, annex 11.1: Commercial fisheries technical report of the PEIR, Figure 1.52). Feedback from project-specific consultation with fisheries stakeholders has suggested that this activity is mostly from whelk vessels (13-17m in length) which are largely operating out of Fleetwood and Whitehaven.

11.4.4.14 Inside the 12nm limit, there were low levels of effort overlapping with the Mona Offshore Cable Corridor (volume 6, annex 11.1: Commercial fisheries technical report of the PEIR, Figure 1.52). The following additional datasets were used to provide distribution information on activity by smaller vessels, that would not have been

[5] MMO, 2020a

[6] MMO, 2020a

captured in the VMS data. The WMNP shows that the relative fishing intensity along the majority of the Mona Offshore Cable Corridor was relatively low, with slightly higher intensities observed within the nearshore area between Llandudno and Rhyl. The Sea Fishing Atlas of Wales data (NRW, 2010) indicated that the inshore whelk fishery was active between approximately 6-12nm, and overlapped with the Mona Offshore Cable Corridor, which aligns with the MMO landings data. Vessels using lobster pots, crab pots and set nets were mainly active in the nearshore regions in the commercial fisheries study area (approximately 0-6nm); these fishing vessels were operating out of local Welsh fishing ports.

Dredge gear

11.4.4.15 Within the commercial fisheries study area, landings using mechanical dredge accounted for approximately 75% of total landings by UK vessels, indicating the relative importance of the scallop dredge fishery in the region. Of these UK vessels, the MMO landings data indicated notable importance of the dredge fishery to the Scottish, Isle of Man and Northern Irish fisheries, as their vessels deploying dredges accounted for the majority of their total landed weight. In terms of non-UK vessels, the Irish fleet accounted for the largest proportion of dredge vessels.

11.4.4.16 The dredge fishery targets scallops, with minimal landings of other commercial species. Landings by Isle of Man dredge vessels are highest from 36E5 landings by Scottish dredge vessels are highest from 36E5, with notable landings from 36E6; landings by Northern Irish dredge vessels were highest from 36E5 and notable from 36E6; landings by Irish dredge vessels were highest from 36E5. VMS data indicated that highest intensities of the dredge fishery were within the Isle of Man 12nm limit, and within the central and west parts of the Mona Array Area. This is supported by feedback from project-specific consultation which highlighted that the central and west part of the Mona Array Area is an important queen and king scallop fishing ground.

11.4.4.17 Annual landed weight by the dredge fishery was highly variable, with considerably lower catches within the commercial fisheries study area between 2016 to 2020, compared with 2010 to 2015 (Figure 11.6). This reflects the somewhat cyclical nature of scallop fisheries, where particular grounds are more productive in certain years and are, therefore, targeted on a cyclical basis, as indicated by fisheries stakeholders in consultation workshops.

Demersal fishery – beam trawl

11.4.4.18 VMS data illustrating beam trawl (vessels >12m) activity over the period 2009 to 2020, showed sporadic overlap with small parts of the Mona Array Area, at a relatively low intensity (volume 6, annex 11.1: Commercial fisheries technical report of the PEIR, Figure 1.53). There were two areas of higher intensity beam trawling activity within the commercial fisheries study area which did not overlap with the Mona Array Area; these areas were observed to the northeast and the west of the Mona Array Area.

11.4.4.19 Within the commercial fisheries study area, the landings data indicates that landings by vessels using beam trawl were predominantly undertaken by Belgian and south coast English fleets. The target species of this fishery are sole and plaice, which are principally taken from ICES Rectangles 36E6 and 36E5. This coincides with information provided from fisheries stakeholders within consultation workshops, which has indicated that beam trawl vessels from the southwest of the UK are active in the Mona Array Area during the Spring, with these vessels predominantly targeting sole. Belgian beam trawl vessels are active within the commercial fisheries study area, but do not fish where the Mona Array Area is located. Beam trawl activity fluctuated across the time period studied.

Demersal fishery – otter trawl

11.4.4.20 VMS data illustrating activity by otter trawl vessels (>12m) from England, Isle of Man and Northern Ireland was limited within the commercial fisheries study area, with the highest levels observed in the northwest part of ICES Rectangle 36E5 and predominantly close to the Isle of Man. Otter trawl activity was observed at relatively low levels within the Mona Array Area and the section of the Mona Offshore Cable Corridor beyond 12nm (volume 6, annex 11.1: Commercial fisheries technical report of the PEIR). However, otter trawl activity fluctuated across the time period studied. Otter trawl vessels from the Isle of Man target queen scallop, generally between July to October.

11.4.5 Receptor groups

11.4.5.1 From the overview of the commercial fisheries baseline environment presented in the previous sections, it is clear to note that there is a range of UK and non-UK fleets targeting a number of different fisheries in the commercial fisheries study area. The diverse nature of these fleets and fisheries means that potential impacts on the Mona Offshore Wind Project will vary depending on the fleet concerned.

11.4.5.2 To ensure that potential impacts which may affect certain fleets/fisheries in different ways are fully assessed, a number of commercial fisheries receptor groups have been identified through review of data and feedback from stakeholder consultation. A total of six main receptor groups have been defined. These have been categorised based on gear type, nature of fishing activity and nationality and are summarised in Table 11.8.

Table 11.8: Key commercial fisheries receptor groups used in this assessment.

Receptor Group	Description
Inshore static gear vessels	Smaller (≤12m) static gear vessels that are active across the inshore region (between 0 to 12nm). These are predominantly local Welsh vessels that mostly target whelk, lobster and crab, as established by project specific consultation.
Offshore static gear vessels	Larger (>12m) static gear vessels that are active offshore (beyond 12nm) and within the Mona Array Area. These are predominantly English vessels that mostly target whelk, as established by project specific consultation.
Beam trawl vessels	Beam trawl vessels that are active across the commercial fisheries study area. Vessels are predominantly from Belgium and the South Coast of England that mostly target sole and plaice, as established by project specific consultation, but may include vessels from other UK jurisdictions and Ireland. Vessels from the South Coast of England are active within the Mona Array Area, whereas Belgium beam trawl vessels are not.
Scallop vessels – Scottish west coast	West coast based Scottish vessels deploying dredges that are active across the commercial fisheries study area, targeting king and queen scallop. Key ports for this receptor group include Kirkcudbright and Annan. The west coast based Scottish scallopers are particularly active within the commercial fisheries study area and rely heavily upon the Mona Array Area for the dredging of queen scallop.

Receptor Group	Description
Scallop vessels – Isle of Man	Vessels from the Isle of Man deploying dredges and otter trawls that are active across the commercial fisheries study area targeting king and queen scallop. Fishing techniques in the Isle of Man differ to the rest of the UK fleet due to the fisheries regulations set out by the Isle of Man Government and the main target species.
Other Scallop vessels	Vessels deploying dredges that are active across the commercial fisheries study area, targeting king and queen scallop. Vessels are predominantly from Northern Ireland and Ireland, as established by project specific consultation, but may also include more nomadic vessels from other UK jurisdictions.

11.4.6 Future baseline scenario

11.4.6.1 The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017 requires that the future baseline scenario is presented within the Environmental Statement. The Regulations state that the Environmental Statement must include: "*an outline of the likely evolution thereof without implementation of the development as far as natural changes from the baseline scenario can be assessed with reasonable effort on the basis of the availability of environmental information and scientific knowledge*". In the event that the Mona Offshore Wind Project is not developed further in the future, an assessment of potential future baseline conditions has been carried out and is described within this section.

11.4.6.2 The baseline environment for commercial fisheries is constantly evolving. The fishing industry is dynamic, with frequent and sometimes unpredictable changes which affect activity, for example, changes in fish abundance and distribution, climatic conditions, management regulations and fuel costs (DECC, 2016). A review by the Irish Sea Maritime Forum highlighted that 'Brexit', overfishing and spatial conflict are considered key future issues for the fishing industry (Salthouse, 2021). More recently, increased fuel prices and the Covid-19 pandemic are likely to impact fishing activity; for example, vessels with longer transit times may reduce their activity in the region, due to higher fuel prices.

11.4.6.3 The baseline was described using the most recent datasets available and across a 10 year time period, where possible. This time period was selected to account for variations within the different fisheries, for example the scallop fishery within the commercial fisheries study area is cyclical over seven to eight year periods.

11.4.6.4 At the time of writing, uncertainty remains with respect to impacts of the UK's withdrawal from the Common Fisheries Policy (CFP) and how fishing activity may be affected within the commercial fisheries study area. Under the new EU-UK Trade and Cooperation Agreement there is a five year transition period, whereby 25% of the EU quota for British waters will be transferred to the UK fishing fleet, phased across the five years until 2025. As a result, the UK will receive higher quota shares for some stocks, as outlined in Table 11.7 for species within the Irish Sea. However, a large proportion of landings within the commercial fisheries study area are from non-quota shellfish species, however, and will not be affected by the quota changes.

Table 11.9: Quota share changes by 2026 for the UK, for species within the Irish Sea[7].

Stock	2020 UK share of EU quota	2026 UK share of EU/UK quota or TAC	UK quota absolute increase
Herring	73.97%	99.01%	25%
Plaice	41.15%	51.11%	10%
Haddock	47.91%	56.02%	8%
Whiting	38.70%	61.00%	22%
Cod	28.79%	44.80%	16%
Sole	21.01%	23.30%	2%

11.4.6.5 Prior to the new trade agreement, a large percentage of fish caught in the region was sold to EU markets, so introduction of the Catch Certificate and other supporting documents, as well as changes to tariffs, could act as a considerable barrier to particular markets. Landings of species, such as whelk, which are exported to non-UK countries may increase as a result.

11.4.7 Data limitations

11.4.7.1 Limitations with data sources used have been discussed fully in volume 6, annex 11.1: Commercial fisheries technical report of the PEIR. The use of various datasets, combined with feedback from stakeholder consultation, has managed the limitations of the data; therefore, the limitations identified are not considered to affect the certainty/predictability of the impact assessment in section 11.8.

11.4.7.2 It should be noted that although smaller vessels are not captured within the MMO (<15m vessels) and ICES (<12m vessels) VMS data, information on their activity has been reviewed through feedback from stakeholder consultation and other supplementary data sources, such as from the WNMP, Sea Fishing Atlas of Wales and information gathered via site specific surveys undertaken in 2021 and 2022.

11.4.7.3 The landings statistics datasets are only available by the ICES rectangle, so these only give an indication of commercial fisheries activity for a general area. Vessels ≤10m are not required to complete logbooks, so may be under-represented within the landings statistics.

11.4.7.4 Data from the WNMP and the Sea Fishing Atlas of Wales are purely indicative in nature but have been used to supplement the VMS data which does not capture the spatial activity of smaller fishing vessels.

11.4.7.5 Data collected via site specific surveys, only capture fishing activity during a short time period and have, therefore, only been used to supplement the official datasets and corroborate feedback from consultation with fisheries stakeholders. However, the site-

[7] ABPmer, 2021

specific surveys are useful to provide context on fishing activity over the last few years, which the official datasets do not currently cover.

11.5 Impact assessment methodology

11.5.1 Overview

11.5.1.1 The commercial fisheries impact assessment has followed the methodology set out in volume 1, chapter 5: EIA methodology of the PEIR. Specific to the commercial fisheries impact assessment, the following guidance documents have also been considered:

- FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison: FLOWW (Fishing Liaison with Offshore Wind and Wet Renewables Group) (FLOWW, 2014)
- FLOWW Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds. FLOWW (Fishing Liaison with Offshore Wind and Wet Renewables Group) (FLOWW, 2015)
- Best Practice Guidance for Fishing Industry Financial and Economic Impact Assessments (United Kingdom Fisheries Economics Network (UKFEN), 2012)
- Options and opportunities for marine fisheries mitigation associated with windfarms (Blyth-Skyrme, 2010)
- Fishing and Submarine Cables – Working Together (International Cable Protection Committee (ICPC), 2009)
- RenewableUK (2013) Cumulative impact assessment guidelines, guiding principles for cumulative impacts assessments in offshore wind farms.

11.5.2 Impact assessment criteria

11.5.2.1 The criteria for determining the significance of effects is a two-stage process that involves defining the magnitude of the impact and the sensitivity of the receptor. This section describes the criteria applied in this chapter to assign values to the magnitude of potential impacts and the receptor sensitivity. The terms used to define magnitude and sensitivity are based on those which are described in further detail in volume 1, chapter 5: EIA methodology of the PEIR.

11.5.2.2 The criteria for defining magnitude of impact in this chapter are outlined in Table 11.10 below. It should be noted that beneficial impacts as a result of the Mona Offshore Wind Project are also possible. In such a case, the same definitions would apply as in Table 11.10, albeit in reverse (e.g. the impact would affect an area from which a minor proportion (5-20%) of a commercial fishing receptor's annual value of landings is caught and/or would lead to a 5-20% increase in annual value of landings).

Table 11.10: Definition of terms relating to magnitude of impact.

Magnitude of impact	Definition
High	The effect would be permanent/irreplaceable change and is likely to occur.
	The impact would permanently affect an area from which the majority (>50%) of a commercial fishing receptor's annual value of landings is caught and/or would lead to a >50% reduction in annual value of landings.
Medium	The effect would be long-term (e.g. less than 35 years) though reversible and is likely to occur.
	The impact would affect an area from which a moderate proportion (20-50%) of a commercial fishing receptor's annual value of landings is caught and/or would lead to a 20-50% reduction in annual value of landings.
Low	The effect would be short to medium term (e.g. less than five years) through reversible and could possibly occur.
	The impact would affect an area from which a minor proportion (5-20%) of a commercial fishing receptor's annual value of landings is caught and/or would lead to a 5-20% reduction in annual value of landings.
Negligible	The effect would be short-term (e.g. less than two years), intermittent and reversible and unlikely to occur.
	The impact would affect an area from which a very small proportion (<5%) of a commercial fishing receptor's annual value of landings is caught and/or would lead to a <5% reduction in annual value of landings.
No change	No loss or alteration of characteristics, features or elements; no observable impact either adverse or beneficial.

11.5.2.3 The criteria for defining sensitivity in this chapter are outlined in Table 11.11 below.

Table 11.11: Definition of terms relating to sensitivity of the receptor.

Sensitivity	Definition
High	Very low spatial adaptability due to limited operational range and/or very low ability to deploy more than one gear type.
	Very limited spatial tolerance due to dependence upon a single ground.
	Very low recoverability due to inability to mitigate loss of fishing area by operating in alternative areas.
Medium	Limited spatial adaptability due to extent of operational range and/or limited ability to deploy an alternative gear type.
	Limited spatial tolerance due to dependence upon a limited number of fishing grounds.
	Limited recoverability with some ability to mitigate loss of fishing area by operating in alternative areas.
Low	Moderate spatial adaptability due to extensive operational range and/or moderate ability to deploy an alternative gear type.
	Moderate spatial tolerance due to ability to fish numerous fishing grounds.
	Moderate recoverability due to ability to mitigate loss of fishing area by operating in a range of alternative areas of the Irish Sea.

Sensitivity	Definition
Negligible	Category of fishing receptor with an extensive operational range and high method versatility. Vessel able to exploit a large number of fisheries.

11.5.2.4 The significance of the effect upon commercial fisheries is determined by correlating the magnitude of impact with the sensitivity of the receptor. The particular method employed for this assessment is presented in Table 11.12. Where a range of significance of effect is presented, the final assessment for each effect is based upon expert judgement.

11.5.2.5 For the purposes of this assessment, any impacts with a significance level of minor or less are not significant in terms of The Infrastructure Planning (Environmental Impact Assessment) Regulations 2017. As discussed, such impacts can be either adverse or beneficial.

11.5.2.6 Where impacts fall within a range of 'minor or moderate' within Table 11.12, the final assessment of significance in EIA terms has been made based on the understanding of the receptor.

Table 11.12: Matrix used for the assessment of the significance of effect.

Sensitivity of Receptor	Magnitude of Impact				
	No Change	**Negligible**	**Low**	**Medium**	**High**
Negligible	No change	Negligible	Negligible or Minor	Negligible or Minor	Minor
Low	No change	Negligible or Minor	Negligible or Minor	Minor	Minor or Moderate
Medium	No change	Negligible or Minor	Minor	Moderate	Moderate or Major
High	No change	Minor	Minor or Moderate	Moderate or Major	Major

11.6 Key parameters for assessment

11.6.1 Maximum design scenario

11.6.1.1 The MDSs identified in Table 11.13 have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. These scenarios have been selected from the Project Design Envelope (PDE) provided in volume 1, chapter 3: Project description of the PEIR. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the PDE (e.g. different infrastructure layout), to that assessed here, be taken forward in the final design scheme.

Table 11.13: MDS considered for the assessment of potential impacts on commercial fisheries.

[a] C=construction, O=operations and maintenance, D=decommissioning

Potential impact	Phase[a]			Maximum Design Scenario	Justification
	C	O	D		
Loss or restricted access to fishing grounds	✓	✓	✓	**Construction phase** Loss or restricted access to fishing grounds due to: • Duration: up to four years, however, during this period, fishing activity will only be excluded from discrete spatial areas (i.e. only parts of the Mona Array Area and Mona Offshore Cable Corridor will be subject to temporary restrictions where construction is taking place) • During the construction phase the loss or restricted access to fishing grounds will be gradual, as the presence of infrastructure increases; reaching the MDS, outlined below, in the operations and maintenance phase. The MDS in terms of the presence of infrastructure would be on the completion of construction, during the operations and maintenance phase • Construction safety zones: 500m safety zones around wind turbines and Offshore Substation Platforms (OSPs) during their construction. 50m safety zone around each item of infrastructure during the construction phase, where no construction works are taking place on that infrastructure (for example, where a wind turbine generator is incomplete or is in the process of being tested before commissioning). It is proposed that rolling advisory exclusion zones of 500m will also be present around vessels installing inter-array cables, interconnector cables and subtidal export cables. The loss or restricted access to fishing grounds created by such exclusion zones will be gradual as the presence of infrastructure increases. Temporary restrictions to fishing activity and/or anchoring, will also be required in areas where full cable burial to target depth has not yet been achieved and/or surface-laid cable exists (prior to cover by external cable protection). In such areas of temporarily shallow-buried/surface-laid cable, the restricted areas will be monitored by Guard Vessels. Seabed preparation: • Sandwave and boulder clearance for wind turbines, OSPs, inter-array cables, interconnector cables and the subtidal export cables throughout the Mona Array Area and offshore cable corridor over a duration of approximately 12 months within the wider offshore construction programme • Existing cable removal: up to 46km. Reduction of access around infrastructure during construction: • Wind turbine generators: – up to 107 wind turbine generators – minimum spacing 1,000m between rows of wind turbines and 875m between wind turbines in a row[8] – seabed footprint of up to 524,300m^2 (inclusive of scour protection) • OSPs: up to four OSPs with a seabed footprint of up to 24,964m^2 (inclusive of scour protection) • Inter-array cables: up to 500km of inter-array cables, buried (where possible) to a minimum depth of 0.5m • Inter-array cable protection: up to 50km (10% of total length) of inter-array cables may require cable protection (steel armour wire, rock dump or mattressing), up to a height of 3m and a width of 10m • Inter-array crossings: up to 67 crossings with concrete mattresses and rock berm, maximum dimensions – 4m height x 60m length x 10m width • Interconnector cables: up to 50km of interconnector cables, buried (where possible) to a minimum depth of 0.5m • Interconnector cable protection: up to 10km (20% of total length) of interconnector cables may require cable protection (steel armour wire, rock dump or mattressing) up to a height of 3m and a width of 10m • Interconnector crossings: up to 10 crossings with concrete mattresses and rock berm, maximum dimensions – 3m height x 50m length x 20m width	Maximum duration and extent of fishing exclusion, and therefore the greatest potential to restrict access to fishing grounds.

[8] Within this chapter, the minimum distance of 1,000m between rows of wind turbines will be used to assess impacts on commercial fisheries receptors.

Potential impact	Phase[a]			Maximum Design Scenario	Justification
	C	O	D		
				• Export cable: up to 360km of export cables within the offshore cable corridor, buried (where possible) to a minimum depth of 0.5m • Export cable protection: up to 72km (20% of total length) of export cables may require cable protection (steel armour wire, rock dump or mattressing) up to a height of 3m and a width of 10m • Export cable crossings: 24 crossings with concrete mattresses/frond mattress/rock berm, maximum dimensions – 3m height x 50m length x 30m width.	
				Operations and maintenance phase • Operation duration: 35 years • Operation safety zones: 500m around any vessel involved in major maintenance works • Reduction of access around infrastructure as per the construction phase above; however, fishing assumed to continue within the Mona Array Area and offshore cable corridor, where possible; external cable protection will be designed to increase potential for coexistence. • Cable repair/reburial activities: • Inter-array cables: – repair of up 10km of cable in one event every three years – reburial of up to 20km of cable in one event every five years • Interconnector cables: – repair of up to 16km of cable in each of three events every 10 years – reburial of up to 2km of cable in one event every five years • Subtidal export cables: – repair of up to 32km of cable in eight events every five years – reburial of up to 15km of cable in one event every five years • Up to a total of 21 operations and maintenance vessels on site at any one time • Up to 2,351 operations and maintenance vessel movements (return trips) each year **Decommissioning phase** • During the decommissioning phase the loss or restricted access to fishing grounds would gradually decrease from the operations and maintenance MDS as structures above the seabed are removed and cut below the seabed.	
Displacement of fishing activity into other areas	✓	✓	✓	As for ‘Loss or restricted access to fishing grounds’ – see above.	Maximum duration and extent of fishing exclusion, and hence the greatest potential for gear conflict and increased pressure on adjacent grounds.
Interference with fishing activity	✓	✓	✓	**Construction phase** • Duration: up to four years, however, during this period, fishing activity will only be excluded from discrete spatial areas (i.e. only parts of the Mona Array Area and offshore cable corridor will be subject to temporary restrictions where construction is taking place). • Up to a total of 91 construction vessels on site at any one time • Up to 1,983 installation vessel movements (return trips) during construction **Operations and maintenance phase** • Operation duration: 35 years • Up to a total of 21 operations and maintenance vessels on site at any one time • Up to 2,351 operation and maintenance vessel movements (return trips) each year **Decommissioning phase**	Maximum amount of infrastructure and number of vessel transits.

