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# Morlais Project Environmental Statement

## Chapter 14: Commercial Fisheries

### Volume I

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**MarineSpace**  
Making Sense of the Marine Environment™



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## GLOSSARY OF ABBREVIATIONS

AIS	Automatic Identification System
ALARP	As Low As Reasonably Possible
CCW	Countryside Council for Wales
COWRIE	Collaborative Offshore Wind Research into the Environment
DCO	Development Consent Order
ECC	Export Cable Corridor
EIA	Environmental Impact Assessment
ES	Environmental Statement
FLO	Fisheries Liaison Officer
FLOWW	Fishing Liaison with Offshore Wind and Wet Renewables
ICES	International Council for Exploration of the Seas
LSE	Likely Significant Effect
MCA	Maritime and Coastguard Agency
MCAA	Marine and Coastal Access Act
MDZ	Morlais Demonstration Zone
MHWS	Mean High Water Springs
MLWS	Mean Low Water Springs
MMO	Marine Management Organisation
MPS	Marine Policy Statement
NPS	National Policy Statement
NSIP	Nationally Significant Infrastructure Project
NRA	Navigational Risk Assessment
NRW	Natural Resources Wales
NtM	Notice to Mariners
OWF	Offshore wind farm
PINS	Planning Inspectorate
VMS	Vessel Monitoring System
WFA	Welsh Fishermen's Association
WNMP	Wales National Marine Plan

## GLOSSARY OF TERMINOLOGY

Beam trawl	A trawl net whose lateral spread during trawling is maintained by a beam across its mouth.
Bottom (demersal) otter trawling	Fishing whereby a single net is towed behind the vessel on the seabed.
Demersal	Living on or near the seabed.
ICES Statistical Rectangles	The spatial units by which fisheries data are recorded, collated and analysed.
Pelagic	Refers to fishing gear fished in the water column as opposed to seabed or fish present mid-water (e.g. herring, mackerel).
Potting	Fishing method whereby the fish are caught in portable traps laid onto the sea bed.



Scallop dredging	Fishing method used to catch scallops. Heavy dredges are towed along the seabed with teeth which rake scallops from the seabed.
VMS	Satellite tracking system used to track positions of EU vessels.
Whitefish	Refers to species such as cod, haddock and whiting

## 14. COMMERCIAL FISHERIES

### 14.1. INTRODUCTION

1. Menter Môn Morlais Limited (Menter Môn) proposes the development of 240 MW of tidal generating capacity within the Morlais Demonstration Zone (MDZ). The development of the Morlais Project (the Project) will support the development of renewable energy technology objectives of the Anglesey and Gwynedd Joint Local Development Plan, providing a consented tidal technology demonstration zone which supports installation, testing and commercial demonstrations of tidal energy devices. The Project will also provide opportunities for the local communities via direct employment and support of the local supply chain.
2. The Project will include permanent communal infrastructure for tidal technology developers which provides a shared route to a local grid connection via nine export cable tails, an onshore landfall substation, and an onshore electrical cable route to a grid connection via a grid connection substation.
3. This chapter provides a summary description of key aspects relating to existing commercial fisheries in the region, followed by an assessment of the magnitude and significance of the effects on the baseline conditions resulting from the construction, operation (repowering) and decommissioning of the Project, as well as those effects resulting from cumulative interactions with other existing or planned projects.
4. The Project will install multiple technology types within the MDZ, and so the consent application is based on a project design envelope (also known as the Rochdale Envelope), determined through knowledge of existing technology and anticipation of the direction of future developments. The project design envelope is provided in full in **Chapter 4, Project Description**. Hence, the potential effects on commercial fisheries have been assessed conservatively using realistic 'worst case' scenarios for the Project.
5. This chapter, inclusive of baseline information and environmental impact assessment has been undertaken by MarineSpace Ltd on behalf of Menter Môn.

