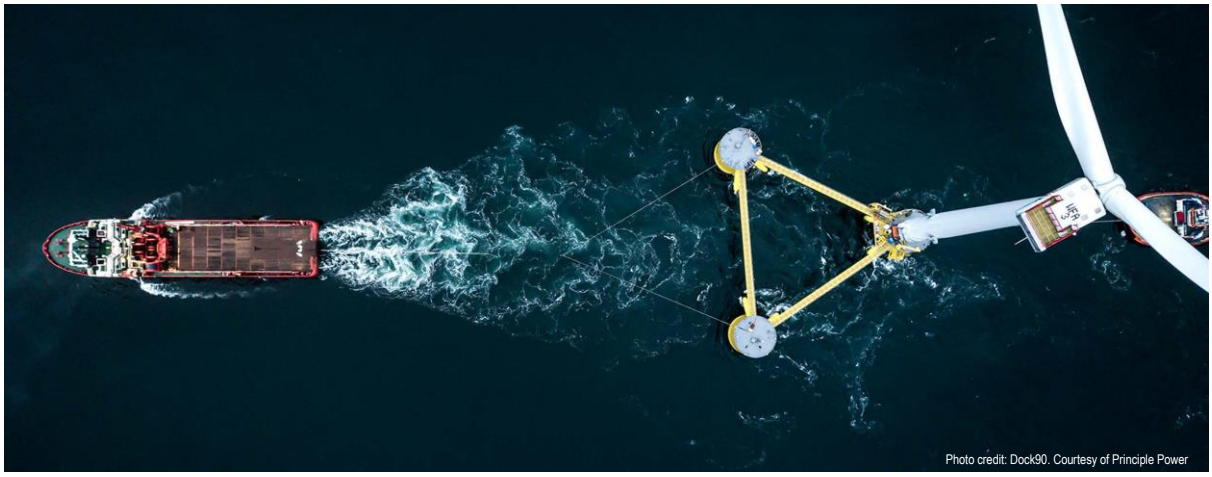

Project Erebus Environmental Statement
Chapter 15: Commercial Fisheries

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Acronyms

Term	Definition
AIS	Automatic Identification Systems
CEA	Cumulative Effects Assessment
CFP	Common Fisheries Policy
CFPO	Cornish Fish Producers Organisation
CLV	Cable Lay Vessel
COLREGS	International Regulations for Preventing Collisions at Sea
COWRIE	Collaborative Offshore Wind Research into the Environment
DECC	Department of Energy & Climate Change
EIA	Environmental Impact Assessment
ES	Environmental Statement
EU	European Union
FLO	Fisheries Liaison Officer
FLOW	Floating Offshore Wind
FLOWW	Fishing Liaison with Offshore Wind and Wet Renewables
IALA	International Association of Lighthouse Authorities
ICES	International Council for the Exploration of the Sea
IMO	International Maritime Organisation
km	Kilometre
km^2	Square Kilometre
m	Metres
m^2	Square Metres
MCA	Maritime and Coastguard Agency
MCAA	Marine and Coastal Access Act
META	Marine Energy Test Area
MMO	Marine Management Organisation
MMS	Minimum Mesh Size
MPS	Marine Policy Statement

Term	Definition
MW	Megawatt
NDFA	North Devon Fishermen's Association
NEAFC	North East Atlantic Fisheries Commission
NFFO	National Federation of Fishermen's Organisations
nm	Nautical Mile
NPS	National Policy Statement
NRA	Navigational Risk Assessment
NRW	Natural Resources Wales
NtM	Notice to Mariners
ONS	Office for National Statistics
OSEA3	Offshore Energy Strategic Environmental Assessment 3
OWF	Offshore Wind Farm
PDE	Project Design Envelope
PINS	The Planning Inspectorate
PLG	Pre-Lay Grapnel
PLGR	Pre-Lay Grapnel Run
SAC	Special Area of Conservation
SBE	Simply Blue Energy
STECF	Scientific, Technical and Economic Committee for Fisheries
SWFPO	South Western Fish Producers Organisation
UKFIP	United Kingdom Fishing Information Project
UKHO	United Kingdom Hydrographic Office
VMS	Vessel Monitoring Systems
WFA	Welsh Fishermen's Association
WFPO	Western Fish Producers Organisation
WNMP	Welsh National Marine Plan
WTG	Wind Turbine Generators

Chapter 15 Commercial Fisheries

15.1 Introduction

15.1.1.1 The proposed Project Erebus (the Project) is a demonstration scale Floating Offshore Wind (FLOW) development in the Celtic Sea region. The Applicant, Blue Gem Wind, is a joint venture between Simply Blue Energy (SBE) and TotalEnergies, set up to create a new low carbon offshore energy sector in the region; that contributes to climate change targets, supply chain diversification and energy security.

15.1.1.2 This assessment has been carried out by MarineSpace Limited, the lead offshore Environmental Impact Assessment (EIA) Consultants. The Chapter has been authored by Bethan Owens, who has over six years' experience as a marine professional, undertaking environmental impact assessments focused on commercial fisheries and is experienced in providing Fisheries Liaison Officer services on projects.

15.1.1.3 The array area is located approximately 35 km southwest of the Pembrokeshire coastline, covering an area of 43.5 km^2 in water depths of between 65-85 m. The array area is located outside of the 12 nm limit, but all elements of the Project, array area, offshore export cable corridor and landfall, fall within Welsh territorial waters or the Welsh Zone.

15.1.1.4 The Project comprises six to ten Wind Turbine Generators (WTG) with a total generating capacity up to 100 MW. Each WTG is housed on a semi-submersible floating platform with a mooring system comprising a maximum of five catenary mooring lines, up to 870 m in length, and a range of foundation options including drag embedment anchors, driven piles, drilled piles and/or suction piles. Up to 10 dynamic array cables are proposed, with a lazy wave configuration from the semi-submersible floating platform to the seabed. The offshore export cable, up to 49 km in length, links the array area to landfall at West Angle Bay, Pembrokeshire.

15.1.1.5 The Study Area for this assessment is defined in Section 15.4.2 (also see Volume 2, Figure 15.1).

15.1.1.6 A wide range of studies were undertaken to inform the site-selection process, as described fully in Chapter 3: Site Selection and Alternatives. Regional-scale fishing effort and activity data were used as one of the constraint layers in the GIS-based modelling that informed the site-selection. As part of this process, various commercial fisheries organisations were also engaged with, to gather additional information on key areas for fishing activity and the potential risks to the fishing sector of a FLOW project in this region. Feedback confirmed that the array area was not located in a significant fishing ground.

15.1.1.7 This chapter of the Environmental Statement (ES) characterises commercial fisheries activity in the Study Area and presents the assessment of the potential impacts of the Project on commercial fisheries which may arise during the construction, operation and maintenance, and decommissioning phases of the Project. This chapter utilises and builds upon the information presented in the Project Erebus EIA Scoping Report (MarineSpace, 2019).

15.1.1.8 No comments were made with respect to commercial fisheries in Natural Resource Wales' (NRW) formal EIA Scoping Opinion (NRW, 2020). Copies of the Scoping Opinion Request (the Scoping Report) and NRW's Scoping Opinion are provided in Volume 3, Technical Appendices 2.1 and 2.2, respectively. The Project Consultation Report (Volume 3, Technical Appendix 2.3: Consultation Report) contains all consultation relevant to commercial fisheries between July 2019 to December 2021. It should also be noted that no specific surveys were undertaken in relation to commercial fisheries for the Project.

15.1.1.9 The potential impacts on commercial fisheries have been assessed conservatively using realistic worst case scenarios for the Project, summarised in Table 15.9.

15.1.1.10 The Project Design Envelope (PDE) is provided in full in Chapter 4: Proposed Development Description.

15.1.1.11 Further details on commercial fisheries activity in the Study Area are provided in Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report. This Chapter should also be read in conjunction with the following ES chapters: Chapter 10: Fish and Shellfish Ecology, Chapter 16: Shipping and Navigation, and Chapter 27: Socio-Economics, Tourism and Recreation.

15.2 Legislation, Policy and Guidelines

15.2.1 A detailed overview of the relevant policy and legislation for the Project is provided in Chapter 5: Policy and Legislation. The Project is seeking a Section 36 consent, with deemed planning permission, under the Electricity Act 1989 from Welsh Ministers, administered by the Planning and Environment Decisions Wales (PEDW) and a Marine Licence under the Marine and Coastal Access Act (MCAA) 2009 from NRW.

15.2.2 Legislation

15.2.3 Relevant legislation, policy and guidance documents have been reviewed and taken into account as part of this assessment. Those of particular relevance are:

- Overarching National Policy Statement (NPS) for Energy (EN-1) (DECC, 2011a);
- NPS for Renewable Energy Infrastructure (EN-3), July 2011 (DECC, 2011b);
- UK Marine Policy Statement (HM Government, 2011); and
- Wales National Marine Plan (Welsh Government, (2019).

15.2.3.1 Other relevant legislation has also been considered during this assessment (see Chapter 5: Policy and Legislation).

15.2.4 Policy

National Policy Statements

15.2.4.1 Although this Project is seeking Section 36 consent under the Electricity Act 1989 and a Marine Licence under the Marine and Coastal Access Act (MCAA) 2009, as opposed to a Development Consent Order (DCO), its size (up to 100 MW) is similar to the minimum threshold (100 MW) for Nationally Significant Infrastructure Projects (NSIPs). As such, guidance relevant to NSIPs is considered relevant to use for this Project.

15.2.4.2 National Policy Statements (NPSs) were developed to provide guidance in the determination of NSIPs

15.2.4.3 A review of EN-1 has been undertaken and there are no specific references to commercial fisheries. Details of specific policies within EN-3 used to inform this assessment are provided in Table 15.1[1].

Table 15.1 – NPS EN-3 Assessment Provisions Relevant to Commercial Fisheries

NPS Requirement	NPS Reference	ES Reference
The construction and operation of offshore windfarms can have both positive and negative effects on fish and shellfish stocks	EN-3, Section 2.6.122	Potential impacts to fish stocks arising from the Project have been assessed in Chapter 10: Fish and Shellfish Ecology. Potential impacts on the commercial fisheries that target the fish stocks are assessed in Section 15.6 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 (PINS) should consider adverse or beneficial impacts on different types of commercial fishing on a case by case basis.	EN-3, Section 2.6.123	Potential impacts to commercial fisheries have been described in Section 15.6, and cumulative effects are described in Section 15.10.
In some circumstances, transboundary issues may be a consideration as fishermen from other countries may fish in waters within which offshore windfarms are sited.	EN-3, Section 2.6.124	Transboundary issues have been described in Section 15.11, 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 discussion of impact assessment methodologies. Where any part of the proposal involves a grid connection to shore, appropriate inshore fisheries groups should be consulted.	EN-3, Section 2.6.127	Consultation with relevant stakeholders (local, regional, national and international) has been undertaken for the Project and is summarised in Section 15.3, with further information in Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report and the Project Consultation Report (Volume 3, Technical Appendix 2.3: Consultation Report)

[1] A period of consultation on a set of revised energy NPS's, managed by the Department of Business, Energy and Industrial Strategy (BEIS), ended on 29th November 2021.

NPS Requirement	NPS Reference	ES Reference
Where a number of offshore windfarms have been proposed within an identified zone, it may be beneficial to undertake such consultation at a zonal, rather than a site specific, level.	EN-3, Section 2.6.128	Cumulative impacts have been assessed in Section 15.10.
The assessment by the applicant should include 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 boundaries. Robust baseline data should have been collected and studies conducted as part of the assessment.	EN-3, Section 2.6.129	Chapter 10: Fish and Shellfish Ecology outlines the potential impacts on fish stocks, including those of commercial interest. Baseline fisheries activity data have been collated from official sources and through consultation, as described in Section 15.5 and Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report. Likely constraints associated with the Project are assessed in Section 15.6.
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.	EN-3, Section 2.6.130	Implications from the implementation of safety zones have been presented in Section 15.6. There will be a 500 m safety zone around the major construction vessels. Safety Zones are included within the PDE and have been considered within Chapter 16: Shipping and Navigation and Volume 3, Technical Appendix 16.1: Navigational Risk Assessment.
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.	EN-3, Section 2.6.131	As above.

Marine Policy Statement

15.2.4.4 The Marine Policy Statement (MPS) provides the policy framework for the preparation of marine plans and establishes how decisions affecting the marine area should be made in order to enable sustainable development. The MPS was adopted by all UK administrations in March 2011. The MPS sets out a vision of having "clean, healthy, safe, productive and biologically diverse oceans and seas" by supporting the development of Marine Plans. It also sets out the framework for environmental, social and economic considerations that needs to be considered in marine planning. Requirements from the MPS relevant to the Project with regards to commercial fisheries are outlined in Table 15.2.

Table 15.2 – National and Regional Policy Requirements from the MPS Relevant to Commercial Fisheries

Policy Description	Reference	ES Reference
Have regard to the impacts of displacement and whether it is possible for vessels to relocate to other fishing grounds.	Section 3.8.10	Consideration has been given to impacts from potential displacement in the assessment presented in Section 15.6.
Consider the potential impacts of this displacement on the viability of fish stocks.	Section 3.8.10	Consideration has been given to impacts from potential displacement in the assessment presented in Section 15.6.
Consider and measure the impacts on local communities of any reduction in fishing activity, redistribution of fishing effort or associated impact on related businesses.	Section 3.8.10	Consideration has been given in Section 15.6. and Chapter 27: Socio-Economics, Tourism and Recreation.
Encourage opportunities for co-existence between fishing and other activities.	Section 3.8.10	Consideration has been given in Section 15.6. and Chapter 27: Socio-Economics, Tourism and Recreation.

Welsh National Marine Plan

15.2.4.5 The Welsh Government published its first marine plan for Welsh inshore and offshore waters, the Welsh National Marine Plan (WNMP), in November 2019. The WNMP was developed in accordance with the MCAA 2009 and the UK MPS. The WNMP covers a 20-year period from its adoption in 2019. The publishing of the WNMP in November 2019 followed a period of consultation from 7 December 2017 to 29 March 2018 (the WNMP is discussed further in Chapter 5: Policy and Legislation).

15.2.4.6 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 coexistence of compatible activities, the mitigation of conflicts between users and, where possible, by reducing the displacement of existing activities";* and
- 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".*

15.2.4.7 Also of relevance to this Chapter is WNMP policy GOV_01, which pertains to the assessment of cumulative impacts and GOV_02 which relates to cross-border issues. Requirements relevant to the Project from the WNMP are outlined in Table 15.3.

Table 15.3 – National and Regional Policy Requirements from the WNMP relevant to Commercial Fisheries

Policy Description	Reference	ES Reference
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.	GOV_01: Cumulative effects	Cumulative impacts are assessed in Section 15.10 and in Chapter 30: Cumulative Effects.
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.	GOV_02: Cross-border and plan compatibility	Cross-border impacts are assessed in Sections 15.6 and 15.11 and Chapter 30: Cumulative Effects.
Proposals likely to have significant adverse impacts upon an established activity must demonstrate how they will address compatibility issues with that activity.	SAF_01: Safeguarding existing activity	Impacts on commercial fisheries, that may arise from the Project, have been assessed in this Chapter.
Proposals should demonstrate how they have considered opportunities for coexistence with other compatible sectors in order to optimize the value and use of the marine area and marine natural resources.	ECON_02: Coexistence	Coexistence impacts are assessed in Chapter 27: Socio-Economics, Tourism and Recreation and Chapter 29: Inter-Related Effects.
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 Chapter 10: Fish and Shellfish Ecology.

15.2.5 Guidance

15.2.5.1 The following best practice guidelines/guidance have been used to inform this ES chapter:

- Changes to Fishing Practices around the UK as a Result of the Development of Offshore Windfarms – Phase One (Revised) (Gray et al., 2016);

- Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Disruption Settlements and Community Funds (FLOWW, 2015);
- Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison (FLOWW, 2014);
- Best Practice Guidance for Fishing Industry Financial and Economic Impact Assessments – Guidelines Based on Outputs from a Technical Workshop organised by the UK Fisheries Economic Network (Poseidon, 2012); and
- Options and Opportunities for Marine Fisheries Mitigation associated with Windfarms commissioned by Collaborative Offshore Wind Research into the Environment (COWRIE), (Blyth-Skyrme, 2010).

15.3 Consultation and Scoping

15.3.1.1 Consultation with key commercial fisheries stakeholders has been undertaken at all stages of the Project to date and will continue in the future.

15.3.1.2 Regional fisheries organisations were contacted during the site-selection stage to offer up any additional information to official datasets reviewed at that stage, to ensure that the inshore (<10 m) fishing fleet was represented. Outputs from this initial consultation were used to inform final site selection for the array area, and also to develop further understanding of existing fishing activity in the Study Area.

15.3.1.3 An EIA Scoping Report (MarineSpace, 2019) was produced and submitted to the regulators, who consulted with the statutory bodies and key stakeholders upon the contents. No comments on commercial fisheries were included in NRW's formal EIA Scoping Opinion (received January 2020), other than NRW highlighting that the ES should include an assessment of impacts as set out in the EIA Scoping Report for commercial fisheries.

15.3.1.4 Following receipt of the EIA Scoping Opinion (NRW, 2020), a series of meetings was arranged with key fisheries stakeholders. Details of the Project were provided, along with initial conclusions on fisheries activity, predicted impacts, and potential mitigation measures. Feedback from these meetings was used to inform the characterisation of fisheries activity in the Study Area and the impact assessments presented in this Chapter. Further details of these meetings are provided in Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report and in the Consultation Report, (Volume 3, Technical Appendix 2.3: Consultation Report).

In addition to these focused stakeholder meetings, MarineSpace engaged at a detailed-level with individual vessels potentially affected by offshore surveys associated with the Project. Key findings from consultations are outlined in Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report and the Consultation Report (Volume 3, Technical Appendix 2.3: Consultation Report). Key concerns raised by consultees specific to commercial fisheries are outlined in Table 15.4, alongside how the issues have been considered as part of the EIA process.

Table 15.4 – Consultation Responses Pertaining to Commercial Fisheries where Concerns were Raised (July 2019 to December 2021).

Consultee	Response	Applicant Action
Local Fisheries Officer (Welsh Government), Marine and Fisheries Division, North Devon Fisheries Association (NDFA), Pembrokeshire Marine SAC Officer, Severn and Devon Inshore Fisheries and Conservation Authority (IFCA), South and West Wales Fishing Communities (SWWFC), South-West Fish Producers Organisation (SWFPO), Welsh Fishermen's Association (WFA), Welsh Marine Fisheries Advisory Group (WMFAG) and West Wales Shell Fisherman's Association (WWSFA) (July 2019)	Site description was shared and calls were held with consultees.	N/A (see Consultation Report (Volume 3, Technical Appendix 2.3: Consultation Report) for full list of consultations with commercial fisheries consultees).
NRW (Scoping Opinion) January 2020	No comments were received from consultees in relation to commercial fisheries and we have no comment to make on this section of the report (section 7.1). The ES should however include an assessment of impacts on commercial fisheries, as set out in the scoping report.	Assessment of impacts on commercial fisheries has been undertaken as set out in the EIA Scoping Report – see Section 15.6.
Cornish Fish Producers Organisation (CFPO) (October, 2020)	Highlighted that any surface-laid cable could cause issues for mobile vessels.	The Project aims to achieve a conservative target burial depth of 3 m (Table 15.9). Where burial is not possible due to ground conditions, the Project will ensure appropriate cable protection is deployed and clearly marked on relevant charts (Section 15.6 and 15.7). Snagging risk is assessed within this Chapter, Chapter 16: Shipping and Navigation and Volume 3, Technical Appendix 16.1: Navigational Risk Assessment.
	Concerns were highlighted regarding piling or ground noise	Impacts related to piling and magnetic fields have been

Consultee	Response	Applicant Action
Interfish (November, 2020)	and questioned whether magnetic fields were likely to have an effect on fish stocks.	addressed in Chapter 10: Fish and Shellfish Ecology and Volume 3, Technical Appendix 7.2: EMF Assessment.
	Noted importance of long-term engagement with fishing community.	Noted.
National Federation of Fishermen's Organisations (NFFO) (October, 2020)	Queried the status of safety zones	Consideration of safety zones has been included within the PDE (Table 15.9), and the impacts of these are assessed in Section 15.6.
	Noted that snagging risk to fishermen caused by the offshore export cable should be considered.	Snagging risk is assessed within this Chapter, Chapter 16: Shipping and Navigation and Volume 3, Technical Appendix 16.1: Navigational Risk Assessment.
North Devon Fishermen's Association (NDFA) (July, 2019, October, 2020, January 2021 and April 2021)	Concern whether the offshore export cable will be over-trawlable.	Snagging risk is assessed within this Chapter, Chapter 16: Shipping and Navigation and Volume 3, Technical Appendix 16.1: Navigational Risk Assessment.
	Highlighted concern regarding the effect of the Project on fish stocks, noting that it could be beneficial to some species.	The impact of the Project on fish stocks has been assessed in Chapter 10: Fish and Shellfish Ecology.
	Identified that fishing vessels would use an additional 1-2 nm of exclusion around the offshore array area to take into account the tide and wind when manoeuvring.	This has been considered in the assessment in Section 15.6.
	Concerns regarding cumulative impacts on fishing.	This has been considered in Section 15.10.
Pembrokeshire Special Area of Conservation (SAC) Officer (October, 2020)	The SAC Officer confirmed that they were content to not be involved in discussions provided there was engagement with active local fishers.	The dedicated Fisheries Liaison Officer (FLO) has engaged with local organisations and individual fishers, as described in Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report.