Potential impact	Phase[a]			Maximum Design Scenario	Justification
	C	O	D		
				• During the decommissioning phase the changes would gradually decrease from the operations and maintenance MDS as the need for project-related vessels is reduced.	
Temporary increase in steaming distances (Mona Array Area – construction and decommissioning phases)	✓	×	✓	As for 'Loss or restricted access to fishing grounds' – see above.	Maximum potential disruption to established steaming routes.
Loss or damage to fishing gear due to snagging	✓	✓	✓	As for 'Loss or restricted access to fishing grounds' and 'interference with fishing activity' – see above.	Maximum duration and extent of seabed obstructions and therefore the maximum potential for interactions between infrastructure and fishing gear.
Potential impacts on commercially important fish and shellfish resources	✓	✓	✓	As described in volume 2, chapter 8: Fish and shellfish ecology of the PEIR.	Greatest disturbance to fish and shellfish species, and therefore the resulting effect to commercial fisheries.
Supply chain opportunities for local fishing vessels	✓	✓	✓	**Construction phase** • Duration: up to four years, however, during this period, fishing activity will only be excluded from discrete spatial areas (i.e. only parts of the Mona Array Area and Mona Offshore Cable Corridor will be subject to temporary restrictions) • Likely number of guard vessels onsite at one time (array): one • Likely number of guard vessels onsite at one time (export cable): one • Potential provision of fishing vessel for visual checks of project infrastructure • Potential provision of fishing vessel for scouting surveys • Potential for Offshore Fisheries Liaison Officer (OFLO) duties. **Operations and maintenance phase** • There may be opportunities for commercial fishing vessels to provide marine operation support during the operations and maintenance phase (35 years) of the Mona Offshore Wind Project, such as OFLO duties during period of major maintenance and guard vessel requirements. **Decommissioning phase** • In the absence of detailed methodologies, the supply chain opportunities for local fishing vessels are considered the same as for the construction phase.	Potential opportunities for local fishing vessels (potential beneficial impact for commercial fishing vessels).
Increased risk of introduction and spread of invasive non-native species (INNS)	✓	✓	✓	This impact has been considered in volume 2, chapter 7: Benthic subtidal and intertidal ecology of the PEIR.	Maximum surface area created by offshore infrastructure and maximum number of vessel movements during construction, operations and maintenance and decommissioning phases.
Increased collision and allision risk to commercial fishing vessels	✓	✓	✓	This impact has been considered in volume 2, chapter 12: Shipping and navigation of the PEIR.	Greatest extent of the Mona Offshore Wind Project over the longest duration, with the maximum number of project vessel movements, therefore the highest potential for increases in the risk of collision and allision.

11.6.2 Impacts scoped out of the assessment

11.6.2.1 On the basis of the baseline environment and the description of development outlined in volume 1, chapter 5: Project description of the PEIR, a number of impacts are proposed to be scoped out of the assessment for commercial fisheries. These impacts are outlined, together with a justification for scoping them out, in Table 11.14.

Table 11.14: Impacts scoped out of the assessment for commercial fisheries.

Potential impact	Justification
Increased steaming distances during the operations and maintenance phase – Mona Array Area.	Once the Mona Offshore Wind Project has been constructed fishing vessels will be able to transit through the Mona Array Area to/from adjacent fishing grounds, the presence of wind farm infrastructure during the operations and maintenance phase would not affect steaming distances. The Planning Inspectorate agreed in the Scoping Opinion that this matter can be scoped out on the basis that once operational, fishing vessels will be able to transit through the Mona Array Area.
Increased steaming distances during the construction, operations and maintenance phase, and decommissioning phases – Mona Offshore Cable Corridor.	Offshore export cable installation and maintenance, and any decommissioning activities, will be temporary and only occur within a very localised area. The Planning Inspectorate agreed in the Scoping Opinion that significant increases in steaming distances from the installation, maintenance, and decommissioning of the Mona transmission assets are unlikely and can therefore be scoped out from the assessment.
Interference with fishing activity during the operations and maintenance phase – Mona Offshore Cable Corridor.	Increased vessel traffic within fishing grounds as a result of changes to shipping routes and project vessel traffic within the Mona Offshore Cable Corridor may result in increased interaction with fishing vessels. Operations and maintenance activities will be temporary, and the number of vessels required during maintenance is unlikely to add considerably to the marine traffic already present within the Mona Offshore Cable Corridor. Operations and maintenance activities associated with the OSPs will be limited in spatial extent and temporary. The Planning Inspectorate agreed in the Scoping Opinion that this matter can be scoped out of the assessment on the basis that, during the operations and maintenance phase, the number of vessels required for such activities would be unlikely to result in significant effects.

11.7 Measures adopted as part of the Mona Offshore Wind Project

11.7.1.1 For the purposes of the EIA process, the term ‘measures adopted as part of the project’ is used to include the following measures (adapted from IEMA, 2016):

- Measures included as part of the project design. These include modifications to location or design, integrated into the application for consent. These measures are implemented through the consent itself; through the requirements of the DCO or the conditions within the deemed marine licences/marine licence (referred to as primary mitigation in IEMA, 2016).
- Measures required to meet legislative requirements, or actions that are considered to be standard practice used to manage commonly occurring environmental effects (referred to as tertiary mitigation in IEMA, 2016).

11.7.1.2 A number of measures (primary and tertiary) have been adopted as part of the Mona Offshore Wind Project to reduce the potential for impacts on commercial fisheries (see Table 11.15).

11.7.1.3 As there is a commitment to implementing these measures, they are considered inherently part of the design of the Mona Offshore Wind Project and have, therefore, been considered in the assessment presented in section 11.8 below (i.e. the determination of magnitude and, therefore, significance, assumes implementation of these measures).

Table 11.15: Measures adopted as part of the Mona Offshore Wind Project.

Measures adopted as part of the Mona Offshore Wind Project	Justification	How the measure will be secured
Primary measures: Measures included as part of the project design		
Cable protection shall be designed to minimise snagging hazards as far as possible, for example by minimising height above seabed, smooth and shallower profiles, grade used for rock placement, type of rock (e.g. smoother edges).	To ensure safety of fishing activity and to minimise the amount of fishing grounds lost.	Will be committed to within the project design (volume 1, section 3: Project description of the ES) and the cable installation plan secured through the marine licence(s).
Time delay between sequential cable installation operations (e.g. cable-lay and post-lay burial, shall be minimised to a short as reasonably practicable).	To minimise duration of disruption to commercial fishing activity in the area of the export cable(s).	Will be committed to within the project design (volume 1, section 3: Project description of the ES) and the cable installation plan secured through the marine licence(s).
Optimal foundation/wind turbine spacing and cable alignment to increase potential for co-existence (whilst also considering other key aspects, such as ground conditions, wind yield and environmental constraints).	To seek to design the array layout to increase potential for co-existence.	Will be committed to within the project design (volume 1, section 3: Project description of the ES). Wind turbine spacing will be a parameter secured through the DCO.
Tertiary measures: Measures required to meet legislative requirements or actions that are considered to be standard practice		

Measures adopted as part of the Mona Offshore Wind Project	Justification	How the measure will be secured
Ongoing liaison with the fishing industry through the CFLO and Fishing Industry Representative (FIR) and adhere to good practice guidance with regards to fisheries liaison.	To maintain effective communications between the project and the fishing industry.	This will be committed to within the Fisheries Co-existence and Liaison Plan. Proposed to be secured through a condition in the marine licence(s).
Development of a Fisheries Co-existence and Liaison Plan.	To communicate the commitments by the Mona Offshore Wind Project to coexist with the fishing industry.	Proposed to be secured through a condition in the marine licence(s).
Advance warning to fishing fleets of construction, maintenance and decommissioning activities.	To ensure that the fishing industry is fully informed in advance of any offshore activities.	This will be committed to within the Fisheries Co-existence and Liaison Plan. Proposed to be secured through a condition in the marine licence(s).
Timely and efficient distribution of Notices to Mariners (NtMs).	To ensure that the fishing industry is fully informed in advance of any offshore activities.	This will be committed to within the Fisheries Co-existence and Liaison Plan. Proposed to be secured through a condition in the marine licence(s).
Use of advisory clearance distances and safety zones during construction and periods of major maintenance.	To ensure navigational safety and minimise risk of gear snagging.	Advisory clearance distances will be committed to within the Fisheries Co-existence and Liaison Plan. Proposed to be secured through a condition in the marine licence(s). Formal safety zones will be applied for via a formal safety zone application.
Adequate navigational markers (including lighting), in accordance with the most recent relevant industry guidance.	To ensure navigational safety and minimise risk of gear snagging.	Committed with the project design (see volume 1, section 3: Project description of the PEIR) and the Aids to Navigation Management Plan. Proposed to be secured through a condition in the marine licence(s).
Development of a cable burial plan, to outline cable burial depth, cable protection and monitoring of cables.	To ensure navigational safety and minimise risk of gear snagging.	Proposed to be secured through a condition in the marine licence(s).
‘As-laid’ co-ordinates of the cable route shall be recorded and submitted to the UKHO and KIS-ORCA Service; ‘as-laid’ cables shall be marked on Admiralty Charts and fisherman’s awareness charts (paper and electronic format)	To ensure navigational safety and minimise risk of gear snagging.	This will be committed to within the Fisheries Co-existence and Liaison Plan. Proposed to be secured through a condition in the marine licence(s).
Development of a dropped objects plan.	To ensure navigational safety and minimise risk of gear snagging.	Proposed to be secured through a condition in the marine licence(s).
Development of a decommissioning plan.	To ensure navigational safety and minimise risk of gear snagging.	Proposed to be secured through a condition in the marine licence(s).
Use of rolling construction zones.	To avoid the entire offshore Mona Array Area being closed to fishing vessels during the construction phase.	Rolling construction zones will be committed to within the Fisheries Co-existence and Liaison Plan. Proposed to be secured through a condition in the marine licence(s).
Use of guard vessels where required.	To ensure navigational safety and minimise risk of gear snagging.	This will be committed to within the Fisheries Co-existence and Liaison Plan. Proposed to be secured through a condition in the marine licence(s).

11.8 Assessment of significant effects

11.8.1.1 The potential impacts on commercial fisheries of the construction, operations and maintenance, and decommissioning phases of the Mona Offshore Wind Project have been assessed. The potential impacts arising from these different phases of the Mona Offshore Wind Project are listed in Table 11.13, along with the MDS against which each potential impact has been assessed.

11.8.1.2 A description of the potential significance of effect on commercial fisheries receptors caused by each identified impact is provided below. Due to the seasonality of activities of the different fishing fleets, the impacts are presumed to occur during the peak activity periods for each receptor group.

11.8.2 Loss or restricted access to fishing grounds

11.8.2.1 The construction, operations and maintenance, and decommissioning phases of the Mona Array Area and Mona Offshore Cable Corridor may lead to loss or restricted access to fishing grounds.

11.8.2.2 The MDS is represented by the maximum number of advisory safety zones around infrastructure and installation vessels during construction and decommissioning, and by the maximum amount of infrastructure during the operations and maintenance phase plus any additional, temporary safety zones around vessels undertaking major maintenance works.

Construction phase

11.8.2.3 During construction of the Mona Offshore Wind Project, it is proposed that temporary 500m safety zones will be present around wind turbines and OSPs where works are underway. It is proposed that rolling advisory exclusion zones of 500m will also be present around vessels installing inter-array cables, interconnector cables and subtidal export cables. The loss or restricted access to fishing grounds created by such exclusion zones will be gradual as the presence of infrastructure increases. Temporary restrictions to fishing activity and/or anchoring, will also be required in

areas where full cable burial to target depth has not yet been achieved and/or surface-laid cable exists (prior to cover by external cable protection). In such areas of temporarily shallow-buried/surface-laid cable, the restricted areas will be monitored by Guard Vessels.

11.8.2.4 Construction of the Mona Offshore Wind Project will also involve seabed preparation activities, comprising of sandwave and boulder clearance for wind turbines, OSP, inter-array cables, interconnector cables and the subtidal export cables throughout the Mona Array Area and Mona Offshore Cable Corridor.

11.8.2.5 A description of the significance of effect upon commercial fisheries receptors as a result of this potential impact is given below.

Magnitude of impact

Inshore static gear vessels

11.8.2.6 Inshore static gear vessels are active within the inshore region of the commercial fisheries study area and the Mona Offshore Cable Corridor, with project-specific feedback establishing that these are predominantly Welsh vessels targeting lobster and crab, operating out of local ports such as Rhyl and Conwy. Limited spatial activity data is available for this receptor group; however, WNMP data indicates relatively low static gear activity across the entire Mona Offshore Cable Corridor and no activity within the Mona Array Area. Construction works at the Mona Array Area will therefore not affect this receptor.

11.8.2.7 The main element of construction activity that will affect this receptor is seabed preparation and installation work within the Mona Offshore Cable Corridor, in particular within the inshore region (0 to 12nm). The construction phase has an anticipated duration of up to four years, with the seabed preparation works expected to take approximately 12 months within the wider offshore construction programme. However, during this period, fishing activity will only be excluded from discrete spatial areas (i.e. only discrete sections of the Mona Offshore Cable Corridor will be subject to temporary restrictions at any one time).

11.8.2.8 Due to the rolling advisory 500m safety zones around vessels undertaking installation works within the Mona Offshore Cable Corridor, a relatively low proportion of this receptor's annual landings may be affected. Some studies suggest there may be potential benefits to lobster fisheries from temporary closures of selected areas during construction (Roach *et al.*, 2018).

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

11.8.2.10 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility due the temporary nature of the works. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged construction would only affect an area from which a very small proportion of the receptor group's commercial annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Offshore static gear vessels

11.8.2.11 Offshore static gear vessels are active across the commercial fisheries study area, including within the Mona Array Area and Mona Offshore Cable Corridor. Project-specific consultation has established that these are predominantly English vessels targeting crab and whelk. VMS data indicate no effort of >15m vessels in 2016, 2018 and 2020 within the Mona Offshore Cable Corridor (section beyond 12nm); limited fishing effort was recorded in 2017 and 2019 within the offshore section. In terms of the Mona Array Area, VMS data indicate that fishing effort by static gear vessels was concentrated within the northeast section; no static gear fishing was recorded in the VMS data during 2018.

11.8.2.12 This receptor group will be affected by construction works at the Mona Array Area and the section of the Mona Offshore Cable Corridor beyond 12nm. The construction phase has an anticipated duration of up to four years (including seabed preparation); however, during this period, fishing activity will only be excluded from discrete spatial areas (i.e. only discrete sections of the Mona Offshore Cable Corridor will be subject to temporary restrictions at any one time). Based on the relatively low level of offshore static gear fishing in this area, and the fact that any temporary advisory 500m safety zones around vessels undertaking installation will be applied on a rolling basis, the area of exclusion is assessed as representing between 5-20% of the annual value of landings for vessels in this receptor group.

11.8.2.13 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than four years), intermittent, and with high reversibility due to the temporary nature of the works. It is predicted that the impact will affect the receptor directly, but be of low magnitude, as it is judged that construction would only affect an area from which a minor proportion of the receptor group's commercial annual value of landings is caught. The magnitude of impact for this receptor is therefore considered to be **low.**

Beam trawl vessels

11.8.2.14 Project-specific consultation established that approximately one English and approximately six Belgian beam trawl vessels operate within the commercial fisheries study area. However only the English beam trawl vessel operates within the Mona Array Area; while operating within the commercial fisheries study area, the Belgian beam trawl vessels mostly trawl east of the Mona Array Area. All of these vessels fish within the wider Irish Sea and not only within the commercial fisheries study area, highlighting their nomadic nature.

11.8.2.15 The main element of construction activity that will affect this receptor is the installation of the Mona Array Area (duration of up to four years, including seabed preparation). As this receptor group is mostly active outside the Mona Array Area, the construction phase is assessed to have a predicted loss of <5% of this receptor's annual value of landings.

11.8.2.16 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility due to the temporary nature of the works. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged construction would only affect an area from which a very small proportion of the receptor group's

commercial annual value of landings is caught. The magnitude of impact for this receptor is, therefore, deemed as **negligible**.

Scallop vessels – Scottish west coast

11.8.2.17 Landing statistics indicate that the commercial fisheries study area was particularly important to Scottish west coast scallopers during the period 2010 to 2020, with 11 scallop vessels based in Annan, Ballantrae and Kirkcudbright particularly active. Through close liaison with stakeholders (SFF, SWFPA and WCSP), project-specific consultation has established that Scottish west coast scallop vessels are considerably active and rely heavily upon the Mona Array Area for the dredging of queen scallop; with August to December being particularly important months. These vessels also target king scallop within the Mona Array Area, with November to May being a key period within the year.

11.8.2.18 The main element of construction activity that will affect this receptor is the installation of the Mona Array Area (duration of up to four years, including seabed preparation). During the construction phase, fishing activity will only be excluded from discrete spatial areas (i.e. only sections of the Mona Array Area will be subject to temporary restrictions via temporary 500m safety and/or safety zones around major installation vessels). This limited area of exclusion for fishing activity is assessed as only resulting in a loss of between 5-20% of the annual value of landings for vessels in this receptor group.

11.8.2.19 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility. It is predicted that the impact will affect the receptor directly but be of low magnitude, as it is judged construction would only affect an area from which a minor proportion of the receptor group's commercial annual value of landings is caught. The magnitude of impact for this receptor is therefore deemed as **low.**

Scallop vessels – Isle of Man

11.8.2.20 Feedback from project-specific consultation has established that, at the time of writing, there are 33 scallop vessels registered in the Isle of Man (the majority of these vessels have a licence for both king and queen scallop); however, due to the size and capacity of the Manx vessels, it is expected that the majority of these vessels will not fish beyond the Manx 12nm and, therefore, unlikely to fish within the Mona Array Area due to the distance offshore. Fisheries monitoring has recorded 2 Manx vessels large enough to fish outside of the Manx territorial sea. Landing statistics indicate that Isle of Man scallop vessels almost exclusively operate out of ICES Rectangle 36E5, in which only a relatively small section in the west of the Mona Array Area is positioned.

11.8.2.21 The main element of construction activity that will affect this receptor is the installation of the Mona Array Area (duration of up to four years, including seabed preparation). When considering the above, and the fact that fishing activity for this receptor would only be excluded from discrete spatial areas during the construction phase (i.e. only sections of the Mona Array Area will be subject to temporary 500m safety zone restrictions), loss or restricted access to fishing grounds is assessed as only representing between 5-20% of the annual value of landings for vessels within this receptor group.

11.8.2.22 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility. It is predicted that the impact will affect the receptor directly but be of low magnitude, as it is judged construction would only affect an area from which a minor proportion of the receptor group's commercial annual value of landings is caught. The magnitude of impact for this receptor is deemed as **low**.

Other scallop vessels

11.8.2.23 Feedback, via detailed consultation with fisheries stakeholders and analyses of official datasets indicates that this receptor group predominantly constitutes vessels from the Republic of Ireland and Northern Ireland, plus a small number of more nomadic vessels from Wales and southwest England. While landing statistics indicate the relative importance of scallop within the commercial fisheries study area, remote monitoring has established that these vessels are highly nomadic, often pass through the Mona Array Area in transit to fish other areas of the Irish Sea, and target scallop across a relatively wide area offshore.

11.8.2.24 The main element of construction activity that will affect this receptor is the installation of the Mona Array Area (duration of up to four years, including seabed preparation). Fishing activity would only be excluded from discrete spatial areas during the construction phase. Loss or restricted access to fishing grounds during construction is, therefore, assessed as representing <5% of the annual value of landings for this receptor group.

11.8.2.25 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged construction would only affect an area from which a very small proportion of the receptor group's commercial annual value of landings is caught. The magnitude of impact is, therefore, considered as **negligible**.

Sensitivity of the receptor

Inshore static gear vessels

11.8.2.26 The potential area from which this receptor group will have reduced access is relatively small (i.e. rolling advisory safety/safety zones of 500m around vessels undertaking installation within the inshore section of the Mona Offshore Cable Corridor). However, this receptor group generally constitutes smaller vessels (<12m) that deploy static gear, and although these vessels have some ability to deploy alternative gear, this is relatively limited, as is their spatial adaptability.

11.8.2.27 Inshore static gear vessels are deemed to be of limited spatial adaptability, have limited spatial tolerance and limited recoverability. The sensitivity of the receptor is, therefore, considered to be **medium**.

Offshore static gear vessels

11.8.2.28 This commercial fisheries receptor comprises larger offshore vessels (>12 m) that deploy static gear within a wider part of the Irish Sea than inshore static gear vessels. VMS data identified that these vessels have been observed within various areas of the commercial fisheries study area and are occasionally active at low levels along

the Mona Offshore Cable Corridor. This receptor group has the ability to fish a wider area than any areas they may be temporarily excluded from during construction works.

11.8.2.29 Offshore static gear vessels are deemed to be of high spatial adaptability, moderate spatial tolerance and moderate recoverability. The sensitivity of the receptor is, therefore, considered to be **low**.

Beam trawl vessels

11.8.2.30 This commercial fisheries receptor group generally constitutes larger beam trawl vessels (>12m) from Belgium and the south coast of England that are active within the commercial fisheries study area. Relatively low fishing effort was observed within the Mona Array Area by beam trawl vessels and only by one beam trawl vessel from the South Coast of England. This receptor group has the ability to fish numerous grounds within the wider Irish Sea and beyond.

11.8.2.31 Beam trawl vessels are deemed to be of high spatial adaptability, high spatial tolerance and high recoverability. The sensitivity of the receptor is, therefore, considered to be **negligible**.

Scallop vessels – Scottish west coast

11.8.2.32 This commercial fisheries receptor group generally constitutes larger vessels (>12m) from the Scottish west coast, deploying dredge gear and targeting queen and king scallop. Although vessels within this receptor group exhibit a relatively high operational range, they possess limited spatial tolerance, due to their high dependence upon the commercial fisheries study area for queen scallop dredging. The Scottish west coast scallop vessels also have a limited ability to deploy alternative gear.

11.8.2.33 Scottish west coast scallop vessels are deemed to be of high spatial adaptability, limited spatial tolerance and limited recoverability. The sensitivity of the receptor is therefore, considered to be **medium**.

Scallop vessels – Isle of Man

11.8.2.34 Within the commercial fisheries study area, according to landing statistics during the study period (2010 to 2020), this receptor group almost exclusively operates out of ICES Rectangle 36E5 and, therefore, exhibits moderate spatial adaptability. Project-specific consultation indicates that vessels within this receptor group are dedicated scallop vessels, with limited ability to deploy alternative gear. The Isle of Man Government administers a robust Scallop long-term management plan (LTMP) within its territorial waters; access to the fishery is predominantly restricted to vessels registered to the Isle of Man.

11.8.2.35 Isle of Man scallop vessels are deemed to be of moderate spatial adaptability, high spatial tolerance and moderate recoverability. The sensitivity of the receptor is therefore, considered to be **low**.

Other scallop vessels

11.8.2.36 As discussed, this receptor group comprises nomadic scallop vessels, that are often observed transiting through the Mona Array Area to other parts of the wider Irish Sea. The receptor group exhibits an extensive operational range and is able to mitigate loss or restricted access to fishing grounds through its spatial tolerance.