### 14.2. POLICY, LEGISLATION AND GUIDANCE

6. This section outlines the relevant national and regional policy and guidance and industry guidance which has been used to support the compilation of this Commercial Fisheries Chapter.
7. An overview of the relevant legislative context for the Project is provided in **Chapter 2, Policy and Legislation**.

#### 14.2.1. National Policy Statements

8. The Marine Policy Statement (MPS) adopted by all UK administrations in March 2011 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 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 need to be considered in marine planning.

9. By adopting the MPS, the Welsh Government committed to the requirement to introduce Marine Plans for Wales. The Welsh Government is currently developing the first marine plan for Welsh inshore and offshore waters, the Wales National Marine Plan (WNMP).
10. The Plan is being developed in accordance with the Marine and Coastal Access Act (MCAA) 2009, the MPS and the Maritime Spatial Planning Directive, a draft version has been issued for consultation (discussed further in **Chapter 2, Policy and Legislation**).
11. Objective 10 of the MPS, “to maintain and enhance the resilience of marine ecosystems and the benefits they provide in order to meet the needs of present and future generations”, is of relevance to this chapter as this covers policies and commitments on the wider ecosystem, set out in the MPS including those to do with the Marine Strategy Framework Directive and the Water Framework Directive, as well as other environmental, social and economic considerations.
12. Although this Project is not seeking a Development Consent Order (DCO), its size (240 MW) means it is representative of a Nationally Significant Infrastructure Project (NSIP). Guidance that is relevant to assessing impacts on commercial fisheries for NSIPs are set out within National Policy Statements (NPSs) which are the principal decision making documents for NSIPs. Those relevant to commercial fisheries include:
  - NPS for Renewable Energy Infrastructure (EN-3), July 2011.
13. Details of specific policies within EN-3 used to inform this assessment are provided in **Table 14-1** below. The specific assessment requirements for commercial fisheries are detailed, together with an indication of the paragraph numbers of the chapter where each is addressed.

**Table 14-1 NPS EN-3 Assessment Requirements 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, Paragraph 2.6.122	A detailed assessment of the impacts of the project on fish and shellfish species, including commercial species, is provided <b>Chapter 10, Fish and Shellfish Ecology</b> . Potential impacts on the commercial fisheries that target them are assessed within this chapter ( <b>Section 14.7.4, Section 14.7.5 and Section 14.7.6</b> ).
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 fishing activities, such as potting, where this would not compromise any safety zone in place. The Planning Inspectorate should consider adverse or	EN-3, Paragraph 2.6.123	The potential impacts of the project alone and cumulatively with other projects are described in <b>Section 14.7.7</b> .

NPS Requirement	NPS Reference	ES Reference
beneficial impacts on different types of commercial fishing on a case by case basis.		
“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	Consideration has been given to the potential impacts of the project on both UK and non-UK fleets in <b>Chapter 26, Cumulative, Transboundary and In-Combination Impact Assessment.</b>
“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, Paragraph 2.6.127	<b>Section 14.3</b> describes stakeholder consultation which has been undertaken to inform this chapter.
“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, Paragraph 2.6.129	A detailed assessment of the impacts of the project on fish and shellfish receptors is provided in <b>Chapter 10, Fish and Shellfish Ecology</b> . The likely constraints on fishing associated with the project are considered in this chapter ( <b>Section 14.7.4, Section 14.7.5 and Section 14.7.6</b> ).
“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, Paragraph 2.6.130	Consideration has been given in the assessment presented in <b>Section 14.7.4</b> to the implications of the implementation of safety zones.
“Where the precise extents of potential safety zones are unknown, a realistic worst case scenario should be assessed. Applicants should consult the 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 that will result from the presence of the windfarm development and of any safety zones.”	EN-3, Paragraph 2.6.131	Consideration has been given to the implementation of safety zones for definition of the Worst-Case Parameters ( <b>Table 14-10</b> ) and for assessment of potential impacts on commercial fisheries ( <b>Section 14.7</b> ). Consideration is given in this chapter to the potential impact on commercial fisheries resulting from potential impacts associated with the Project on commercially exploited fish and shellfish species. A detailed assessment of the impacts of the project on fish and shellfish species, including those of commercial importance, is provided in <b>Chapter 10, Fish and Shellfish Ecology</b> .