Consultee	Response	Applicant Action
South Western Fish Producers Organisation (SWFPO) (July 2019 and October, 2020)	Highlighted importance of navigational accuracy for fishermen to identify cable locations.	Consideration of feedback from consultation has been included within the standard mitigation measures.
	Acknowledged lack of information regarding inshore static gear vessels in official data sources.	In addition to the official data sources, feedback from fisheries liaison and consultation was included to inform the baseline and assessment. Described further in Section 15.5 and Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report.
Welsh Fishermen's Association (WFA) (July, 2019 and October, 2020)	Queries were raised regarding the duration of cable laying activities which may affect members.	Worst case scenarios for the duration of installation works have been assessed further in Table 15.9.
	Confirmed that the site is well chosen with regards to the >12 m fleet. The primary concern is the <10 m fleet, for which there is no official data, and the overlap with the cable route.	In addition to the official data sources, feedback from fisheries liaison and consultation was included to inform the baseline and assessment. Described further in Section 15.5 and Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report.
	Concerns whether impact on fish stocks from electromagnetic frequencies would be assessed.	The impact of the Project, including electromagnetic fields, on fish stocks has been assessed in Chapter 10: Fish and Shellfish Ecology.
	Questioned whether disruption payments would be issued during cable construction.	The Project intends to set up a Community Fisheries Fund as a move towards more strategic investment in the local fishing community.
Western Fish Producers Organisation (WFPO) (December, 2020)	Concern whether the offshore export cable will be over-trawlable.	Snagging risk is assessed within this Chapter, Chapter 16: Shipping and Navigation and Volume 3, Technical Appendix 16.1: Navigational Risk Assessment.
	Noted that there was higher beam trawl activity in array area than shown in official data.	Feedback from consultation has been included to inform the baseline and assessment. Described further in Section 15.5 and Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report.

Consultee	Response	Applicant Action
Welsh Government (January, 2021)	Noted that official data sources do not capture smaller vessels.	In addition to the official data sources, feedback from fisheries liaison and consultation was included to inform the baseline and assessment. Described further in Section 15.5 and Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report.
Individual locally-based inshore fishermen (April, 2020 to September 2021)	Range of issues raised and discussed.	Issuing of NtMs; discussions on static gear clearance ahead of surveys; disruption discussions and payments.
Individual locally-based inshore fishermen (November, 2021)	Range of issues raised and discussed via face to face meetings in Milford Haven.	Agreement to maintain lines of communication past ES submission phase and onto any future construction.

15.4 Assessment Methodology and Significance Criteria

15.4.1.1 Detailed discussion on the EIA methodology can be found in Chapter 2: Overview of EIA Methodology. Effects on commercial fisheries are based on the effects identified within the EIA Scoping Report, and any additional potential effects which have been identified via consultation with key stakeholders.

15.4.1.2 This assessment has been based on the existing baseline environment, as described in Section 15.5 (see also Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report) and the PDE as detailed in Chapter 4: Proposed Development Description. Specific parameters that have been the basis of this assessment are provided in Table 15.9.

15.4.1.3 Impacts have been assessed for the following three distinct phases of the proposed project:

- Construction;
- Operation (and maintenance); and
- Decommissioning.

15.4.2 Study Area

15.4.2.1 For the purposes of this chapter, the Study Area is defined as International Council for the Exploration of the Sea (ICES) Rectangles 31E4 and 32E4 (Volume 2, Figure 15.1). The array area is located outside of the 12 nm limit and lies within the northern part of 31E4. The array area covers an area of 43.5 km^2 in water depths of between 65-85 m. An offshore export cable will run from the array area to landfall at West Angle Bay, Pembrokeshire. The majority of the offshore export cable corridor is located within 32E4, with the southern part of the cable within the northern part of 31E4.

15.4.2.2 Port data have been considered for Milford Haven and Saundersfoot. Milford Haven is the main local port within the Study Area. Saundersfoot is located outside of the Study Area but is also notable in terms of landings.

15.4.3 Desk Study

15.4.3.1 Commercial fisheries activity in the Study Area was defined via a desktop review that drew upon a variety of sources as outlined below. In addition to formal datasets, MarineSpace engaged at a detailed level with individual vessels potentially affected by offshore surveys associated with the Project; held a series of consultation meetings with relevant fisheries organisations/stakeholders; reviewed data collected via two 14-day marine traffic surveys undertaken in 2020; and also assessed Automatic Identification Systems (AIS) data from 2019.

15.4.3.2 Limitations and assumptions of these data are discussed in Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report. Data sources are listed below:

- Marine Management Organisation (MMO) UK fleet landings by selected ICES Rectangle (2015-2019) (MMO, 2020a);
- MMO UK and foreign fleet landings into the UK by Port (2015-2019) (MMO, 2020b);
- European Commission – Scientific, Technical and Economic Committee for Fisheries (STECF) non-UK landings by ICES Rectangle (2012- 2016) (STECF, 2018);
- MMO fishing activity data for UK vessels (≥15 m), using Vessel Monitoring Systems (VMS) data (2016-2019) (MMO, 2021a);
- MMO fish landings to UK ports (2016-2019) (MMO, 2021b);
- ICES fishing activity data for mobile bottom contacting gear vessels (>12 m) using VMS data (2014-2017) (ICES, 2017);
- UK Fishing Information Project (UKFIP) (2013);
- NRW – Sea Fishing Atlas of Wales (2010);
- Data from consultations with relevant stakeholders;
- Data from two 14-day Project-specific marine traffic surveys undertaken in August 2020 and November/December 2020 (NASH Maritime, 2021); and
- AIS data (July 2019-December 2019).

15.4.4 Site Visit / Surveys

15.4.4.1 Marine traffic data (radar and AIS) were collated as part of the Navigational Risk Assessment (NRA) process, and these have been included during consideration of the baseline (described further in Section 15.5, Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report and Volume 3, Technical Appendix 16.1: Navigational Risk Assessment).

15.4.5 Assessment of Potential Effect Significance

15.4.5.1 Specific criteria relating to commercial fisheries have been developed for the sensitivity of the receptor (Table 15.5) and the magnitude of impact (Table 15.6). Each aspect (sensitivity and magnitude) was considered using the available evidence, including official data sources, feedback from consultation and expert judgement.

15.4.5.2 A matrix tool, as described in Chapter 2: Overview of EIA Methodology, has been used to inform the assessment to determine the significance of effect, based on the sensitivity of receptor and magnitude of impact

15.4.5.3 The assessment of potential effects of the Project on commercial fisheries receptors follows the guidance listed in Section 15.2.

Sensitivity

15.4.5.4 Sensitivity of the receptor was considered in terms of its ability to avoid, adapt, accommodate or recover from potential impacts. Data sources, feedback from consultation and expert judgement were used to inform the assessment of sensitivity of commercial fisheries receptors. The criteria for defining sensitivity for the purposes of commercial fisheries are outlined in Table 15.5.

Table 15.5 – Sensitivity Levels for Receptors (Commercial Fisheries)

Sensitivity	Description
High	Very low spatial adaptability due to limited operational range and/or ability to deploy only 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 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 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 Celtic Sea.
Negligible	Category of fishing receptor with an extensive operational range and high method versatility. Vessel able to exploit a large number of fisheries.

Magnitude

15.4.5.5 Magnitude of the impact on commercial fisheries receptors is based on the extent and duration. Data sources, feedback from consultation and expert judgement were used to inform the assessment of the magnitude of impacts to commercial fisheries receptors. The criteria for defining magnitude for the purposes of commercial fisheries are outlined in Table 15.6.

Table 15.6 – Magnitude of Impact (Commercial Fisheries)

Magnitude	Description
High	The impact would 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. The effect would be permanent/irreplaceable change and is likely to occur.
Medium	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. The effect would be long-term though reversible, and is likely to occur.
Low	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. The effect would be short to medium term through reversible and could possibly occur.
Negligible	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. The effect would be short-term, intermittent and reversible and unlikely to occur.

Significance of Effect

15.4.5.6 The significance of the effect upon commercial fisheries is determined by correlating the magnitude of the impact and the sensitivity of the receptor, as presented in Table 15.7. On this basis potential impacts are assessed as of negligible, minor, moderate and major significance (definitions are provided in Chapter 2: Overview of EIA Methodology).

15.4.5.7 For the purposes of this assessment, any effects with a significance level of major and/or moderate have been deemed significant in EIA terms, while those of minor or negligible are deemed non-significant.

Table 15.7 – Effect Significant Matrix

		Sensitivity			
		High	**Medium**	**Low**	**Negligible**
Magnitude	**High**	Major	Major	Moderate	Minor
	Medium	Major	Moderate	Minor	Minor
	Low	Moderate	Minor	Minor	Negligible
	Negligible	Minor	Minor	Negligible	Negligible

15.4.6 Standard Mitigation

15.4.6.1 A range of standard mitigation measures has already been applied to the Project as part of the over-arching site selection and iterative design process (see below and Chapter 3: Site Selection and Alternatives). These have been introduced in order to minimise potential impacts of the Project on any affected receptors.

15.4.6.2 Standard mitigation measures which the Project has already implemented, or is committed to in the future, in order to minimise potential impacts on commercial fisheries are listed below.

- The initial site-selection process specifically included fisheries activity data in order to try and avoid areas of high importance/activity;
- Communication and engagement with the commercial fishing community through a dedicated project FLO (including communication via Notices to Mariners (NtMs) and Kingfisher notifications);
- Use of Safety Zones around installation vessels during construction, major maintenance works and decommissioning;
- All material disturbed by the Pre-Lay Grapnel Run (PLGR) shall be recovered (unless there is a valid reason why an item cannot be safely recovered);
- The size of the Pre-Lay Grapnel (PLG) shall be optimised for the expected duty and seabed obstacles to be cleared; over-sized PLGs shall not be used;
- Ensure all subsea cables are buried to a suitable depth to avoid interaction with fishing gear. Where burial is not possible, due to ground conditions, the Project will ensure appropriate cable protection is deployed and clearly marked on relevant charts;
- In any areas where there may be areas of unburied/shallow buried/free-spanning cable, guard vessels and/or temporary surface marker buoys will be deployed;
- A Project-specific Cable Mitigation and Monitoring Plan be developed which sets out the proposed strategy for monitoring the state of the offshore export cable and what mitigation measures would be implemented;
- Cable protection shall be designed to minimise snagging hazards, for example by minimising height above seabed, smooth and shallower profiles, grade used for rock placement, type of rock (e.g smoother edges);
- Any post-lay cable exposure for whatsoever reason shall be published in the Kingfisher Information bulletins;
- Development of agreed transit routes for construction vessels to avoid damage to static gear;
- Clearly marking the Proposed Development and Project infrastructure, including submitting ‘as-laid' co-ordinates of the cable route to the UK Hydrographic Office (UKHO) via a H102 hydrographic note and KIS-ORCA Service; 'as-laid' cables shall be marked on Admiralty Charts and fisherman's awareness charts (paper and electronic format);
- Project vessels to comply with appropriate regulations, such as the International Regulations for Preventing Collisions at Sea, (IMO, 1972);
- Project vessels to exhibit appropriate lightings and markings at all times;
- Structures within the array area will be marked and lit in accordance with International Association of Lighthouse Authorities technical guidance (IALA, 2021); and

- Deployment of anchors/anchor chains on the seabed will be kept to a minimum in order to reduce disturbance to seabed and will be within the Proposed Development.

15.4.7 Assessment for Residual Effect Significance

15.4.7.1 The assessments and conclusions on significance of effect presented in Section 15.6 assume that these standard mitigation measures listed above have been successfully implemented. Where significant environmental effects remain even after these standard measures have been factored in, then project-specific mitigation measures are detailed and the residual significance of effect presented.

15.4.8 Limitations to Assessment

15.4.8.1 It is acknowledged that changes to the existing baseline could occur, as a result of changes to legislation/management, quotas, conservation restrictions, economic constraints and weather constraints. Changes to the baseline could be in relation to fishing effort, location of fishing and target species. These are discussed further in Section 15.5.

15.4.8.2 Limitations with data sources used have been reviewed fully in Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report. It should be noted that although smaller vessels are not captured within the MMO and ICES VMS data, information on their activity has been reviewed through feedback from consultation; and other supplementary data sources, such as the Sea Fishing Atlas of Wales.

15.5 Baseline Conditions

15.5.1.1 Characterisation of the baseline conditions for commercial fisheries is based upon the Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report and has been undertaken using the data sources listed in Section 15.4. Limitations of the data have been discussed fully in the Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report.

15.5.2 Regional Overview

15.5.2.1 The Welsh fishing industry contributed 3% of the UK industry total in 2018 (Uberoi et al., 2020). Despite the Welsh fishing fleet being composed mainly of 10 m and under vessels, they only land around 25% of the catch, and the value of landings into Wales is almost evenly split between European vessels, other UK vessels, and Welsh vessels (Carpenter et al., 2018). Landings in Wales are mostly shellfish.

15.5.2.2 Commercial fishing in the Celtic Sea region is widely distributed, with higher activity observed in ‘The Smalls’ which is west of the Project. Demersal fish and shellfish are the key target species for commercial fisheries in this region. The most important demersal target species include cod, haddock, ling, monkfish, plaice, ray, skate and sole; whilst key shellfish species include lobster, nephrops, crab, scallop, razor clam and whelk. Pelagic fish landings from this area are of less economic importance, and mainly consist of herring and mackerel.

15.5.3 Pembrokeshire Fisheries

15.5.3.1 Noting that the offshore export cable will pass through the nearshore waters of Pembrokeshire before landfall at West Angle Bay, an overview of nearshore Pembrokeshire fisheries is provided below.

15.5.3.2 The Pembrokeshire fisheries provide jobs for approximately 100 people, and there are approximately 60 businesses in Pembrokeshire supporting the industry, including suppliers and retailers (ONS, 2020). It has been estimated that there are eight fish suppliers based in Milford Haven, two in Fishguard and one in Tenby (Levercliff, 2020). The current processing sector is small, with processing in Pembrokeshire generally based around shellfish, such as crab and lobster; it has been suggested that there is scope for growth in the processing sector, with a new processing hub in Milford Haven. There has been recent investment in ice machines to preserve catch, and in coastal infrastructure such as hard standings (Pembrokeshire County Council, 2015).

15.5.3.3 In Pembrokeshire, the ports with the highest landings in the region are Milford Haven, Fishguard, Saundersfoot and Aberystwyth. The closest fishing port to landfall is Milford Haven, which sees a variety of species landed. Milford Haven is one of the ports with the highest proportion of ≤10 m vessels in the UK (MMO, 2019), with 377 fishing vessels that use it as their administrative port, 94% of which are ≤10 m vessels. Saundersfoot, located east of the offshore export cable corridor, is another important local port, where there are relatively high landings of whelks.

15.5.3.4 Most fishermen working off the Pembrokeshire coast rely heavily on potting for crab and lobster, with activity peaking during the warmer months. Generally, lobster and velvet crab are caught inshore and around the Pembrokeshire islands, whereas brown crab are caught both inshore and offshore. Pots and nets are also used for crayfish around the rocky Pembrokeshire coast, and for spider crab both inshore and offshore.

15.5.3.5 Since 1995 significant whelk fisheries have developed in Carmarthen Bay and offshore of Gower, Fishguard and Milford Haven. This species is typically found on muddier ground than crab and lobster. Larger vessels are active in the offshore grounds during the winter and set up to 2,000 pots each. On the inshore grounds up to 1,000 pots per boat are used. Following consultation by Welsh Government in 2017, the minimum landing size for whelks was increased in both July 2019 and July 2020 (Welsh Government, 2020). Welsh Government has also announced intentions to introduce landing caps to conserve stocks and ensure the sustainability of the Welsh whelk fishery.

15.5.3.6 In Cardigan Bay (north Pembrokeshire) several local and some visiting boats, mainly Scottish, dredge for scallop, particularly in winter, landing into Fishguard and Milford Haven (Walmsley and Pawson, 2007). There are restrictions which drive this seasonality of the scallop fishery, such as The Scallop Fishing (Wales) (No.2) Order 2010, which prohibits the taking of scallops between 1 May and 31 October. Trawlers target native oyster in winter in Swansea Bay and Milford Haven. Cuttlefish are caught in pots in spring along the coast from Milford Haven to St Brides Bay (Walmsley and Pawson, 2007).

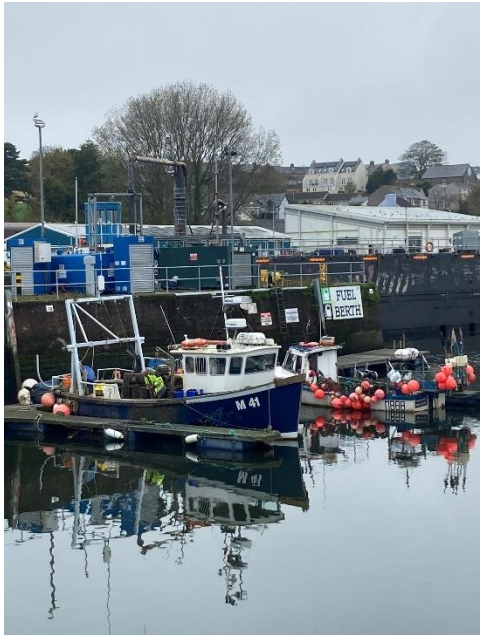
15.5.3.7 Since the 1980s, the ray fishery has expanded along the south Welsh coast, and trawlers concentrate their efforts between 3-6 nm offshore. Flatfish and rays (principally thornback) are taken in fixed nets and otter and beam trawls from spring through to the end of the year. Boats using gill nets and otter trawls take cod and whiting during the winter months. Large-meshed tangle nets are used for rays and large flatfish such as turbot. In many areas, Welsh Government byelaws prohibit netting between April and October, and a Minimum Mesh Size (MMS) of 100 mm is in place for all nets, except trawls and purse seines.

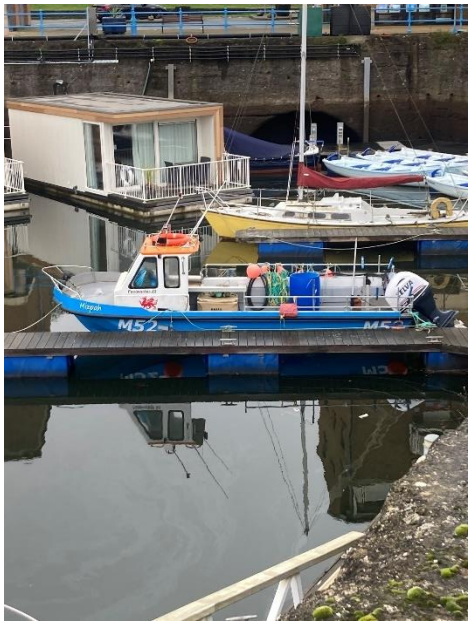
15.5.3.8 A mixed catch is landed throughout the year by the trawler fleet along the south Welsh coast, which focuses its efforts in the outer Bristol Channel and Cardigan Bay. These trawlers mainly fish inshore and are mostly <10 m; competition outside 6 nm from the coast can be intense, especially when the sole fishery attracts visiting beam trawlers from the south coast of Devon, Cornwall and Belgium. The majority of otter trawling effort along the south Welsh coast is by Devon and Cornish vessels operating twin rig gear. There is also Belgian activity in the 6-12 nm zone (Walmsley and Pawson, 2007).

15.5.3.9 Bass are increasingly caught in fixed and drift nets, by rod and line, on longlines and, more recently, in high lift trawls, throughout the year along the south Welsh coast. Mullet are sometimes taken as a bycatch in nets. The bass rod and line fishery has expanded since the late-1980s, due to numerous netting restrictions, and the low cost of fishing gear contrasting with the high demand for this species. The popularity of bass angling has also increased demand for sandeel as bait, and many rod and line fishermen also utilise sandeel nets to collect this species in shallow sandy bays to provide bait for their bass fishing activity. Mackerel are caught in drift nets and by hand-lining and the charter angling sector is highly dependent on mackerel during the summer. Sprats are occasionally taken in mid-water trawls and inshore in gill nets (Walmsley and Pawson, 2007).

15.5.3.10 The intertidal regions of the Pembrokeshire coast are recognised for harvesting cockle, mussel, Pacific and native oyster, clam and razor shell.