11.8.2.37 Other scallop vessels are deemed to be of high spatial adaptability, high spatial tolerance and high recoverability. The sensitivity of this receptor is, therefore, considered **negligible**.

Significance of the effect

11.8.2.38 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.16.

Table 11.16: Magnitude, sensitivity and impact significance relating to loss or restricted access to fishing grounds during construction of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	Negligible	Medium	Negligible
Offshore static gear vessels	Low	Low	Negligible
Beam trawl vessels	Negligible	Negligible	Negligible
Scottish west coast scallop vessels	Low	Medium	Minor
Isle of man scallop vessels	Low	Low	Negligible
Other scallop vessels	Negligible	Negligible	Negligible

Operations and maintenance phase

11.8.2.39 During the operations and maintenance phase of the Mona Offshore Wind Project, commercial fishing activity may be affected via long-term loss or restricted access to fishing grounds, and the associated reduction in revenue. This impact is dependent on the location of the receptor's fishing grounds, and also the spatial extent of potential fishing grounds lost.

Magnitude of impact

11.8.2.40 Existing UK legislation does not prohibit commercial fishing within operational offshore wind farms and for some sites that have fixed foundation options (e.g. monopiles, jackets – three legged, jackets – four legged, suction bucket three-legged jacket and suction bucket four-legged jacket), commercial fishing has continued during this phase. For example, towed demersal fishing has occurred within the Walney 4 Extension Wind Farm since it has been operational, which could be partly attributed to layout of the wind turbines which facilitates vessels to safely fish within the boundary of the wind farm (Dunkley and Solandt, 2022). A study investigating the impact of the Westermost Rough Offshore Wind Farm on commercial crustacean stock within its array area found that offshore static gear vessels were able to fish between wind turbines (spacing of 1,100m) and, therefore, continue their activity within the array during the operations and maintenance phase (Roach and Cohen, 2015). Post construction fish surveys undertaken on Westermost Rough Offshore Wind Farm

highlighted that landings per unit effort were consistent with pre-construction surveys and catches per unit effort of lobsters increased post-construction (Roach et al., 2022). Post construction fish surveys undertaken on the Barrow Offshore Wind Farm demonstrated that it is feasible to tow beam trawl gear between the wind turbines of the wind farm (Gray et al., 2016). Remote monitoring of fishing activity has confirmed that mobile gear vessels fish within operational wind farms in the Irish Sea.

11.8.2.41 The potential maximum number of wind turbines within the Mona Array Area is 107, while the minimum spacing between rows of wind turbines is 1,000m. During project-specific consultation, information was provided by commercial fisheries stakeholders with regard to their preference of minimum spacing between wind turbines that would allow for continued fishing within the Mona Array Area, as summarised within the magnitude section below. Differences in preference of wind turbine spacing by different fisheries operators are in part attributable to different attitudes to risk, as well as different operating requirements associated with gear width when actively fishing.

11.8.2.42 With respect to the Mona Offshore Cable Corridor, it is assumed that during the operations and maintenance phase, all cables will either be buried, or have external cable protection that will have sloped sides to minimise risk of snagging. Therefore, there will be no material loss of fishing grounds along the entire Mona Offshore Cable Corridor and fishing will be able to continue normally. The only exception with respect to the Mona Offshore Cable Corridor will be any temporary (advisory) 500m safety zones, that will be implemented around any large vessels undertaking cable repair/remediation events.

11.8.2.43 Measures adopted as part of the Mona Offshore Wind project, as outlined in Table 11.15, will minimise the impact of the loss, or restricted access to, fishing grounds during the operations and maintenance phase. A dedicated FLO will also be appointed to communicate timings and location of any maintenance works with the commercial fishing industry.

11.8.2.44 A number of fleets from the UK and other nationalities operate within the commercial fisheries study area. The impact is predicted to be of regional spatial extent, of relevance to international fishing fleets, and of long-term duration, as it will directly affect fleets across the 35-year design life of the Mona Offshore Wind Project.

Inshore static gear vessels

11.8.2.45 This receptor group will not be affected by a loss of grounds or restricted access to the Mona Array Area during the operations and maintenance phase, due to the distance offshore (i.e. these vessels do not fish in this area). The only permanent infrastructure within the inshore region will be the Mona Offshore Cable Corridor, which will be fully buried or have external cable protection and will, therefore, not prevent this receptor continuing to fish. The only exception to this is if any cable repair/remediation events are required in the operations and maintenance phase in the inshore region. This would lead to some temporary, spatially limited impacts where vessels would be requested to avoid such areas for the duration of the works

11.8.2.46 The loss or restricted access to fishing grounds during the operations and maintenance phase is, therefore, assessed as representing <5% of the annual value of landings for vessels in this receptor group.

11.8.2.47 In light of the above, the impact (via cable repair/remediation events), is predicted to be of local spatial extent, long term duration, intermittent, and with high reversibility. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged construction would only affect an area from which a very small proportion of the receptor group's commercial annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Offshore static gear vessels

11.8.2.48 During project-specific consultation, this receptor group confirmed that they would fish within operational arrays, for example they fish within both Walney and Burbo Bank offshore wind farms. However, these static gear vessels lay gear in a north - south alignment within the Mona Array Area, which is the only orientation possible due to tides in the region; if turbines were set out in this layout, this receptor group would be able to fish between 1km spaced turbines. A study investigating the impact of the Westermost Rough Offshore Wind Farm on commercial crustacean stock within its array area found that offshore static gear vessels were able to fish between wind turbines (spacing of 1,100m) and, therefore, continue their activity within the Array Area during the operations and maintenance phase (Roach and Cohen, 2015).

11.8.2.49 This receptor group will lose access to discrete areas as a result of project infrastructure: up to 107 turbines, with a seabed footprint of 524,300m^2 (inclusive of scour protection); up to four OSPs with a seabed footprint of 24,964m^2 (inclusive of scour protection). Due to the nature of the fishing gear, this receptor group is not expected to be affected by the cable protection and cable crossings.

11.8.2.50 The section of the Mona Offshore Cable Corridor beyond 12nm will not affect this receptor during the operations and maintenance phase, as the cable will be fully buried or have external cable protection, thus, permitting the deployment of static gear (pots). The loss or restricted access to fishing grounds is therefore assessed as representing <5% of the annual value of landings for vessels in this receptor group.

11.8.2.51 Presuming that fishing by this receptor group could continue within the Mona Array Area and Mona Offshore Cable Corridor, the loss or restricted access to fishing grounds is, therefore, assessed as representing <5% of the annual value of landings for vessels in this receptor group.

11.8.2.52 In light of the above, the impact is predicted to be of local spatial extent, long term duration, intermittent, and with high reversibility due to the temporary nature of any maintenance works. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged construction would only affect an area from which a very small proportion of the receptor group's commercial annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Beam trawl vessels

11.8.2.53 The presence of the Mona Array Area is expected to restrict the baseline operation of this receptor group (this does not apply for Belgian beam trawl vessels which have confirmed they do not actively fish within the Morgan Array Area). Project-specific consultation established that the minimum spacing of wind turbines, outlined in the MDS table (minimum spacing of 1,000m between rows of wind turbines, would allow beam trawl vessels from the South Coast of England to continue trawling within the Mona Array Area. Project-specific consultation also established that these vessels fish within the wider Irish Sea and only occasionally within the Mona Array Area. The

baseline review process established that these vessels mostly trawl east of the Mona Array Area, during the Spring period.

11.8.2.54 This receptor group will lose access to discrete areas as a result of project infrastructure: up to 107 turbines, with a seabed footprint of 524,300m^2 (inclusive of scour protection); up to four OSPs with a seabed footprint of 24,964m^2 (inclusive of scour protection). Due to the nature of the fishing gear (e.g. limited bottom contact with use of the SumWing), this receptor group is not expected to be affected by the cable protection and cable crossings.

11.8.2.55 Presuming that fishing by this receptor group could continue within the Mona Array Area, the loss or restricted access to fishing grounds is, therefore, assessed as representing <5% of the annual value of landings for vessels in this receptor group.

11.8.2.56 In light of the above, the impact is predicted to be of local spatial extent, long term duration, intermittent, and with high reversibility due to the temporary nature of any maintenance works. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged construction would only affect an area from which a very small proportion of the receptor group's commercial annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Scallop vessels – Scottish west coast

11.8.2.57 The Mona Array Area is located within established queen scallop grounds, on which this receptor group is highly reliant for its annual income (as described above for the construction phase). The presence of the Mona Array Area is expected to restrict the operation of this scallop dredge fishery. Project-specific consultation established that the minimum spacing of wind turbines, outlined in the MDS table (minimum spacing 1,000m between rows of wind turbines), is lower than the preferred distance between wind turbines outlined by the Scottish west coast scallopers (2,800m to 3,700m). These scallop vessels tow gear in a north - south alignment within the Mona Array Area, which is the only orientation possible due to tides in the region. Stakeholders also confirmed that gear penetration varied between 0.05-0.25m, so adequate burial of inter-array cables is important to allow these vessels to continue fishing within the Mona Array Area; the MDS for burial depths of inter-array cables is 0.5m.

11.8.2.58 Based on the minimum spacing of 1,000m between rows of wind turbines, fishing could continue within the Mona Array Area for this receptor group but would be severely restricted. This receptor group will also lose access to discrete areas as a result of project infrastructure: up to 107 turbines, with a seabed footprint of 524,300m^2 (inclusive of scour protection); up to four OSPs with a seabed footprint of 24,964m^2 (inclusive of scour protection); up to 50km of inter-array cable protection (up 3m height); up to 67 inter-array crossings (up to 4m height); up to 10km of interconnector cable protection (up 3m height) and up to 10 interconnector crossings (up to 3m height). External cable protection will be designed to increase potential for coexistence; up to 72km of export cable protection (up 3m height) and up to 24 export cable crossings (up to 3m height). External cable protection will be designed to increase potential for coexistence.

11.8.2.59 Taking into account the significant reliance upon the Mona Array Area (potentially accounting for approximately 40% of their total annual landings), the operations and maintenance phase of the Mona Array Area could lead to a reduction of 20-50% in annual landings.

11.8.2.60 In light of the above, the impact is predicted to be of regional spatial extent, long term duration, continuous, and with low reversibility. It is predicted that the impact will affect the receptor directly, and be of medium magnitude, as it is judged that it would affect an area from which a moderate proportion of the receptor group's annual value of landings is caught. The magnitude of impact is, therefore, considered to be **medium**.

Scallop vessels – Isle of Man

11.8.2.61 During project-specific consultation, this receptor group indicated that they would fish within operational wind farms, as the gear type used and vessel size facilitates sufficient manoeuvrability; therefore, they would be able to continue fishing within the Mona Array Area with the minimum spacing of 1,000m between rows of turbines.

11.8.2.62 This receptor group will lose access to discrete areas as a result of project infrastructure: up to 107 turbines, with a seabed footprint of 524,300m^2 (inclusive of scour protection) and up to four OSPs with a seabed footprint of 24,964m^2 (inclusive of scour protection). Due to the nature of the fishing gear, this receptor group is not expected to be affected by the cable protection and cable crossings.

11.8.2.63 As it is assumed that fishing will continue within the Mona Array Area during the operations and maintenance phase, the area unsuitable for continued fishing is assessed as representing <5% of the annual value of landings for vessels in this receptor group.

11.8.2.64 In light of the above, the impact is predicted to be of local spatial extent, long term duration, intermittent, and with high reversibility due to the temporary nature of any maintenance works. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged construction would only affect an area from which a very small proportion of the receptor group's commercial annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Other scallop vessels

11.8.2.65 During project-specific consultation, this receptor group indicated that they would fish within operational wind farms and they would be able to continue fishing within the Mona Array Area with the minimum spacing of 1,000m, although they highlighted safety concerns due to restricted operations between turbines.

11.8.2.66 This receptor group will also lose access to discrete areas as a result of project infrastructure: up to 107 turbines, with a seabed footprint of 524,300m^2 (inclusive of scour protection); up to four OSPs with a seabed footprint of 24,964m^2 (inclusive of scour protection); up to 50km of inter-array cable protection (up 3m height); up to 67 inter-array crossings (up to 4m height); up to 10km of interconnector cable protection (up 3m height) and up to 10 interconnector crossings (up to 3m height). External cable protection will be designed to increase potential for coexistence; up to 72km of export cable protection (up 3m height) and up to 24 export cable crossings (up to 3m height). External cable protection will be designed to increase potential for coexistence.

11.8.2.67 As it is assumed that fishing will continue within the Mona Array Area during the operations and maintenance phase, the area unsuitable for continued dredging is assessed as representing <5% of the annual value of landings for vessels in this receptor group.

11.8.2.68 In light of the above, the impact is predicted to be of local spatial extent, long term duration, intermittent, and with high reversibility due to the temporary nature of any maintenance works. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged construction would only affect an area from which a very small proportion of the receptor group's commercial annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Sensitivity of receptor

Inshore static gear vessels

11.8.2.69 The vessels within this receptor group have limited operational ranges due to their size, are relatively dependant on a limited number of grounds, and have limited ability to deploy alternative gear types.

11.8.2.70 Inshore static gear vessels are deemed to be of limited spatial adaptability, have limited spatial tolerance and limited recoverability. The sensitivity of the receptor is, therefore, considered to be **medium**.

Offshore static gear vessels

11.8.2.71 Offshore static gear vessels are deemed to be of high spatial adaptability, moderate spatial tolerance and moderate recoverability. The sensitivity of the receptor is, therefore, considered to be **low**.

Beam trawl vessels

11.8.2.72 Beam trawl vessels are deemed to be of high spatial adaptability, high spatial tolerance and high recoverability. The sensitivity of the receptor is, therefore, considered to be **negligible**.

Scallop vessels – Scottish west coast

11.8.2.73 As previously discussed, this receptor group has limited spatial tolerance due to significant dependence upon the commercial fisheries study area for queen scallop dredging. The Scottish west coast scallop vessels also have a limited ability to deploy alternative gear.

11.8.2.74 Scottish west coast scallop vessels are deemed to be of high spatial adaptability, limited spatial tolerance and limited recoverability. The sensitivity of the receptor is therefore, considered to be **medium**.

Scallop vessels – Isle of Man

11.8.2.75 Isle of man scallop vessels are deemed to be of moderate spatial adaptability, high spatial tolerance and moderate recoverability. The sensitivity of this receptor is, therefore, considered to be **low**

Other scallop vessels

11.8.2.1 As discussed, this receptor group comprises nomadic scallop vessels that are often observed transiting through the Mona Array Area to other parts of the wider Irish Sea. The receptor group exhibits an extensive operational range and is able to mitigate loss or restricted access to fishing grounds through their spatial tolerance.

11.8.2.2 Other scallop vessels are deemed to be of high spatial adaptability, high spatial tolerance and high recoverability. The sensitivity of this receptor is, therefore, considered **negligible**.

Significance of effect

11.8.2.3 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.17.

Table 11.17: Magnitude, sensitivity and impact significance relating to loss or restricted access to fishing grounds during the operations and maintenance phase of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	Negligible	Medium	Negligible
Offshore static gear vessels	Negligible	Low	Negligible
Beam trawl vessels	Negligible	Negligible	Negligible
Scottish west coast scallop vessels	Medium	Medium	Moderate
Isle of man scallop vessels	Negligible	Low	Negligible
Other scallop vessels	Negligible	Negligible	Negligible

Further mitigation and residual effects

11.8.2.4 A moderate adverse effect is predicted on the Scottish west coast scallop vessels receptor, which is significant in terms of the EIA Regulations. In order to mitigate this effect on the Scottish west coast scallop fleet, options to increase the minimum distance between wind turbines and options to align the turbines with orientations of fishing tows are being explored by the Applicant that could allow for continued scallop dredging activity within the Mona Array Area, thus increasing the potential for coexistence.

11.8.2.5 With these commitments to implement mitigation measures, which will be fully captured in the environmental statement submitted at Application, the impact magnitude is predicted to reduce to minor and the residual effect will be of **minor adverse** significance, which is not significant in EIA terms.

Decommissioning phase

Magnitude of impact

11.8.2.6 The magnitude of the receptor groups remains the same as described for the construction phase of this impact and is summarised in Table 11.18.

Sensitivity of receptor

11.8.2.7 The sensitivity of the receptor groups remains the same as described for the construction phase of this impact and is summarised in Table 11.18**.**

Significance of effect

11.8.2.8 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.18.

Table 11.18: Magnitude, sensitivity and impact significance relating to loss or restricted access to fishing grounds during decommissioning of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	Negligible	Medium	Negligible
Offshore static gear vessels	Negligible	Low	Negligible
Beam trawl vessels	Negligible	Negligible	Negligible
Scottish west coast scallop vessels	Low	Medium	Minor
Isle of man scallop vessels	Low	Low	Negligible
Other scallop vessels	Negligible	Negligible	Negligible

11.8.3 Displacement of fishing activity into other areas

11.8.3.1 The construction, operations and maintenance, and decommissioning phases of the Mona Array Area and Mona Offshore Cable Corridor may lead to displacement of fishing activity into other areas, as a result of loss or restricted access to fishing grounds. This displacement can create potential adverse effects on existing fisheries in the areas that vessels are displaced into.

11.8.3.2 The MDS is represented by the maximum number of advisory safety zones around infrastructure and installation vessels during construction and decommissioning, and by the maximum amount of infrastructure during operations and maintenance. The MDS is summarised in Table 11.13 and is the same as for the “Loss or restricted access to fishing grounds” impact.

Construction phase

Magnitude of impact

Inshore static gear vessels

11.8.3.3 Displacement of mobile beam trawl and scallop vessels, from the Mona Array Area into the inshore areas where this receptor’s vessels set static gear (pots), is unlikely, as the mobile vessels would likely focus on alternative established offshore grounds throughout the Irish Sea. Displacement of offshore static vessels from the Mona Array Area and part of the Mona Offshore Cable Corridor beyond 12nm into inshore areas could occur due to construction works, requiring the inshore static gear vessels to temporarily relocate gear and/or experience a reduction in landings due to a greater number of vessels targeting stocks in this inshore area. However, this is also judged to be unlikely, as these offshore static vessels would likely look to remain in grounds further offshore, such as the east offshore Irish Sea region. Displacement of individual vessels within this receptor group, from the Mona Offshore Cable Corridor within 12nm, onto adjacent grounds that may be fished by other inshore vessels, is also possible. However, the rolling 500m safety zone around any cable installation vessels will limit the extent of such displacement. Therefore, displacement of fishing activity during construction is predicted to result in a loss of <5% of this receptor’s annual value of landings.

11.8.3.4 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility due to the temporary nature of the works. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged that it would only affect an area from which a very small proportion of the receptor group’s annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Offshore static gear vessels

11.8.3.5 Displacement of mobile vessels deploying beam trawl and scallop dredges from the Mona Array Area, into the areas where offshore static gear vessels set static gear (pots), could cause conflict between these different receptor groups. However, assuming that fishing will only be excluded within the 500m safety zones around major installation vessels, and that such displacement will be temporary and limited to discrete spatial areas at any one time, the extent of displacement is judged to be negligible. Displacement of fishing activity during construction is, therefore, predicted to result in a loss of < 5% of this receptor’s annual value of landings.

11.8.3.6 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility due to the temporary nature of the works. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged that it would only affect an area from which a very small proportion of the receptor group’s annual value of landings is caught. The magnitude of impact for this receptor is, therefore, considered as **negligible.**

Beam trawl vessels

11.8.3.7 Displacement of scallop vessels deploying dredges and offshore static gear, from the Mona Array Area and part of the Mona Offshore Cable Corridor, into the areas where beam trawl vessels are active, could cause conflict between these different receptor groups. During construction, fishing activity will only be excluded from discrete spatial areas (i.e. only sections of the Mona Array Area and Mona Offshore Cable Corridor beyond 12nm will be subject to temporary restrictions around major installation vessels). Therefore, in light of the temporary nature of the works and the short to medium term duration (i.e. less than five years), the displacement of fishing activity during construction results in a predicted loss of < 5% of this receptor’s annual value of landings.

11.8.3.8 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility

due to the temporary nature of the works. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged that it would only affect an area from which a very small proportion of the receptor group's annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Scallop vessels – Scottish west coast

11.8.3.9 Displacement of offshore static gear, beam trawl vessels and other scallop receptor gear from the Mona Array Area and part of the Mona Offshore Cable Corridor beyond 12nm into areas of Scottish west coast scallop activity could cause conflict between these different receptor groups. However, the extent of this displacement is judged to be limited due to fishing activity only being excluded from discrete spatial areas during the construction phase (i.e. around major installation vessels). The displacement of fishing activity during construction therefore results in a predicted loss of <5% of this receptor's annual value of landings.

11.8.3.10 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged that it would only affect an area from which a very small proportion of the receptor group's annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Scallop vessels – Isle of Man

11.8.3.11 Displacement of other fishing vessels from the Mona Array Area into areas where Isle of Man scallop vessels fish could cause conflict between these different receptor groups. However, displacement of non-UK vessels, such as Belgian beam trawl vessels or Irish scallop vessels, into the Manx Territorial Sea (within 12nm) within the 36E5 will not occur, as non-UK vessels do not have access to this area, under the London Fisheries Convention 1964. Displacement of Scottish west coast scallop vessels and other scallopers into the Manx Territorial Sea is also limited, as under the Isle of Man Scallop LTMP, access to king scallop dredging is limited to vessels under 221kW, unless they possess Grandfather Rights. These Grandfather Rights will be terminated by November 2024 under the LTMP. Only vessels which possess a UK and Isle of Man fishing vessel licence with scallop entitlement, may fish for scallops within Manx Territorial waters. In light of this, and the discrete spatial areas of exclusion during construction, the displacement of fishing activity during construction therefore results in a predicted loss of <5% of this receptor's annual value of landings.

11.8.3.12 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged that it would only affect an area from which a very small proportion of the receptor group's annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Other scallop vessels

11.8.3.13 Displacement of fishing activity into areas where other scallop vessels are active during construction is predicted to result in a loss of <5% of this receptor's annual value of landings, due to the highly nomadic nature of this receptor group and exclusion being limited to discrete areas.

11.8.3.14 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged that it would only affect an area from which a very small proportion of the receptor group's annual value of landings is caught. The magnitude of impact is, therefore, considered as **negligible**.

Sensitivity of receptor

Inshore static gear vessels

11.8.3.15 The inshore static gear fleet operates across distinct areas of ground, from the coastline out to 12nm. Displacement of this receptor group from current fishing grounds may occur if displaced vessels beyond 12 nm explore grounds further inshore although, as previously discussed, this is considered unlikely. This receptor is limited to a number of grounds, and although these vessels have some ability to deploy alternative gear, this is relatively limited.

11.8.3.16 Inshore static gear vessels are deemed to be of limited spatial adaptability, have limited spatial tolerance and limited recoverability. The sensitivity of the receptor is, therefore, considered to be **medium**.