#### 14.2.2. Marine Policy Statement

- The Marine Policy Statement (MPS) adopted by all UK administrations in March 2011 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 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 need to be considered in marine planning.

### 14.2.3. Wales National Marine Plan

15. By adopting the MPS, the Welsh Government committed to the requirement to introduce Marine Plans for Wales.
16. The Welsh Government is currently developing the first marine plan for Welsh inshore and offshore waters, the Welsh National Marine Plan (WNMP). The Plan is being developed in accordance with the Marine and Coastal Access Act (MCAA) 2009, the MPS and the Maritime Spatial Planning Directive, a draft version has been issued for consultation (discussed further in **Chapter 2, Policy and Legislation**).
17. Objective 10 of the WNMP, “to maintain and enhance the resilience of marine ecosystems and the benefits they provide in order to meet the needs of present and future generations”, is of relevance to this chapter as this covers policies and commitments on the wider ecosystem, as set out in the MPS including those to do with the Marine Strategy Framework Objective Directive and the Water Framework Directive, as well as other environmental, social and economic considerations.
18. **Table 14-2** sets out specific national and regional policies relevant to the Project.

**Table 14-2 National and Regional Policy Relevant to Commercial Fisheries**

Policy Description	Reference	ES Reference
<b>Draft WNMP</b>		
Proposals that consider opportunities for coexistence with other compatible sectors are encouraged in order to optimise the value and use of the marine area and marine natural resources	ECON_02: Coexistence	The Project will explore opportunities for local fishing vessels to support the Project ( <b>Section 14.7.4.5</b> and <b>14.7.5.5</b> )
Proposals that contribute to the well-being of coastal communities are encouraged.	SOC_02: Well-being of coastal communities	As above
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 <b>Section 14.7.7</b> and in <b>Chapter 26</b>

#### 14.2.4. Industry Guidance

19. This chapter takes into account the following legislation and guidance:

- Fishing Liaison with Offshore Wind and Wet Renewables (FLOWW) Group Best Practice Guidance for Offshore Renewables Developments: Recommendations for Fisheries Liaison (January 2014);
- Guidance on Commercial Fisheries Mitigation and Opportunities from Offshore Wind commissioned by Collaborative Offshore Wind Research into the Environment (COWRIE), (Blyth-Skyrme, 2010);
- Best Practice Guidance for Fishing Industry Financial and Economic Impact Assessments – guidelines based on outputs from a technical workshop organised by the UK Fisheries Economics Network (UFEN and Seafish, 2012);
- Scallop Fishing (Wales) Order (2010): bans scallop dredging within 1 nm of the Welsh coast; vessels fishing between 1-3 nm must be 10 m or less and not have more than 6 scallop dredges in total; vessels fishing between 3-6 nm must not have more than 8 scallop dredges; and vessels 6-12 nm must not have more than 14 scallop dredgers;
- The Welsh Government's Byelaw 9 (Annex 2) prohibits fishing with vessels exceeding 12 m in length (subject to certain exemptions) in the sea 0 to 6 nautical mile (nm)<sup>25</sup> (0 to 11.1 km) from the shore (Welsh Government, 2014)<sup>1</sup>;
- Inshore Fishery Legislation (North Wales, 0-6 nautical miles), including;
  - The Welsh Government's Byelaw 14 mandates a seasonal closure of the cockle fishery between 1<sup>st</sup> May and 31<sup>st</sup> August;
  - The Welsh Government's Byelaw 20 mandates a seasonal closure of the scallops *Pecten maximus* fishery between 1<sup>st</sup> June and 31<sup>st</sup> December in a specified inshore area;
  - The Welsh Government's Byelaw 21 prohibits the use of bottom towed fishing gear in the prohibited area;
  - The Welsh Government's Byelaw 30 which gives maximum daily quantity of shellfish landed; and
- Whelk Statutory Instrument is planned to be phased in from spring 2019.