15.5.3.11 Boat-based recreational angling occurs at a relatively low level around the wider Study Area, focussed on discrete locations, such as the Turbot Bank and offshore reefs. There are a number of established charter angling businesses that operate in the Study Area. The majority of trips are focussed inshore (out to 12 nm) but some vessels offer trips further offshore, including shark fishing in the Celtic Deeps region.





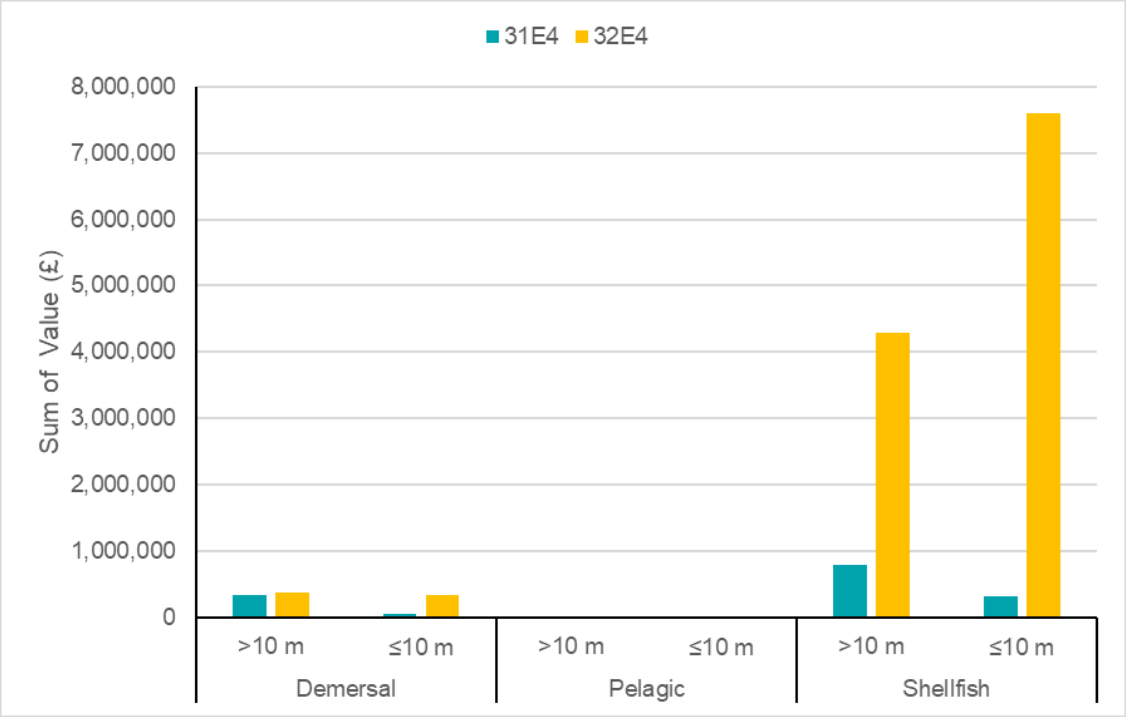
Graphic 15.1 – Selection of Milford Haven based commercial fishing vessels (pictured November, 2021)

15.5.4 Overview of Landings Data in the Study Area

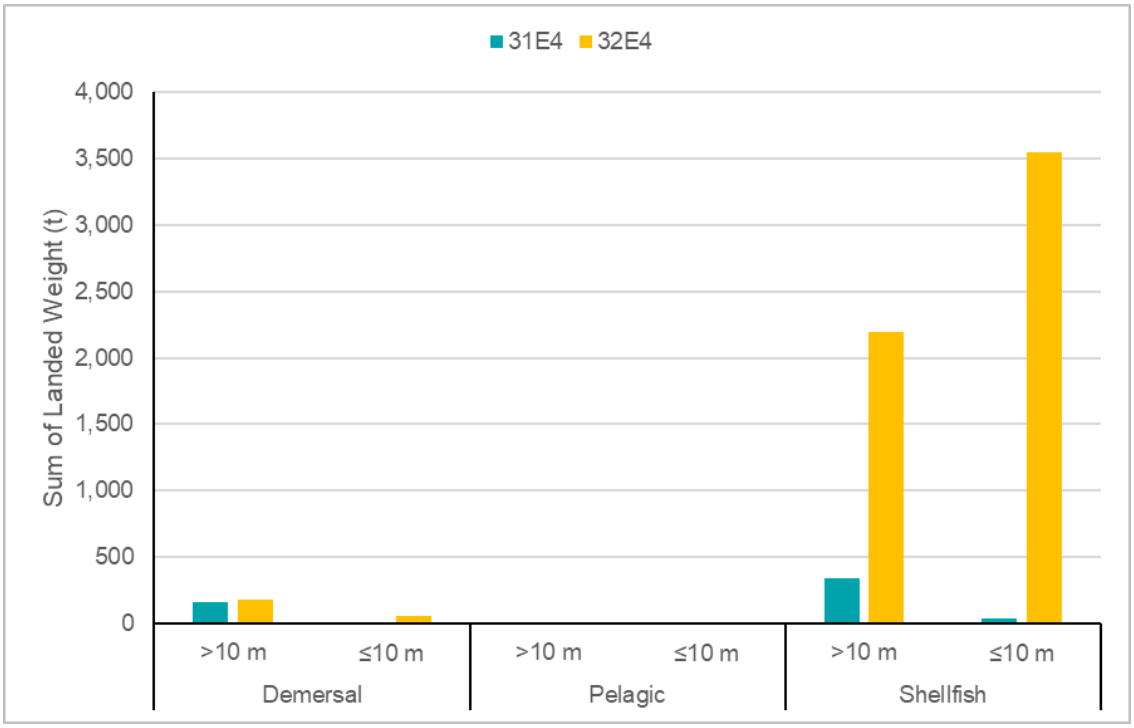
15.5.4.1 Data compiled by both the MMO (MMO, 2020a) and STECF (STECF, 2018) were reviewed for the most recently available five years (2015-2019 and 2012-2016 respectively) and were filtered to show only landings from the Study Area (ICES Rectangles 31E4 and 32E4). The array area is located in 31E4; the offshore export cable lies within 31E4 and 32E4.

15.5.4.2 The MMO data show that the total landed value of fish across the time period (2015-2019) by UK vessels was over £12 million from ICES Rectangle 32E4, and over £1.5 million from ICES Rectangle 31E4 (Graphic 15.2). As would be expected, smaller (≤10 m) vessels contributed more to the overall weight and value of fish landed from 32E4 which is further inshore, whereas larger (>10 m) vessels contributed more to the landings in 31E4.

15.5.4.3 Pots and traps were the gear types which accounted for the majority (84%) of the landed weight and value of fish from 31E4 and 32E4 by UK vessels. Shellfish accounted for 92% of the total landed value from 31E4 and 32E4, with the majority caught in 32E4 (approximately £7.5 million) (Graphic 15.3), highlighting the importance of the Welsh inshore potting fishery. Key species within 32E4 were whelk, brown/edible crab, spider crab, lobster and bass (Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report). Within 31E4, shellfish and demersal species were the key species caught by UK vessels (>10 m). Key species within 31E4 were brown/edible crab, nephrops, blonde ray, whiting, lobster, thornback ray and haddock.



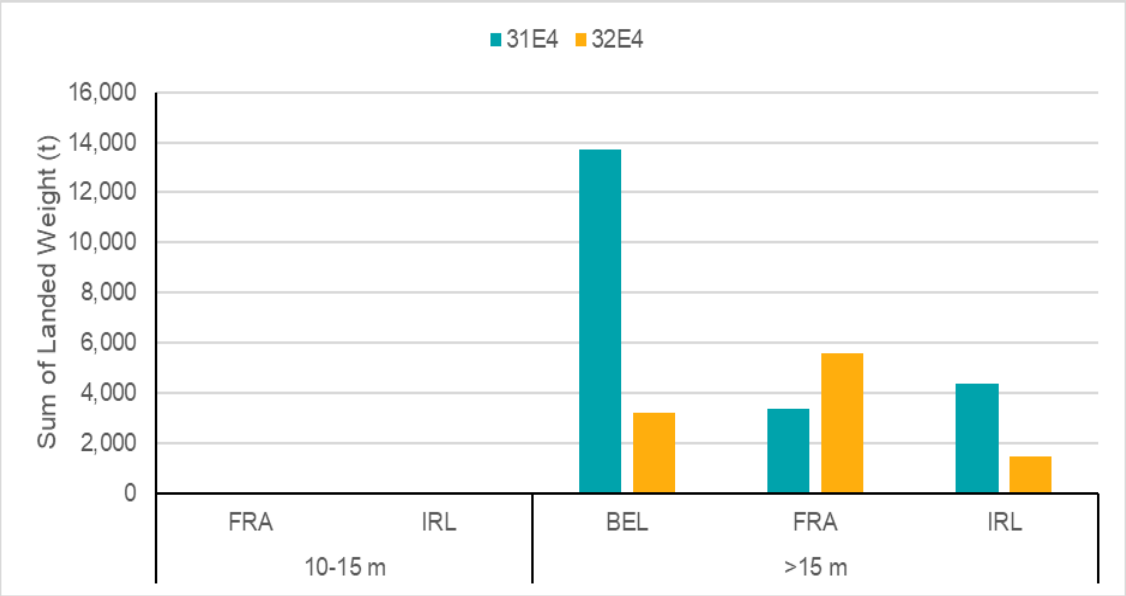
Graphic 15.2 – Sum of Landings Value from ICES Rectangles 31E4 and 32E4 (2015-2019), displayed by Vessel Size Class and Species Group (UK vessels) (Source: MMO, 2020a)



Graphic 15.3 – Sum of Landings Weight (tonnes) from ICES Rectangles 31E4 and 32E4 (2015-2019), displayed by Vessel Size Class and Species Group (UK vessels) (Source: MMO, 2020a)

15.5.4.4 Vessels from Belgium, France and Ireland were active across both ICES Rectangle 31E4 and 32E4. Of the three nationalities, Belgian vessels landed the largest proportion of total weight of fish caught in ICES Rectangle 31E4 (Graphic 15.4). French vessels landed the largest proportion of total weight from 32E4.

15.5.4.5 The majority of total landings from non-UK vessels in the region were from vessels >15 m in length, utilising beam trawl and bottom trawl/seine. Key species were rays and skates, whiting, anglerfish, haddock and common sole. There was a large variety of species caught by the Belgian and French fleets and, given the understanding that both fleets almost exclusively use beam and bottom trawls, this suggests that other species may have been caught as bycatch during fishing for the main target species. Approximately 80% of the total Irish tonnage landed from the region by Irish vessels constituted whiting, nephrops and Atlantic herring.



Graphic 15.4 – Sum of Landings Weight (tonnes) from ICES Rectangles 31E4 and 32E4 (2012-2016) by Vessel Size Class and Nationality (non-UK vessel) (Source: STECF, 2018)

15.5.5 Temporal Trends in the Study Area

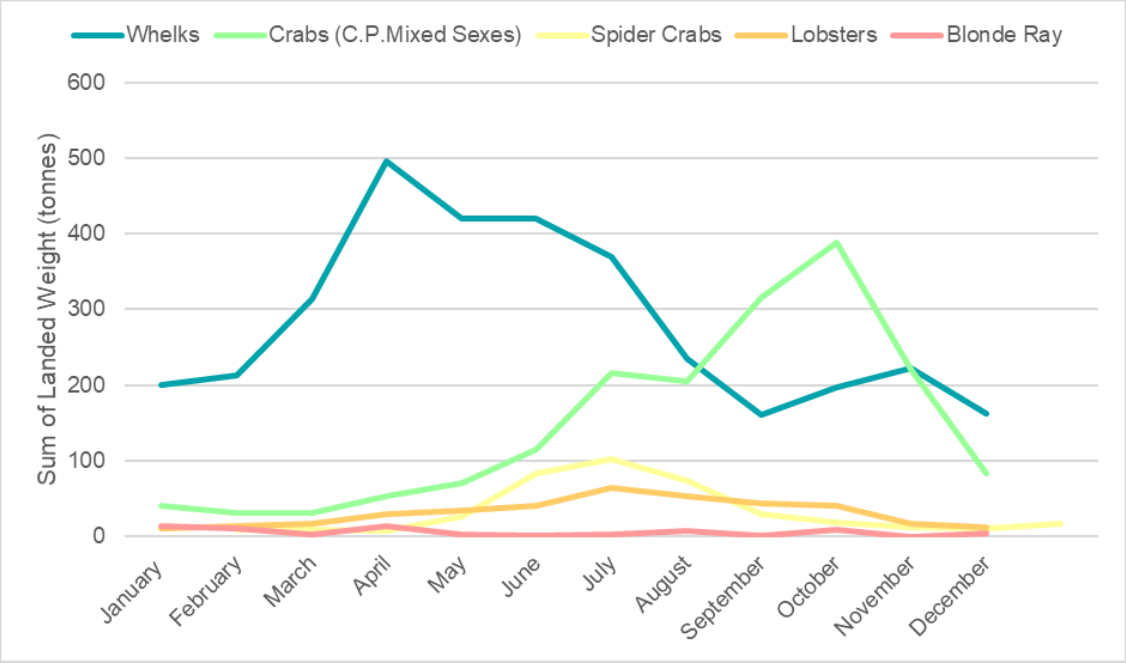
15.5.5.1 Landings by weight and value, for UK vessels between 2015-2019, varied across both 31E4 and 32E4, with no obvious general trend. Variations can generally be attributed to changes in which species were caught.

15.5.5.2 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 April and October each year.

15.5.5.3 For the top five individual species landed by UK vessels within the Study Area (Graphic 15.5) the following were the key periods for landings by weight and value:

- Whelk - April to July;
- Brown/edible crab – July to November;
- Spider crab – May to July;
- Lobster - April to October; and
- Blonde ray – no clear seasonal pattern.

15.5.5.4 For the non-UK fleet, based on data presented only by Quarter, the period July to September appears to be the most important in terms of landings, especially for species such as whiting, haddock and common sole. January to March was the least productive for most species, with the exception of rays and skates.



Graphic 15.5 – Seasonal Trends in Top five Species by Total Landings Weight (tonnes) from UK Vessels (2015-2019) for ICES Rectangles 31E4 and 32E4 (Source: MMO 2020a)

15.5.6 Spatial Distribution of Fishing Activity/Effort in the Study Area

15.5.6.1 The spatial distribution of fishing activity/value in the entire region has been described within Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report, based on review and analysis of multiple datasets as well as more direct consultation with individual skippers and fisheries organisations (due to the fact that activity of the <10 m fleet is typically under-represented by official activity datasets, as a result of VMS not being a requirement on these smaller vessels); relevant datasets are listed in Section 15.4. The datasets show that fishing occurs along all parts of the offshore export cable corridor to varying degrees, with a lower intensity within the array area.

Static Gear Vessels

15.5.6.2 Analyses of the MMO VMS data (2016-2019) (MMO, 2021a), split by ICES subrectangle, shows that the spatial distribution of UK static/passive gear vessels ≥15 m varies yearly. Within the Study Area during 2016-2019, UK static ≥15 m vessels generally showed varying levels of effort inside the 12 nm limit (ICES Rectangle 32E4), with only low levels of effort overlapping with the offshore export cable corridor; the majority of this activity was located to the west of the offshore export cable corridor (Volume 2, Figure 15.2). During 2016-2019, low-moderate levels of UK static ≥15 m vessels were observed across the southern and eastern parts of 31E4, but there was only overlap with the array area during 2019.

15.5.6.3 In order to estimate the total annual value of landings generated by ≥15 m static gear vessels along the offshore export cable corridor (approximately 450 m width) and at the array area, the proportional area technique was used on the 2016-2019 MMO VMS data, split by ICES subrectangle. This method assumes that effort and catches were evenly distributed over each subrectangle, which cover an area approximately 19.3 km^2. The average annual value of landings (between 2016-2019) by ≥15 m static gear vessels from along the offshore export cable corridor was estimated to be approximately £363. The average annual value of landings (between 2016-2019) by ≥15 m static gear vessels from within the array area was estimated to be approximately £1,440.

15.5.6.4 Additional datasets were used to provide distribution information on activity by smaller vessels. The Sea Fishing Atlas of Wales data (NRW, 2010) indicated that the inshore whelk fishery was active across the majority of the area within 12 nm, whereas vessels using lobster pots, crab pots and set nets were mainly active in the nearshore regions in the Study Area (approximately 0-3 nm).

15.5.6.5 Fisheries liaison work undertaken by MarineSpace prior to, and during, project-specific geophysical and environmental surveys of the offshore export cable corridor, completed in summer 2020, identified a total of 12 static gear vessels (all ≤12 m) as having the potential to be directly affected. The surveys extended along the entire offshore export cable corridor, however none of the affected static gear vessels was active beyond approximately 9 nm (Volume 2, Figure 15.4). The majority of these vessels were particularly active in the nearshore region, i.e., within the Milford Haven waterway and around the Angle peninsula, whereas only four vessels were active between 3-9 nm. The 12 vessels identified in 2020 were predominantly targeting crab (brown, spider and velvet), crawfish, lobster, whelk and prawn. Other vessels may be active at different times of year, particularly as the whelk season is earlier in the year.

Mobile Gear Vessels

15.5.6.6 Mobile gear vessels were active across the majority of the Study Area, particularly beyond 6 nm from the coast, as shown in both the MMO (Volume 2, Figure 15.2) and ICES VMS data (Volume 2, Figure 15.3) (MMO, 2021a and ICES, 2017) (both split by ICES subrectangle), the Sea Fishing Atlas of Wales (NRW, 2010), the UKFIP dataset (Crown Estate and NFFO, 2013), feedback from consultations and the Project Erebus: Marine Traffic Data Report (NASH Maritime, 2021). This range of data sources ensured that all vessel sizes were captured. The data indicate that the array area is in an area of lower fishing intensity for the wider region, particularly in comparison to an area west of the array area called 'The Smalls', which is the main fishing ground in this region; this was confirmed through feedback from fisheries stakeholders.

15.5.6.7 Within the Study Area, otter trawl vessels were generally focused between 6-12 nm along the offshore export cable corridor, and fishing effort was observed as moderate (Volume 2, Figure 15.2, Figure 15.3 and Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report). Feedback from consultation indicated that these are likely fishing vessels from Cornwall and Devon, which tow across the offshore cable corridor with the tide (Volume 2, Figure 15.5) (as can be observed in the UKFIP data). The AIS data also indicated that several Belgian trawlers were active within the 6-12 nm. Otter trawl effort at the array area was defined as low-moderate. Within the wider region, otter trawl effort was highest in 'The Smalls', which is approximately 25 km west of the array area (Volume 2, Figure 15.2 and Figure 15.3). During the marine traffic surveys (August and December 2020), two Belgian otter trawl vessels were observed in the vicinity of the array area.

15.5.6.8 Within the Study Area, beam and bottom trawls showed moderate fishing effort at the array area and low effort along the offshore export cable corridor (Volume 2, Figure 15.2, Figure 15.3 and Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report). These are likely to be vessels from the UK as well as Belgium, France and Ireland. One Newlyn beam trawl vessel was observed within the vicinity of the array area during the December 2020 marine traffic survey, and a Belgian beam trawl vessel was identified within the AIS data from the same time period. Feedback from stakeholders indicated that a beam trawler from Brixham targets Dover sole on softer ground in the vicinity of the array area. Fishing effort by beam trawl vessels within the Study Area was generally lower than in neighbouring areas, such as off the north Devon coast beyond 12 nm.

15.5.6.9 Two Belgian trawlers were identified during the offshore geophysical survey in November 2020, and another Belgian trawler was observed close to the wave buoy during September 2020.The AIS data also indicated that vessels from Belgium, France, Holland, Poland and the United Kingdom were present beyond 12 nm and in the vicinity of the array.

15.5.6.10 Drift lines were used by vessels along the 12 nm limit, and commercial rod and lines were used within the 12 nm limit across the Study Area (Sea Fishing Atlas of Wales (NRW, 2010)).

15.5.6.11 Based on the proportional area technique using MMO VMS data, the average annual value of landings (between 2016-2019) by ≥15 m mobile gear vessels from along the offshore cable corridor was estimated to be approximately £604. The average annual value of landings (between 2016-2019) by ≥15 m mobile gear vessels from within the array area was estimated to be £502. ICES data indicated that the value of landings in 2017, from the array area, for non-UK mobile bottom contacting gear vessels, was approximately £73,000.

Local Ports

15.5.6.12 Fishing effort by port appeared relatively equally distributed across both the Pembrokeshire coast and the north Devon coast (MMO, 2021b) (Volume 2, Figure 15.6). The two ports with highest fishing effort close to the Project offshore export cable corridor were Milford Haven (within the Study Area) and Saundersfoot (east of the Study Area).

15.5.6.13 Belgian and English vessels (>10 m) landed the majority of demersal species in Milford Haven (MMO, 2020b), whereas Welsh vessels landed the majority of shellfish species (Belgian, English and Jersey vessels also made notable landings of shellfish species) (Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report). A total of 82 species was landed at Milford Haven during 2015-2019, and the top five species in terms of both landed weight and value were sole, megrim, whelk, monk or angler, and brown/edible crab.