Offshore static gear vessels

11.8.3.17 Displacement of mobile vessels, such as those that deploy beam trawls and dredges, into the areas where the offshore static gear vessels set pots could cause displacement of fishing activity for this receptor group. However, this receptor group has the ability to fish a wider area than those areas they may be temporarily excluded from during construction works.

11.8.3.18 Offshore static gear vessels are deemed to be of high spatial adaptability, moderate spatial tolerance and moderate recoverability. The sensitivity of the receptor is, therefore, considered to be **low**.

Beam trawl vessels

11.8.3.19 Beam trawl vessels exhibit extensive operational ranges and they have the ability to fish numerous grounds within the wider Irish Sea. Some Belgian beam trawl vessels that have been recorded within the commercial fisheries study area, have also been observed to deploy alternative gear types.

11.8.3.20 Beam trawl vessels are deemed to be of high spatial adaptability, high spatial tolerance and high recoverability. The sensitivity of the receptor is, therefore, considered to be **negligible**.

Scallop vessels – Scottish west coast

11.8.3.21 As previously discussed, this receptor group has limited spatial tolerance due to significant dependence upon the commercial fisheries study area for queen scallop dredging. The Scottish west coast scallop vessels also have a limited ability to deploy alternative gear.

11.8.3.22 Scottish west coast scallop vessels are deemed to be of high spatial adaptability, limited spatial tolerance and limited recoverability. The sensitivity of the receptor is therefore, considered to be **medium**.

Scallop vessels – Isle of Man

11.8.3.23 Within the commercial fisheries study area, according to landing statistics, this receptor group almost exclusively operated out of ICES Rectangle 36E5 throughout the study period (2010 to 2020), and project-specific consultation indicates that the Isle of Man vessels are dedicated scallop vessels.

11.8.3.24 Isle of Man scallop vessels are deemed to be of moderate spatial adaptability, high spatial tolerance and moderate recoverability. The sensitivity of the receptor is, therefore, considered to be **low**.

Other scallop vessels

11.8.3.25 As discussed, this receptor group comprises nomadic scallop vessels that are often observed transiting through the Mona Array Area to other parts of the wider Irish Sea. The receptor group exhibits an extensive operational range and is able to mitigate loss or restricted access to fishing grounds through their spatial tolerance.

11.8.3.26 Other scallop vessels are deemed to be of high spatial adaptability, high spatial tolerance and high recoverability. The sensitivity of this receptor is, therefore, considered **negligible**.

Significance of effect

11.8.3.27 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.19.

Table 11.19: Magnitude, sensitivity and impact significance relating to displacement of fishing activity into other areas during construction of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	Negligible	Medium	Negligible
Offshore static gear vessels	Negligible	Low	Negligible
Beam trawl vessels	Negligible	Negligible	Negligible
Scottish west coast scallop vessels	Negligible	Medium	Negligible
Isle of man scallop vessels	Negligible	Low	Negligible
Other scallop vessels	Negligible	Negligible	Negligible

Operations and maintenance phase

Magnitude of impact

Inshore static gear vessels

11.8.3.28 It is unlikely that this receptor group will be affected by displacement of vessels from the Mona Array Area, due to the offshore vessels preferring to focus on alternative established offshore grounds throughout the Irish Sea. The only permanent infrastructure in the inshore region that could create displacement effects will be the Mona Offshore export cable, which will be fully buried or have external cable protection. Therefore, it is assumed that fishing in the inshore region by this receptor group will be able to continue during the operation and maintenance phase and that any resulting displacement of fishing activity from the Mona Array Area will only lead to a potential reduction of annual value of landings of <5%.

11.8.3.29 In light of the above, the impact is predicted to be of local spatial extent, long term duration, continuous, and with low reversibility. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged that construction would only affect an area from which a very small proportion of the receptor group's annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Offshore static gear vessels

11.8.3.30 Displacement of mobile vessels deploying beam trawl and scallop dredges during the operations and maintenance phase from the Mona Array Area, into the areas where offshore static gear vessels set pots, could cause conflict between these different receptor groups. However, it is noted that the other mobile gear receptor groups target a relatively large area in comparison to the Mona Array Area. It is also currently understood that a spatial 'gentleman's agreement' exists between the different gear types in operation in this area and it is assumed that this would continue during the operations and maintenance phase. Therefore, displacement of fishing activity during the operations and maintenance phase is predicted to result in a predicted loss of <5% of this receptor's annual value of landings.

11.8.3.31 In light of the above, the impact is predicted to be of local spatial extent, long term duration, intermittent, and with high reversibility. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged that construction would only affect an area from which a very small proportion of the receptor group's annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Beam trawl vessels

11.8.3.32 Project-specific consultation established that these vessels fish within the wider Irish Sea and not specifically within the Mona Offshore Array, highlighting their nomadic nature and operational range. Project-specific consultation established that while operating within the wider commercial fisheries study area, these vessels mostly trawl east of the Mona Array Area, during the Spring period. While direct displacement caused by possible wind turbine layout within the Mona Array Area is minimal, as a result of their spatial preferences, displacement of other offshore vessels during the

operations and maintenance phase from the Mona Array Area into areas where beam trawl vessels operate, could cause conflict between these different receptor groups. However, project-specific consultation established that this receptor group fishes within the wider Irish Sea, and not specifically within the Mona Array Area, highlighting their nomadic nature and relatively high operational range. Therefore, displacement of fishing activity during operations and maintenance results in a predicted loss of <5% of this receptor's annual value of landings.

11.8.3.33 In light of the above, the impact is predicted to be of regional spatial extent, long term duration, continuous, and with low reversibility. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged that construction would only affect an area from which a very small proportion of the receptor group's annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Scallop vessels – Scottish west coast

11.8.3.34 Displacement of offshore static gear, beam trawl vessels and other scallop receptor gear from the Mona Array Area and part of the Mona Offshore Cable Corridor beyond 12nm into areas of Scottish west coast scallop activity could cause conflict between these different receptor groups. However, it is noted that the other mobile gear receptor groups and offshore static gear vessels target a relatively large area in comparison to the Mona Array Area. It is also currently understood that a spatial 'gentleman's agreement' exists between the different gear types in operation in this area and it is assumed that this would continue during the operations and maintenance phase. Therefore, displacement of fishing activity during the operations and maintenance phase results in a predicted loss of <5% of this receptor's annual value of landings.

11.8.3.35 In light of the above, the impact is predicted to be of regional spatial extent, long term duration, continuous, and with low reversibility. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged that construction would only affect an area from which a very small proportion of the receptor group's annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Scallop vessels – Isle of Man

11.8.3.36 Displacement of other fishing vessels from the Mona Array Area into areas where Isle of Man Scallop vessels fish could create conflict. However, as previously discussed, displacement of non-UK vessels, such as Belgian beam trawl vessels or Irish scallop vessels, into the Manx Territorial Sea (within 12nm), within the 36E5 will not happen as non-UK vessels do not have access to this area, under the London Fisheries Convention 1964. Displacement of Scottish west coast scallop vessels and other scallopers into the Manx Territorial Sea is also limited, as under the Isle of Man Scallop LTMP, access to king scallop dredging is limited to vessels under 221kW, unless they possess Grandfather Rights. These Grandfather Rights will be terminated by November 2024 under the LTMP. Only vessels which possess a UK and Isle of Man fishing vessel licence with scallop entitlement may fish for scallops within Manx Territorial waters. The displacement of fishing activity during the operations and maintenance phase therefore results in a predicted loss of <5% of this receptor's annual value of landings.

11.8.3.37 In light of the above, the impact is predicted to be of regional spatial extent, long term duration, continuous, and with low reversibility. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged that construction would only affect an area from which a very small proportion of the receptor group's annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Other scallop vessels

11.8.3.38 Displacement, during the operations and maintenance phase, of fishing activity into areas where this receptor group is active, is predicted to result in a loss of <5% of this receptor's annual value of landings, due to the nomadic nature and relatively high operational range of the receptor.

11.8.3.39 In light of the above, the impact (via cable repair/remediation events), is predicted to be of local spatial extent, long term duration, continuous, and with low reversibility. It is predicted that the impact will affect the receptor directly, but be of negligible magnitude, as it is judged that construction would only affect an area from which a very small proportion of the receptor group's annual value of landings is caught. The magnitude of impact is, therefore, considered to be **negligible**.

Sensitivity of receptor

11.8.3.40 The sensitivity of the receptor groups remains the same as described for the construction phase of this impact and is summarised in Table 11.20.

Significance of effect

11.8.3.41 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.20.

Table 11.20: Magnitude, sensitivity and impact significance relating to displacement of fishing activity into other areas during the operations and maintenance phase of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	Negligible	Medium	Negligible
Offshore static gear vessels	Negligible	Low	Negligible
Beam trawl vessels	Negligible	Negligible	Negligible
Scottish west coast scallop vessels	Negligible	Medium	Negligible
Isle of man scallop vessels	Negligible	Low	Negligible
Other scallop vessels	Negligible	Negligible	Negligible

Decommissioning phase

Magnitude of impact

11.8.3.42 The sensitivity of the receptor groups remains the same as described for the construction phase of this impact and is summarised in Table 11.21.

Sensitivity of receptor

11.8.3.43 The sensitivity of the receptor groups remains the same as described for the construction phase of this impact and is summarised in Table 11.21.

Significance of effect

11.8.3.44 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.21.

Table 11.21: Magnitude, sensitivity and impact significance relating to displacement of fishing activity into other areas during decommissioning of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	Negligible	Medium	Negligible
Offshore static gear vessels	Negligible	Low	Negligible
Beam trawl vessels	Negligible	Negligible	Negligible
Scottish west coast scallop vessels	Negligible	Medium	Negligible
Isle of man scallop vessels	Negligible	Low	Negligible
Other scallop vessels	Negligible	Negligible	Negligible

11.8.4 Interference with fishing activity

11.8.4.1 The construction, operations and maintenance and decommissioning phases of the Mona Array Area may lead to interference with fishing activity, as a result of increased vessel traffic caused by vessels associated with the Mona Offshore Wind Project or changes to shipping routes. This impact has been scoped out for the operations and maintenance phase of the Mona Offshore Cable Corridor (see section 11.6.2).

11.8.4.2 The MDS is represented by the maximum amount of infrastructure and number of vessel transits which could result in the greatest potential for interference and is summarised in Table 11.13. Full consideration of effects on commercial fishing vessels while transiting, for example collision and allision, is discussed in volume 2, chapter 12: Shipping and navigation of the PEIR.

Construction phase

11.8.4.3 During the construction of the Mona Offshore Wind Project (duration of up to four years), there will be a total of 91 construction vessels on site at any one time. There will be up to 1,983 installation vessel movements (return trips) during construction.

Magnitude of impact

11.8.4.4 Measures outlined in section 11.7 will minimise the impact of interference with fishing activity during construction of the Mona Offshore Wind Project. These include notifying the commercial fishing industry in advance of any offshore activities through Notices to Mariners, Kingfisher Bulletins and ongoing liaison by the CFLO and FIR.

11.8.4.5 Although construction vessel traffic will add to the existing level of shipping activity in the area, there are already moderate levels of vessel traffic that exist in the area and there is co-existence of fishing vessels with other marine traffic. Fishing vessels engaged in fishing must exhibit appropriate lighting; and have the right of way over most other marine traffic. Construction vessels in transit would also be fully compliant with the International Regulations for Preventing Collisions at Sea (COLREGS).

11.8.4.6 For all commercial fisheries receptor groups, the impact is predicted to be of local spatial extent, short to medium term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptors directly. However, the magnitude of impact is predicted to be greater for receptor groups active within the Mona Array Area, rather than those active inshore. The magnitude of impact is, therefore, considered to be **negligible** for inshore static gear vessels and **low** for all other commercial fisheries receptor groups.

Sensitivity of receptor

11.8.4.7 For this impact, the sensitivity has been defined by the vulnerability of the receptor group to potential interference with their fishing activity.

Inshore static gear vessels

11.8.4.8 This receptor group is constituted generally of smaller vessels (<12m) that deploy static gear and have limited spatial adaptability due to the extent of their operational range. These vessels will only be affected by construction vessels within the Mona Offshore Cable Corridor. The marker buoys and actual gear deployed by the inshore static gear vessels are vulnerable to potential interference by construction vessels, due to their poor visibility. Although these vessels have some ability to deploy alternative gear, this is relatively limited. The sensitivity of the receptor is therefore, considered to be **medium**.

Offshore static gear vessels

11.8.4.9 This commercial fisheries receptor comprises larger offshore vessels (>12 m) that deploy static gear and has high spatial adaptability due to the extent of its operational range. These vessels will only be affected by construction vessels within the Mona Array Area and the Mona Offshore Cable Corridor. The marker buoys deployed by the offshore static gear vessels are vulnerable to potential interference by construction vessels, due to their poor visibility. The offshore static gear vessels are deemed to be of medium vulnerability. The sensitivity of the receptor is therefore, considered to be **medium**.

Beam trawl vessels

11.8.4.10 This commercial fisheries receptor group is constituted generally of larger beam trawl vessels (>12m) from the south coast of England and Belgium (although noted that

Belgian beam trawl vessels have confirmed they do not actively fish within the Morgan Array Area); these vessels exhibit high spatial adaptability, due to extensive operational ranges. It is expected that these vessels will be in a position to avoid the Mona Offshore Wind Project construction vessels. Construction vessels in transit would be fully compliant with COLREGS, so would not pose a risk to towed fishing gear or require fishing vessels engaged in fishing to alter their course. The beam trawl vessels are deemed to be of negligible vulnerability. The sensitivity of the receptor is therefore, considered to be **negligible**.

Scallop vessels – Scottish west coast

11.8.4.11 This commercial fisheries receptor group is constituted generally of larger vessels (>12m) from the Scottish west coast. It is expected that these vessels will be in a position to avoid the Mona Offshore Wind Project construction vessels. Construction vessels in transit would be fully compliant with COLREGS, so would not pose a risk to towed fishing gear or require fishing vessels engaged in fishing to alter their course. These scallop vessels are deemed to be of negligible vulnerability. The sensitivity of the receptor is therefore, considered to be **negligible**.

Scallop vessels – Isle of Man

11.8.4.12 This commercial fisheries receptor group is constituted generally of larger vessels (>10m) from the Isle of Man. It is expected that these vessels will be in a position to avoid the Mona Offshore Wind Project construction vessels. Construction vessels in transit would be fully compliant with COLREGS, so would not pose a risk to towed fishing gear or require fishing vessels engaged in fishing to alter their course. These scallop vessels are deemed to be of negligible vulnerability. The sensitivity of the receptor is therefore, considered to be **negligible**.

Other scallop vessels

11.8.4.13 This receptor group comprises nomadic scallop vessels that are often observed transiting through the Mona Array Area to other parts of the wider Irish Sea. This commercial fisheries receptor group is constituted generally of larger vessels (>12m) from Ireland and Northern Ireland. It is expected that these vessels will be in a position to avoid the Mona Offshore Wind Project construction vessels. Construction vessels in transit would be fully compliant with COLREGS, so would not pose a risk to towed fishing gear or require fishing vessels engaged in fishing to alter their course. These scallop vessels are deemed to be of negligible vulnerability. The sensitivity of the receptor is therefore, considered to be **negligible**.

Significance of effect

11.8.4.14 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.22.

Table 11.22: Magnitude, sensitivity and impact significance relating to interference with fishing activity during construction of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	Negligible	Medium	Negligible
Offshore static gear vessels	Low	Medium	Minor
Beam trawl vessels	Low	Negligible	Negligible
Scottish west coast scallop vessels	Low	Negligible	Negligible
Isle of man scallop vessels	Low	Negligible	Negligible
Other scallop vessels	Low	Negligible	Negligible

Operations and maintenance phase

11.8.4.15 During the operations and maintenance phase of the Mona Offshore Wind Project there will be a total of up to 21 operation and maintenance vessels on site at any one time. There will be up to 2,351 operations and maintenance vessel movements (return trips) during operational lifetime.

Magnitude of impact

11.8.4.16 Measures outlined in section 11.7 will minimise the impact of interference with fishing activity during operation and maintenance of the Mona Offshore Wind Project. The commercial fishing industry will be fully informed in advance of any offshore activities through Notices to Mariners, Kingfisher Bulletins and ongoing liaison by the CFLO and FIR.

11.8.4.17 Although operations and maintenance vessel traffic will add to the existing level of shipping activity in the area, there are already moderate levels of vessel traffic in the area, and there is co-existence of fishing vessels with other marine traffic. Fishing vessels engaged in fishing must exhibit appropriate lighting and have the right of way over most other marine traffic. Operation and maintenance vessels in transit would also be fully compliant with COLREGS.

11.8.4.18 For all commercial fisheries receptor groups, the impact is predicted to be of local spatial extent, long term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptors directly. However, the magnitude of impact is predicted to be greater for receptor groups active within the Mona Array Area during operations and maintenance, rather than those active inshore. The magnitude of impact is, therefore, considered to be **negligible** for inshore static gear vessels and **low** for all other commercial fisheries receptor groups, as summarised in Table 11.23.

Sensitivity of receptor

11.8.4.19 The sensitivity of the receptor groups remains the same as described for the construction phase of this impact and summarised in Table 11.23.

Significance of effect

11.8.4.20 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.23.

Table 11.23: Magnitude, sensitivity and impact significance relating to interference with fishing activity during the operations and maintenance phase of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	Negligible	Medium	Negligible
Offshore static gear vessels	Low	Medium	Minor
Beam trawl vessels	Low	Negligible	Negligible
Scottish west coast scallop vessels	Low	Negligible	Negligible
Isle of man scallop vessels	Low	Negligible	Negligible
Other scallop vessels	Low	Negligible	Negligible

Decommissioning phase

11.8.4.21 During the decommissioning phase the changes would gradually decrease from the operations and maintenance MDS as the need for project-related vessels is reduced.

Magnitude of impact

11.8.4.22 It is anticipated that the magnitude for interference with fishing activity will be similar to that of the construction phase and is summarised in Table 11.24.

Sensitivity of receptor

11.8.4.23 The sensitivity of all commercial fisheries receptors during decommissioning is deemed to be the same as for the construction phase and is summarised in Table 11.24.

Significance of effect

11.8.4.24 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.24.

Table 11.24: Magnitude, sensitivity and impact significance relating interference with fishing activity during decommissioning of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	Negligible	Medium	Negligible
Offshore static gear vessels	Low	Medium	Minor
Beam trawl vessels	Low	Negligible	Negligible
Scottish west coast scallop vessels	Low	Negligible	Negligible
Isle of man scallop vessels	Low	Negligible	Negligible
Other scallop vessels	Low	Negligible	Negligible

11.8.5 Temporary increase in steaming distances

11.8.5.1 The construction and decommissioning phases of the Mona Array Area may lead to increased steaming times and distances for commercial fishing vessels, which could increase operational costs. This impact has been scoped out for all phases of the Mona Offshore Cable Corridor, and for the operations and maintenance phase of the Mona Array Area (see section 11.6.2), as fishing vessels will be able to transit through to/from adjacent fishing grounds.

11.8.5.2 The MDS is represented by the maximum number of advisory safety zones around infrastructure and installation vessels during construction and decommissioning and is summarised in Table 11.13. Full consideration of effects on commercial fishing vessels while transiting, for example collision and allision, is discussed in volume 2, chapter 12: Shipping and navigation of the PEIR.

Construction phase

11.8.5.3 There will be 500m safety zones around wind turbines and OSPs during their construction. There will also be a 50m safety zone around each item of infrastructure during the construction phase when no construction works are taking place on that infrastructure (for example, where a wind turbine is incomplete or is in the process of being tested before commissioning). Rolling advisory safety zones of 500m will be in place around vessels installing inter-array cables, interconnector cables and subtidal export cables.

Magnitude of impact

11.8.5.4 Measures outlined in section 11.7 will minimise the impact of any increased steaming distances during construction. The commercial fishing industry will be fully informed in advance of any offshore activities through Notices to Mariners, Kingfisher Bulletins and ongoing liaison by the CFLO and FIR.

11.8.5.5 It is anticipated that transiting fishing vessels will only be required to take minor deviations, as impacts will localised to the immediate area of construction and construction vessels, with the use of rolling construction zones.

11.8.5.6 No change has been predicted for the inshore static gear vessels commercial fisheries receptor group, as the impact has been scoped out of the Mona Offshore Cable Corridor.

11.8.5.7 The impact is predicted to be of local extent, short to medium term duration, intermittent and high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is, therefore, considered to be **negligible** for all other commercial fisheries receptor groups.

Sensitivity of receptor

11.8.5.8 All commercial fisheries receptor groups have operational ranges that are beyond that of the areas of construction, so have the ability to make deviations to transit routes. Providing that adequate notification is given, these fishing vessels will be in a position to avoid construction areas, with limited impact upon steaming times.

11.8.5.9 Inshore static gear vessels will not be affected by construction of the Mona Array Area, as they are only active further inshore. All other commercial fisheries receptor groups are deemed to be of low vulnerability, high spatial adaptability, high spatial tolerance and moderate recoverability to this impact. The sensitivity of all commercial fisheries receptors is, therefore, considered to be **low**.

Significance of effect

11.8.5.10 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.25.

Table 11.25: Magnitude, sensitivity and impact significance relating to temporary increase in steaming distances during construction of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	No change	No change	No change
Offshore static gear vessels	Negligible	Low	Negligible
Beam trawl vessels	Negligible	Low	Negligible
Scottish west coast scallop vessels	Negligible	Low	Negligible
Isle of man scallop vessels	Negligible	Low	Negligible
Other scallop vessels	Negligible	Low	Negligible

Decommissioning phase

Magnitude of impact

11.8.5.11 It is anticipated that the magnitude of impact for increases in steaming distances in the decommissioning phase will be no greater than the same impact during the construction phase. The magnitude is therefore, considered to be **negligible** for all commercial fisheries receptor groups.

Sensitivity of receptor

11.8.5.12 The sensitivity of all commercial fisheries receptors to this particular impact during decommissioning is deemed to be the same as for the same impact in the construction phase. The sensitivity of all commercial fisheries receptors is therefore, considered to be **low**.

Significance of effect

11.8.5.13 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.26.

Table 11.26: Magnitude, sensitivity and impact significance relating to temporary increase in steaming distances during decommissioning of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	No change	No change	No change
Offshore static gear vessels	Negligible	Low	Negligible
Beam trawl vessels	Negligible	Low	Negligible
Scottish west coast scallop vessels	Negligible	Low	Negligible
Isle of man scallop vessels	Negligible	Low	Negligible
Other scallop vessels	Negligible	Low	Negligible

11.8.6 Loss or damage to fishing gear due to snagging

11.8.6.1 The construction, operations and maintenance and decommissioning of the Mona Array Area and Mona Offshore Cable Corridor may lead to loss or damage to fishing gear due to snagging. Snagging risks may occur as a result of infrastructure on the seabed, such as inter-array cables, offshore export cables and associated cable protection.