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<sup>1</sup> The Welsh Government is understood to have been working on an Order to update the restrictions currently in force under Byelaw 9, but these have not yet been implemented.

### 14.3. CONSULTATION

20. Consultation with statutory bodies and key stakeholders was undertaken through a formal process for the Project. Key responses of relevance to commercial fisheries have been summarised in **Table 14-3**.

**Table 14-3 Consultation Responses**

Consultee	Date/Document	Comment	Response
Planning Inspectorate	2018 Scoping Response	<i>Access to fishing grounds:</i> The loss or restricted access to traditional fishing grounds may have subsequent effects on alternative fishing grounds. Impacts from intensification of fishing in alternative fishing grounds should be fully assessed within the ES. The exclusion of certain types of fishing may make an area more productive for other types of fishing. The assessment should include detailed surveys of the effects on fish stocks of commercial interest and the potential reduction or increase in such stocks that will result from the presence of the TECs and of any safety or buffer zones.	These impacts are assessed in detail under <b>Sections 14.7.4.1, 14.7.5.2 and 14.7.5.3</b>
Planning Inspectorate	2018 Scoping Response	<i>Potential impacts:</i> The ES should assess the likely significant effects resulting from target species being affected by the Proposed Works and not being able to migrate to inshore areas.	Likely Significant Effect (LSE) resulting from abundance of target species has been addressed in Section <b>14.7.5.3</b>
Planning Inspectorate	2018 Scoping Response	<i>Loss of or damage to fishing gear:</i> The potential for loss of or damage to fishing gear during all phases of the Proposed Works should be assessed.	Loss of or damage to fishing gear is assessed under <b>Section 14.7.4.4</b>
National Resource Wales (NRW) (for Planning Inspectorate (PINS))	2018 Scoping Response	We advise that vessels from Nefyn/Trevor should be mentioned when describing the baseline environment due to the potential that some of them utilise the area close to the proposed demonstration zone or their fisheries may be impacted by the development.	Vessels from Nefyn and Trevor have been considered as part of the baseline environment in <b>Section 14.5.3.1</b>
NRW (for PINS)	2018 Scoping Response	The potential impact of change in abundance of target species outlined in table 9.4 should also address the possibility of species movement being affected by development and not being able to migrate to inshore areas.	LSE resulting from abundance of target species has been addressed in <b>Section 14.7.5.3</b>
NRW	2018 Scoping Response	As the project progresses we recommend that you have regular meetings with Fishing Industry representatives starting at the top with the Welsh Fisherman's Association, and also more localised groups. We recommend that you follow the Fishing Liaison with Offshore Wind and Wet Renewables (FLOWW) best practice guidance for fisheries liaison to ensure continued liaison with the fishing industry through the planning	This recommendation has been duly noted. The WFA have been consulted with during the process of producing this chapter. The FLOWW Guidance has been followed when