15.5.6.14 Welsh vessels (≤10 m) were dominant at the port of Saundersfoot in terms of landed weight, with whelks constituting the majority of the catch. Bass was also a notable species landed in species, particularly with regards to value (Volume 3, Technical Appendix 15.1: Commercial Fisheries Technical Report).

Anticipated Trends to the Existing Environment

15.5.6.15 As described in the Offshore Energy Strategic Environmental Assessment 3 (OESEA 3) (DECC, 2016), the baseline for commercial fisheries is constantly evolving, as the fishing industry is dynamic with frequent and sometimes unpredictable changes in fish abundance and distribution, climatic conditions, management regulations and fuel costs, all of which affect activity. The fishing industry has shown a general decline over recent years. The baseline was assessed using the most recent datasets available over a period of at least 4 years, and combined with information from stakeholders to account for any yearly fluctuations or general trends.

15.5.6.16 Up to 31 December 2020, fisheries within UK waters, including the Celtic Sea region were managed through the European Union (EU) Common Fisheries Policy (CFP), with fisheries of some stocks managed by the North East Atlantic Fisheries Commission (NEAFC) and by coastal state agreements. Since the withdrawal of the UK from the EU on the 31 December 2020, the new EU-UK Trade and Cooperation Agreement stipulates that there will be a 5-year transition phase, whereby 25% of the EU quota for British waters will be transferred to the UK fishing fleet. At the time of writing, uncertainty still remains with respect to actual impacts of the UK's withdrawal from the CFP and how fishing activity in and around the Project may change over the lifetime of the Project.

15.5.6.17 In Wales, the proportion of total catch value from quota species has been declining over the last 20 years. Partly due to a lack of quota allocation, the Welsh fleet now relies predominantly on non-quota species such as shellfish and bass. Although this means the Welsh fleet is less sensitive to changes in quota than other parts of the UK, it has limited the fishing opportunities available to the Welsh fleet. A high proportion of the Welsh quota is held by non-UK vessels. This is likely to change with the new trade agreement, as quota swaps with EU member states are no longer allowed. In the Study Area there could be a reduction in mobile gear vessels from Belgium, followed by an increase in UK vessels, which in turn may affect domestic landings.

15.5.6.18 Prior to the new trade agreement, the majority of fish caught in Welsh waters 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 significant barrier.

Summary of the Baseline Environment

15.5.6.19 A wide range of official landings and activity data and additional information gathered via review of reports, direct consultation with key fishing organisations and fisheries liaison with individual vessels has been assessed to characterise commercial fishing activity in the Study Area. The review has concluded that whilst fishing does occur in and around the array area, by both UK and non-UK vessels, the extent and intensity of activity is much less than in other parts of the Celtic Sea region.

15.5.6.20 The offshore part (>12 nm) of the export cable corridor is of low-moderate importance to both mobile and static gear vessels.

15.5.6.21 The nearshore region (0-3 nm) supports moderate numbers of smaller vessels deploying static gear for crab, lobster and whelk. Lower numbers of static gear vessels were observed in the inshore region (3-12 nm) than the nearshore region. Shellfish landings from these static gear fleets in the Study Area were a relatively major contribution to the landings at Milford Haven. Landings of shellfish species generally peaked between April to October.

15.5.6.22 Within the wider region, activity by mobile gears was observed in higher intensities outside of the Study Area. Within the Study Area, otter trawls showed moderate activity along the offshore export cable corridor between 6-12 nm, and relatively low activity at the array area. Moderate beam trawl activity was observed at the array area, and these vessels showed low activity along the offshore export cable corridor.

15.6 Potential Environmental Effects

15.6.1.1 The following assessment provides a summary of all effects identified during Scoping, and those which have been noted as the EIA has progressed. Each effect is not necessarily relevant to all stages of the Project, and thus effects have been assessed within the stage of the Project at which they will occur (construction, operation and maintenance, and decommissioning). Further information on the EIA process and methodology is outlined in Section 15.4 and Chapter 2: Overview of EIA methodology.

15.6.1.2 The effects have been assessed on the current baseline, which could change over the operational life of the Project, as discussed in Section 15.5.

15.6.1.3 The receptors have been identified through review of data and feedback from consultation (Table 15.8). A total of five main receptors have been defined by the size of vessel and the geographic area of activity.

15.6.1.4 The worst case parameters assumed for each individual potential impact on commercial fisheries are detailed below in Table 15.9. Further information on the PDE is described in Chapter 4: Proposed Development Description.

Table 15.8 – Key Commercial Fishing Receptors Used in this Assessment

Receptor Group	Description
(A) ≤12 m nearshore static gear vessels	Smaller (≤12 m) static gear vessels active in the nearshore and inshore regions (between 0-3 nm offshore).
(B) ≤12 m inshore static gear vessels	Smaller (≤12 m) static gear vessels active in the inshore regions (between 3-12 nm offshore).
(C)>12 m static gear vessels	Larger (>12 m) static gear vessels that are active across the Study Area.
(D) >12 m inshore mobile gear vessels	Larger (>12 m) mobile gear vessels that are active inshore in the inshore regions (between 3-12 nm offshore).
(E)>12 m offshore mobile gear vessels	Larger (>12 m) mobile gear vessels that are active offshore, beyond 12 nm.

Table 15.9 - Project Design Envelope Parameters Relevant to Commercial Fisheries

Potential Pathway Change / Impact	Realistic Worst Case Scenario	Justification
Construction		
Temporary loss of access to fishing grounds) (and associated reduction in revenue) due to presence of installation vessels and (temporary) construction-phase safety zones	• Maximum overall offshore construction duration = 8 months (dates/season); • During construction phase, temporary 500 m safety zones will be imposed around all major construction vessels; Offshore export cable: • Length: 49 km; • Area of seabed impacted via cable installation: 650,000 m^2; • Volume of potential sandwave levelling 403,000m^3; • Sandwave levelling: 15 days (based on 500m/day and inclusive of operation constraints/contingency and weather); • Boulder clearance: 30 days (based on 500m/day and inclusive of operation constraints/contingency and weather); • PLGR: 24 days (based on 6 km/day and inclusive of operation constraints/contingency and weather); • Multipass/pre-trenching 8 days (based on 500m/day and inclusive of operation constraints/contingency and weather); • Installation: 49 days (based on 1km/day and inclusive of operation constraints/contingency and weather) (laying and trenching carried out concurrently; • Post-lay installation burial: 6 days; • Protection installation: 20 days (based on 50m/hr and inclusive of operation constraints/contingency and weather); • Total duration of the offshore export cable installation: 152 days (based on sandwave levelling, boulder clearance, PLGR, multipass, installation, post-lay burial and protection installation);	This represents the maximum duration and extent of fishing exclusion throughout the construction phase and hence the greatest potential to restrict access to fishing grounds. For the total duration of the offshore export cable installation works (152 days), these activities will be split out into approximately seven discrete phases of works, each separated by approximately 1-2 weeks. In times of no activity, fishing will be permitted where possible.

Potential Pathway Change / Impact	Realistic Worst Case Scenario	Justification
	• Duration of time between each installation phase: 1-2 weeks (some activities will run concurrently); • Duration of time between installation and rock protection: 12 weeks; Array area: • Array area: 43.5 km^2; • Array area plus 1 nm buffer: 103.5 km^2; • Number of WTG: 10; • Number of array cables: 10; • Number of mooring lines: 35; • Number of anchors: 63; • Area of seabed impacted by array cable installation: 285,00 m^2; • Area of seabed impacted via array cables protection plus stabilisation: 67,250 m^2; • Total swept area of catenary: 1,303,194 m^2; • Cable array installation: 7 days; • Post lay burial: 9 days; • Protection installation: 47 days; • Hook-up installation: 25 days; and • Duration of time between each installation phase: 1-2 weeks.	
Temporary displacement of fishing activity into other areas (and associated reduction in revenue) due to presence of installation vessels and construction-phase safety zones	As per worst case scenario for 'temporary loss of access to fishing grounds'.	This represents the maximum duration and extent of fishing exclusion throughout the construction phase and hence the greatest potential to displace fishing activity into other area.
Temporary increased steaming times due to the presence of installation vessels and (temporary) construction-phase	Steaming/transit would not be permitted within 500 m of the main cable lay vessel (CLV).	Represents the maximum potential disruption to established steaming routes.

Potential Pathway Change / Impact	Realistic Worst Case Scenario	Justification
safety zones during construction		
Change in distribution of commercially exploited fish and shellfish populations due to construction activities	Impacts to commercially important fish and shellfish are assessed in Chapter 10: Fish and Shellfish Ecology.	Impacts to commercially important fish and shellfish are assessed in Chapter 10: Fish and Shellfish Ecology.
Snagging resulting from seabed obstructions	Offshore export cable: • Duration of time between surface-laid cable and burial/rock placement: 12 weeks; and • Total length of cable with rock protection: 7.5 km; • Area of seabed impacted via offshore export cable protection: 83,380 m^2.	Represents the maximum duration and extent of seabed obstructions during the construction phase which could result in snagging.
Supply chain opportunities for local fishing vessels	There may be opportunities for commercial fishing vessels to provide marine operation support during the construction phase of the Project.	Beneficial impact for commercial fishing vessels.
Collision risk between fishing vessels and Project vessels	Impacts to commercial fishing vessels with regards to collision risk are assessed in Chapter 16: Shipping and Navigation.	Impacts to commercial fishing vessels with regards to collision risk are assessed in Chapter 16: Shipping and Navigation.
Operation and Maintenance		
Loss of access to fishing grounds (and associated reduction in revenue) due to long-term presence of Project infrastructure	• Total area occupied by WTG 32 km^2; • Array area: 43.5 km^2; • Array area plus 1 nm buffer: 103.5 km^2; • Assumed that entire offshore export cable (inclusive of cable-protection) will be over-trawlable and that static gear could be set; and • Operation duration: 25 years.	This represents the maximum duration and extent of fishing exclusion throughout the operation phase and hence the greatest potential to restrict access to fishing grounds.
Displacement of fishing activity into other areas	As per worst case scenario for 'loss of access to fishing grounds'.	This represents the maximum

Potential Pathway Change / Impact	Realistic Worst Case Scenario	Justification
due to long-term presence of Project infrastructure		duration and extent of fishing exclusion throughout the operation phase and hence the greatest potential to displace fishing activity into other area.
Temporary disruption due to export cable repair/remediation events	• Estimated cable repair during lifespan: 5; • Estimated cable repair length: 1 km length (50 m wide) • Total estimated export cable repair area impacted: 250,000 m^2; • Duration of each cable repair: 2 weeks; • Cable remediation events – reburial: 12; • Footprint of seabed disturbance during remediation event: 150,000 $m^{2;}$ • During maintenance works, temporary 500 m safety zones will be imposed around all vessels; and • Vessel quantities per year: 2	This represents the maximum predicted (temporary) disruption to fishing activity along the export cable route due to cable repairs / remediation
Increased steaming times due to the presence of the Proposed Development FLOW	As per worst case scenario for *"loss of access to fishing grounds"*.	Represents the maximum potential disruption to established steaming routes.
Snagging resulting from seabed obstructions	As per worst case scenario for 'loss of access to fishing grounds', with the additions of: Offshore export cable: • Target burial depth: 3 m; • Type of cable protection: rock dump, rock bags; • Rock size: 30 cm; • Rock berm footprint: 11 m base width x 2 m height. • Total length of export cable with rock protection:7,500 m; and • Area of seabed impacted via offshore export cable protection: 83,380 m^2.	Represents the maximum duration and extent of seabed obstructions during the operation phase which could result in snagging.

Potential Pathway Change / Impact	Realistic Worst Case Scenario	Justification
Supply chain opportunities for local fishing vessels	There may be opportunities for commercial fishing vessels to provide marine operation support during the operation and maintenance phase of the Project.	Beneficial impact for commercial fishing vessels.
Change in distribution of commercially exploited fish and shellfish populations due to presence of Project infrastructure	Impacts to commercially important fish and shellfish are assessed in Chapter 10: Fish and Shellfish Ecology.	Impacts to commercially important fish and shellfish are assessed in Chapter 10: Fish and Shellfish Ecology.
Collision risk between fishing vessels and the Proposed Development	Impacts to commercial fishing vessels with regards to collision risk are assessed in Chapter 16: Shipping and Navigation.	Impacts to commercial fishing vessels with regards to collision risk are assessed in Chapter 16: Shipping and Navigation.
Change in navigable water depth (e.g. from rock-berms)	• Type of cable protection: rock dump, rock bags; • Rock size: 30 cm; • Rock berm footprint: 11 m base width x 2 m height; and • Area of seabed impacted via offshore export cable protection: 83,380 m^2	Changes in navigable water depth are assessed in Chapter 16: Shipping and Navigation.
Decommissioning		
Temporary loss of access to fishing grounds (short-term) due to presence of decommissioning vessels and (temporary) safety zones (and associated reduction in revenue)	As per worst case scenario for temporary loss of fishing grounds during construction.	Decommissioning works will be very similar to construction activities, albeit in reverse.
Temporary increased steaming times due to the presence of vessels and safety zones during decommissioning	As per worst case scenario for increased steaming times during construction.	Decommissioning works will be very similar to construction activities, albeit in reverse.

Potential Pathway Change / Impact	Realistic Worst Case Scenario	Justification
Supply chain opportunities for local fishing vessels	There may be opportunities for commercial fishing vessels to provide marine operation support during the decommissioning phase of the Project.	Decommissioning works will be very similar to construction activities, albeit in reverse.
Collision risk between fishing vessels and decommissioning vessels	Impacts to commercial fishing vessels with regards to collision risk are assessed in Chapter 16: Shipping and Navigation.	Impacts to commercial fishing vessels with regards to collision risk are assessed in Chapter 16: Shipping and Navigation.

15.6.2 Construction

Temporary loss of access to fishing grounds (and associated reduction in revenue) due to presence of installation vessels and (temporary) construction-phase safety zones

15.6.2.1 During construction, commercial fishing activity may be affected via temporary loss of access to fishing grounds, and any associated reduction in revenue that may result. They key areas where fishing vessels will likely be excluded from will include the following:

- Application and use of safety zones of up to 500 m from platform edge (at sea level) during construction/major maintenance and decommissioning phases;
- An advisory safe passing distance of up to 1,000 m around work areas (cable landfall proximity) during construction and decommissioning phases, and up to 1,000 m advisory safe distances around cable installation/removal or maintenance vessels; and
- Advisory (temporary) exclusion zones around any areas of surface-laid cable/shallow buried cable prior to any subsequent cable protection works.

15.6.2.2 The realistic worst case scenario for loss of access during construction in the array area is that fishing activity is excluded from the entire array area (103.5 km^2, inclusive of a 1 nm buffer) for the duration of the offshore construction phase (8 months).

15.6.2.3 The realistic worst case scenario for loss of access during installation of the offshore export cable is that access will be prevented for the duration of all the cable works, i.e., sandwave levelling, boulder clearance, the PLGR, pre-trenching, installation, post-lay burial and protection installation. Further information regarding the rates of each phase of works is listed in Table 15.9. Due to the seasonality of activities of the different fishing fleets, the worst case scenario is presumed during peak activity for each receptor group.

15.6.2.4 Standard mitigation measures will minimise the impact of the temporary loss of access to fishing grounds during construction. The array area has been selected in an area of relatively low importance for commercial fisheries in the region, which will ensure that as few vessels as possible will be affected by construction works.

15.6.2.5 The main receptors defined in this assessment all have differing sensitivity, based on the criteria outlined in Table 15.9. The assessment of temporary loss of access to fishing grounds is discussed below, for each different receptor, and summarised in Table 15.10.

≤12 m nearshore static gear vessels (A)

15.6.2.6 Commercial fisheries receptor group A comprises the ≤12 m vessels that deploy static gear in the nearshore region (0-3 nm) in and around the Angle Peninsula and the entrance to the Milford Haven Waterway. The sensitivity of this receptor is judged to be medium, as although vessels have limited recoverability, they are judged to have some ability to mitigate loss of fishing area by operating in alternative areas.

15.6.2.7 Construction works at the array area will not affect this receptor. Therefore, the main element of construction activity that will affect this receptor is the installation of the offshore export cable, specifically in the nearshore region (0-3 nm), where this receptor exhibits relatively high activity. Based on the worst case duration of the phases of construction work for the offshore export cable, there will be approximately 22 days of disruption within 3 nm (this includes worst case scenario delays due to weather and operational constraints), across an area of approximately 4 km^2 (this assumes that fishing is excluded from the entire offshore export cable corridor inside of 3 nm).

15.6.2.8 As the potential area from which this receptor group will have reduced access is small, i.e., between a 100-450 m wide corridor; and the loss of access is expected to be around 22 days, the magnitude of impact is defined as low (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).

15.6.2.9 Taking the medium sensitivity of the receptor and the low magnitude of the impact, the temporary loss of access to fishing grounds is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

≤12 m inshore static gear vessels (B)

15.6.2.10 This commercial fisheries receptor comprises the ≤12 m vessels that deploy static gear in the inshore region (3-12 nm), south of the Angle Peninsula and the Milford Haven Waterway. The sensitivity of this receptor is judged to be medium, as although these vessels have some spatial adaptability, this is relatively limited, as is their ability to deploy alternative gear.

15.6.2.11 Construction works at the array area will not affect this receptor. The main element of construction activity that will affect this receptor is the installation of the offshore export cable in the inshore region (3-12 nm). The number of vessels active in this inshore region was less than in the nearshore region. Based on the worst case, the duration of works between 3-12 nm will be approximately 45 days (this includes worst case scenario delays due to weather and operational constraints), across an area of approximately 8.5 km^2 (this assumes that fishing is excluded from the entire offshore export cable corridor inside of 3-12 nm).

15.6.2.12 The magnitude of impact is deemed low, due to the temporary nature of the construction works, the localised area that would be affected and, therefore, the relatively low proportion of the receptor’s annual landings that may be affected.

15.6.2.13 Taking the medium sensitivity of the receptor and the low magnitude of the impact, the temporary loss of access to fishing grounds is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

>12 m static gear vessels (C)

15.6.2.14 This commercial fisheries receptor comprises the >12 m vessels that deploy static gear within the Study Area. Data collated to characterise the site indicate that these vessels have been observed within all parts of the Study Area, and are occasionally active at low levels along the offshore export cable within 6nm, and occasionally beyond 12nm. The sensitivity of this receptor is judged to be low as they exhibit high spatial adaptability and have the ability to fish numerous grounds.

15.6.2.15 Construction works at the array area and along the offshore export cable will affect this receptor. Based on the worst case for the offshore export cable, the duration of works for the entire offshore export cable corridor will be approximately 152 days (this includes worst case scenario delays due to weather and operational constraints), across an area of approximately 22 km^2. Based on the worst case for the array area constructions, fishing will be excluded from 103.5 km^2 (array area plus 1 nm buffer) for 8 months.

15.6.2.16 The magnitude of impact is deemed low due to the temporary nature of the construction works the fact that the area of temporary exclusion is assessed as only representing between 5-20% of the annual value of landings for vessels in this receptor group.

15.6.2.17 Taking the low sensitivity of the receptor and the medium magnitude of the impact, the temporary loss of access to fishing grounds during construction is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

> 12 m inshore mobile gear vessels (D)

15.6.2.18 The fourth commercial fisheries receptor group identified via the baseline review is the >12 m inshore mobile gear vessels, that are active between 3-12 nm. These vessels are particularly active between 6-12 nm and include trawlers from North Devon, Cornwall and southwest Wales. The sensitivity of this receptor is judged to be medium, as although these vessels have a relatively extensive operational range, they generally tow in the region through which the offshore cable corridor passes. Therefore, their spatial adaptability in this area is limited.

15.6.2.19 Construction works at the array area will not affect this receptor. The main element of construction activity that will affect this receptor is the installation of the offshore export cable corridor in the inshore region (3-12 nm), where low-moderate activity by this receptor was observed. Based on the worst case rate, the duration of works between 3-12 nm will be 49 days (this includes worst case scenario delays due to weather and operational constraints), across an area of approximately 8.5 km^2 (this assumes that fishing is excluded from the entire offshore export cable corridor inside of 3-12 nm).

15.6.2.20 The magnitude of impact is deemed low due to the length of the construction works affecting this receptor, and it being in the middle of their fishing grounds, which would likely result in shorter tows. In turn, this may lead to a 5-20% reduction in annual value of landings.

15.6.2.21 Taking the medium sensitivity of the receptor and the low magnitude of the impact, the temporary loss of access to fishing grounds is considered to result in a **minor adverse** effect**,** which is not significant in EIA terms.