11.8.6.2 The MDS is represented by the maximum amount of infrastructure associated with the project and is summarised in Table 11.13. Safety risk for fishing vessels associated with potential gear snagging is assessed in volume 2, chapter 12: Shipping and navigation of the PEIR.

Construction phase

11.8.6.3 The progressive installation of infrastructure during the construction phase of the Mona Offshore Wind Project would result in an increased potential for snagging risks to fishing vessels. These include risks associated with sub-surface infrastructure such as partially laid/surface-laid cables.

Magnitude of impact

11.8.6.4 Measures outlined in section 11.7 will minimise the risks of snagging during construction. The commercial fishing industry will be fully informed of any potential snagging risks through Notices to Mariners, Kingfisher Bulletins and ongoing liaison by the CFLO and FIR. Use of advisory clearance distances and safety zones will minimise the risk of interaction between fishing vessels and project infrastructure, therefore reducing the risk of snagging. Where it is required, snagging risks such as surface-laid cable that has not yet had external cable protection applied or secondary burial works undertaken, will be marked by a guard vessel or navigational marker.

Inshore static gear vessels

11.8.6.5 The main element of construction activity that will impact this receptor group is the installation of the Mona Offshore Cable Corridor within the inshore region. WNMP data

indicates relatively low static gear activity across the Mona Offshore Cable Corridor. Based on this, and the proposed measures adopted as part of the Mona Offshore Wind Project and the commitments to follow standard protocols, a relatively low proportion of this receptor's annual landings may be affected. Therefore, the construction phase is assessed to have a predicted loss of <5% of this receptor's annual value of landings.

11.8.6.6 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility due the temporary nature of the works. It is predicted that the impact will affect the receptor directly. The magnitude of impact is, therefore, considered to be **negligible**.

Offshore static gear vessels

11.8.6.7 This receptor group will be affected by construction works at the Mona Array Area and the section of the Mona Offshore Cable Corridor beyond 12nm. As previously discussed for this receptor group, VMS data indicates relatively low levels of offshore static fishing gear in this area. Based on this, and on the proposed measures adopted as part of the Mona Offshore Wind Project and the commitments to follow standard protocols, loss or damage to fishing gear due to snagging in the construction phase is assessed to have a predicted loss of <5% of this receptor's annual landings.

11.8.6.8 In light of the above, the impact is predicted to be of regional spatial extent, short to medium term duration (i.e. less than five years), intermittent and with high reversibility due to the temporary nature of the works. It is predicted that the impact will affect the receptor directly. The magnitude of impact is therefore, considered to be **negligible**.

Beam trawl vessels

11.8.6.9 The main element of construction activity that will affect this receptor is the installation of the Mona Array Area. Project-specific consultation established that these vessels fish within the wider Irish Sea and not only within the commercial fisheries study area, highlighting their nomadic nature. While operating within the commercial fisheries study area, these vessels mostly trawl east of the Mona Array Area, during the Spring period. Based on this, and on the proposed measures adopted as part of the Mona Offshore Wind Project, and the commitments to follow standard protocols, loss or damage to fishing gear due to snagging in the construction phase is assessed to have a predicted loss of <5% of this receptor's annual landings.

11.8.6.10 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility due to the temporary nature of the works. It is predicted that the impact will affect the receptor directly. The magnitude of impact is therefore considered **negligible**.

Scallop vessels – Scottish west coast

11.8.6.11 The main element of construction activity that will affect this receptor is the installation of the Mona Array Area (duration of up to four years, including seabed preparation). Through close liaison with stakeholders (SFF, SWFPA and WCSP), project-specific consultation has established that Scottish west coast scallop vessels are considerably active and rely heavily upon the Mona Array Area for the dredging of queen scallop; August to December being particularly important months. However, based on the proposed measures adopted as part of the Mona Offshore Wind Project, and the commitments to follow standard protocols, loss or damage to fishing gear due to snagging during the construction phase is assessed to have a predicted loss of <5% of this receptor's annual landings.

11.8.6.12 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility due to the temporary nature of the works. It is predicted that the impact will affect the receptor directly. The magnitude of impact is therefore considered **negligible**.

Scallop vessels – Isle of Man

11.8.6.13 The main element of construction activity that will affect this receptor is the installation of the Mona Array Area. As previously discussed for this receptor group, landing statistics indicate that Isle of Man scallop vessels almost exclusively operate out of ICES Rectangle 36E5, within which only a relatively small section in the west of the Mona Array Area is positioned. Fisheries monitoring has, to date, recorded 2 Manx vessels large enough to fish outside of the Manx 12nm. Based on this, and on the proposed measures adopted as part of the Mona Offshore Wind Project and the commitments to follow standard protocols, loss or damage to fishing gear due to snagging in the construction phase is assessed to have a predicted loss of <5% of this receptor's annual landings.

11.8.6.14 In light of the above, the impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility due to the temporary nature of the works. It is predicted that the impact will affect the receptor directly. The magnitude of impact is therefore considered **negligible**.

Other scallop vessels

11.8.6.15 The main element of construction activity that will affect this receptor is the installation of the Mona Array Area. While landing statistics indicate relative importance for scallop within the commercial fisheries study, remote monitoring has established that these vessels are highly nomadic, often pass through the Mona Array Area in transit to fish other areas of the Irish Sea, and target scallop across a relatively wide area offshore. Based on this, and on the proposed measures adopted as part of the Mona Offshore Wind Project and the commitments to follow standard protocols, loss or damage to fishing gear due to snagging in the construction phase is assessed to have a predicted loss of <5% of this receptor's annual landings.

11.8.6.16 The impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be **negligible**.

Sensitivity of receptor

11.8.6.17 For this impact, the sensitivity has been defined by the vulnerability of the receptor group associated with snagging risks.

Inshore static gear vessels

11.8.6.18 This receptor group is constituted generally of smaller vessels (<12m) that deploy static gear, and although these vessels have some ability to deploy alternative gear,

this is relatively limited, as is their spatial adaptability. The nature of static gear fishing, where gear is not towed and does not penetrate the seabed, means that the vulnerability of these receptor groups is low. It is acknowledged, however, that snagging still poses a risk to static gear vessels, for example when hauling gear. The sensitivity of the receptor is therefore, considered to be **low**.

Offshore static gear vessels

11.8.6.19 This receptor group, comprising generally larger offshore vessels (>12m), demonstrates high spatial adaptability and has the ability to fish a wider area than any areas that are subject to potential loss or damage to fishing gear due to snagging during construction works. The nature of static gear fishing, where gear is not towed and does not penetrate the seabed, means that the vulnerability of these receptor groups is low. It is acknowledged, however, that snagging still poses a risk to static gear vessels, for example when hauling gear. The sensitivity of the receptor is therefore, considered to be **low**.

Beam trawl vessels

11.8.6.20 This receptor group exhibits high spatial adaptability, due to extensive operational ranges and has the ability to fish numerous grounds within the wider Irish Sea and beyond; this receptor group therefore has the ability to fish a wider area than any areas that are subject to potential loss or damage to fishing gear due to snagging during construction works.

11.8.6.21 The nature of the gear deployed means that the vulnerability of this receptor group is medium, as the method of fishing by mobile gear vessels, means that vessels need to tow nets/trawls under significant power, and at defined speeds. The sensitivity of the receptor is therefore, considered to be **medium**.

Scallop vessels – Scottish west coast

11.8.6.22 Although vessels within this receptor group exhibit a relatively high operational range, they possess limited spatial tolerance due to their high dependence upon the commercial fisheries study area for queen scallop dredging, as previously discussed. The Scottish west coast scallop vessels also have a limited ability to deploy alternative gear.

11.8.6.23 During consultation, this receptor group clarified that penetration of gear varied between 0.05-0.25m. The nature of the gear deployed means that the vulnerability of this receptor group is high, and the method of fishing by scallop dredgers, means that vessels need to tow nets/trawls under significant power, and at defined speeds. The sensitivity of the receptor is considered to be **high**.

Scallop vessels – Isle of Man

11.8.6.24 This receptor group almost exclusively operates out of ICES Rectangle 36E5 and, therefore, exhibits moderate spatial adaptability. Project-specific consultation indicates that vessels within this receptor group are dedicated scallop vessels, with limited ability to deploy alternative gear.

11.8.6.25 During consultation, fisheries stakeholders provided information on penetration depths of gear and requested a minimum burial depth of 1.5m; penetration of gear depended on the gear type, with otter trawl gear and queen scallop dredge gear penetrating less than king scallop dredge gear. The nature of the gear deployed means that the vulnerability of this receptor group is medium, as the method of fishing by mobile gear vessels, means that vessels need to tow nets/trawls under significant power, and at defined speeds. The sensitivity of this receptor is considered to be **medium**.

Other scallop vessels

11.8.6.26 As discussed, this receptor group comprises nomadic scallop vessels that are often observed transiting through the Mona Array Area to other parts of the wider Irish Sea. The receptor group exhibits an extensive operational range and has the ability to fish a wider area than any areas that are subject to potential loss or damage to fishing gear due to snagging during construction works.

11.8.6.27 The nature of the gear deployed, means that the vulnerability of this receptor group is medium, as the method of fishing by mobile gear vessels, means that vessels need to tow nets/trawls under significant power, and at defined speeds. The sensitivity of this receptor is considered to be **medium.**

Significance of effect

11.8.6.28 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.27.

Table 11.27: Magnitude, sensitivity and impact significance relating to loss or damage to fishing gear due to snagging during construction of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	Negligible	Low	Negligible
Offshore static gear vessels	Negligible	Low	Negligible
Beam trawl vessels	Negligible	Medium	Negligible
Scottish west coast scallop vessels	Negligible	High	Minor
Isle of man scallop vessels	Negligible	Medium	Negligible
Other scallop vessels	Negligible	Medium	Negligible

Operations and maintenance phase

11.8.6.29 During the operations and maintenance phase of the Mona Offshore Wind Project, cables will be buried (where possible) to a minimum depth of 0.5m, however potential exists for inter-array cables, interconnector cables and export cables to become shallow-buried or exposed due to changes in seabed conditions.

11.8.6.30 Associated external cable protection could also present a snagging risk to fishing vessels:

11.8.6.31 Up to 10% of the inter-array cables (up to 50km) may require external cable protection; up to 20% of the interconnectors (up to 10km) and up to 20% of the export cables (up

to 72km) may also require external cable protection. There will be a maximum of 67 inter-array cable crossings, up to 10 interconnector crossings and up to 25 export cable crossings, all of which will likely require external cable protection. Scour protection could also extend up to 21m from each wind turbine structure to a height of 2.5m above seabed level.

Magnitude of impact

11.8.6.32 Measures outlined in section 11.7 will minimise the risks of snagging during operations and maintenance.

11.8.6.33 Cables will be buried, where possible, to a minimum of 0.5m to reduce the risk of snagging. If appropriate burial depth cannot be achieved, external cable protection may be required, the locations of which would be communicated to all commercial fisheries groups.

11.8.6.34 Cable protection shall be designed to minimise snagging hazards as far as possible, for example by minimising height above seabed, smooth and shallower profiles, grade used for rock placement, type of rock (e.g. smoother edges).

11.8.6.35 Project infrastructure, including the 'as-laid' coordinates of the offshore export cable, inter-array cables and interconnector cables, shall be recorded and submitted to the United Kingdom Hydrographic Office (UKHO) and Kingfisher for inclusion on charts. The commercial fishing industry will be fully informed of any potential snagging risks through Notices to Mariners, Kingfisher Bulletins and ongoing liaison by the CFLO and FIR. Use of advisory clearance distances and safety zones during major maintenance periods will minimise the risk of interaction between fishing vessels and project infrastructure, therefore reducing the risk of snagging. Where it is deemed necessary, snagging risks will be marked by a guard vessel or navigational marker.

11.8.6.36 Based on the proposed measures adopted as part of the Mona Offshore Wind Project, and the commitments to follow standard protocols, it is anticipated that the magnitude for loss or damage to fishing gear due to snagging will be similar to that of the construction phase, as summarised in Table 11.28.

Sensitivity of receptor

11.8.6.37 The sensitivity of the receptor groups remains the same as described for the construction phase of this impact, as summarised in Table 11.28.

Significance of effect

11.8.6.1 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.28.

Table 11.28: Magnitude, sensitivity and impact significance relating to loss or damage to fishing gear due to snagging during the operations and maintenance phase of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	Negligible	Low	Negligible
Offshore static gear vessels	Negligible	Low	Negligible
Beam trawl vessels	Negligible	Medium	Negligible
Scottish west coast scallop vessels	Negligible	High	Minor
Isle of man scallop vessels	Negligible	Medium	Negligible
Other scallop vessels	Negligible	Medium	Negligible

Decommissioning phase

Magnitude of impact

11.8.6.2 It is anticipated that the magnitude for loss or damage to fishing gear due to snagging will be the same, and likely less than for the construction phase, as summarised in Table 11.29.

Sensitivity of receptor

11.8.6.3 The sensitivity of all commercial fisheries receptors during decommissioning is deemed to be the same as for the construction phase, as summarised in Table 11.29.

Significance of effect

11.8.6.4 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.29.

Table 11.29: Magnitude, sensitivity and impact significance relating to loss or damage to fishing gear due to snagging during decommissioning of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	Negligible	Low	Negligible
Offshore static gear vessels	Negligible	Low	Negligible
Beam trawl vessels	Negligible	Medium	Negligible
Scottish west coast scallop vessels	Negligible	High	Minor
Isle of man scallop vessels	Negligible	Medium	Negligible
Other scallop vessels	Negligible	Medium	Negligible

11.8.7 Potential impacts on commercially important fish and shellfish resources

11.8.7.1 The following potential impacts on fish and shellfish ecology via the construction, operation and maintenance, and decommissioning phases of the Mona Offshore Wind Project have been identified:

- Temporary habitat loss/disturbance
- Underwater noise creating injury and/or disturbance

- Increased suspended sediment concentrations (SSCs) and associated sediment deposition
- Long-term habitat loss
- Electromagnetic Fields (EMFs) from subsea electrical cabling
- Colonisation of hard structures
- Disturbance/remobilisation of sediment-bound contaminants
- Injury due to increased risk of collision with vessels.

11.8.7.2 These potential impacts on fish and shellfish ecology are assessed within volume 2, chapter 8: Fish and Shellfish Ecology of the PEIR. The Mona fish and shellfish ecology study area covers the east Irish Sea, extending from MHWS west from the Mull of Galloway in Scotland to the western tip of Anglesey, following the territorial waters / 12nm limit of the Isle of Man.

11.8.7.3 As discussed in volume 6, annex 11.1: Commercial fisheries technical report of the PEIR and Table 11.8, the following species are of commercial importance within the commercial fisheries study area and are, therefore, the focus of this assessment:

- Queen scallop
- King scallop
- Herring[9]
- Lobster
- Sole
- Plaice
- Whelk.

11.8.7.4 Injury due to increased risk of collision with vessels has only been assessed for basking sharks and is therefore not considered within this chapter.

Construction phase

11.8.7.5 There is potential for the construction phase to have result in both adverse and/or beneficial effects on commercially important fish and shellfish populations. Adverse effects include behavioural changes or increases/declines in abundance, which could, therefore, potentially affect the commercial fisheries which target those species.

11.8.7.6 The fish and shellfish ecology assessment concluded that for all impacts during the construction phase of the Mona Offshore Wind Project, the effect will be of **minor adverse** significance for king and queen scallops, which is not significant in EIA terms. Therefore, no significant impact is predicted for the Scottish west coast, Isle of Man and other scallop vessels receptor groups.

11.8.7.7 The fish and shellfish ecology assessment concluded that for all impacts during the construction phase of the Mona Offshore Wind Project, the effect will be of **minor adverse** significance for European lobster and *Nephrops,* which is not significant in EIA terms. Therefore, no significant impact is predicted for the inshore and offshore static gear vessel receptor groups.

11.8.7.8 The fish and shellfish ecology assessment concluded that for all impacts during the construction phase of the Mona Offshore Wind Project, the effect will be of **minor adverse** significance for herring, which is not significant in EIA terms. Although a discrete commercial fishery was not identified via the baseline activity report, and thus, no specific commercial fisheries receptor group was assigned to this fishery, it can be concluded that no significant impact is predicted for any vessels that target herring within the commercial fisheries study area.

11.8.7.9 The fish and shellfish ecology assessment concluded that for all impacts during the construction phase of the Mona Offshore Wind Project, the effect will be of **minor adverse** significance for all other fish and shellfish ecology Important Ecological Features (IEFs), which is not significant in EIA terms. Therefore, no significant impact is predicted for the beam trawl vessels receptor groups, who predominantly target sole and plaice as well as other, demersal species.

Operations and maintenance phase

11.8.7.10 There is potential for the operations and maintenance phase to result in adverse and/or beneficial effects on commercially important fish and shellfish populations. Adverse effects include behavioural changes or increases/declines in abundance, which could, therefore, potentially affect the commercial fisheries which target those species.

11.8.7.11 Overall, the fish and shellfish ecology assessment concluded that the significance of effect for temporary habitat loss/disturbance, increased SSCs and associated sediment deposition, long-term habitat loss and colonisation of hard structures during the operations and maintenance phase remains the same as described in the construction phase above. Therefore, no significant impact for the Scottish west coast scallop vessels, Isle of Man scallop vessels, other scallop vessels, beam trawl vessels, inshore and offshore static gear receptor groups is predicted.

11.8.7.12 Overall, the fish and shellfish ecology assessment concluded that the significance of effect for disturbance/remobilisation of sediment-bound contaminants during the operations and maintenance phase remains mostly the same as described in the construction phase above for European lobster, *Nephrops*, herring, and all other fish and shellfish ecology IEFs. The following significance of effects are, therefore, concluded as **minor adverse**.

11.8.7.13 The fish and shellfish ecology assessment concluded that the significance of EMFs from subsea electrical cabling during the operations and maintenance phase is **minor adverse** for all species.

11.8.7.14 Therefore, no significant impacts are predicted for the inshore and offshore static gear vessel receptor groups, vessels targeting herring, or the beam trawl vessels receptor groups. For king and queen scallop, a negligible significance is concluded, which is

[9] Commercial fishing vessels targeting this species have not been observed to be active within the Mona Array Area or Mona Offshore Cable Corridor, therefore have not been included as a separate receptor group within this assessment.

not significant in EIA terms. Therefore, no significant impact is predicted for the Scottish west coast, Isle of Man and other scallop vessels receptor groups.

Decommissioning phase

11.8.7.15 The significance of effect for each commercially important species assessed within the fish and shellfish ecology assessment is expected to remain the same, if not less than, as described during the construction phase above for each impact. The potential impacts are, therefore, not expected to exceed **minor adverse** significance, which is not significant in EIA terms.

11.8.7.16 In light of the above, no significant impact is predicated for each of the six identified commercial fisheries receptor groups in Table 11.8 during the decommissioning phase.

11.8.8 Supply chain opportunities for local fishing vessels

11.8.8.1 The construction, operations and maintenance and decommissioning of the Mona Offshore Wind Project may lead to supply chain opportunities for local fishing vessels. The MDS is summarised in Table 11.13.

Construction phase

11.8.8.2 During the construction phase (up to four years duration) of the Mona Offshore Wind Project, the following are areas of potential support that could be provided by local commercial fishing operators:

- Guard vessels
- Scouting surveys
- Visual checks of infrastructure
- OFLO duties.

Magnitude of impact

11.8.8.3 Due to this impact being beneficial, the definition for magnitude has been amended to align with the terms for beneficial impacts that are outlined in Table 5.4 of volume 1, chapter 5: EIA methodology of the PEIR.

Inshore static gear vessels

11.8.8.4 Due to the relatively limited size and nature of the vessels that fall within this receptor group, it is unlikely that any notable opportunities would exist for providing supply chain support to the Mona Offshore Wind Project. This is due to the fact that many of the supply chain opportunities listed above, may require larger, better equipped vessels, with the ability to stay at sea for a longer period than these smaller vessels are able.

11.8.8.5 The exception to this is potentially undertaking scouting surveys in the inshore cable corridor, ahead of any future cable installation works, to identify the locations of static gear with a view to getting this temporarily removed ahead of any major cable installation works.

11.8.8.6 Even if this was impact was to arise, the benefit would be relatively limited in terms of a source of revenue for this receptor group.

11.8.8.7 The impact is predicted to be of local spatial extent, short to medium term duration and intermittent. It is predicted that the impact will affect the receptor directly, but only be of negligible benefit as it is judged that any such support by this receptor group would create a value equivalent to <5% of the receptor group's annual value of landings. The magnitude is therefore, considered to be **negligible**.

Offshore static gear vessels

11.8.8.8 The impact is predicted to be of local spatial extent, short to medium term duration and intermittent. It is predicted that the impact will affect the receptor directly, but only be of minor benefit, as it is judged that any such support by this receptor group would create a value equivalent to between 5-20% of the receptor group's annual value of landings. The magnitude is therefore, considered to be **low**.

Beam trawl vessels

11.8.8.9 The impact is predicted to be of local spatial extent, short to medium term duration and intermittent. It is predicted that the impact will affect the receptor directly, but only be of minor benefit, as it is judged that any such support by this receptor group would create a value equivalent to between 5-20% of the receptor group's annual value of landings. The magnitude is therefore, considered to be **low**.

Scallop vessels – Scottish west coast

11.8.8.10 The impact is predicted to be of local spatial extent, short to medium term duration and intermittent. It is predicted that the impact will affect the receptor directly, but only be of minor benefit, as it is judged that any such support by this receptor group would create a value equivalent to between 5-20% of the receptor group's annual value of landings. The magnitude is therefore, considered to be **low**.

Scallop vessels – Isle of Man

11.8.8.11 The impact is predicted to be of local spatial extent, short to medium term duration and intermittent. It is predicted that the impact will affect the receptor directly, but only be of minor benefit, as it is judged that any such support by this receptor group would create a value equivalent to between 5-20% of the receptor group's annual value of landings. The magnitude is therefore, considered to be **low**.

Other scallop vessels

11.8.8.12 The impact is predicted to be of local spatial extent, short to medium term duration and intermittent. It is predicted that the impact will affect the receptor directly, but only be of minor benefit, as it is judged that any such support by this receptor group would create a value equivalent to between 5-20% of the receptor group's annual value of landings. The magnitude is therefore, considered to be **low**.

Sensitivity of receptor

11.8.8.13 For this impact, the sensitivity has been defined by the likely potential that the receptor group has for providing support to the Mona Offshore Wind Project.