Consultee	Date/Document	Comment	Response
		stages and all subsequent stages of the project (FLOWW, 2014).	conducting Fisheries Liaison for this chapter. Several meeting requests have been issued over the course of the Project.
NRW	2018 Scoping Response	Vessels from Nefyn/Trevor should be included when describing the baseline environment due to the potential for them to utilise the area close to the proposed demonstration zone or their fisheries may be impacted by the development.	This comment has been addressed previously.
NRW	2018 Scoping Response	As noted in the shipping and navigation section of this scoping opinion, vessel traffic estimated from AIS data and VMS data only shows large vessels and does not account for smaller boats, for example the under 10 m fishing fleet and recreational fishing vessels. This needs to be addressed in the ES.	The traffic of smaller vessels has been assessed using visual and radar data as well as liaison with national fishing organisations; see <b>Section 14.4.3</b> .
NRW	2018 Scoping Response	The potential impact of change in abundance of target species outlined in table 9.4 should also address the possibility of species movement being affected by the development and not being able to migrate to inshore areas.	This comment has been addressed above.
Welsh Fishermen's Association (WFA)	2018 Navigational Consultation	<p><i>Fishing Vessel Traffic Analysis:</i></p> <ul style="list-style-type: none"> <li>▪ Fishing vessel traffic on plot appears to be light. There is a plethora of under 10 m vessel that operate within the area;</li> <li>▪ Abrahams Bosom should be more populated. Pot buoys – head ropes inshore within 10 m contour;</li> <li>▪ July is a very active month and therefore, there should be more traffic than demonstrated on the plot. There is very little traffic at the end of February /start of March;</li> <li>▪ The Morlais Zone is not very fishing friendly due to the tidal conditions, except for at slack water.</li> </ul> <p><i>Impacts</i></p> <ul style="list-style-type: none"> <li>▪ If the project were to go ahead fishing in the area would be sterilised due to snagging and gear loss issues – may get some fishermen attempting to set pots as lobsters will hide within devices which will create a new habitat;</li> <li>▪ Vessels will not be able to anchor in the zone if they run into difficulties;</li> </ul>	<p>The feedback from consultation has been included and used to inform the relevant sections of the chapter. Specifically:</p> <ul style="list-style-type: none"> <li>▪ Fishing vessel traffic for small vessels has been investigated and supplemented with additional data (<b>Section 14.4.3</b>)</li> <li>▪ <b>Section 14.5.4</b> incorporates the comments with regards to fishing vessel traffic.</li> </ul> <p>Comment about tidal conditions noted and incorporated.</p>

Consultee	Date/Document	Comment	Response
		<ul style="list-style-type: none"> <li>At maximum capacity, a fishing boat would not attempt to navigate through the zones, even if they were lit.</li> </ul>	
WFA	2018 Navigational Consultation	<ul style="list-style-type: none"> <li>Commented that a local fishermen who is a scalloper will not fish within local OWFs with &gt;2 knots of tide as the risk of gear loss is too high;</li> <li>Considers that the tidal site is a much greater hazard than an OWF as cannot see all infrastructure.</li> <li>There is a risk of loss of power and drifting onto devices;</li> <li>It appears that for safety, all vessels will need to navigate around the outside of the MDZ.</li> </ul>	The feedback from consultation has been included and used to inform the relevant sections of the chapter, and also in <b>Chapter 12, Shipping and Navigation</b> .
WFA	2018 Navigational Consultation	<p><i>Inshore Passage:</i></p> <ul style="list-style-type: none"> <li>Inshore passage is a manageable gap, however, the current makes it difficult to navigate;</li> <li>The inshore passage would not be navigable for a coaster;</li> <li>Collision risk will likely increase, however, does not consider increase will be appreciable. However, may be of concern for yachts/ powerboats in summer;</li> <li>Normal passage planning would allow 1-2 miles offing from a steep to dangerous coastline.</li> </ul> <p><i>Anchoring</i></p> <ul style="list-style-type: none"> <li>Abraham's Bosom is not a very good holding ground, no one anchors here if they can help it. Very quickly you are in 30 m plus water depths.</li> </ul> <p><i>Mitigation</i></p> <ul style="list-style-type: none"> <li>Engagement with stakeholders is key. Stakeholders must be informed the whole way along.</li> </ul>	The feedback from consultation has been included and used to inform the relevant sections of this chapter, and also in <b>Chapter 12, Shipping and Navigation</b> .
NRW	2015 Scoping Response	It is not clear whether or not impacts to crab fisheries have been considered. This should be included in the ES, or, if this has been scoped out justification should be provided.	Crab fisheries have been assessed under two of the receptor groups (see <b>Section 14.4.4.1</b> ) throughout this chapter.
NRW	2015 Scoping Response	FishMap Mon may provide useful information to inform this section of the EIA. The Fish Map Mon information was gathered to give a better	The data from FishMap Mon that is available on the

Consultee	Date/Document	Comment	Response
		understanding of the fishery around Anglesey and help manage, protect and help maintain a sustainable fishery, and protect fishermen's livelihoods in the area. <a href="http://fishmapmon.naturalresourceswales.gov.uk/">http://fishmapmon.naturalresourceswales.gov.uk/</a>	Wales Marine Planning Portal was used for the baseline.