>12 m offshore mobile gear vessels (E)

15.6.2.22 The final commercial fisheries receptor group is the >12 m mobile gear vessels, active beyond 12 nm. Moderate fishing effort by this receptor group was observed at the array area, with low effort along the offshore export cable corridor; these vessels are generally UK vessels from Cornwall and Devon and non-UK vessels from Belgium, France or Ireland. The sensitivity of these vessels is judged to be negligible as they exhibit high spatial adaptability, due to extensive operational ranges and have the ability to fish numerous grounds within the wider Celtic Sea.

15.6.2.23 Construction works at the array area, and along the section of the offshore export cable corridor beyond 12 nm will affect this receptor. Based on the worst case for the offshore export cable, the duration of works beyond 12 nm will be 49 days, across an area of approximately 7 km^2 (this includes worst case scenario delays due to weather and operational constraints). Based on the worst case for the array area constructions, fishing will be excluded from 103.5 km^2 (array area plus 1 nm buffer) for 8 months.

15.6.2.24 The magnitude of impact is therefore deemed to be low due to the duration of the construction works and the fact that the area of temporary exclusion is assessed as only representing between 5-20% of the annual value of landings for vessels in this receptor group.

15.6.2.25 Taking the negligible sensitivity of the receptor and the low magnitude of the impact, temporary loss of access to fishing grounds is considered to result in a **negligible** effect, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.6.2.26 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Table 15.10 – Summary of effects for the temporary loss of access to fishing grounds (and associated reduction in revenue) due to presence of installation vessels and (temporary) construction-phase safety zones

Receptor	Sensitivity	Magnitude	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
			Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
≤12 m nearshore static gear vessels	Medium	Low	Minor	Adverse	NA	Minor	Adverse
≤12 m inshore static gear vessels	Medium	Low	Minor	Adverse	NA	Minor	Adverse
>12 m static gear vessels	Low	Medium	Minor	Adverse	NA	Minor	Adverse

Receptor	Sensitivity	Magnitude	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
			Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
>12 m inshore mobile gear vessels	Medium	Low	Minor	Adverse	NA	Minor	Adverse
>12 m offshore mobile gear vessels	Negligible	Low	Negligible	Adverse	NA	Negligible	Adverse

Temporary displacement of fishing activity into other areas (and associated reduction in revenue) due to presence of installation vessels and construction-phase safety zones

15.6.2.27 In addition to a temporary loss of access to fishing grounds due to localised exclusion during the construction phase, such exclusion can have a secondary effect of temporarily displacing this fishing activity into adjacent areas and thereby increasing fishing effort or conflict between vessels in these adjacent areas due to reduced catches/landings.

15.6.2.28 The realistic worst case scenario for loss of access during construction in the array area is that fishing activity is excluded from the entire array area (103.5 km^2, inclusive of a 1 nm buffer) for the duration of the construction phase (8 months).

15.6.2.29 The realistic worst case scenario for loss of access during installation of the offshore export cable is that access will be prevented for the duration of all the cable works, i.e., sandwave levelling, boulder clearance the PLGR, pre-trenching, installation, post-lay burial and protection installation. Further information regarding the rates of each phase of works is listed in Table 15.9. Due to the seasonality of activities of the different fishing fleets, the worst case scenario is presumed during peak activity for each receptor group.

15.6.2.30 The standard mitigation measures set out in Section 15.4 will minimise the impact of the displacement of fishing activity into other areas during construction. The array area has been selected in an area of relatively low importance for commercial fisheries in the region, which will ensure that as few vessels as possible will be affected by construction works. A dedicated FLO will be appointed during the construction phase, to communicate timings and location of works with the commercial fishing industry.

15.6.2.31 The main receptors defined in this assessment all have differing sensitivity, based on the criteria outlined in Table 15.9. The following assessment of temporary displacement of fishing activity is discussed below for each different receptor, and summarised in Table 15.11.

≤12 m nearshore static gear vessels (A)

15.6.2.32 This commercial fisheries receptor comprises the ≤12 m vessels that deploy static gear in the nearshore region (0-3 nm) in and around the Angle Peninsula and the entrance to the Milford Haven Waterway. Conflict over diminished grounds may occur if displaced vessels beyond 3 nm explore grounds further inshore. This receptor is limited to a number of grounds and is relatively vulnerable to gear conflict interactions, as pots are left unattended on the seabed. The sensitivity is therefore judged as medium.

15.6.2.33 Displacement of mobile vessels into these areas is unlikely. Displacement of other static vessels could occur due to construction works beyond 3 nm requiring them to temporarily relocate gear; this could increase pressure on the nearshore fishing grounds. Displacement of individual vessels within this receptor group onto adjacent grounds that may be fished by another nearshore vessel is also possible.

15.6.2.34 The magnitude of impact for this receptor is deemed low due to displacement onto adjacent grounds resulting in a predicted loss of between 5-20% of the annual value of landings.

15.6.2.35 Taking the medium sensitivity of the receptor and the low magnitude of the impact, temporary loss of access to fishing grounds is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

≤12 m inshore static gear vessels (B)

15.6.2.36 This commercial fisheries receptor comprises the ≤12 m vessels that deploy static gear in the inshore region (3-12 nm), south of the Angle Peninsula and the Milford Haven Waterway. Conflict over diminished grounds may occur if displaced vessels beyond 12 nm explore grounds further inshore. The sensitivity of this receptor is judged to be medium, as although these vessels have some spatial adaptability, this is relatively limited, as is their ability to deploy alternative gear; and they are relatively vulnerable to gear conflict interactions, as pots are left unattended on the seabed.

15.6.2.37 Displacement of mobile vessels into inshore areas where static gear vessels set pots, could cause conflict between the two fleets. However, potting activity is most prominent in areas further inshore, and displacement of mobile gear vessels would likely be focused on alternative established grounds throughout the Celtic Sea, thereby reducing displacement onto potting grounds. The magnitude of impact for this receptor is deemed low due to the temporary nature of the construction works, localised area that would be affected and, therefore, the relatively low proportion of the receptor's annual landings.

15.6.2.38 Taking the medium sensitivity of the receptor and the low magnitude of the effect, temporary loss of access to fishing grounds is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

>12 m static gear vessels (C)

15.6.2.39 Displacement of mobile vessels into the areas where the >12 m static vessels set pots could cause conflict between the two fleets. The sensitivity of this receptor is judged to be low as they exhibit high spatial adaptability and have the ability to fish numerous grounds away from the export cable corridor.

15.6.2.40 Use of static gear by >12 m vessels within the Study Area is low. Displacement of mobile vessels into the areas where these static gear vessels set pots, could cause conflict between the two fleets. However, potting activity is most prominent in areas further inshore, and displacement of mobile gear vessels would likely be focused on alternative established grounds throughout the Celtic Sea, thereby reducing displacement onto potting grounds. The magnitude of impact for this receptor is deemed low due to the temporary nature of the construction works, localised area that would be affected and, therefore, the relatively low proportion of the receptor's annual landings.

15.6.2.41 It is concluded that the overall significance of the effect on this receptor will be **minor** adverse, which is not significant in EIA terms.

>12 m inshore mobile gear vessels (D)

15.6.2.42 The fourth commercial fisheries receptor group identified via the baseline review is the >12 m inshore mobile gear vessels, that are active between the 3-12 nm, particularly 6-12 nm. The sensitivity of this receptor is judged to be medium as although these vessels have a relatively extensive operational range, they generally tow in the region through which the across the offshore cable corridor passes, so their spatial adaptability in this area is limited.

15.6.2.43 Displaced static gear fishing vessels from the construction works along the offshore export cable corridor would be unlikely to disperse into the fishing grounds targeted by this receptor group, due to the vulnerability of the static gear and conflict which would arise between the two fleets. Displaced mobile gear vessels from the array area may disperse into this receptor's fishing grounds, however the data indicate that this receptor targets a relatively large area in comparison to the size of any exclusion due to the construction works. Therefore, the magnitude of impact is deemed low due to the temporary nature of the construction works, localised area that would be affected, and relatively low proportion of the receptor's annual landings that could be affected.

15.6.2.44 Taking the medium sensitivity of the receptor and the low magnitude of the impact, the temporary displacement of other fishing vessels onto the grounds of this receptor group is considered to be of **minor adverse** effect, which is not significant in EIA terms.

>12 m offshore mobile gear vessels (E)

15.6.2.45 The final commercial fisheries receptor group is the >12 m mobile gear vessels, active beyond 12 nm. The sensitivity of these vessels is judged to be negligible as they exhibit high spatial adaptability, due to extensive operational ranges and have the ability to fish numerous grounds within the wider Celtic Sea.

15.6.2.46 Displacement of the mobile fleet which is normally active between 6-12 nm could affect this receptor group. However, due to the duration of the construction works and the small size of area that would be affected compared to the wider extent of fishing grounds outside 12 nm, the magnitude of impact is deemed low.

15.6.2.47 Taking the negligible sensitivity of the receptor and the low magnitude of the effect, the impact of temporary displacement of mobile vessels onto adjacent fishing grounds is considered to result in a **negligible** effect, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.6.2.48 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Table 15.11 – Summary of effects of the temporary displacement of fishing activity into other areas (and associated reduction in revenue) due to presence of installation vessels and construction phase safety zones

Receptor	Sensitivity	Magnitude	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
			Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
≤12 m nearshore static gear vessels	Medium	Low	Minor	Adverse	NA	Minor	Adverse
≤12 m inshore static gear vessels	Medium	Low	Minor	Adverse	NA	Minor	Adverse
>12 m static gear vessels	Low	Low	Minor	Adverse	NA	Minor	Adverse
>12 m inshore mobile gear vessels	Medium	Low	Minor	Adverse	NA	Minor	Adverse
>12 m offshore mobile gear vessels	Negligible	Low	Negligible	Adverse	NA	Negligible	Adverse

Temporary increased steaming times due to the presence of installation vessels and (temporary) construction-phase safety zones during construction

15.6.2.49 The implementation of temporary 500 m safety zones during construction, could, in theory, result in short-term, minor increases in steaming times and distances and, therefore, higher operational costs for commercial fishing vessels.

15.6.2.50 The realistic worst case scenario for loss of access during construction in the array area is that fishing activity is excluded from the entire array area (103.5 km^2, inclusive of a 1 nm buffer) for the duration of the construction phase (8 months).

15.6.2.51 The worst case scenario for the offshore export cable is that steaming/transit would not be permitted within 500 m of the main CLV. Durations of the different phases are listed in Table 15.9. Due to the seasonality of activities of the different fishing fleets, the worst case scenario is presumed during peak activity for each receptor group.

15.6.2.52 Standard mitigation measures in place will minimise the impact of any increased steaming times during construction. The array area has been selected in an area of relatively low importance for commercial fisheries in the region, which will ensure that as few vessels as possible will be affected by construction works. A dedicated FLO will be appointed during the construction phase to communicate timings and location of works with the commercial fishing industry. Further mitigation measures are outlined within Chapter 16: Shipping and Navigation.

15.6.2.53 The main receptors defined in this assessment all have differing sensitivity, based on the criteria outlined in Table 15.9. The following assessment of temporary increased steaming times is discussed below for each different receptor and summarised in Table 15.12.

≤12 m nearshore static gear vessels (A)

15.6.2.54 This commercial fisheries receptor comprises the ≤12 m vessels that deploy static gear in the nearshore region (0-3 nm) in and around the Angle Peninsula and the entrance to the Milford Haven Waterway. The sensitivity of this receptor is judged to be medium, as these vessels have limited operational ranges due to their size, are relatively dependent on a limited number of grounds, and do not have the ability to deploy alternative gear types.

15.6.2.55 Construction works at the array area will not affect the steaming times for this receptor as these vessels do not operate that far offshore. The main element of construction activity that will affect this receptor is the installation of the offshore export cable in the nearshore region (0-3 nm), where this receptor exhibits relatively high activity. Vessels transiting between Milford Haven and east of the offshore export cable corridor (e.g., to Freshwater West) may have slightly increased steaming times to avoid the CLV, which will have a rolling, advisory safety zone of up to 500 m (expected to be reduced to 100 m in/around the main Milford Haven waterway).

15.6.2.56 Based on the worst case duration of the phases of construction work for the offshore export cable, there will be approximately 22 days of disruption within 3 nm (this includes worst case scenario delays due to weather and operational constraints).

15.6.2.57 As the vessels in this receptor group will only be required to transit an additional 500 m either side of the CLV, the magnitude of impact is judged to be negligible.

15.6.2.58 Taking the medium sensitivity of the receptor and the negligible magnitude of the impact, the effect of increased steaming/transit times is considered to be of **minor adverse** effect, which is not significant in EIA terms.

≤12 m inshore static gear vessels (B)

15.6.2.59 This commercial fisheries receptor comprises the ≤12 m vessels that deploy static gear in the inshore region (3-12 nm), south of the Angle Peninsula and the Milford Haven Waterway. The sensitivity of this receptor is judged to be medium, as although these vessels have some spatial adaptability, this is relatively limited, as is their ability to deploy alternative gear.

15.6.2.60 Construction works at the array area will not affect the steaming times for this receptor as these vessels do not fish that far offshore. The main element of construction activity that will affect this receptor is the installation of the offshore export cable in the inshore region (3-12 nm). The number of vessels active in this inshore region was less than in the nearshore region. Vessels transiting between Milford Haven and east of the cable route (e.g., to Freshwater West) may have slightly increased steaming times to avoid the CLV, which will have a temporary (advisory) safety zone of 500 m. Based on the worst case duration of the phases of construction work for the offshore export cable, there will be approximately 45 days of disruption within 3-12 nm (this includes worst case scenario delays due to weather and operational constraints).

15.6.2.61 As the vessels in this receptor group will only be required to transit an additional 500 m either side of the CLV, the magnitude of impact is judged to be negligible.

15.6.2.62 Taking the medium sensitivity of the receptor and the negligible magnitude of the impact, increased steaming/transit times is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

>12 m static gear vessels (C)

15.6.2.63 This commercial fisheries receptor comprises the >12 m vessels that deploy static gear within the Study Area. Data collated to characterise the site indicate that these vessels have been observed within all parts of the Study Area and are occasionally active at low levels along the offshore export cable within 6nm, and occasionally beyond 12nm. The sensitivity of this receptor is judged to be low as they exhibit high spatial adaptability, comprise vessels with greater power and speed, and have the ability to fish numerous grounds.

15.6.2.64 Construction works at the array area and along the offshore export cable will affect this receptor. Vessels transiting between Milford Haven and east of the offshore export cable corridor (e.g., to Freshwater West) may have slightly increased steaming times to avoid cable installation vessels, which will have a safety zone of 500 m. Based on the worst case duration of the phases of construction work for the entire offshore export cable, there will be approximately 152 days of disruption across an area of approximately 22km^2 (this includes worst case scenario delays due to weather and operational constraints).

15.6.2.65 As the vessels in this receptor group will only be required to transit an additional 500 m either side of the CLV, the magnitude of impact is judged to be negligible.

15.6.2.66 Taking the low sensitivity of the receptor and the negligible magnitude of the impact, increased steaming/transit times is considered to result in a **negligible** effect, which is not significant in EIA terms.

>12 m inshore mobile gear vessels (D)

15.6.2.67 The fourth commercial fisheries receptor group identified via the baseline review is the >12 m inshore mobile gear vessels, that are active between 3-12 nm. These vessels are particularly active between 6-12 nm. The sensitivity of this receptor is judged to be medium as although these vessels have a relatively extensive operational range, they generally tow in the region through which the offshore export cable corridor passes, so their spatial adaptability in this area is limited.

15.6.2.68 Construction works at the array area will, generally, not affect the steaming times for this receptor. The main element of construction activity that will affect this receptor is the installation of the offshore export cable in the inshore region (3-12 nm), where low-moderate activity by this receptor group was observed. Vessels transiting along this part of the offshore export cable corridor may have slightly increased steaming times to avoid the CLV, which will have a temporary (advisory) safety zone of 500 m; this would have a greater impact on local vessels based out of Milford Haven, in comparison to vessels located further afield, such as North Devon. Based on the worst case duration of the phases of construction work for the offshore export cable, there will be approximately 22 days of disruption between 3-12 nm (this includes worst case scenario delays due to weather and operational constraints).

15.6.2.69 As the vessels in this receptor group will only be required to transit an additional 500 m either side of the CLV, the magnitude of impact is judged to be negligible.

15.6.2.70 Taking the medium sensitivity of the receptor and the negligible magnitude of the impact, increased steaming/transit times is considered to result in a **negligible** effect, which is not significant in EIA terms.

>12 m offshore mobile gear vessels (E)

15.6.2.71 The final commercial fisheries receptor group is the >12 m mobile gear vessels, active beyond 12 nm. There may be a small increase in steaming times for local mobile vessels, but due to their large operational ranges the sensitivity is considered negligible for this receptor.

15.6.2.72 Construction works at the array area and along the offshore export cable corridor beyond 12 nm, where moderate activity was observed by this receptor, will potentially affect the steaming/transiting times of this receptor group. Any increase in steaming times for mobile vessels, particularly to avoid construction at the array area, is likely to be minimal due to the distances from their home ports (particularly for the Belgian and French fleets) and the large amount of available sea area to move within.

15.6.2.73 The magnitude of impact is, therefore, considered negligible due to the temporary nature of the works and very small area of impact in relation to the extent of wider, available fishing grounds.

15.6.2.74 Taking the negligible sensitivity of the receptor and the negligible magnitude of the impact, increased steaming/transit times is considered to result in a **negligible** effect, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.6.2.75 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Table 15.12 – Summary of effects of the temporary increased steaming times due to the presence of installation vessels and (temporary) construction-phase safety zones during construction

Receptor	Sensitivity	Magnitude	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
			Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
≤12 m nearshore static gear vessels	Medium	Negligible	Minor	Adverse	NA	Minor	Adverse
≤12 m inshore static gear vessels	Medium	Negligible	Minor	Adverse	NA	Minor	Adverse
>12 m static gear vessels	Low	Negligible	Negligible	Adverse	NA	Negligible	Adverse
>12 m inshore mobile gear vessels	Medium	Negligible	Negligible	Adverse	NA	Negligible	Adverse
>12 m offshore mobile gear vessels	Negligible	Negligible	Negligible	Adverse	NA	Negligible	Adverse

Change in distribution of commercially exploited fish and shellfish populations due to construction activities

15.6.2.76 There is the potential for the construction phase to have either adverse or beneficial effects on commercially exploited fish and shellfish populations, such as causing behavioural changes or increases/declines in abundance, which would therefore affect the fisheries which target those species. Effects on commercially important fish and shellfish are assessed in Chapter 10: Fish and Shellfish Ecology and are not expected to exceed minor adverse significance.

Snagging resulting from seabed obstructions

15.6.2.77 During the construction phase within the array area, a realistic worst case scenario has been used whereby all commercial fishing activity is excluded from the entire site for the duration of the works, i.e., from the period of anchor/mooring line deployment through till full commissioning of the site.

15.6.2.78 Assuming this proposed exclusion is implemented successfully, with close engagement and communication with commercial fisheries stakeholders, then there will be no scope for snagging fishing gear on sub-surface obstructions/structures within the array area.

15.6.2.79 Therefore, for all the five commercial fisheries receptor groups, no effect is predicted with regards to the array area.

15.6.2.80 A more focussed assessment of potential marine safety and navigation risks for all vessels active in/around the array area (including commercial fishing vessels), is included in Chapter 16: Shipping and Navigation.

15.6.2.81 A different scenario exists for the offshore export cable corridor as the realistic worst case scenario assumes that a temporary, rolling (advisory) safety zone would be applied around the main CLV and/or any other major vessels involved in cable works, i.e., PLGR vessels; sandwave levelling vessels etc. The progressive installation of these during the construction phase would result in an increasing potential for snagging risks on fishing vessels.

There will be a maximum of 12 weeks between the offshore export cables being laid and being fully protected by rock protection. During this time, there is a risk of snagging for fishing vessels with the surface-laid cable. Whilst standard mitigation measures in place will minimise the impact of the snagging from seabed obstructions along the offshore export cable corridor, risk will still remain, and this is assessed in terms of the different receptor groups below and summarised in Table 15.13.

≤12 m nearshore static gear vessels (A); ≤12 m inshore static gear vessels (B); >12 m static gear vessels (C)

15.6.2.82 For this specific impact, the receptor groups A, B and C have been grouped together as they are all static gear vessels (<12 m and >12 m) where the potential impact of snagging due to seabed obstructions is quite similar.

15.6.2.83 The sensitivity of these receptors is judged to be low, since if the static gear deployed by these vessels did happen to snag on a sub-surface obstruction, the gear could be cut and/or retrieved relatively easily.

15.6.2.84 As per the introductory text for this effect (Sections 15.6.2.76 to 0), it is assumed that with successful implementation of standard mitigation measures, specifically, adherence to no fishing within the array area once construction commences, no risk of snagging will arise to static vessels.

15.6.2.85 The main element of construction activity that will affect this receptor is the installation of the offshore export cable, particularly in the nearshore and inshore regions, where these receptors exhibit relatively high activity. The worst case scenario for offshore export cable installation assumes that the installation works will be split out into approximately seven discrete phases of works, each separated by approximately 1-2 weeks. In times of no activity, fishing will be permitted where possible. There will be a maximum of 12 weeks between offshore export cables being laid and being fully protected by rock protection.