Inshore static gear vessels

11.8.8.14 The inshore static gear vessels are unlikely to be able to provide marine operational support during the construction phase, due to the size and type of vessel (i.e. they are unlikely to have the necessary certifications to allow them to provide non-commercial fishing support). The sensitivity for this receptor group is therefore, considered to be **negligible**.

Offshore static gear vessels

11.8.8.15 These vessels have moderate suitability to provide marine operational support during the construction phase. This is based on the vessels being larger, and therefore having larger operational ranges and capacity to provide support, in addition to the assumption that vessels have the relevant workboat certifications for the vessel and crew. Multiple vessels from this receptor group have provided support as scout vessels during initial offshore surveys. The sensitivity of the receptor is therefore, considered to be **medium**.

Beam trawl vessels

11.8.8.16 These vessels do not have the suitability to provide marine operational support during the construction phase. Although these vessels are larger, and therefore have larger operational ranges, they are not suitable for providing support work due to poor stability without their derricks in operational position. The sensitivity of the receptor is therefore, considered to be **negligible**.

Scallop vessels – Scottish west coast

11.8.8.17 These vessels have low suitability to provide marine operational support during the construction phase; these vessels may have to undergo modifications to enable safe use as support vessels. The sensitivity of the receptor is therefore, considered to be **low**.

Scallop vessels – Isle of Man

11.8.8.18 These vessels have moderate suitability to provide marine operational support during the construction phase. This is based on the vessel type and size which means they have the capacity to provide support; in addition to the assumption that vessels have the relevant workboat certifications for the vessel and crew. The sensitivity of the receptor is therefore, considered to be **medium**.

Other scallop vessels

11.8.8.19 These vessels have low suitability to provide marine operational support during the construction phase; these vessels may have to undergo modifications to enable safe use as support vessels. The sensitivity of the receptor is therefore, considered to be **low**.

Significance of effect

11.8.8.20 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.30.

Table 11.30: Magnitude, sensitivity and impact significance relating to supply chain opportunities for local fishing vessels during construction of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	Negligible	Negligible	Negligible
Offshore static gear vessels	Low	Medium	Minor
Beam trawl vessels	Low	Negligible	Negligible
Scottish west coast scallop vessels	Low	Low	Minor
Isle of man scallop vessels	Low	Medium	Minor
Other scallop vessels	Low	Low	Minor

Operations and maintenance phase

11.8.8.21 During the operations and maintenance phase (35 years), there may be opportunities for commercial fishing vessels to provide marine operational support, such as OFLO duties and guard vessel requirements during periods of major maintenance.

Magnitude of impact

11.8.8.22 Due to this impact being beneficial, the definition for magnitude has been amended to align with the terms for beneficial impacts, that are outlined in Table 5.4 of volume 1, chapter 5: EIA methodology.

11.8.8.23 The inshore static gear vessels are unlikely to be able to provide marine operational support, as described for the construction phase. The magnitude is therefore, considered to be **negligible**.

11.8.8.24 The magnitude for all other commercial fisheries receptor groups during the operations and maintenance phase is considered to be lower than during construction, as the supply chain opportunities are likely to be shorter term and more intermittent. It is predicted that the impact will affect the receptors directly, but only be of very minor benefit, as it is judged that any such support by these receptor groups would create a value equivalent to less than 5% of the receptor groups' annual value of landings. The magnitude is therefore, considered to be **negligible**.

Sensitivity of receptor

11.8.8.25 For this impact, the sensitivity has been defined by the likely potential the receptor group has to provide support to the Mona Offshore Wind Project.

11.8.8.26 The sensitivity of the receptor groups remains the same as described for the construction phase of this impact, as summarised in Table 11.31.

Significance of effect

11.8.8.27 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.31.

Table 11.31: Magnitude, sensitivity and impact significance relating to supply chain opportunities for local fishing vessels during the operations and maintenance phase of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Inshore static gear vessels	Negligible	Negligible	Negligible
Offshore static gear vessels	Negligible	Medium	Minor
Beam trawl vessels	Negligible	Negligible	Negligible
Scottish west coast scallop vessels	Negligible	Low	Negligible
Isle of man scallop vessels	Negligible	Medium	Minor
Other scallop vessels	Negligible	Low	Negligible

Decommissioning phase

11.8.8.28 In the absence of detailed methodologies for the decommissioning phase the supply chain opportunities for local fishing vessels are considered the same as for the construction phase, as summarised in Table 11.30.

11.8.9 Potential impacts on commercial fisheries as a result of increased risk of introduction and spread of INNS

11.8.9.1 As assessed in chapter 7: Benthic subtidal and intertidal ecology of the PEIR, no significant effects are likely to occur as a result of the risk of introduction and spread of INNS during the construction, operations and maintenance and decommissioning phases. This is due to the fact that only a small proportion of the Mona benthic subtidal and intertidal ecology study area that may be colonised. Furthermore, measures have been adopted to minimise the effects from introduction or spread of INNS. Therefore, as a result there will be no significant effects on commercial fisheries.

11.8.10 Future monitoring

11.8.10.1 Table 11.32 below outlines the proposed monitoring commitments for commercial fisheries.

Table 11.32: Monitoring commitments.

Environmental effect	Monitoring commitment	Means of implementation
Potential snagging risk.	Monitoring of the cables and their burial status to reduce snagging risk.	Proposed to be secured through a condition in the marine licence.
Effects of the operations and maintenance phase on fishing activity and subsequent value.	Annual reviews for the first five years of the operations and maintenance phase, to review VMS data and landings data to identify whether there are any changes to fishing activity within the Mona Array Area.	Commitment to undertake this to be included within the outline Fisheries Liaison and Co-existence Plan, which will be submitted as part of the DCO application.

11.9 Cumulative effect assessment methodology

11.9.1 Methodology

11.9.1.1 The CEA takes into account the impact associated with the Mona Offshore Wind Project together with other projects and plans. The projects and plans selected as relevant to the CEA presented within this chapter are based upon the results of a screening exercise (see volume 5, annex 5.3: CEA screening matrix of the PEIR). Each project has been considered on a case by case basis for screening in or out of this chapter's assessment based upon data confidence, effect-receptor pathways and the spatial/temporal scales involved.

11.9.1.2 The commercial fisheries CEA methodology has followed the methodology set out in volume 1, chapter 5: EIA methodology of the PEIR. As part of the assessment, all projects and plans considered alongside the Mona Offshore Wind Project have been allocated into 'tiers' reflecting their current stage within the planning and development process, these are listed below.

11.9.1.3 A tiered approach to the assessment has been adopted, as follows:

- Tier 1
  - Under construction
  - Permitted application
  - Submitted application
  - Those currently operational that were not operational when baseline data were collected, and/or those that are operational but have an ongoing impact
- Tier 2
  - Scoping report has been submitted and is in the public domain
- Tier 3
  - Scoping report has not been submitted and is not in the public domain
  - Identified in the relevant Development Plan
  - Identified in other plans and programmes.

11.9.1.4 This tiered approach is adopted to provide a clear assessment of the Mona Offshore Wind Project alongside other projects, plans and activities. The specific projects, plans and activities scoped into the CEA, are outlined in Table 11.33 and displayed in Figure 11.7.

11.9.1.5 The range of potential cumulative impacts is identified in Table 11.34 and is a subset of those considered for the Mona Offshore Wind Project alone. Where the potential significant effect for the Mona Offshore Wind Project alone is assessed as negligible or where an impact is predicted to be highly localised, these will not generally be considered within the CEA, as there is not considered to be a potential for cumulative effects with other plans, projects or activities.

11.9.1.6 Given the operational ranges of the fishing fleets active in the region, the scope of the CEA for commercial fisheries is larger than the commercial fisheries study area used to assess impacts in section 11.8; and is defined by ICES rectangles 35E5, 35E6, 35E7, 36E5, 36E6, 36E7, 37E5, 37E6 and 37E7 (Figure 11.1). This wider area will ensure that relevant fishing grounds are captured for the different fishing fleets. Projects outside of this wider area have not been screened in.

11.9.1.7 For the purposes of this assessment, projects and activities have not been included where they are considered to be included in the baseline, such as shipping routes, operational offshore wind farms, aggregate areas[10], operational cables and pipelines, anchorages and existing restrictions within Marine Protected Areas (MPAs), as commercial fisheries receptors would already be adapted to them and they do not have significant effects on commercial fisheries receptors.

[10] Aggregate areas have been considered with regard to fish and shellfish ecology, as described in volume 2, chapter 8: Fish and shellfish ecology of the PEIR.

Table 11.33: List of other projects, plans and activities considered within the CEA.

Project/Plan	Status	Distance from the Mona array area (km)	Distance from the Mona offshore/onshore cable corridor (km)	Description of project/plan	Dates of construction (if applicable)	Dates of operation (if applicable)	Overlap with the Mona Offshore Wind Project
Tier 1-							
Awel y Mor Offshore Wind Farm	Submitted but not yet determined	12.2	3.60	Proposed offshore wind farm.	2025 to 2029	2030	Yes
West Anglesey Demonstration Zone tidal site	Permitted but not yet implemented	53.7	50.6	Tidal energy project.	Unknown	2025	Yes
Tier 2-							
Morgan Offshore Wind Project	Pre-application	5.52	32.93	Proposed offshore wind farm. Maximum of 108 wind turbines. Area: 322.2km^2.	2026	2030	Yes
Morecambe Offshore Wind Project	Pre-application	8.9	21.5	Proposed offshore wind farm. Maximum of 40 wind turbines and indicative minimum spacing between wind turbines of 990m. Area: 125km^2.	2026	2028	Yes
Morgan Offshore Wind Project and Morecambe offshore wind farm transmission assets	Pre-application	8.92	21.53	Coordinated transmission assets for the Morgan Offshore Wind Project and the Morecambe offshore wind farm. Morgan Offshore Wind Project Transmission Assets and the Morecambe offshore wind farm.	2026	2030	Yes

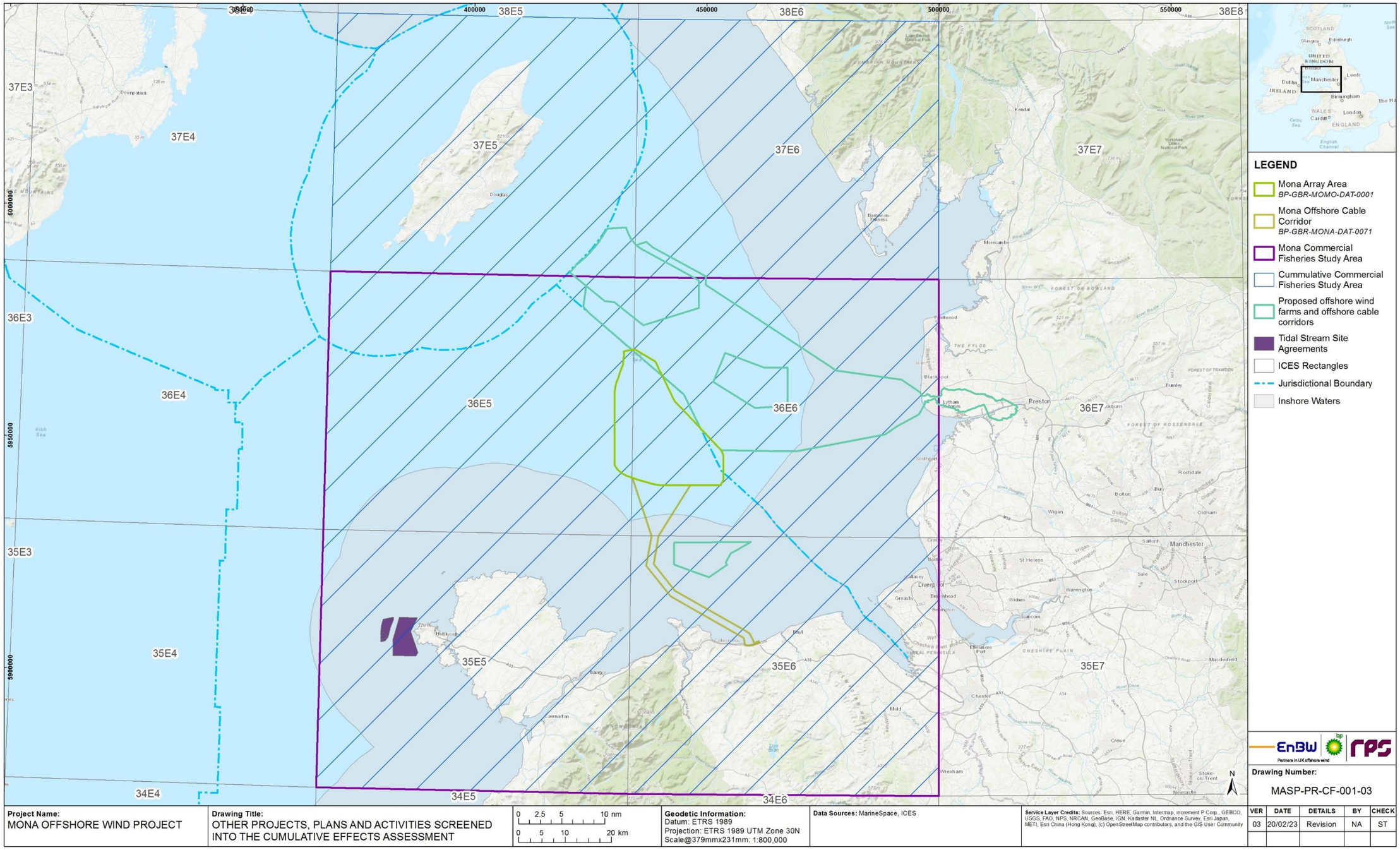


Figure 11.7: Other projects, plans and activities screened into the cumulative effects assessment[11].

[11] The Awel y Môr agreement for lease area extends further to the west than the application boundary presented, however Awel y Môr Offshore Wind Farm Ltd. have decided to develop in the area presented.

11.9.2 Maximum design scenario

11.9.2.1 The MDSs identified in Table 11.34 have been selected as those having the potential to result in the greatest effect on an identified receptor or receptor group. The cumulative effects presented and assessed in this section have been selected from the PDE provided in volume 1, chapter 5: Project description of the PEIR, as well as the information available on other projects and plans, in order to inform a 'MDS'. Effects of greater adverse significance are not predicted to arise should any other development scenario, based on details within the PDE (e.g. different wind turbine layout), to that assessed here, be taken forward in the final design scheme.

Table 11.34: MDS considered for the assessment of potential cumulative effects on commercial fisheries.

[a] C=construction, O=operation and maintenance, D=decommissioning

Potential cumulative effect	Phase[a]			Maximum Design Scenario	Justification
	C	O	D		
Loss or restricted access to fishing grounds Interference with fishing activity	✓	✓	✓	MDS as described for the Mona Offshore Wind Project (Table 11.13) assessed cumulatively with the following other projects/plans: **Tier 1** • One proposed offshore wind farm • Two tidal energy projects **Tier 2** • Two proposed offshore wind farms and combined export cable	Outcome of the CEA will be greatest when the greatest number of other schemes, which would result in a loss or restricted access to fishing ground, are considered within the cumulative commercial fisheries study area.
Loss or damage to fishing gear due to snagging	✓	✓	✓	MDS as described for the Mona Offshore Wind Project (Table 11.13) assessed cumulatively with the following other projects/plans: **Tier 1** • One proposed offshore wind farm • Two tidal energy projects **Tier 2** • Two proposed offshore wind farms and combined export cable.	Outcome of the CEA will be greatest when the greatest number of other schemes, which would result in loss or damage to fishing gear due to snagging, are considered within the cumulative commercial fisheries study area.
Potential impacts on commercially important fish and shellfish stocks	✓	✓	✓	As described in volume 2, chapter 8: Fish and shellfish ecology of the PEIR.	Outcome of the CEA will be greatest when the greatest number of other schemes, which would result in potential impacts on commercially important fish and shellfish stocks, are considered within the cumulative commercial fisheries study area.

11.10 Cumulative effects assessment

11.10.1.1 A description of the significance of cumulative effects upon commercial fisheries receptors, arising from each identified impact is given below.

11.10.1.2 The likelihood of any significant effects on commercial fisheries occurring would largely depend on the operational practices of each particular fleet, the location and extent of their grounds relative to other developments and the timings of the construction, operational and decommissioning phases. Effects and receptor groups are only discussed where there is the potential for a cumulative effect to arise.

11.10.2 Loss or restricted access to fishing grounds

11.10.2.1 For loss or restricted access to fishing grounds, the potential significant effect for the Mona Offshore Wind Project alone, across all phases, is assessed as negligible for all receptor groups other than the Scottish west coast scallop vessels. Therefore, only the Scottish west coast scallop vessels have been considered within the CEA for this impact, as there is not considered to be a potential for cumulative effects with other plans, projects or activities for the other receptor groups.

Tier 1

Construction phase

11.10.2.2 There is potential for cumulative loss or restricted access to fishing grounds for Scottish west coast scallopers, as a result of the Mona Offshore Wind Project construction phase which will overlap with the projects listed in Table 11.33.

Magnitude of impact

Scallop vessels – Scottish west coast

11.10.2.3 The Awel y Môr Offshore Wind Farm will spatially overlap with the south limits of the scallop fishery that is targeted by this receptor group. The construction phase of Awel y Môr is expected to have a medium magnitude of impact on these scallop vessels from the Scottish west coast. However, loss or restricted access as a result of the Awel y Môr and Mona Offshore Wind Projects construction phases together, will not result in a reduction of more than 20% of the annual value of landings, due to the temporary and intermittent nature of the works.

11.10.2.4 It is not anticipated that this receptor will lose access to fishing grounds as a result of the West Anglesey Demonstration Zone tidal energy projects.

11.10.2.5 The cumulative impact is predicted to be of regional spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be **low**.

Sensitivity of the receptor

Scallop vessels – Scottish west coast

11.10.2.6 This receptor group has limited spatial tolerance due to significant dependence upon the commercial fisheries study area for queen scallop dredging. The Scottish west coast scallop vessels also have a limited ability to deploy alternative gear.

11.10.2.7 Scottish west coast scallop vessels are deemed to be of high spatial adaptability, limited spatial tolerance and limited recoverability. The sensitivity of the receptor to cumulative impacts is considered to be **medium**.

Significance of effect

11.10.2.8 A summary of the impact magnitude, sensitivity of receptor and overall effect significance is provided in Table 11.35.

Table 11.35: Magnitude, sensitivity and impact significance relating to loss or restricted access to fishing grounds during construction of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Scottish west coast scallop vessels	Low	Medium	Minor

Operations and maintenance phase

11.10.2.9 There is potential for cumulative loss or restricted access to fishing grounds for Scottish west coast scallopers, as a result of the Mona Offshore Wind Project operations and maintenance phase which will temporally overlap with the projects listed in Table 11.33.

Magnitude of impact

Scallop vessels – Scottish west coast

11.10.2.10 Loss or restricted access is expected to be limited during the Awel y Môr Offshore Wind Project operation phase, due to limited spatial overlap of the main fishing grounds for this receptor group. This is not assessed to result in a cumulative effect that is greater than when the Mona Offshore Wind Project is assessed alone.

11.10.2.11 No other projects were identified as restricting access to scallop grounds within the cumulative commercial fisheries study area.

11.10.2.12 The cumulative impact is predicted to be of regional spatial extent, long term duration, continuous, and with low reversibility. It is predicted that the impact will affect the receptor directly. The magnitude of cumulative impact is, therefore, considered to be **medium**.

Sensitivity of the receptor

11.10.2.13 The sensitivity of for Scottish west coast scallops remains the same as described for the construction phase of this impact for Tier 1 and is summarised in Table 11.36.

Significance of effect

11.10.2.14 A summary of the impact magnitude, sensitivity of receptor and overall effect significance is provided in Table 11.36.

Table 11.36: Magnitude, sensitivity and impact significance relating to loss or restricted access to fishing grounds during the operations and maintenance phase of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Scottish west coast scallop vessels	Medium	Medium	Moderate

Further mitigation and residual effect

11.10.2.15 Further mitigation is outlined in section 11.8.2. A moderate adverse effect is predicted on the Scottish west coast scallop vessels receptor, which is significant in terms of the EIA Regulations. In order to mitigate this effect on the Scottish west coast scallop fleet, options to increase the minimum distance between wind turbines and options to align the turbines with orientations of fishing tows are being explored by the Applicant that could allow for continued scallop dredging activity within the Mona Array Area, thus increasing the potential for coexistence.

11.10.2.16 With these commitments to implement mitigation measures, which will be fully captured in the environmental statement submitted at Application, the impact magnitude is predicted to reduce to minor and the residual effect will be of **minor adverse** significance, which is not significant in EIA terms.

Tier 2

Construction phase

11.10.2.17 There is potential for cumulative loss or restricted access to fishing grounds for Scottish west coast scallop vessels, as a result of the Mona Offshore Wind Project construction phase which will overlap with the projects listed in Table 11.33.

Magnitude of impact

Scallop vessels – Scottish west coast

11.10.2.18 It is anticipated that this receptor group will lose access to fishing grounds during the construction phases of the Morecambe and Morgan Offshore Wind Projects. This receptor group is less active within the Morecambe Array Area, but very active within the northwest part of the Morgan Array Area. The MDS for this receptor group would be loss of access to key fishing grounds as a result of the construction areas of the Mona, Morecambe and Morgan offshore wind projects at one time; the total area from the three array areas alone is approximately 897km^2. However, it is likely that there will be rolling safety and/or safety zones during the construction phases of these wind farms, which will minimise loss of area to this receptor group.

11.10.2.19 Loss or restricted access as a result of the Morecambe, Morgan and Mona Offshore Wind Projects construction phases is not anticipated to result in a reduction of more than 20% of the annual value of landings, due to the temporary and intermittent nature of the works.

11.10.2.20 The cumulative impact is predicted to be of regional spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility due to the temporary nature of the works. It is predicted that the impact will affect the receptor directly, but be of low magnitude, as it is judged that it would affect an area from which a minor proportion of the receptor group's annual value of landings is caught. The magnitude of cumulative impact is therefore, considered to be **low**.

Sensitivity of the receptor

11.10.2.21 The sensitivity of Scottish west coast scallops remains the same as described for the construction phase of this impact for Tier 1 and is summarised in Table 11.37.

Significance of effect

11.10.2.22 A summary of the impact magnitude, sensitivity of receptors and overall effect significance is provided in Table 11.37.

Table 11.37: Magnitude, sensitivity and impact significance relating to loss or restricted access to fishing grounds during construction of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Scottish west coast scallop vessels	Low	Medium	Minor

Operations and maintenance phase

11.10.2.23 There is potential for cumulative loss or restricted access to fishing grounds for Scottish west coast scallops, as a result of the Mona Offshore Wind Project operations and maintenance phase, which will overlap with the projects listed in Table 11.33

Magnitude of impact

Scallop vessels – Scottish west coast

11.10.2.24 This receptor group has indicated that they may be able to continue fishing within the array areas of the Mona, Morecambe and Morgan Offshore Wind Projects, but fishing activity could be severely restricted. The total area from the three array areas alone is approximately 897km^2. This cumulative loss of area could affect an area from which a moderate proportion (20-50%) of this commercial fisheries receptor's annual value of landings is caught.

11.10.2.25 In light of the above, the cumulative impact is predicted to be of regional spatial extent, long term duration, continuous, and with low reversibility. It is predicted that the impact will affect the receptor directly and be of medium magnitude, as it is judged that it

would affect an area from which a moderate proportion of the receptor group's annual value of landings is caught. The magnitude of cumulative impact is therefore, considered to be **medium**.

Sensitivity of the receptor

11.10.2.26 The sensitivity of this receptor group remains the same as described for the construction phase of this impact for Tier 1 and is summarised in Table 11.38.

Significance of effect

11.10.2.27 A summary of the impact magnitude, sensitivity of receptor and overall effect significance is provided in Table 11.38.

Table 11.38: Magnitude, sensitivity and impact significance relating to loss or restricted access to fishing grounds during the operations and maintenance phase of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Scottish west coast scallop vessels	Medium	Medium	Moderate

Further mitigation and residual effect

11.10.2.28 The operational phases of the Morecambe and Morgan Offshore Wind Projects, combined with the operations and maintenance phase of the Mona Offshore Wind Project could cumulatively add to the loss of key fishing grounds for the Scottish west coast scallop vessels. It is predicted that this cumulative effect will be of **moderate** adverse significance.

11.10.2.29 In response to this significant cumulative effect, the Applicant commits to working closely with these other projects to reduce the significance of cumulative effect on these commercial fisheries receptors.

11.10.2.30 As discussed in section 11.8.2, a moderate adverse effect is predicted on the Scottish west coast scallop vessels receptor, which is significant in terms of the EIA Regulations. In order to mitigate this effect on the Scottish west coast scallop fleet, options to increase the minimum distance between wind turbines and options to align the turbines with orientations of fishing tows are being explored by the Applicant that could allow for continued scallop dredging activity within the Mona Array Area, thus potentially enabling co-existence.

11.10.2.31 With these commitments to implement mitigation measures, which will be fully captured in the environmental statement submitted at Application, the impact magnitude is predicted to reduce to minor and the residual effect will be of minor adverse significance, which is not significant in EIA terms.

11.10.3 Interference with fishing activity

11.10.3.1 For interference with fishing activity, the potential significant effect for the Mona Offshore Wind Project alone, across all phases, is assessed as negligible for all receptor groups other than the offshore static gear vessels. Therefore, only the offshore static gear vessels have been considered within the CEA for this impact, as there is not considered to be a potential for cumulative effects with other plans, projects or activities for the other receptor groups.

Tier 1

Construction phase

11.10.3.2 There is potential for cumulative interference between fishing activity and project vessels for offshore static gear vessels, as a result of the Mona Offshore Wind Project construction phase which will overlap with the projects listed in Table 11.33.

Magnitude of impact

Offshore static gear vessels

11.10.3.3 The location of construction works for the Awel y Môr offshore wind farm will overlap with the offshore static gear vessels fishing grounds, however they typically target grounds that cover a large part of the commercial fisheries study area so the likelihood of any cumulative interference with fishing activity is low. The Awel y Môr project is expected to have a low magnitude of cumulative impact on these vessels.

11.10.3.4 It is not anticipated that there will be any cumulative interference with fishing activity as a result of the West Anglesey Demonstration Zone tidal energy projects.

11.10.3.5 In light of the above, the cumulative impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility due to the temporary nature of any maintenance works. It is predicted that the impact will affect the receptor directly. The magnitude of cumulative impact is, therefore, considered to be **low**.

Sensitivity of the receptor

Offshore static gear vessels

11.10.3.6 This commercial fisheries receptor comprises larger offshore vessels (>12m) that deploy static gear across the east Irish Sea. These vessels will only be affected by construction vessels within the Mona Array Area and the Mona Offshore Cable Corridor. The marker buoys deployed by the offshore static gear vessels are vulnerable to potential interference by construction vessels, due to their poor visibility. The offshore static gear vessels are deemed to be of medium vulnerability. The sensitivity of the receptor is therefore, considered to be **medium**.

Significance of effect

11.10.3.7 A summary of the impact magnitude, sensitivity of receptor and overall effect significance is provided in Table 11.39.

Table 11.39: Magnitude, sensitivity and impact significance relating to interference with fishing activity during construction of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Offshore static gear vessels	Low	Medium	Minor

Operations and maintenance phase

11.10.3.8 There is potential for cumulative interference with fishing activity for offshore static gear vessels, as a result of the Mona Offshore Wind Project operations and maintenance phase which will overlap with the projects listed in Table 11.33.

Magnitude of impact

Offshore static gear vessels

11.10.3.9 It is presumed that this receptor group will continue to fish within the Mona Array Area and that of the Awel y Môr Offshore Wind Farm. Therefore, cumulative interference with fishing activity could be experienced by this receptor group as a result of operations and maintenance vessels.

11.10.3.10 It is not anticipated that interference to fishing activity will arise cumulatively as a result of the West Anglesey Demonstration Zone tidal energy projects.

11.10.3.11 In light of the above, the cumulative impact is predicted to be of local spatial extent, long term duration, intermittent, and with high reversibility due to the temporary nature of the works. It is predicted that the impact will affect the receptor directly. The magnitude of cumulative impact is therefore, considered to be **low**.

Sensitivity of the receptor

11.10.3.12 The sensitivity of the receptor group remains the same as described for the construction phase of this impact for Tier 1, as summarised in Table 11.40.

Significance of effect

11.10.3.13 A summary of the impact magnitude, sensitivity of receptor and overall effect significance is provided in Table 11.40.

Table 11.40: Magnitude, sensitivity and impact significance relating to interference with fishing activity during the operations and maintenance phase of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Offshore static gear vessels	Low	Medium	Minor

Tier 2

Construction phase

11.10.3.14 There is potential for cumulative interference with fishing activity for offshore static gear vessels, as a result of the Mona Offshore Wind Project construction phase which will overlap with the projects listed in Table 11.33.

Magnitude of impact

Offshore static gear vessels

11.10.3.15 It is anticipated that this receptor group will experience cumulative interference with fishing activity during the construction phases of the Morecambe and Morgan Offshore Wind Projects. As previously discussed, the MDS for this receptor group would be interference with fishing activity over a combined area from the Mona, Morecambe and Morgan Offshore Wind Projects at one time; total area from the three array areas alone is approximately 897km^2, which equates to approximately 17% of the cumulative commercial fisheries study area beyond 12nm. However, there will be rolling safety zones during the construction phases of the wind farms, which will minimise interference with fishing activity with this receptor group. There is potential for an increase in interference with fishing activity, however this receptor group has a high spatial adaptability and ability to fish numerous grounds.

11.10.3.16 In light of the above, the cumulative impact is predicted to be of local spatial extent, short to medium term duration (i.e. less than five years), intermittent, and with high reversibility due the temporary nature of the works. It is predicted that the impact will affect the receptor directly. The magnitude is therefore, considered to be **low**.

Sensitivity of the receptor

11.10.3.17 The sensitivity of the receptor group remains the same as described for the construction phase of this impact for Tier 1 and summarised in in Table 11.41.

Significance of effect

11.10.3.18 A summary of the impact magnitude, sensitivity of receptor and overall effect significance is provided in Table 11.41.

Table 11.41: Magnitude, sensitivity and impact significance relating to interference with fishing activity during construction of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Offshore static gear vessels	Low	Medium	Minor

Operations and maintenance phase

11.10.3.19 There is potential for cumulative interference with fishing activity for offshore static gear vessels, as a result of the Mona Offshore Wind Project operations and maintenance phase, which will overlap with the projects listed in Table 11.33.

Magnitude of impact

Offshore static gear vessels

11.10.3.20 It is presumed that this receptor group will continue to fish within the Mona Array Area and that of the Morecambe and Morgan Offshore Wind Projects. Although operations and maintenance vessel traffic will add to the existing level of shipping activity in the area, there are already moderate levels of vessel traffic in the area, and there is co-

existence of fishing vessels with other marine traffic. Interference with fishing as a result of the Morecambe, Morgan and Mona Offshore Wind Projects construction phases is not anticipated to result in a reduction of more than 20% of the annual value of landings, due to the temporary and intermittent nature of the works.

11.10.3.21 The cumulative impact is predicted to be of local to regional spatial extent, long term duration, intermittent, and with high reversibility due the temporary nature of the works. It is predicted that the impact will affect the receptor directly. The magnitude of cumulative impact is, therefore, considered to be **low**.

Sensitivity of the receptor

11.10.3.22 The sensitivity of the receptor groups remain the same as described for the construction phase of this impact for Tier 1 and is summarised in Table 11.42.

Significance of effect

11.10.3.23 A summary of the impact magnitude, sensitivity of receptor and overall effect significance is provided Table 11.42.

Table 11.42: Magnitude, sensitivity and impact significance relating to interference with fishing activity during the operations and maintenance phase of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Offshore static gear vessels	Low	Medium	Minor

11.10.4 Loss or damage of fishing gear due to snagging

11.10.4.1 For loss or damage of fishing gear due to snagging, the potential significant effect for the Mona Offshore Wind Project alone, across all phases, is assessed as negligible for all receptor groups other than the Scottish west coast scallop vessels. Therefore, only the Scottish west coast scallop vessels have been considered within the CEA for this impact, as there is not considered to be a potential for cumulative effects with other plans, projects or activities for the other receptor groups.

Tier 1

Construction phase

11.10.4.2 There is potential for cumulative loss or damage of fishing gear due to snagging for Scottish west coast scallop vessels, as a result of the Mona Offshore Wind Project construction phase which will overlap with the projects listed in Table 11.33.

Magnitude of impact

11.10.4.3 Given the proposed measures adopted as part of the Mona Offshore Wind Project and the commitments to follow standard protocols, in addition to the safety aspects that would be applied by all other projects, the cumulative impacts would remain as assessed for the Mona Offshore Wind Project alone. The magnitude of cumulative impact is, therefore, as summarised in Table 11.43.

Sensitivity of the receptor

11.10.4.4 The sensitivity for Scottish west coast scallop vessels remains the same as described for the construction phase of this impact in section 11.8.6 and as summarised in Table 11.43.

Significance of effect

11.10.4.5 A summary of the impact magnitude, sensitivity of receptor and overall effect significance is provided in Table 11.43.

Table 11.43: Magnitude, sensitivity and impact significance relating to loss or damage of fishing gear due to snagging during construction of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Scottish west coast scallop vessels	Negligible	High	Minor

Operations and maintenance phase

11.10.4.6 There is potential for cumulative loss or damage of fishing gear due to snagging for Scottish west coast scallop vessels, as a result of the Mona Offshore Wind Project operation and maintenance phase which will overlap with the projects listed in Table 11.33.

Magnitude of impact

11.10.4.7 Given the proposed measures adopted as part of the Mona Offshore Wind Project and the commitments to follow standard protocols, in addition to the safety aspects that would be applied by all other projects, the cumulative impacts would remain as assessed for the Mona Offshore Wind Project alone. The magnitude of cumulative impact is, therefore, as summarised in Table 11.44.

Sensitivity of receptor

11.10.4.8 The sensitivity for Scottish west coast scallop vessels remains the same as described for the construction phase of this cumulative impact, as summarised in Table 11.44.

Significance of effect

11.10.4.9 A summary of the impact magnitude, sensitivity of receptor and overall effect significance is provided in Table 11.44.

Table 11.44: Magnitude, sensitivity and impact significance relating to loss or damage of fishing gear due to snagging during the operations and maintenance phase of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Scottish west coast scallop vessels	Negligible	High	Minor

Tier 2

Construction phase

11.10.4.10 There is potential for cumulative loss or damage of fishing gear due to snagging for Scottish west coast scallop vessels, as a result of the Mona Offshore Wind Project construction phase which will overlap with the projects listed in Table 11.33.

Magnitude of impact

11.10.4.11 Given the proposed measures adopted as part of the Mona Offshore Wind Project and the commitments to follow standard protocols, in addition to the safety aspects that would be applied by all other projects, the cumulative impacts would remain as assessed for the Mona Offshore Wind Project alone. The magnitude of cumulative impact is, therefore, as summarised in Table 11.45.

Sensitivity of receptor

11.10.4.12 The sensitivity for Scottish west coast scallop vessels remains the same as described for the construction phase of this cumulative impact, as summarised in Table 11.45.

Significance of effect

11.10.4.13 A summary of the impact magnitude, sensitivity of receptor and overall effect significance is provided in Table 11.45.

Table 11.45: Magnitude, sensitivity and impact significance relating to loss or damage of fishing gear due to snagging during construction of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Scottish west coast scallop vessels	Negligible	High	Minor

Operations and maintenance phase

11.10.4.14 There is potential for cumulative loss or damage of fishing gear due to snagging for Scottish west coast scallop vessels, as a result of the Mona Offshore Wind Project operations and maintenance phase, which will overlap with the projects listed in Table 11.33.

Magnitude of impact

11.10.4.15 Given the proposed measures adopted as part of the Mona Offshore Wind Project and the commitments to follow standard protocols, in addition to the safety aspects that would be applied by all other projects, the cumulative impacts would remain as assessed for the Mona Offshore Wind Project alone. The magnitude of cumulative impact is, therefore, as summarised in in Table 11.46.

Sensitivity of receptor

11.10.4.16 The sensitivity Scottish west coast scallop vessels remains the same as described for the construction phase of this cumulative impact, as summarised in Table 11.46.

Significance of effect

11.10.4.17 A summary of the impact magnitude, sensitivity of receptor and overall effect significance is provided in Table 11.46.

Table 11.46: Magnitude, sensitivity and impact significance relating to loss or damage of fishing gear due to snagging during the operations and maintenance phase of the Mona Offshore Wind Project.

Receptor Group	Magnitude	Sensitivity	Significance
Scottish west coast scallop vessels	Negligible	High	Minor

11.10.5 Potential impacts on commercially important fish and shellfish resources

11.10.5.1 The following potential cumulative impacts on fish and shellfish ecology via the construction, operation and maintenance, and decommissioning phases of the Mona Offshore Wind Project have been identified which are relevant to commercial fish species:

- Temporary habitat loss/disturbance
- Underwater noise creating injury and/or disturbance
- Increased suspended sediment concentrations (SSCs) and associated sediment deposition
- Long-term habitat loss
- Colonisation of hard structures
- EMFs from subsea electrical cabling
- Disturbance/remobilisation of sediment-bound contaminants.

11.10.5.2 These potential cumulative impacts on fish and shellfish ecology are assessed within volume 2, chapter 8: Fish and Shellfish Ecology of the PEIR.

11.10.5.3 The fish and shellfish ecology cumulative assessment concluded that for all impacts during the construction, operation and maintenance, and decommissioning phases of the Mona Offshore Wind Project, the effect will be of no greater than **minor adverse** significance for commercial fish species, which is not significant in EIA terms. Therefore, no significant impact is predicted for commercial fisheries receptor groups.

11.10.6 Future monitoring

11.10.6.1 Table 11.47 below outlines the proposed monitoring commitments for commercial fisheries.

Table 11.47: Monitoring commitments.

Environmental effect	Monitoring commitment	Means of implementation
Effects of the operations and maintenance phase on fishing activity and subsequent value.	Annual reviews for the first five years of the operations and maintenance phase, to review VMS data and landings data to identify whether there are any changes to fishing activity within the cumulative commercial fisheries study area.	Commitment to undertake this to be included within the outline Fisheries Liaison and Co-existence Plan, which will be submitted as part of the DCO application.

11.11 Transboundary effects

11.11.1.1 A screening of transboundary impacts has been carried out and any potential for significant transboundary effects with regard to commercial fisheries from the Mona Offshore Wind Project upon the interests of other states has been assessed as part of this PEIR. The potential transboundary impacts assessed within volume 5, annex 5.4: Transboundary screening of the PEIR, are summarised below. Potential impacts on both UK and foreign commercial fishing fleets have been considered as part of this impact assessment (section 11.8); it was predicted that there will be no significant effects on Irish and Belgian vessels which operate within the commercial fisheries study area. Transboundary impacts outside UK waters are as follows:

- Potential effects on commercially important fish and shellfish resources will be restricted to the Mona Array Area and immediate surrounding areas, with the exception of underwater noise and the impacts of increased suspended sediment concentrations and associated sediment deposition. Effects of underwater noise on fish and shellfish receptors, and therefore commercial fisheries receptors, are not predicted to extend beyond UK and Isle of Man waters. The identified tidal excursion of 20km means that any increased SSC is likely to settle out before crossing any international boundaries, suggesting this impact is unlikely to have any significant transboundary effect on fish and shellfish stocks and therefore commercial fisheries receptors. Therefore, the potential transboundary impact of effects on commercially important fish and shellfish stocks is concluded to be not significant in EIA terms.
- Displacement of fishing vessels could occur into non-UK waters, such as the Isle of Man waters. However, it is not anticipated that there would be a significant displacement of fishing vessels into these EEZs, based on the established fishing grounds of the receptor groups within this assessment. For example, scallop vessels may be displaced into Isle of Man waters from the Mona Array Area, but due to the extensive king scallop grounds within the Irish Sea and the current management measures in place for this fishery in the Isle of Man, this impact is concluded as not significant. Queen scallop grounds are more discrete, however there are strict management measures in place which also control this fishery in Isle of Man waters, which would limit the displacement of scallop vessels targeting queen scallops into Isle of Man waters. Therefore, the potential transboundary impact of effects on displacement of fishing vessels is concluded to be not significant in EIA terms.

11.12 Inter-related effects

11.12.1.1 Inter-relationships are considered to be the impacts and associated effects of different aspects of the proposal on the same receptor. These are considered to be:

- Project lifetime effects: Assessment of the scope for effects that occur throughout more than one phase of the Mona Offshore Wind Project (construction, operations and maintenance, and decommissioning), to interact to potentially create a more significant effect on a receptor, than if just assessed in isolation in these three phases (e.g. subsea noise effects from piling, operational wind turbines, vessels and decommissioning)
- Receptor led effects: Assessment of the scope for all effects to interact, spatially and temporally, to create inter-related effects on a receptor. As an example, all effects on commercial fisheries, such as direct habitat loss or disturbance, sediment plumes, scour, jack-up vessel use etc., may interact to produce a different, or greater effects on this receptor than when the effects are considered in isolation. Receptor-led effects may be short term, temporary or transient effects, or incorporate longer term effects.

11.12.1.2 A description of the likely interactive effects arising from the Mona Offshore Wind Project on commercial fisheries is provided in volume 2, chapter 15: Inter-related effects of the PEIR.

Project lifetime effects

11.12.1.3 It is not anticipated that effects on commercial fishing vessels across all phases of the Mona Offshore Wind Project will interact in such a way to result in combined effects of greater significance than the assessment of each individual phase.

Receptor-led effects

11.12.1.4 Spatial and temporal interactions between different impacts have the potential to exist:

- There is potential for an inter-related effect from the combination of supply chain benefits for local fishing vessels and reduction in loss or restricted access to fishing grounds; this is because fishing vessels are likely to be providing marine operational support during periods of construction or major maintenance works which would have resulted in a loss or restricted access to fishing grounds if the vessel had not been providing support to the Mona Offshore Wind Project. This means that the benefit to the local fishing vessels as a result of the supply chain opportunities is acting more as an alleviation of potential losses than an additional benefit. It is therefore predicted that any potential inter-related effect will reduce the beneficial significance of supply chain opportunities, which would result in a negligible beneficial significance.
- There is potential for an inter-related effect from the combination of the loss or restricted access to fishing grounds and the consequent displacement of fishing activity into other areas. This could result in increased gear conflict and pressure on other fishing grounds. During construction, static gear vessels may be required to relocate pots from areas of activity, which could increase intensity of activity in other areas or cause conflict with mobile gear species (e.g. scallop vessels). However, with successful implementation of the measures outlined in

section 11.7 and 11.8, and the temporary nature of the works, it is not predicted that there will be any inter-related effect of greater significance than those already assessed in isolation. During the operations and maintenance phase of the Mona Offshore Wind Project, there will be no complete exclusions to mobile or static vessels, however some mobile gear vessels may not fish within the Mona Array Area due to risks associated with the minimum spacing of wind turbines; this could result in conflict with static gear vessels or other mobile gear vessels and increase pressure on other fishing grounds. With consideration of the measures outlined in section 11.7 and 11.8, it is anticipated that the appropriately mitigated loss of access will reduce displacement and, therefore, any inter-related effect will not be of greater significance than those assessed in isolation (negligible to moderate adverse significance).

- Impacts on commercially important fish and shellfish species from direct habitat loss or disturbance, sediment plumes etc are assessed in volume 2, Chapter 8: Fish and shellfish ecology of the PEIR.
- Increased collision and allision risk to commercial fishing vessels has been considered in volume 2, chapter 12: Shipping and navigation of the PEIR.

11.13 Summary of impacts, mitigation measures and monitoring

11.13.1.1 Information on commercial fisheries within the commercial fisheries study area was collected through a review of official datasets; additional information and knowledge obtained through consultation with fisheries groups; and site-specific surveys.

- Table 11.48 presents a summary of the potential impacts, measures adopted as part of the Mona Offshore Wind Project and residual effects in respect to commercial fisheries. The impacts assessed include, loss or restricted access to fishing grounds, displacement of fishing activity, interference with fishing activity, temporary increase in steaming distances, loss of damage to fishing gear due to snagging, potential impacts on commercially important fish stocks, and supply chain opportunities for local fishing vessels. Overall, it is concluded that there will be no significant effects arising from the Mona Offshore Wind Project during the construction, operations and maintenance or decommissioning phases in relation to commercial fisheries following the implementation of embedded and further mitigation measures.
- Table 11.49 presents a summary of the potential cumulative impacts, mitigation measures and residual effects. The cumulative impacts assessed include, loss or restricted access to fishing grounds, interference with fishing activity, loss of damage to fishing gear due to snagging, and potential impacts on commercially important fish stocks. Overall it is concluded that there will be no significant cumulative effects on commercial fisheries from the Mona Offshore Wind Project alongside other projects/plans following the implementation of embedded and further mitigation measures.
- The following potential transboundary impacts have been identified in regard to effects of the Mona Offshore Wind Project:
  - Potential effects on commercially important fish and shellfish resources
  - Displacement of fishing vessels.

Table 11.48: Summary of potential environmental effects, mitigation and monitoring.