15.6.2.86 In this scenario, static gear vessels may seek to deploy gear in areas where there are not any offshore activities taking place but where some sub-surface obstructions exist, leading to potential snagging of gear.

15.6.2.87 The magnitude of this impact is deemed medium, due to it being likely to occur but reversible.

15.6.2.88 Taking the low sensitivity of the receptor and the medium magnitude of the impact, potential snagging from seabed obstructions along the export cable route for receptor groups A, B and C is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

>12 m inshore mobile gear vessels (D); >12 m offshore mobile gear vessels (E)

15.6.2.89 For receptor groups D and E (mobile gear), the potential issues faced by snagging on seabed obstructions are quite different to the static gear vessel receptors. The nature of the gear deployed and the method of fishing by these vessels means that vessels need to tow nets/trawls under significant power and at defined speeds. If mobile gear under tow snags on subsurface obstructions, there is significant risk to the gear, the vessel and, most importantly, the crew.

15.6.2.90 The worst case scenario for cable installation assumes that the offshore export cable installation works will be split out into approximately seven discrete phases of works, each separated by approximately 1-2 weeks. In times of no activity, fishing will be permitted where possible. There will be a maximum of 12 weeks between cables being laid and being fully protected by rock protection; however, there are only limited areas of rock protection planned between approximately 8-16 nm offshore, which is the area where there are high numbers of mobile vessels active. In these periods of no activity, scope exists for mobile gear vessels to trawl through an area however the implementation of embedded mitigation in the form of guard vessels will reduce the potential for subsurface obstructions to be snagged.

15.6.2.91 With respect to this specific effect, the sensitivity of these two receptors is judged to be high as they have a very low recoverability to any snagging, however the protection offered by the standard mitigation measures will provide further protection to mobile gear vessels that may be operating in this area. These measures include ensuring the Project FLO issues NtMs with information on any areas of shallow buried/exposed cable; other obstructions etc., and in any areas where there may be areas of unburied/shallow buried/free-spanning cable, guard vessels and/or temporary surface marker buoys are deployed. As there is limited potential for gear to be snagged the magnitude of impact is therefore deemed negligible.

15.6.2.92 With the high receptor sensitivity and negligible magnitude of impact, it is considered to result in **minor adverse** effect, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.6.2.93 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Table 15.13 – Summary of effects of snagging resulting from seabed obstructions.

Receptor	Sensitivity	Magnitude	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
			Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
≤12 m nearshore static gear vessels	Low	Medium	Minor	Adverse		Minor	Adverse
≤12 m inshore static gear vessels	Low	Medium	Minor	Adverse		Minor	Adverse
>12 m static gear vessels	Low	Medium	Minor	Adverse		Minor	Adverse
>12 m inshore mobile gear vessels	High	Negligible	Minor	Adverse		Minor	Adverse
>12 m offshore mobile gear vessels	High	Negligible	Minor	Adverse		Minor	Adverse

Supply chain opportunities for local fishing vessels

15.6.2.94 During the construction phase of the Project, commercial opportunities other than core fishing activities may arise for suitable local commercial fishing vessels. A summary of effects is provided in Table 15.14.

15.6.2.95 The following are areas of potential support that could be provided by local commercial fishing vessels:

- Guard vessel duties;
- Debris recovery;
- Navigational marker buoy deployment, servicing and recovering;
- Provision of vessels for any environmental monitoring work; and
- Crew transfers.

≤12 m nearshore static gear vessels (A)

15.6.2.96 Due to this impact being potentially beneficial, the definition for receptor sensitivity has been amended. The sensitivity of this receptor is deemed negligible, as these vessels have low suitability 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 MCA certification to allow them to provide non-commercial fishing support.

15.6.2.97 The magnitude of impact (beneficial) is judged to be negligible, as it is unlikely to occur, and therefore unlikely to provide a source of revenue for the receptor group.

15.6.2.98 It is concluded that the overall significance of the effect on this receptor will be **negligible**, which is not significant in EIA terms.

≤12 m inshore static gear vessels (B)

15.6.2.99 Due to this impact being beneficial, the definition for receptor sensitivity has been amended. The sensitivity of this receptor is deemed negligible, as these vessels have low suitability to provide marine operational support during the construction phase due to the size and type of vessel.

15.6.2.100 The magnitude of impact (beneficial) is judged to be negligible, as it is unlikely to occur, and therefore unlikely to provide a source of revenue for the receptor group.

15.6.2.101 It is concluded that the overall significance of the effect on this receptor will be **negligible**, which is not significant in EIA terms.

>12 m static gear vessels (C)

15.6.2.102 Due to this impact being beneficial, the definition for receptor sensitivity has been amended. The sensitivity of this receptor is deemed medium, as 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.

15.6.2.103 The magnitude of impact (beneficial) is judged to be low. Any such impact would be short-term. It is also judged that any such support by this receptor group would only create value equivalent to between 5-20% of existing commercial fish income per annum.

15.6.2.104 It is concluded that the overall significance of the effect on this receptor will be a **minor beneficial** effect, which is not significant in EIA terms.

>12 m inshore mobile gear vessels (D)

15.6.2.105 Due to this impact being beneficial, the definition for receptor sensitivity has been amended. The sensitivity of this receptor is deemed medium, as 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.

15.6.2.106 The magnitude of impact (beneficial) is judged to be medium. The impact would potentially be long-term, albeit reversible. It is also judged likely to occur, as the Applicant has a clearly stated aspiration to maximise local supply chain content on the Project. It may also lead to a value of support equivalent to between 20-50% of the commercial fishing receptor's annual value of landings.

15.6.2.107 It is concluded that the overall significance of the effect on this receptor will be a **moderate beneficial** effect, which is significant in EIA terms.

>12 m offshore mobile gear vessels (E)

15.6.2.108 Due to this impact being beneficial, the definition for receptor sensitivity has been amended. The sensitivity of this receptor is deemed medium, as these vessels have moderate suitability to provide marine operational support during the construction phase. This is based on the vessels being larger and therefore have 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.

15.6.2.109 The magnitude of impact (beneficial) is judged to be medium. The impact would potentially be long-term, albeit reversible. It is also judged likely to occur, as the Applicant has a clearly stated aspiration to maximise local supply chain content on the Project. It may also lead to a value of support equivalent to between 20-50% of the commercial fishing receptor's annual value of landings.

15.6.2.110 It is concluded that the overall significance of the effect on this receptor will be a **moderate beneficial** effect, which is significant in EIA terms.

Additional Mitigation and Residual Effect

15.6.2.111 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Table 15.14 – Summary of effects of the supply chain opportunities for local fishing vessels

Receptor	Sensitivity	Magnitude	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
			Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
≤12 m nearshore static gear vessels	Negligible	Negligible	Negligible	-	NA	Negligible	-
≤12 m inshore static gear vessels	Negligible	Negligible	Negligible	-	NA	Negligible	-
>12 m static gear vessels	Medium	Low	Minor	Beneficial	NA	Minor	Beneficial
>12 m inshore mobile gear vessels	Medium	Medium	Moderate	Beneficial	NA	Moderate	Beneficial
>12 m offshore mobile gear vessels	Medium	Medium	Moderate	Beneficial	NA	Moderate	Beneficial

Collision risk between fishing vessels and Project vessels

15.6.2.112 During the construction phase, potential exists for increased risk of collision between fishing vessels and Project vessels. This impact has been assessed formally within Chapter 16: Shipping and Navigation, and Volume 3, Technical Appendix 16.1: Navigational Risk Assessment.

15.6.2.113 In summary, although a risk of collision exists between fishing and Project vessels, this can be reduced to a low-level risk by development of agreed transit routes, communication of information via a dedicated FLO and the compliance of Project vessels with the principles of good seamanship and COLREGs.

15.6.3 Operational Phase

Loss of access to fishing grounds (and associated reduction in revenue) due to long-term presence of Project infrastructure

15.6.3.1 During the operational phase of the Project, commercial fishing activity may be affected via long-term loss of 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 amount of potential fishing grounds lost.

15.6.3.2 Existing UK legislation does not prohibit commercial fishing within operational offshore wind farms (OWFs) and for many sites that have fixed foundation options (monopiles), commercial fishing has continued.

15.6.3.3 However, feedback from consultation with key fisheries stakeholders carried out to date has indicated that mobile gear vessels would not tow gear within the array area due to the amount of subsurface infrastructure (dynamic array cables; mooring ropes/chains; clump weights) and the wider environmental conditions of the site (strong tidal currents; sandwave features). Therefore, a worst case scenario is applied for this assessment that assumes all fishing activity is excluded from the entire array area plus a 1 nm buffer (103.5 km^2) for the duration of the operational phase.

15.6.3.4 It is also assumed that during the operational phase, the offshore export cable will either be buried or have cable protection that will be over-trawlable and/or able to cope with static gear being deployed nearby. Therefore, there will be no material loss of fishing grounds along the entire offshore export cable corridor and fishing can continue normally. The only exception with respect to the offshore export cable will be any temporary (advisory) safety zones needing to be implemented around any cable repair/remediation events. The worst case scenario for the offshore export cable is that there will be an estimated maximum of two cable repairs during the lifespan of the Project, and a maximum of 12 remediation events. This temporary, short-term disruption via such cable operation and maintenance activities is assessed separately below.

15.6.3.5 Standard mitigation measures in place will minimise the impact of the temporary loss of access to fishing grounds during operation and maintenance. The array area has been selected in an area of relatively low importance for commercial fisheries in the region, which will ensure that as few vessels as possible will be affected by the Project's operational phase. A dedicated FLO will be appointed, to communicate timings and location of any maintenance works with the commercial fishing industry.

15.6.3.6 The main receptors defined in this assessment all have differing sensitivity, based on the criteria outlined in Table 15.9. The following assessment of long-term access to fishing grounds is discussed below for each different receptor and summarised in Table 15.15.

≤12 m nearshore static gear vessels (A)

15.6.3.7 The sensitivity of this receptor is judged to be medium, as these vessels have limited operational ranges due to their size, are relatively dependent on a limited number of grounds and do not have the ability to deploy alternative gear types.

15.6.3.8 This receptor group will not be affected by the exclusion area at the array area. The only permanent infrastructure in the nearshore region will be the offshore export cable, which will be fully buried or have cable protection. Therefore the magnitude of impact is considered to be negligible.

15.6.3.9 Taking the medium sensitivity of the receptor and the negligible magnitude of the impact, this is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

≤12 m inshore static gear vessels (B)

15.6.3.10 The sensitivity of this receptor is judged to be medium, as although these vessels have some spatial adaptability, this is relatively limited, as is their ability to deploy alternative gear.

15.6.3.11 This receptor group will not be affected by the exclusion area at the array area. The only permanent infrastructure in the nearshore region will be the offshore export cable, which will be fully buried or have cable protection. Therefore the magnitude of impact is considered to be negligible.

15.6.3.12 Taking the medium sensitivity of the receptor and the negligible magnitude of the impact, this is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

>12 m static gear vessels (C)

15.6.3.13 The sensitivity of this receptor is judged to be low as they exhibit high spatial adaptability.

15.6.3.14 This receptor group would lose long-term access to fishing grounds during the operational phase. Although the actual array area totals 43.5 km^2, in order to adopt a precautionary approach, an area of 103.5 km^2 has been used as the basis of this assessment.

15.6.3.15 Whilst the array area is located in an area which sustains low levels of infrequent activity by this fleet, the area occupied by the array area is small in the context of the extent of fishing grounds for this fleet in the Celtic Sea. For example, this area of 103.5 km^2 equates to 2.7% of ICES rectangle 31E4, which is only part of the available fishing grounds in this region. With this in mind, the magnitude of impact is deemed to be low.

15.6.3.16 Taking the low sensitivity of the receptor and the low magnitude of the impact, loss of access to fishing grounds is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

>12 m inshore mobile gear vessels (D)

15.6.3.17 The sensitivity of this receptor is judged to be medium as although these vessels have a relatively extensive operational range, they generally tow across the offshore export cable corridor, so their spatial adaptability in this area is limited.

15.6.3.18 The only permanent infrastructure in this receptor's fishing grounds will be the offshore export cable, which will be fully buried or have cable protection which will be over-trawlable. Therefore the magnitude of impact is considered to be negligible.

15.6.3.19 Taking the medium sensitivity of the receptor and the negligible magnitude of the impact, this is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

>12 m offshore mobile gear vessels (E)

15.6.3.20 The sensitivity of these vessels is judged to be negligible as they exhibit high spatial adaptability, due to extensive operational ranges, and have the ability to fish numerous grounds within the wider Celtic Sea.

15.6.3.21 This receptor group would lose long-term access to fishing grounds during the operational phase. Although the actual array area totals 43.5 km^2, feedback from fisheries consultation during the EIA process indicated that fishing vessels with tows would have to avoid the area by up to 1-2 nm when considering manoeuvring around the site boundary, to take into account local tidal, wave and wind conditions. Therefore, in order to adopt a precautionary approach, an area of 103.5 km^2 has been used as the basis of this assessment.

15.6.3.22 Whilst the array area is located in an area which sustains low to moderate levels of activity by this fleet, the area occupied by the array area is small in the context of the extent of fishing grounds for this fleet in the Celtic Sea. For example, this area of 103.5 km^2 equates to 2.7% of ICES rectangle 31E4, which is only part of the available fishing grounds in this region. With this in mind, the magnitude of impact is deemed to be low.

15.6.3.23 Taking the negligible sensitivity of the receptor and the low magnitude of the impact, loss of access to fishing grounds is considered to result in a **negligible** effect, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.6.3.24 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Table 15.15 – Summary of effects the loss of access to fishing grounds (and associated reduction in revenue) due to long-term presence of Project infrastructure

Receptor	Sensitivity	Magnitude	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
			Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
≤12 m nearshore static gear vessels	Medium	Negligible	Minor	Adverse	NA	Minor	Adverse
≤12 m inshore static gear vessels	Medium	Negligible	Minor	Adverse	NA	Minor	Adverse
>12 m static gear vessels	Low	Low	Minor	Adverse	NA	Minor	Adverse

Receptor	Sensitivity	Magnitude	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
			Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
>12 m inshore mobile gear vessels	Medium	Negligible	Minor	Adverse	NA	Minor	Adverse
>12 m offshore mobile gear vessels	Negligible	Low	Negligible	-	NA	Negligible	-

Displacement of fishing activity into other areas due to long-term presence of Project infrastructure

15.6.3.25 The potential loss of access to fishing grounds described above may also lead to displacement of fishing activity into adjacent areas, thereby increasing fishing effort or conflict between vessels in these adjacent areas.

15.6.3.26 The same worst case scenario is applied for this assessment as per loss of access, whereby fishing activity is assumed as excluded (and thus displaced) from the entire array area plus 1 nm buffer (103.5 km^2) for the duration of the operational phase. It is assumed that during the operational phase, the offshore export cable will be buried or have cable protection so will be over-trawlable and therefore would not result in any material loss of fishing grounds and displacement.

15.6.3.27 Standard mitigation measures in place will minimise the impact of the long-term loss of access (and thus displacement) to fishing grounds during the operational phase. The array area has been selected in an area of relatively low importance for commercial fisheries in the region, which will ensure that as few vessels as possible will be affected by the Project's operational phase. A dedicated FLO will be appointed, to communicate timings and location of any maintenance works with the commercial fishing industry.

15.6.3.28 The main receptors defined in this assessment all have differing sensitivity, based on the criteria outlined in Table 15.9. The following assessment of long-term displacement from fishing grounds is discussed below for each different receptor and summarised in Table 15.16.

≤12 m nearshore static gear vessels (A)

15.6.3.29 The sensitivity of this receptor is judged to be medium as this receptor is limited to a number of grounds and is relatively vulnerable to gear conflict interactions as pots are left unattended on the seabed.

15.6.3.30 This receptor group will not be affected by displacement of vessels from the array area, due to the distance between these two areas. The only permanent infrastructure in the nearshore region that could create displacement effects will be the offshore export cable, which will be fully buried or have cable protection. Therefore, it is assumed that fishing in the nearshore region by this receptor group will be able to continue during the operational phase and, therefore the magnitude is considered to be negligible.

15.6.3.31 Taking the medium sensitivity of the receptor and the negligible magnitude of the impact, it is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

≤12 m inshore static gear vessels (B)

15.6.3.32 The sensitivity of this receptor is judged to be medium, as although these vessels have some spatial adaptability, this is relatively limited, as is their ability to deploy alternative gear.

15.6.3.33 This receptor group will not be affected by displacement of vessels from the array area, due to the distance between these two areas. The only permanent infrastructure in the nearshore region that could create displacement effects will be the offshore export cable, which will be fully buried or have cable protection. Therefore, it is assumed that fishing in the nearshore region by this receptor group will be able to continue during the operational phase and, therefore the magnitude is considered to be negligible.

15.6.3.34 Taking the medium sensitivity of the receptor and the negligible magnitude of the impact, it is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

>12 m static gear vessels (C)

15.6.3.35 The sensitivity of this receptor is judged to be low as they exhibit high spatial adaptability.

15.6.3.36 Use of static gear by >12 m vessels within the Study Area is low. Displacement of mobile vessels into areas where these static gear vessels set pots, could cause conflict between the two fleets. However, potting activity is most prominent in areas further inshore, and displacement of mobile gear vessels would likely be focused on alternative established grounds throughout the Celtic Sea, thereby reducing displacement onto potting grounds. The magnitude of impact for this receptor is deemed negligible due to the infrequent and temporary nature of the maintenance works, very localised area that would be affected, and therefore the very low proportion of the receptor's annual landings.

15.6.3.37 It is concluded that the overall significance of the effect on this receptor will be **minor adverse**, which is not significant in EIA terms.

>12 m inshore mobile gear vessels (D)

15.6.3.38 The sensitivity of this receptor is judged to be medium as although these vessels have a relatively extensive operational range, they generally tow across the offshore export cable corridor, so their spatial adaptability in this area is limited.

15.6.3.39 Static gear vessels (group C) are expected to be able to continue fishing their existing grounds in the operational phase, therefore, no displacement of these vessels into the grounds of the >12 m inshore mobile gear vessels is expected. Displaced vessels from the offshore array area may disperse into this receptor's fishing grounds, however the data indicate that this receptor (group E) is more likely to focus effort in areas further offshore, than where vessels in group D currently work. Therefore, a low magnitude of impact is predicted.

15.6.3.40 It is concluded that the overall significance of the effect on this receptor will be **minor adverse**, which is not significant in EIA terms.

>12 m offshore mobile gear vessels (E)

15.6.3.41 The sensitivity of these vessels is judged to be negligible as they exhibit high spatial adaptability, due to extensive operational ranges, and have the ability to fish numerous grounds within the wider Celtic Sea.

15.6.3.42 Displacement of the mobile fleet which is normally active between 6-12 nm could affect this receptor group, however the data indicate that this receptor targets a relatively large area in comparison to the size of any excluded area, therefore, the magnitude of impact is deemed negligible.

15.6.3.43 It is concluded that the overall significance of the effect on this receptor will be **negligible**, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.6.3.44 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Table 15.16 – Summary of effects of the displacement of fishing activity into other areas due to long-term presence of Project infrastructure

Receptor	Sensitivity	Magnitude	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
			Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
≤12 m nearshore static gear vessels	Medium	Negligible	Minor	Adverse	NA	Minor	Adverse
≤12 m inshore static gear vessels	Medium	Negligible	Minor	Adverse	NA	Minor	Adverse
>12 m static gear vessels	Low	Negligible	Minor	Adverse	NA	Minor	Adverse
>12 m inshore mobile gear vessels	Medium	Low	Minor	Adverse	NA	Minor	Adverse
>12 m offshore mobile gear vessels	Negligible	Negligible	Negligible	-	NA	Negligible	-

Temporary loss of access to fishing grounds) (and associated reduction in revenue) and/or displacement due to presence of export cable repair/remediation vessels and (temporary) advisory safety zones

15.6.3.45 As detailed in Table 15.9, the worst case scenario for this chapter assumes that up to two offshore export cable repairs and/or 12 cable remediation events will take place during the operational phase. During these works, temporary (advisory) safety zones, ranging from between 100 m to 500 m will likely be implemented around any major vessels.

15.6.3.46 This will result in a very similar temporary loss of access to fishing grounds and potential displacement onto adjacent grounds as assessed for the main construction phase.

15.6.3.47 The sensitivity of the five receptor groups is judged to remain as per the original construction-phase assessments and the magnitude of impact will also be similar. Therefore, the assessments and conclusions of significance will be the same as those previously presented and summarised below (Table 15.17).