[a] C=construction, O=operation and maintenance, D=decommissioning

Description of impact	Phase[a]			Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							
Loss or restricted access to fishing grounds	✓	✓	✓	Ongoing liaison with the fishing industry through the CFLO and FIR and adherence to good practice guidance with regards to fisheries liaison. Development of a Fisheries Co-existence and Liaison Plan, which will be submitted as part of the DCO application. Advance warning to fishing fleets of construction, maintenance and decommissioning activities. Use of advisory clearance distances and safety zones during construction and periods of major maintenance. Time delay between sequential cable installation operations (e.g. cable-lay and post-lay burial, shall be minimised as reasonably practicable). Optimal foundation/wind turbine spacing and cable alignment to allow space for commercial fishing activities where possible (whilst also considering other key aspects, such as ground conditions, wind yield and environmental constraints).	Inshore static gear vessels C: Negligible O: Negligible D: Negligible Offshore static gear vessels C: Low O: Negligible D: Negligible Beam trawl vessels C: Negligible O: Negligible D: Negligible Scallop vessels – Scottish west coast C: Low O: Medium D: Low Scallop vessels – Isle of Man C: Low O: Negligible D: Low Other scallop vessels C: Negligible O: Low D: Negligible	Inshore static gear vessels C: Medium O: Medium D: Medium Offshore static gear vessels C: Low O: Low D: Low Beam trawl vessels C: Negligible O: Negligible D: Negligible Scallop vessels – Scottish west coast C: Medium O: Medium D: Medium Scallop vessels – Isle of Man C: Low O: Low D: Low Other scallop vessels C: Negligible O: Negligible D: Negligible	Inshore static gear vessels C: Negligible O: Negligible D: Negligible Offshore static gear vessels C: Negligible O: Negligible D: Negligible Beam trawl vessels C: Negligible O: Negligible D: Negligible Scallop vessels – Scottish west coast C: Minor O: Moderate D: Minor Scallop vessels – Isle of Man C: Negligible O: Negligible D: Negligible Other scallop vessels C: Negligible O: Negligible D: Negligible	O: Options to increase the minimum distance between wind turbines and options to align the turbines with orientations of fishing tows are being explored by the Applicant.	Not assessed for PEIR as further mitigation is to be considered and included as part of the DCO application (see section 11.14).	O: Annual review for the first five years of the operations and maintenance phase, to review VMS and landings data to identify whether there are any changes to fishing activity within the Mona Array Area.
Displacement of fishing activity into other areas	✓	✓	✓	Advance warning to fishing fleets of construction, maintenance and decommissioning activities. Use of advisory clearance distances and safety zones during construction and periods of major maintenance. Time delay between sequential cable installation operations (e.g. cable-lay and post-lay burial, shall be minimised to a short as reasonably practicable). Optimal foundation/wind turbine spacing and cable alignment to allow space for commercial fishing activities where possible (whilst also considering other key aspects, such as ground conditions, wind yield and environmental constraints).	Inshore static gear vessels C: Negligible O: Negligible D: Negligible Offshore static gear vessels C: Negligible O: Negligible D: Negligible	Inshore static gear vessels C: Medium O: Medium D: Medium Offshore static gear vessels C: Low O: Low D: Low	Inshore static gear vessels C: Negligible O: Negligible D: Negligible Offshore static gear vessels C: Negligible O: Negligible D: Negligible Beam trawl vessels	None	None	None.

Description of impact	Phase[a] C	O	D	Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
					Beam trawl vessels C: Negligible O: Negligible D: Negligible Scallop vessels – Scottish west coast C: Negligible O: Negligible D: Negligible Scallop vessels – Isle of Man C: Negligible O: Negligible D: Negligible Other scallop vessels C: Negligible O: Negligible D: Negligible	Beam trawl vessels C: Negligible O: Negligible D: Negligible Scallop vessels – Scottish west coast C: Medium O: Medium D: Medium Scallop vessels – Isle of Man C: Low O: Low D: Low Other scallop vessels C: Negligible O: Negligible D: Negligible	C: Negligible O: Negligible D: Negligible Scallop vessels – Scottish west coast C: Negligible O: Negligible D: Negligible Scallop vessels – Isle of Man C: Negligible O: Negligible D: Negligible Other scallop vessels C: Negligible O: Negligible D: Negligible			

Description of impact	Phase[a]			Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							
Interference with fishing activity	✓	✓	✓	Ongoing liaison with the fishing industry through the CFLO and FIR and adherence to good practice guidance with regards to fisheries liaison. Development of a Fisheries Co-existence and Liaison Plan, which will be submitted as part of the DCO application. Advance warning to fishing fleets of construction, maintenance and decommissioning activities. Timely and efficient distribution of NtMs. Use of advisory clearance distances and safety zones during construction and periods of major maintenance. Use of guard vessels where required by risk assessment. Adequate navigational markers (including lighting), in accordance with the most recent relevant industry guidance. NRA.	Inshore static gear vessels C: Negligible O: Negligible D: Negligible Offshore static gear vessels C: Low O: Low D: Low Beam trawl vessels C: Low O: Low D: Low Scallop vessels – Scottish west coast C: Low O: Low D: Low Scallop vessels – Isle of Man C: Low O: Low D: Low Other scallop vessels C: Low O: Low D: Low	Inshore static gear vessels C: Medium O: Medium D: Medium Offshore static gear vessels C: Medium O: Medium D: Medium Beam trawl vessels C: Negligible O: Negligible D: Negligible Scallop vessels – Scottish west coast C: Negligible O: Negligible D: Negligible Scallop vessels – Isle of Man C: Negligible O: Negligible D: Negligible Other scallop vessels C: Negligible O: Negligible D: Negligible	Inshore static gear vessels C: Negligible O: Negligible D: Negligible Offshore static gear vessels C: Minor O: Minor D: Minor Beam trawl vessels C: Negligible O: Negligible D: Negligible Scallop vessels – Scottish west coast C: Negligible O: Negligible D: Negligible Scallop vessels – Isle of Man C: Negligible O: Negligible D: Negligible Other scallop vessels C: Negligible O: Negligible D: Negligible	None	None	None

Description of impact	Phase[a] C	O	D	Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
Temporary increase in steaming distances	✓	×	✓	Ongoing liaison with the fishing industry through the CFLO and FIR and adherence to good practice guidance with regards to fisheries liaison. Development of a Fisheries Co-existence and Liaison Plan, which will be submitted as part of the DCO application. Advance warning to fishing fleets of construction, maintenance and decommissioning activities. Timely and efficient distribution of NtMs. Use of rolling construction zones.	Inshore static gear vessels C: No change D: No change Offshore static gear vessels C: Negligible D: Negligible Beam trawl vessels C: Negligible D: Negligible Scallop vessels – Scottish west coast C: Negligible D: Negligible Scallop vessels – Isle of Man C: Negligible D: Negligible Other scallop vessels C: Negligible D: Negligible	Inshore static gear vessels C: No change D: No change Offshore static gear vessels C: Low D: Low Beam trawl vessels C: Low D: Low Scallop vessels – Scottish west coast C: Low D: Low Scallop vessels – Isle of Man C: Low D: Low Other scallop vessels C: Low D: Low	Inshore static gear vessels C: No change D: No change Offshore static gear vessels C: Negligible D: Negligible Beam trawl vessels C: Negligible D: Negligible Scallop vessels – Scottish west coast C: Negligible D: Negligible Scallop vessels – Isle of Man C: Negligible D: Negligible Other scallop vessels C: Negligible D: Negligible	None	None	None
Loss or damage to fishing gear due to snagging	✓	✓	✓	Ongoing liaison with the fishing industry through the CFLO and FIR and adherence to good practice guidance with regards to fisheries liaison. Development of a Fisheries Co-existence and Liaison Plan, which will be submitted as part of the DCO application. Advance warning to fishing fleets of construction, maintenance and decommissioning activities. Timely and efficient distribution NtMs. Use of advisory clearance distances and safety zones during construction and periods of major maintenance. Development of a cable burial plan, to outline cable burial depth, cable protection and monitoring of cables. 'As-laid' co-ordinates of the cable route shall be recorded and submitted to the UKHO and KIS-ORCA Service; 'as-laid' cables shall be marked on Admiralty Charts and fisherman's awareness charts (paper and electronic format). Cable protection shall be designed to minimise snagging hazards as far as possible, for example by minimising height above seabed, smooth and shallower profiles, grade used for rock placement, type of rock (e.g. smoother edges). Development of a dropped objects plan. Development of a decommissioning plan.	Inshore static gear vessels C: Negligible O: Negligible D: Negligible Offshore static gear vessels C: Negligible O: Negligible D: Negligible Beam trawl vessels C: Negligible O: Negligible D: Negligible Scallop vessels – Scottish west coast C: Negligible O: Negligible	Inshore static gear vessels C: Low O: Low D: Low Offshore static gear vessels C: Low O: Low D: Low Beam trawl vessels C: Medium O: Medium D: Medium Scallop vessels – Scottish west coast C: High O: High	Inshore static gear vessels C: Negligible O: Negligible D: Negligible Offshore static gear vessels C: Negligible O: Negligible D: Negligible Beam trawl vessels C: Minor O: Minor D: Minor Scallop vessels – Scottish west coast C: Minor O: Minor D: Minor	None	None	Monitoring of the cables and their burial status to reduce snagging risk.

Description of impact	Phase[a]			Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D		D: Negligible Scallop vessels – Isle of Man C: Negligible O: Negligible D: Negligible Other scallop vessels C: Negligible O: Negligible D: Negligible	D: High Scallop vessels – Isle of Man C: Medium O: Medium D: Medium Other scallop vessels C: Medium O: Medium D: Medium	Scallop vessels – Isle of Man C: Negligible O: Negligible D: Negligible Other scallop vessels C: Negligible O: Negligible D: Negligible			
Potential impacts on commercially important fish and shellfish resources	✓	✓	✓	See volume 2, chapter 8: Fish and shellfish ecology of the PEIR.	Negligible - Low	Low - Medium	Negligible - Minor	None	Negligible - Minor	None proposed

Description of impact	Phase[a]			Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							
Supply chain opportunities for local fishing vessels	✓	✓	✓	None	Inshore static gear vessels C: Negligible O: Negligible D: Negligible Offshore static gear vessels C: Low O: Negligible D: Low Beam trawl vessels C: Low O: Negligible D: Low Scallop vessels – Scottish west coast C: Low O: Negligible D: Low Scallop vessels – Isle of Man C: Low O: Negligible D: Low Other scallop vessels C: Low O: Negligible D: Low	Inshore static gear vessels C: Negligible O: Negligible D: Negligible Offshore static gear vessels C: Medium O: Medium D: Medium Beam trawl vessels C: Negligible O: Negligible D: Negligible Scallop vessels – Scottish west coast C: Low O: Low D: Low Scallop vessels – Isle of Man C: Medium O: Medium D: Medium Other scallop vessels C: Low O: Low D: Low	Inshore static gear vessels C: Negligible O: Negligible D: Negligible Offshore static gear vessels C: Minor O: Minor D: Minor Beam trawl vessels C: Negligible O: Negligible D: Negligible Scallop vessels – Scottish west coast C: Minor O: Negligible D: Minor Scallop vessels – Isle of Man C: Minor O: Minor D: Minor Other scallop vessels C: Minor O: Negligible D: Minor	None	None	None
Potential impacts on commercial fisheries as a result of increased risk of introduction and spread of INNS	✓	✓	✓	Development of, and adherence to, an Environmental Management and Monitoring Plan, including actions to minimise INNS.	Low	Negligible – High	Negligible – Minor	None	None	None
Increased collision and allision risk to commercial fishing vessels	✓	✓	✓	See volume 2, chapter 12: Shipping and navigation of the PEIR.	Negligible – Medium	Low – High	Negligible – Moderate	See volume 2, chapter 12: Shipping and navigation of the PEIR.		

Table 11.49: Summary of potential cumulative environmental effects, mitigation and monitoring.

[a] C=construction, O=operation and maintenance, D=decommissioning

Description of impact	Phase[a]			Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							
Tier 1										
Loss or restricted access to fishing grounds	✓	✓	✓	Same as described for the same impact in Table 11.48.	Scallop vessels – Scottish west coast C: Low O: Medium D: Low	Scallop vessels – Scottish west coast C: Medium O: Medium D: Medium	Scallop vessels – Scottish west coast C: Minor O: Moderate D: Minor	O: Options to increase the minimum distance between WTGs and options to align the turbines with orientations of fishing tows are being explored by the Applicant.	Not assessed for PEIR as further mitigation is to be considered and included as part of the DCO application (see section 11.14).	O: Annual review for the first five years of the operations and maintenance phase, to review VMS and landings data to identify whether there are any changes to fishing activity within the Mona Array Area
Interference with fishing activity	✓	✓	✓	Same as described for the same impact in Table 11.48.	Offshore static gear vessels C: Low O: Low D: Low D: Low	Offshore static gear vessels C: Medium O: Medium D: Medium O: Medium D: Medium	Offshore static gear vessels C: Minor O: Minor D: Minor D: Minor	None	None	None
Loss or damage to fishing gear due to snagging	✓	✓	✓	Same as described for the same impact in Table 11.48.	Scallop vessels – Scottish west coast C: Negligible O: Negligible D: Negligible	Scallop vessels – Scottish west coast C: High O: High D: High	Scallop vessels – Scottish west coast C: Minor O: Minor D: Minor	None	None	Monitoring of the cables and their burial status to reduce snagging risk.
Potential impacts on commercially important fish and shellfish resources	✓	✓	✓	See volume 2, chapter 8: Fish and shellfish ecology of the PEIR.	Low - Medium	Negligible – Medium	Negligible - minor adverse	None	Negligible – Minor	None proposed
Increased collision and allision risk to commercial fishing vessels	✓	✓	✓	See volume 2, chapter 12: Shipping and navigation of the PEIR.	Low – Medium	Low – High	Minor - Major	See volume 2, chapter 12: Shipping and navigation of the PEIR.		
Tier 2										

Description of impact	Phase[a]			Measures adopted as part of the project	Magnitude of impact	Sensitivity of the receptor	Significance of effect	Further mitigation	Residual effect	Proposed monitoring
	C	O	D							
Loss or restricted access to fishing grounds	✓	✓	✓	Same as described for the same impact in Table 11.48.	Scallop vessels – Scottish west coast C: Low O: Medium D: Low	Scallop vessels – Scottish west coast C: Medium O: Medium D: Medium	Scallop vessels – Scottish west coast C: Minor O: Moderate D: Minor	O: Options to increase the minimum distance between WTGs and options to align the turbines with orientations of fishing tows are being explored by the Applicant.	Not assessed for PEIR as further mitigation is to be considered and included as part of the DCO application (see section 11.14).	O: Annual review for the first five years of the operations and maintenance phase, to review VMS and landings data to identify whether there are any changes to fishing activity within the Mona Array Area.
Interference with fishing activity	✓	✓	✓	Same as described for the same impact in Table 11.48.	Offshore static gear vessels C: Low O: Low D: Low	Offshore static gear vessels C: Medium O: Medium D: Medium	Offshore static gear vessels C: Minor O: Minor D: Minor	None	None	None
Loss or damage to fishing gear due to snagging	✓	✓	✓	Same as described for the same impact in Table 11.48.	Scallop vessels – Scottish west coast C: Negligible O: Negligible D: Negligible	Scallop vessels – Scottish west coast C: High O: High D: High	Scallop vessels – Scottish west coast C: Minor O: Minor D: Minor	None	None	Monitoring of the cables and their burial status to reduce snagging risk.
Potential impacts on commercially important fish and shellfish resources	✓	✓	✓	See volume 2, chapter 8: Fish and shellfish ecology of the PEIR.	Low - Medium	Negligible – Medium	Negligible - minor adverse	None	Negligible – Minor	None proposed
Increased collision and allision risk to commercial fishing vessels	✓	✓	✓	See volume 2, chapter 12: Shipping and navigation of the PEIR.	Low – Medium	Low – High	Minor - Major	See volume 2, chapter 12: Shipping and navigation of the PEIR.		

11.14 Next steps

11.14.1.1 A number of significant effects on commercial fisheries receptors for the individual and cumulative assessments were identified. Therefore, additional mitigation is required to reduce impacts.

11.14.1.2 The Applicant has committed to exploring these additional mitigation measures through further studies and engagement with stakeholders to ensure they are appropriate and adequate for reducing impacts prior to submission of the DCO application. Appropriate mitigation measures will then be secured through the DCO or marine licenses.

11.14.1.3 Additionally the Applicant has committed to mitigation around array area boundary changes and lines of orientation to reduce potential impacts on shipping and navigation. These are relevant to commercial fisheries and will be incorporated into the assessment within the Environmental Statement. These commitments are set out within volume 2, chapter 12: Shipping and navigation of the PEIR.

11.14.1.4 Engagement with commercial fisheries stakeholders will continue, with further engagement to discuss the proposed layout design. Monitoring of fishing activity within the commercial fisheries study area will continue to inform the baseline. Additional information collected from surveys in 2023 and additional MMO landing data for 2021 and 2022, if available, will be used to inform the Environmental Statement. The baseline description and impact assessments in this chapter will therefore be updated for the final Environmental Statement. Comments received on the PEIR will be addressed within the Environmental Statement.

11.15 References

Blyth-Skyrme, R.E. (2010). Options and Opportunities for Marine Fisheries Mitigation associated with Windfarms. Final report for Collaborative Offshore Wind Research into the Environment Ltd. Accessed January 2022. Available at: https://tethys.pnnl.gov/sites/default/files/publications/Blyth-Skyrme-2010.pdf

DECC (Department of Energy and Climate Change). (2016) Offshore Energy Strategic Environmental Assessment 3 (OESEA 3). Available: https://www.gov.uk/government/consultations/uk-offshore-energy-strategic-environmental-assessment-3-oesea3. Accessed January 2022.

Department of Energy and Climate Change (DECC) (2011a) Overarching National Policy Statements for Energy (NPS EN-1). Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47854/1938-overarching-nps-for-energy-en1.pdf . Accessed April 2022.

Department of Energy and Climate Change (DECC) (2011b) National Policy Statement for Renewable Energy Infrastructure. Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47856/1940-nps-renewable-energy-en3.pdf . Accessed April 2022.

Department of Energy and Climate Change (DECC) (2011c) National Policy Statements for Electricity Networks Infrastructure (NPS EN-5). Available: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/47858/1942-national-policy-statement-electricity-networks.pdf . Accessed April 2022.

Dunkley, F. and Solandt, J.L. (2022). Windfarms, fishing and benthic recovery: Overlaps, risks and opportunities. Marine Policy. 145.

EU STECF (Scientific, Technical and Economic Committee for Fisheries) (2017) Fisheries Dependent Information: Landings and effort (hours fished) data 2018. Available at: https://stecf.jrc.ec.europa.eu/dd/effort/graphs-quarter. Accessed January 2022.

FLOWW (Fishing Liaison with Offshore Wind and Wet Renewables Group) (2014). Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison. Fishing Liaison with Offshore Wind and Wet Renewables. Accessed January 2022. Available at: https://www.sff.co.uk/wp-content/uploads/2016/01/FLOWW-Best-Practice-Guidance-for-Offshore-Renewables-Developments-Jan-2014.pdf

FLOWW (Fishing Liaison with Offshore Wind and Wet Renewables Group) (2015). Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds. Fishing Liaison with Offshore Wind and Wet Renewables. Accessed January 2022. Available at: https://www.thecrownestate.co.uk/media/1776/floww-best-practice-guidance-disruption-settlements-and-community-funds.pdf

Gray, M., Stromberg, P-L., Rodmell, D. (2016). 'Changes to fishing practices around the UK as a result of the development of offshore windfarms – Phase 1 (Revised).' The Crown Estate, 121 pages. ISBN: 978-1-906410-64-3

Highways England, Transport Scotland, Welsh Government, Department for Infrastructure (2019) Design Manual for Roads and Bridges (DMRB) LA 104, Environmental assessment and monitoring, Revision 1, Available at: https://www.standardsforhighways.co.uk/prod/attachments/0f6e0b6a-d08e-4673-8691-cab564d4a60a?inline=true Accessed April 2022.

International Cable Protection Committee (ICPC) (2009) Fishing and Submarine Cables – Working Together. Available at: https://www.iscpc.org/documents/?id=142

MarineTraffic (2022) Global Ship Tracking Intelligence. Available at: www.marinetraffic.com. Accessed May 2022.

MMO (Marine Management Organisation). (2020a) UK fleet landings by ICES Rectangle (2010-2020). Available at: https://www.gov.uk/government/statistics/uk-sea-fisheries-annual-statistics-report-2019. Accessed January 2022.

MMO (Marine Management Organisation). (2021a) Fish Landings to UK Ports. Available at: https://environment.data.gov.uk/dataset/229f21dc-9e8e-4e48-95db-f81bcfc13caa. Accessed January 2022.

MMO (2021b), North West Inshore and North West Offshore Marine Plan. Accessed June 2022.

NRW (Natural Resource Wales) (2010) Sea Fishing Atlas of Wales. Provided by NRW via email 2018.

RenewableUK (2013) Cumulative impact assessment guidelines, guiding principles for cumulative impacts assessments in offshore wind farms.

Roach, M. and Cohen, R. (2015) Westermost Rough Fish & Shellfish Monitoring Report 2015; Including Comparison to Baseline Data 2013. Accessed January 2022. Available at: https://www.researchgate.net/publication/344026116_Westermost_Rough_Fish_Shellfish_Monitoring_Report_2015_Including_Comparison_to_Baseline_Data_2013_A_study_conducted_for_DONG_Energy

Roach, M., M. Cohen, R. Forster, A.S. Revill, and M. Johnson. (2018). The effects of temporary exclusion of activity due to wind farm construction on a lobster (*Homarus gammarus*) fishery suggests a potential management approach. ICES Journal of Marine Science 75(4):1,416–1,426, https://doi.org/10.1093/icesjms/fsy006.

Roach, M., Revill, A. and Johnson, M.J. (2022). Co-existence in practice: a collaborative study of the effects of the Westermost Rough offshore wind development on the size distribution and catch rates of a commercially important lobster (*Homarus gammarus*) population. ICES Journal of Marine Science 79(4):1,175-1,186.

Salthouse, C. (2021) The Future and Changing Context of the Irish Sea in 2020s. Irish Sea Maritime Forum, 9-87.

The Planning Inspectorate (2017) Advice Note ten, Habitat Regulations Assessment relevant to Nationally Significant Infrastructure Projects. Version 8. Available: https://infrastructure.planninginspectorate.gov.uk/legislation-and-advice/advice-notes/advice-note-ten/. Accessed April 2022.

United Kingdom Fisheries Economics Network (UKFEN) (2012) Best Practice Guidance for Fishing Industry Financial and Economic Impact Assessments. Available at: https://www.seafish.org/document/?id=AA0CB236-1E2A-4D2A-9F86- 49CEB2B6DD5E