- ≤12 m nearshore static gear vessels (A) – **minor adverse** (not significant in EIA terms);
- ≤12 m inshore static gear vessels (B) - **minor adverse** (not significant in EIA terms);
- >12 m static gear vessels (C) - **minor adverse** (not significant in EIA terms);
- >12 m inshore mobile gear vessels (D) - **minor adverse** (not significant in EIA terms); and
- >12 m offshore mobile gear vessels (E) – **negligible** (not significant in EIA terms).

Additional Mitigation and Residual Effect

15.6.3.48 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Table 15.17 – Summary of effects of the temporary loss of access to fishing grounds) (and associated reduction in revenue) and/or displacement due to presence of offshore export cable repair/remediation vessels and (temporary) advisory safety zones

Receptor	Sensitivity	Magnitude	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
			Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
≤12 m nearshore static gear vessels	Medium	Low	Minor	Adverse	NA	Minor	Adverse
≤12 m inshore static gear vessels	Medium	Low	Minor	Adverse	NA	Minor	Adverse

Receptor	Sensitivity	Magnitude	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
			Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
>12 m static gear vessels	Low	Low	Minor	Adverse	NA	Minor	Adverse
>12 m inshore mobile gear vessels	Medium	Low	Minor	Adverse	NA	Minor	Adverse
>12 m offshore mobile gear vessels	Negligible	Low	Negligible	-	NA	Negligible	-

Increased steaming times due to the presence of the Proposed Development

15.6.3.49 The exclusion of fishing activity within the array area and buffer could in theory result in increases to steaming times and distance and, therefore, higher operational costs for commercial fishing vessels.

15.6.3.50 A worst case scenario is applied for this impact assessment, whereby fishing activity is assumed as excluded from the entire array area plus 1 nm buffer (103.5 km^2) for the duration of the operational phase, in order to minimise safety risks associated with the Project infrastructure. It is assumed that during the operational phase, the offshore export cable will be buried or have cable protection so will be over-trawlable and therefore would not result in any increased steaming times.

15.6.3.51 Standard mitigation measures in place will minimise the impact of the increased steaming times during operation and maintenance. The array area has been selected in an area of relatively low importance for commercial fisheries in the region, which will ensure that as few vessels as possible will be affected by the Project's operational phase. A dedicated FLO will be appointed, to communicate timings and location of any maintenance works with the commercial fishing industry.

15.6.3.52 The main receptors defined in this assessment all have differing sensitivity, based on the criteria outlined in Table 15.9. The summary of effects is presented in Table 15.18.

≤12 m nearshore static gear vessels (A)

15.6.3.53 The sensitivity of this receptor is judged to be medium, as these vessels have limited operational ranges due to their size, are relatively dependent on a limited number of grounds, and do not have the ability to deploy alternative gear types. This receptor group will not be affected by the exclusion area at the array area. The only permanent infrastructure in the nearshore region will be the offshore export cable, which will be fully buried or have cable protection. There will be no change to steaming times for this receptor in the nearshore region during the operational phase, therefore it is considered to be of negligible magnitude.

15.6.3.54 Taking the medium sensitivity of the receptor and the negligible magnitude of the impact, it is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

≤12 m inshore static gear vessels (B)

15.6.3.55 The sensitivity of this receptor is judged to be medium, as although these vessels have some spatial adaptability, this is relatively limited, as is their ability to deploy alternative gear.

15.6.3.56 This receptor group will not be affected by the exclusion area at the array area. The only permanent infrastructure in the inshore region will be the offshore export cable, which will be fully buried or have cable protection. There will be no change to steaming times for this receptor in the nearshore region during the operational phase, therefore it is considered to be of negligible magnitude.

15.6.3.57 Taking the medium sensitivity of the receptor and the negligible magnitude of the impact, it is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

>12 m static gear vessels (C)

15.6.3.58 The sensitivity of this receptor is judged to be low as they exhibit high spatial adaptability.

15.6.3.59 This receptor group will be affected by the exclusion area at the array area. Any increase in steaming times for static vessels is likely to be minimal due to the distances from their home ports and also the large amount of sea area that will remain for alternative routes without much diversion (if any). The magnitude is therefore considered negligible which, when combined with the low sensitivity results in a **negligible** effect, which is not significant in EIA terms.

>12 m inshore mobile gear vessels (D)

15.6.3.60 The sensitivity of this receptor is judged to be medium as although these vessels have a relatively extensive operational range, they generally tow across the offshore export cable corridor, so their spatial adaptability in this area is limited.

15.6.3.61 This receptor group will not be affected by the exclusion area at the array area. The only permanent infrastructure where this receptor is active will be the offshore export cable, which will be fully buried or have cable protection. There will be no change to steaming times for this receptor therefore it is considered to be of negligible magnitude.

15.6.3.62 Taking the medium sensitivity of the receptor and the negligible magnitude of the impact, it is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

>12 m offshore mobile gear vessels (E)

15.6.3.63 The sensitivity is considered negligible for this receptor. There may be a small increase in steaming times for local mobile vessels, but due to their large operational ranges the sensitivity is considered negligible for this receptor.

15.6.3.64 This receptor group will be affected by the exclusion area at the array area. Any increase in steaming times for mobile vessels is likely to be minimal due to the distances from their home ports (particularly for the Belgian and French fleets) and also the large amount of sea area that will remain for alternative routes without much diversion (if any). The magnitude is therefore considered negligible which, when combined with the negligible sensitivity results in a **negligible** effect, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.6.3.65 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Table 15.18 – Summary of effects of increased steaming times due to the presence of the Proposed Development

Receptor	Sensitivity	Magnitude	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
			Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
≤12 m nearshore static gear vessels	Medium	Negligible	Minor	Adverse	NA	Minor	Adverse
≤12 m inshore static gear vessels	Medium	Negligible	Minor	Adverse	NA	Minor	Adverse
>12 m static gear vessels	Low	Negligible	Negligible	-	NA	Negligible	-
>12 m inshore mobile gear vessels	Medium	Negligible	Minor	Adverse	NA	Minor	Adverse
>12 m offshore mobile gear vessels	Negligible	Negligible	Negligible	-	NA	Negligible	-

Snagging resulting from seabed obstructions

15.6.3.66 During the operational phase, a realistic worst case scenario has been used whereby all commercial fishing activity is excluded from the entire array area and buffer area.

15.6.3.67 Assuming this proposed exclusion is implemented successfully, with close engagement and communication with commercial fisheries stakeholders, then there will be no scope for snagging fishing gear on sub-surface obstructions/structures within the main array area as no vessels will enter this area. Therefore, for all the five commercial fisheries receptor groups, no effect is predicted.

15.6.3.68 A more focussed assessment of potential marine safety and navigation risks for all vessels active in/around the array area (including commercial fishing vessels), is included in Chapter 16: Shipping and Navigation and Volume 3, Technical Appendix 16.1: Navigational Risk Assessment.

15.6.3.69 A different scenario exists for the offshore export cable corridor where fishing activity will still be permitted by all vessels during the operational phase. Even though the cable will be buried and/or surface-laid with appropriate external cable protection (rock berms), potential exists for the cable to become shallow-buried or exposed due to changes in seabed conditions. See Table 15.19 for a summary of effects.

15.6.3.70 Standard mitigation measures in place will minimise this potential impact of any snagging on during the operational phase. In order to minimise potential snagging risks to fishing vessels, regular surveys of the offshore export cable will be undertaken, and a dedicated FLO will be appointed to communicate any areas of risk with the commercial fishing industry; information on seabed obstructions will be sufficiently promulgated to ensure all users are aware, through NtMs, Kingfisher and direct liaison with fishing organisations and vessels. Project infrastructure, including the 'as-laid' coordinates of the offshore export cable, shall be recorded and submitted to the UKHO and Kingfisher for inclusion on charts.

≤12 m nearshore static gear vessels (A); ≤12 m inshore static gear vessels (B); >12 m static gear vessels (C)

15.6.3.71 For this specific impact, the receptor groups A, B and C have been grouped together as they are all static gear vessels (<12 m and >12 m) where the potential impact of snagging due to seabed obstructions is quite similar.

15.6.3.72 The sensitivity of these receptors is judged to be low, since if the static gear deployed by these vessels did happen to snag on a sub-surface obstruction, the gear could be cut and/or retrieved relatively easily.

15.6.3.73 The main risk to these receptor groups will be if, during the operational phase, changes in seabed conditions results in areas of shallow burial and/or exposures.

15.6.3.74 The magnitude of this impact is deemed medium, due to it being likely to occur but reversible.

15.6.3.75 Taking the low sensitivity of the receptor and the medium magnitude of the impact, potential snagging from seabed obstructions along the export cable route for receptor groups A, B and C is considered to result in a **minor adverse** effect, which is not significant in EIA terms.

>12 m inshore mobile gear vessels (D); >12 m offshore mobile gear vessels (E)

15.6.3.76 For receptor groups D and E (mobile gear), the potential issues faced by snagging on seabed obstructions are quite different to the static gear vessel receptors. The nature of the gear deployed and the method of fishing by these vessels means that vessels need to tow nets/trawls under significant power and at defined speeds. If mobile gear under tow snags on subsurface obstructions, there is significant risk to the gear, the vessel and, most importantly, the crew.

15.6.3.77 The worst case scenario for cable installation assumes that the offshore export cable installation works will be split out into approximately seven discrete phases of works, each separated by approximately 1-2 weeks. In times of no activity, fishing will be permitted where possible. There will be a maximum of 12 weeks between cables being laid and being fully protected by rock protection; however, there are only limited areas of rock protection planned between approximately 8-16 nm offshore, which is the area where there are high numbers of mobile vessels active. In these periods of no activity, scope exists for mobile gear vessels to trawl through an area however the implementation of embedded mitigation in the form of guard vessels will reduce the potential for subsurface obstructions to be snagged.

15.6.3.78 With respect to this specific effect, the sensitivity of these two receptors is judged to be high as they have a very low recoverability to any snagging, however the protection offered by the standard mitigation measures will provide further protection to mobile gear vessels that may be operating in this area. These measures include ensuring the Project FLO issues NtMs with information on any areas of shallow buried/exposed cable; other obstructions etc., and in any areas where there may be areas of unburied/shallow buried/free-spanning cable, guard vessels and/or temporary surface marker buoys are deployed. As there is limited potential for gear to be snagged the magnitude of impact is therefore deemed negligible.

15.6.3.79 With the high receptor sensitivity and negligible magnitude of impact, it is considered to result in **minor adverse** effect, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.6.3.80 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Table 15.19 – Summary of effects of snagging resulting from seabed obstructions

Receptor	Sensitivity	Magnitude	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
			Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
≤12 m nearshore static gear vessels	Low	Medium	Minor	Adverse		Minor	Adverse
≤12 m inshore static gear vessels	Low	Medium	Minor	Adverse		Minor	Adverse
>12 m static gear vessels	Low	Medium	Minor	Adverse		Minor	Adverse
>12 m inshore mobile gear vessels	High	Negligible	Minor	Adverse		Minor	Adverse
>12 m offshore mobile gear vessels	High	Negligible	Minor	Adverse		Minor	Adverse

Supply chain opportunities for local fishing vessels

15.6.3.81 During the operation and maintenance phase of the Project, commercial opportunities other than core fishing activities may arise for suitable local commercial fishing vessels.

15.6.3.82 The following are areas of potential support that could be provided by local commercial fishing vessels:

- Guard vessels;
- Debris recovery;
- Navigational marker buoy deployment, servicing and recovering;
- Vessels for environmental monitoring activities; and
- Crew transfers.

15.6.3.83 Supply chain opportunities are judged to be slightly less in the operational phase as the majority of major maintenance works will be done within a local port. Major offshore vessels will be needed to uncouple the semi-submersible floating platforms and tow them back to port.

15.6.3.84 However, some opportunities may arise to support any cable repair/remediation events needed in the operational phase, which may offset the slightly reduced opportunities from major maintenance works.

15.6.3.85 Therefore, the same conclusions with respect to significance of effect as presented in the construction phase section are assumed to apply in the operational phase (see also Table 15.20).

- ≤12 m nearshore static gear vessels (A) – **negligible** (not significant in EIA terms);
- ≤12 m inshore static gear vessels (B) - **negligible** (not significant in EIA terms);
- >12 m static gear vessels (C) - **minor beneficial** (not significant in EIA terms);
- >12 m inshore mobile gear vessels (D) – **moderate beneficial** (significant in EIA terms); and
- >12 m offshore mobile gear vessels (E) – **moderate beneficial** (significant in EIA terms).

Additional Mitigation and Residual Effect

15.6.3.86 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Table 15.20 – Summary of the effects of supply chain opportunities for local fishing vessels

Receptor	Sensitivity	Magnitude	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
			Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
≤12 m nearshore static gear vessels	Negligible	Negligible	Negligible	-	NA	Negligible	-
≤12 m inshore static gear vessels	Negligible	Negligible	Negligible	-	NA	Negligible	-

Receptor	Sensitivity	Magnitude	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
			Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
>12 m static gear vessels	Medium	Low	Minor	Beneficial	NA	Minor	Beneficial
>12 m inshore mobile gear vessels	Medium	Medium	Moderate	Beneficial	NA	Moderate	Beneficial
>12 m offshore mobile gear vessels	Medium	Medium	Moderate	Beneficial	NA	Moderate	Beneficial

Change in distribution of commercially exploited fish and shellfish populations due to construction activities

15.6.3.87 There is the potential for the operational phase to have either adverse or beneficial impacts on commercially exploited fish and shellfish populations, such as causing behavioural changes or increases/declines in abundance, which would therefore affect the fisheries which target those species. Impacts to commercially important fish and shellfish are assessed in Chapter 10: Fish and Shellfish Ecology and are not expected to exceed minor adverse significance.

Collision risk between fishing vessels and the Proposed Development

15.6.3.88 During operation and maintenance, there could be a risk of collision between fishing vessels and Project infrastructure. This impact has been assessed within Chapter 16: Shipping and Navigation, and Volume 3, Technical Appendix 16.1: Navigational Risk Assessment.

15.6.3.89 In summary, although a risk of collision exists between fishing and Project infrastructure, this can be reduced to a low-level risk by exclusion of commercial fisheries from the array area, communication of information via a dedicated FLO, and the compliance of Project vessels with the principles of good seamanship and COLREGs.

Change in navigable water depth (e.g. from rock-berms)

15.6.3.90 During operation and maintenance, there could be a decrease in water depth over rock berms. This impact has been assessed within Chapter 16: Shipping and Navigation and Volume 3, Technical Appendix 16.1: Navigational Risk Assessment, where mitigation measures are outlined. No more than 5% reduction in water depth (referenced to Chart Datum) will occur at any point on the cable route without prior written approval from the Licensing Authority.

15.6.3.91 In summary, although there will be a reduction in water depth due to proposed rock berms, the areas are very localised, and the risk of grounding is low.

15.6.4 Decommissioning

15.6.4.1 During the decommissioning phase, there is potential for WTG, foundations and offshore export cable removal activities to cause disruption to normal fishing activity.

15.6.4.2 Some of the impacts associated with the construction phase of the Project would also occur during decommissioning. These include:

- Temporary loss of access to fishing grounds (only relevant to offshore export cable as fishing assumed to be excluded within the array area for the lifetime of the Project);
- Temporary increased steaming times due to the presence of vessels and safety zones during decommissioning;
- Supply chain opportunities for local fishing vessels; and
- Collision risk between fishing vessels and decommissioning vessels.

15.6.4.3 The sensitivity and magnitude of the five receptor groups is considered to remain the same as per the construction phase impacts, although in practice, they are likely to be less for decommissioning. Therefore, the same conclusions on significance are predicted.

15.6.5 Effects on Human Health and Population

15.6.5.1 There will be no effects on population or human health in relation to commercial fisheries.

15.7 Additional Mitigation

15.7.1.1 Following implementation of Standard Mitigation (as outlined in Section 15.4.6) effects would not exceed minor adverse levels. As such no Additional Mitigation is required.

15.8 Monitoring

15.8.1.1 It is proposed that the following monitoring be implemented:

- An annual review of MMO landings and activity data within the Study Area (including array area and offshore export cable corridor) to identify any notable changes in fishing activity/distribution over the operational phase of the Project; and
- Annual consultation with relevant commercial fisheries organisations and vessels to determine any changes in fishing activity and/or changes in landings or species distributions. This would take the form of project-specific questionnaires designed to highlight any direct or indirect effects of the Project.

15.9 Inter-Related Effects

15.9.1.1 The assessment of impacts arising from construction, operation and decommissioning of the Project indicates that impacts on receptors addressed in different aspects of the Project may potentially further contribute to the impacts assessed on commercial fisheries and vice versa. These are primarily from Chapter 10: Fish and Shellfish Ecology and Chapter 16: Shipping and Navigation.

15.9.1.2 The worst case effects assessed within this chapter take these interactions into account and therefore the assessments are considered conservative and robust. For clarity, the areas of interaction between effects are listed below:

- Change in distribution of commercially exploited fish and shellfish populations. This has been assessed within both Section 15.6 of this chapter, and Chapter 10: Fish and Shellfish Ecology;
- Snagging resulting from seabed obstruction. This has been assessed within Section 15.6 of this Chapter, and both Chapter 16: Shipping and Navigation, and Volume 3, Technical Appendix 16.1: Navigational Risk Assessment;
- Collision risk between fishing vessels and Project vessels. This has been assessed within Section 15.6 of this Chapter, and both Chapter 16: Shipping and Navigation, and Volume 3, Technical Appendix 16.1: Navigational Risk Assessment; and
- Change in navigable water depth. This has been assessed within Section 15.6 of this Chapter, and both Chapter 16: Shipping and Navigation and Volume 3, Technical Appendix 16.1: Navigational Risk Assessment.

15.10 Cumulative Effects Assessment

15.10.1.1 A Cumulative Effects Assessment (CEA) has been made based on existing and proposed developments in the Study Area (Chapter 30: Cumulative Effects). The approach to the CEA is described in Chapter 30: Cumulative Effects. Cumulative effects are defined as those effects on a receptor that may arise when the development is considered together with other reasonably foreseeable projects.

15.10.1.2 The majority of effects on commercial fisheries receptors associated with this Project have a spatial extent that is limited to the array area and offshore export cable corridor and the immediate local surroundings. Therefore, only projects that will affect the immediate local environment shall be screened in for consideration in the cumulative assessment.

15.10.1.3 On this basis, the projects considered within this cumulative assessment are the Greenlink Interconnector, the Marine Energy Test Area (META) projects, and Project Valorous (Table 15.21). Further information on these projects is outlined in Chapter 30: Cumulative Effects.

Table 15.21 – Summary of projects relevant for Cumulative Assessment in relation to Commercial Fisheries

Project	Tier	Distance from array (km)	Distance from export cable	Footprint of project area (km)	Construction Timings
Greenlink Interconnector	2	17.8	0	0.16	2024
META – East Pickard Bay (Bombora)	1	40	3.0	1.23	Summer 2022 for a maximum duration of 18 months including removal.
META – Warrior Way	2	51.7	12.6	0.093	As a test site deployment and recovery will be dictated by client bookings. There is no programme, and activity will be managed by NtM and stakeholder updates.

Project	Tier	Distance from array (km)	Distance from export cable	Footprint of project area (km)	Construction Timings
META – Dale Road	2	39.6	2.3	0.195	As a test site deployment and recovery will be dictated by client bookings. There is no programme, and activity will be managed by NtM and stakeholder updates.
Project Valorous	2	3.3	9.7	155* (1 nm buffer would result in 268.9 km^2 total area)	2026 to 2028. Generating 2029

** The total area inclusive of a 1 nm buffer has also been included to take into consideration the area lost to trawling, as suggested for the array area of the Proposed Development.*

15.10.1.4 The potential cumulative effects of the Pembrokeshire Demonstration Zone (PDZ) have not been considered at the time of writing due to the lack of detail with which to assess the effects of the proposed project. An EIA Scoping Report was produced and issued to NRW in 2018 for a proposed wave/floating wind project however based on discussions with Celtic Sea Power (the 3rd party agents for the PDZ) and recent public presentations by members of Celtic Sea Power, it is understood the PDZ will be repurposed as an offshore electrical hub. In the absence of an updated EIA Scoping Report and insufficient project information to allow the effects to be reasonably understood and a cumulative assessment undertaken, it has been omitted from this assessment.

15.10.1.5 For those reasons identified above, including the absence of EIA Scoping Reports, the potential cumulative impacts of the recently announced Llyr 1, Llyr 2 and Whitecross FLOW projects are also omitted from this cumulative assessment.

15.10.1.6 As set out in PINS Guidance Note 17: Cumulative Effects Assessment, the Project proposed an assessment cut-off date of 1 October 2021 to allow the finalisation of the EIA and HRA assessments, even if project information came forward between the cut-off date and submission. This was agreed with NRW Marine Licensing, noting that in the absence of S.36/Marine Licence guidance the Project was drawing upon the best available advice. It is understood that should sufficient detail of these projects come forward following submission the Project may be requested to provide additional information during the determination period.

15.10.1.7 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, operation and decommissioning phases. Effects and receptor groups are only discussed where there is the potential for a cumulative effect to arise.

15.10.1.8 The consideration of projects that could result in potential cumulative effects is assessed based on the results of the assessment, a review of the status of other projects, together with the professional judgement of the specialist consultants.

15.10.2 Construction

Temporary loss of access to fishing grounds (and associated reduction in revenue) due to presence of installation vessels and (temporary) construction-phase safety zones

15.10.2.1 The Greenlink Interconnector will be in operation once the construction of the Proposed Development commences, thus the only cumulative effect for this impact, would be during maintenance works of the Greenlink Interconnector which were assessed as negligible and not significant due to the discrete locations of works.

15.10.2.2 The static gear vessels (particularly receptor groups A and B) do not have large operational ranges, and so are reliant on limited fishing grounds which would be affected by the Project's construction works. This coupled with the META projects, two of which are located within approximately 3 km of the Project's offshore export cable corridor, could in theory lead to an increased cumulative impact of loss of access to fishing grounds. However, the magnitude of impact is not judged to increase to a degree that would alter the overall impact significance, due to the temporary nature of the Project installation works, and the discrete locations of the META projects (Table 15.21). Therefore, the overall cumulative significance of effect is judged to remain no greater than **minor adverse**, which is not significant in EIA terms.

15.10.2.3 Project Valorous is expected to follow this Project, however if construction activities were to overlap, there will be a cumulative effect of loss of grounds for the >12 m offshore mobile fleet (receptor group E). However, due to this receptor's extensive operational ranges and numerous fishing grounds within the Celtic Sea, this impact would not affect a major proportion of the receptor's annual landings value. Therefore, the magnitude of impact would not increase, so this effect is considered **minor adverse**, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.10.2.4 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Temporary displacement of fishing activity into other areas (and associated reduction in revenue) due to presence of installation vessels and construction-phase safety zones

15.10.2.5 The Greenlink Interconnector will be in operation once the construction of the Proposed Development commences, thus the only cumulative effect for this impact, would be during maintenance works of the Greenlink Interconnector which were assessed as negligible and not significant due to the discrete locations of works.

15.10.2.6 Displacement of static vessels as a result of the construction phases of the Project's offshore export cable and the META projects could increase conflict and intensity of activity, particularly in the nearshore and inshore regions. However, with successful implementation of the mitigation measures this Project is committed to, and the temporary nature of the works, the magnitude of impact would remain minor. Therefore, the cumulative effect would be **minor adverse**, which is not significant in EIA terms.

15.10.2.7 Displacement of mobile vessels as a result of the construction phases of this project in combination with Project Valorous, could cause conflict with the inshore static vessels. However, with successful implementation of the mitigation measures this Project is committed to and the temporary nature of the works, the magnitude of impact would remain minor. Therefore, the cumulative effect would be **minor adverse**, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.10.2.8 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Temporary increased steaming times due to the presence of installation vessels and (temporary) construction-phase safety zones during construction

15.10.2.9 There is no expected cumulative impact of increased steaming times on fishing vessels due to the relatively large areas between sites in which vessels would be able to transit, and the temporary nature of the construction works. This cumulative effect is, therefore, considered **negligible**, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.10.2.10 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Change in distribution of commercially exploited fish and shellfish populations due to construction activities

15.10.2.11 There is the potential for the construction phase to have either adverse or beneficial effects on commercially exploited fish and shellfish populations, such as causing behavioural changes or increases/declines in abundance, which would therefore affect the fisheries which target those species. This impact could be magnified due to the cumulative impacts of the other projects. Effects on commercially important fish and shellfish are assessed in Chapter 10: Fish and Shellfish Ecology.

Snagging resulting from seabed obstructions

15.10.2.12 There is the potential for an increased risk of snagging during construction, in combination with the other projects in the vicinity, particularly for the mobile gear vessels (receptor groups D and E), due to the sensitivities of these fleets as described in Section 15.6. However, with successful implementation of the standard and additional mitigation measures (outlined in Section 15.7), this effect will remain **minor adverse**, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.10.2.13 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Increased supply chain opportunities for local fishing vessels

15.10.2.14 If construction or operation and maintenance of any of the other projects listed is undertaken at the same time as the Project construction activities, potential cumulative beneficial impacts for supply chain opportunities will exist. Negligible beneficial effect is concluded for receptor groups A and B due to the low suitability to provide marine operation support which would not change for the cumulative assessment. For groups C, D and E, the magnitude of the likely cumulative effects is small for this impact, therefore there will be no greater than a **moderate beneficial** effect as assessed in Section 15.6.

Additional Mitigation and Residual Effect

15.10.2.15 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Collision risk between fishing vessels and Project vessels

15.10.2.16 During the construction phase, potential exists for increased risk of collision between fishing vessels and Project vessels. This impact has been assessed formally within Chapter 16: Shipping and Navigation, and the supporting Volume 3, Technical Appendix 16.1: Navigational Risk Assessment.

15.10.3 Operation

Loss of access to fishing grounds (and associated reduction in revenue) due to long-term presence of Project infrastructure

15.10.3.1 During the operation phase of the Project, fisheries will be excluded from the array area, but not from the offshore export cable corridor. Thus, the significance of effect will remain minor adverse for receptor groups A to D.

15.10.3.2 Due to the distance offshore of the array area, the potential impacts of loss of fishing grounds will not interact with the Greenlink Interconnector or META projects which are all located further inshore (Table 15.21).

15.10.3.3 There may be a cumulative effect with Project Valorous on the offshore mobile fleet (receptor group E). The maximum area (inclusive of a 1 nm buffer around each project) lost to this receptor group as a result of the Proposed Development and Project Valorous totals 372.4 km^2. This receptor has extensive operational ranges, allowing the vessels to fish in numerous fishing grounds, and even when all the projects are considered together, the total area of loss of access will not represent a major proportion of the area in which these vessels derive their annual value of landings. The Community Fisheries Fund setup by the Project will also ensure that this receptor does not lose a significant amount of revenue. Therefore, the cumulative effect would remain **minor adverse**, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.10.3.4 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Temporary displacement of fishing activity into other areas (and associated reduction in revenue) due to presence of installation vessels and construction-phase safety zones

15.10.3.5 In respect of the cumulative impacts associated with the operational phase of the Project and other projects in the vicinity, the only receptor group permanently displaced will be the offshore mobile gear vessels, which could interact with the impact of displaced vessels from Project Valorous. This might cause increased conflict with the inshore mobile vessels. However, even when the projects are considered together, this would not make up a large proportion of the area in which the offshore mobile vessels fish, and so dispersal would not be high. The cumulative magnitude of displacement on this commercial fisheries receptor is considered to result in a **negligible** or **minor adverse effect**, which is not significant in EIA terms.

15.10.3.6 Displacement of fishing vessels during maintenance works along the offshore export cable would be very localised, infrequent and temporary, so there would be little potential for cumulative displacement to result.

Additional Mitigation and Residual Effect

15.10.3.7 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Temporary loss of access to fishing grounds (and associated reduction in revenue) and/or displacement due to presence of export cable repair/remediation vessels and (temporary) advisory safety zones

15.10.3.8 Maintenance works of the Project could interact with maintenance or decommissioning works of the other projects, which could increase the significance of the impact. However, the magnitude of impact would be unlikely to increase to 'high' due to the relatively small size of any maintenance works associated with the Project, and the footprint of the other projects, which would not affect any area where the majority of a receptor's annual value of landings is caught. Therefore, the cumulative effect would remain **minor adverse**, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.10.3.9 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Increased steaming times due to the presence of the Proposed Development

15.10.3.10 It is expected that there will be a 500 m safety zone around maintenance vessels, which could in theory increase steaming times. However, this is likely to have little prospect of increasing the cumulative impact due to the very localised areas of the works.

15.10.3.11 Only the offshore mobile vessels receptor would be impacted by permanent increased steaming times during operation, however this was considered negligible due to the long steaming times of these vessels. From a cumulative perspective, this effect remains **negligible**, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.10.3.12 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Snagging resulting from seabed obstructions

15.10.3.13 Assuming this proposed exclusion is implemented successfully, with close engagement and communication with commercial fisheries stakeholders, then there will be no scope for snagging fishing gear on sub-surface obstructions/structures within the array area as no vessels will enter this area. Therefore, for all the five commercial fisheries receptor groups, the effect would remain **minor adverse,** which is not significant in EIA terms.

15.10.3.14 A different scenario exists for the offshore export cable corridor where fishing activity will still be permitted by all vessels during the operational phase. Even though the offshore export cable will be buried and/or surface-laid with appropriate external cable protection (rock berms), potential exists for the offshore export cable to become shallow-buried or exposed due to changes in seabed conditions. This impact could be increased in combination with other projects in the region. However, with successful implementation of the Standard and Additional Mitigation measures, this effect will remain **minor adverse**, which is not significant in EIA terms.

Additional Mitigation and Residual Effect

15.10.3.15 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

Supply chain opportunities for local fishing vessels

15.10.3.16 If construction or operation and maintenance phases of any of the other projects listed are undertaken at the same time as the Project operation and maintenance period, potential cumulative beneficial impacts for supply chain opportunities will exist. Negligible beneficial effect is concluded for receptor groups A and B due to the low suitability to provide marine operation support which would not change for the cumulative assessment. For groups C, D and E, the magnitude of the likely cumulative effects is small for this impact, therefore there will be no greater than a moderate beneficial impact, as assessed in Section 15.6.

Additional Mitigation and Residual Effect

15.10.3.17 None of the effects identified above are major or moderate adverse (significant in EIA terms). Therefore, no additional mitigation is required to reduce the significance to non-significant in EIA terms and the significance of residual effects remain as detailed above.

15.10.4 Decommissioning

15.10.4.1 The same type and significance of cumulative impacts as described for the construction phase would potentially arise if decommissioning of the Project and the other projects in the vicinity occurred simultaneously, resulting in no greater than **minor adverse** effects, which is not significant in EIA terms.

15.11 Transboundary

15.11.1.1 In some circumstances, transboundary issues may be a consideration as fishermen from other countries may fish in waters within which offshore windfarms are sited. Transboundary impacts are integrated within this chapter, as the impact assessment takes into account the potential impacts of the Project on international fleets which are known to operate in the area.

15.12 Summary

15.12.1.1 This chapter has provided an overview on the potential effects which may occur on commercial fisheries within the construction, operation and decommissioning phases of the Project.

15.12.1.2 Review of the existing baseline concluded that the array area is an area of relatively low importance for commercial fishing activity (particularly UK vessels) in comparison to other areas of Welsh waters within the Celtic Sea. At the array area, static gear activity was low and infrequent and activity by mobile vessels (predominantly beam and otter trawls) was moderate. These mobile gear vessels were generally from the UK, France, Belgium and Ireland, and so this activity may be affected by the new EU-UK trade agreement.

15.12.1.3 The offshore export cable corridor is of moderate importance to mobile gear vessels (particularly 6-12 nm) and static gear vessels (particularly 0-9 nm). The nearshore and inshore region supports moderate numbers of smaller vessels deploying static gear for crab, lobster and whelk. Shellfish landings from these static gear fleets in the Study Area were a relatively major contribution to the landings at Milford Haven. Landings of shellfish species generally peaked between April to October. Otter trawl vessels, predominantly from Devon and Cornwall, showed moderate activity along the offshore export cable corridor between 6-12 nm.

15.12.1.4 A total of five ‘receptor groups’ have been defined for this assessment through review of data and feedback from consultation. The receptor groups recognise the different sensitivities of the fishing fleets, and have been defined by the size of vessel and the geographic area of activity, as follows:

- ≤12 m nearshore static gear vessels (A);
- ≤12 m inshore static gear vessels (B);
- >12 m static gear vessels (C);
- >12 m inshore mobile gear vessels (D); and
- >12 m offshore mobile gear vessels (E).

15.12.1.5 The potential pressures considered by this assessment included loss of access to fishing grounds, displacement of fishing activity, increased steaming times and snagging risks. With consideration of the Standard and Additional Mitigation measures, the effect of these pressures was assessed as **minor or negligible**, even when assessed with the worst case scenario. The Standard and Additional Mitigation measures will be implemented to ensure that the risks to commercial fisheries are managed effectively over the lifetime of the project. The EIA concluded that the significance of effect was not significant, as outlined in Table 15.22.

15.12.1.6 Supply chain opportunities for commercial fisheries receptors may arise during the different phases of the Project.

15.12.1.7 No significant cumulative effects on commercial fisheries have been identified (Table 15.23).

Table 15.22 – Summary of Effects for Commercial Fisheries

Description of Effect	Receptor	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
		Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Construction						
Temporary loss of access to fishing grounds (and associated reduction in revenue) due to presence of installation vessels and (temporary) construction-phase safety zones	≤12 m nearshore static gear vessels	Minor	Adverse	NA	Minor	Adverse
	≤12 m inshore static gear vessels	Minor	Adverse		Minor	Adverse
	>12 m static gear vessels	Minor	Adverse		Minor	Adverse
	>12 m inshore mobile gear vessels	Minor	Adverse		Minor	Adverse
	>12 m offshore mobile gear vessels	Negligible	-		Negligible	-
Temporary displacement of fishing activity into other areas (and associated reduction in revenue) due to presence of installation vessels and construction-phase safety zones	≤12 m nearshore static gear vessels	Minor	Adverse	NA	Minor	Adverse
	≤12 m inshore static gear vessels	Minor	Adverse		Minor	Adverse
	>12 m static gear vessels	Minor	Adverse		Minor	Adverse

Description of Effect	Receptor	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
		Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
	>12 m inshore mobile gear vessels	Minor	Adverse		Minor	Adverse
	>12 m offshore mobile gear vessels	Negligible	-		Negligible	-
Temporary increased steaming times due to the presence of installation vessels and (temporary) construction-phase safety zones during construction	≤12 m nearshore static gear vessels	Minor	Adverse	NA	Minor	Adverse
	≤12 m inshore static gear vessels	Minor	Adverse		Minor	Adverse
	>12 m static gear vessels	Negligible	-		Negligible	-
	>12 m inshore mobile gear vessels	Negligible	-		Negligible	-
	>12 m offshore mobile gear vessels	Negligible	-		Negligible	-
Change in distribution of commercially exploited fish and shellfish populations due to construction activities	Discussed in Chapter 10: Fish and Shellfish Ecology.					
Snagging resulting from seabed obstructions	≤12 m nearshore static gear vessels	Minor	Adverse	NA	Minor	Adverse

Description of Effect	Receptor	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
		Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
	≤12 m inshore static gear vessels	Minor	Adverse		Minor	Adverse
	>12 m static gear vessels	Minor	Adverse		Minor	Adverse
	>12 m inshore mobile gear vessels	Minor	Adverse		Minor	Adverse
	>12 m offshore mobile gear vessels	Minor	Adverse		Minor	Adverse
Collision risk between fishing vessels and Project vessels	Discussed in Chapter 16: Shipping and Navigation.					
Operation						
Loss of access to fishing grounds (and associated reduction in revenue) due to long-term presence of Project infrastructure	≤12 m nearshore static gear vessels	Minor	Adverse	NA	Minor	Adverse
	≤12 m inshore static gear vessels	Minor	Adverse		Minor	Adverse
	>12 m static gear vessels	Minor	Adverse		Minor	Adverse
	>12 m inshore mobile gear vessels	Minor	Adverse		Minor	Adverse

Description of Effect	Receptor	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
		Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
	>12 m offshore mobile gear vessels	Negligible	-		Negligible	-
Displacement of fishing activity into other areas due to long-term presence of Project infrastructure	≤12 m nearshore static gear vessels	Minor	Adverse	NA	Minor	Adverse
	≤12 m inshore static gear vessels	Minor	Adverse		Minor	Adverse
	>12 m static gear vessels	Minor	Adverse		Minor	Adverse
	>12 m inshore mobile gear vessels	Minor	Adverse		Minor	Adverse
	>12 m offshore mobile gear vessels	Negligible	-		Negligible	-
Temporary loss of access to fishing grounds) (and associated reduction in revenue) and/or displacement due to presence of export cable repair/remediation vessels and (temporary) advisory safety zones	≤12 m nearshore static gear vessels	Minor	Adverse	NA	Minor	Adverse
	≤12 m inshore static gear vessels	Minor	Adverse		Minor	Adverse
	>12 m static gear vessels	Minor	Adverse		Minor	Adverse
	>12 m inshore mobile gear vessels	Minor	Adverse		Minor	Adverse

Description of Effect	Receptor	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
		Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
	>12 m offshore mobile gear vessels	Negligible	-		Negligible	-
Increased steaming times due to the presence of the Proposed Development	≤12 m nearshore static gear vessels	Minor	Adverse	NA	Minor	Adverse
	≤12 m inshore static gear vessels	Minor	Adverse		Minor	Adverse
	>12 m static gear vessels	Negligible	-		Negligible	-
	>12 m inshore mobile gear vessels	Minor	Adverse		Minor	Adverse
	>12 m offshore mobile gear vessels	Negligible	-		Negligible	-
Snagging resulting from seabed obstructions	≤12 m nearshore static gear vessels	Minor	Adverse	NA	Minor	Adverse
	≤12 m inshore static gear vessels	Minor	Adverse		Minor	Adverse
	>12 m static gear vessels	Minor	Adverse		Minor	Adverse
	>12 m inshore mobile gear vessels	Minor	Adverse		Minor	Adverse

Description of Effect	Receptor	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
		Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
	>12 m offshore mobile gear vessels	Minor	Adverse		Minor	Adverse
Supply chain opportunities for local fishing vessels	≤12 m nearshore static gear vessels	Negligible	-	NA	Negligible	-
	≤12 m inshore static gear vessels	Negligible	-		Negligible	-
	>12 m static gear vessels	Minor	Beneficial		Minor	Beneficial
	>12 m inshore mobile gear vessels	Moderate	Beneficial		Moderate	Beneficial
	>12 m offshore mobile gear vessels	Moderate	Beneficial		Moderate	Beneficial
Change in distribution of commercially exploited fish and shellfish populations due to construction activities	Discussed in Chapter 10: Fish and Shellfish Ecology.					
Collision risk between fishing vessels and the Proposed Development	Discussed in Chapter 16: Shipping and Navigation.					
Change in navigable water depth (e.g. from rock-berms)	Discussed in Chapter 16: Shipping and Navigation.					

Description of Effect	Receptor	Significance of Potential Effect (assuming standard mitigation implemented)		Additional Mitigation Measure	Significance of Residual Effect	
		Significance	Beneficial/ Adverse		Significance	Beneficial/ Adverse
Decommissioning						
As per impacts in the construction phase for the following: temporary loss of access to fishing grounds, temporary increased steaming times, supply chain opportunities and collision risk.						

Table 15.23 – Summary of Cumulative Effects for Commercial Fisheries

Description of Effect	Cumulative Developments	Significance of Cumulative Effect	
		Significance	Beneficial/ Adverse
Construction			
Temporary loss of access to fishing grounds) (and associated reduction in revenue) due to presence of installation vessels and (temporary) construction-phase safety zones	Greenlink Interconnector	Negligible	-
	META projects Project Valorous	Minor	Adverse
Temporary displacement of fishing activity into other areas (and associated reduction in revenue) due to presence of installation vessels and construction-phase safety zones	Greenlink Interconnector	Negligible	-
	META projects Project Valorous	Minor	Adverse
Temporary increased steaming times due to the presence of installation vessels and (temporary) construction-phase safety zones during construction	Greenlink Interconnector META projects Project Valorous	Negligible	-
Snagging resulting from seabed obstructions	Greenlink Interconnector META projects Project Valorous	Minor	Adverse
Supply chain opportunities for local fishing vessels	Greenlink Interconnector META projects Project Valorous	Minor	Beneficial

Description of Effect	Cumulative Developments	Significance of Cumulative Effect	
		Significance	Beneficial/ Adverse
Operation			
Loss of access to fishing grounds (and associated reduction in revenue) due to long-term presence of Project infrastructure	Greenlink Interconnector META projects Project Valorous	Minor	Adverse
Displacement of fishing activity into other areas due to long-term presence of Project infrastructure	Greenlink Interconnector META projects Project Valorous	Minor	Adverse
Temporary loss of access to fishing grounds) (and associated reduction in revenue) and/or displacement due to presence of export cable repair/remediation vessels and (temporary) advisory safety zones	Greenlink Interconnector META projects Project Valorous	Minor	Adverse
Increased steaming times due to the presence of the Proposed Development	Greenlink Interconnector META projects Project Valorous	Minor	Adverse
Snagging resulting from seabed obstructions	Greenlink Interconnector META projects Project Valorous	Negligible	-
Supply chain opportunities for local fishing vessels	Greenlink Interconnector META projects Project Valorous	Minor	Beneficial

Description of Effect	Cumulative Developments	Significance of Cumulative Effect	
		Significance	Beneficial/ Adverse
Decommissioning			
The same type and significance of cumulative impacts as described for the construction phase would potentially arise if decommissioning of the Project and the other projects in the vicinity occurred simultaneously, resulting in no greater than minor adverse impacts.			

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