## 14.4. METHODOLOGY

### 14.4.1. Study Area

21. The specific study area for this chapter is generally defined by the International Council for the Exploration of the Seas (ICES) rectangle 35E5, within which the entire MDZ and export cable corridor lies (see **Figure 4-1, Volume II**). Ports data from the three key ports in the vicinity of the MDZ have been considered here, one of which lies outside of the ICES rectangle 35E5 boundary. Within the ICES rectangle 35E5, emphasis is placed on fishing activity that occurs within the actual MDZ zone and immediate (2 km) area.

### 14.4.2. Data Sources – Desk Study

22. Baseline conditions have been determined by undertaking a desktop review of published information and from consultation with key fishing organisations. The data sources used to inform the baseline description and impact assessment are listed below:

- Marine Management Organisation (MMO) UK fleet landings by selected ICES Rectangle (2012-2016);
- MMO UK and foreign fleet landings into the UK by port (2013-2017);
- Welsh Government, Marine Planning Portal, NRW – Sea Fish Atlas; (2010);
- MMO GIS dataset for UK and Non-UK >15m vessel fishing activity (2007-2010);
- MMO Fishing activity data for UK Vessels >15m, using Vessel Monitoring Systems data (2013-2016);
- MMO Marine Information System;
- FishMapMon;
- Lle – the Wales Marine Planning Portal<sup>2</sup>; and
- Consultation with national and regional fishing organisations via meetings and the Navigational Risk Assessment (NRA) process.

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<sup>2</sup> <http://lle.gov.wales/apps/marineportal/>

### 14.4.3. Data Sources – Site-Specific Surveys and Reports

23. No site-specific surveys of commercial fishing activity in the area around the MDZ have been undertaken. However, project-specific consultation has been undertaken with regional and national fishing organisations and marine traffic data (radar, Automatic Identification System (AIS) and visual) collected as part of the NRA process has also been used to inform the existing environment section.

### 14.4.4. Impact Assessment Methodology

24. A detailed description of the Impact Assessment Methodology is provided in **Chapter 5, EIA Methodology** of this ES. A short summary is provided here for completeness, with additional detail provided for the specific receptor of this chapter (commercial fisheries).

25. A Project Design Envelope approach, often referred to the ‘Rochdale Envelope’, has been used in this assessment. This approach “defines a series of realistic maximum extents and magnitudes for the description of a development, so that a realistic ‘worst case scenario’ is assessed”. **Chapter 4, Project Description**, sets out the parameters of the Project in as much detail as possible in order to complete the assessment.

26. Effects are changes in the existing environment that may arise during Project activities. Effects can result in impacts where a receptor is sensitive to them. Impacts can be considered as direct, indirect, inter-relationships, or cumulative (see **Chapter 5, EIA Methodology** for definitions).

27. The determination of each aspect of the receptor (sensitivity, value, magnitude) was considered for each species, using available evidence, including published data sources, and expert judgement.

#### 14.4.4.1. Sensitivity

28. The sensitivity of the receptor (commercial fishing vessels) was considered in terms of its ability to adapt, tolerate and / or recover from potential impacts (**Table 14-5**), as well as taking into account its value (see **Table 14-6**). Sensitivity of the commercial fishery was based on the available literature, expert judgement, and consultation with local fisheries representatives.

29. Three main fishing receptors have been defined based on knowledge of fishing activity in this area gathered via review of existing data and consultation with local fishers. These receptors have been defined by the size and type of vessel, the predominant gear type used and also the geographic area of activity.

**Table 14-4 Key Commercial Fishing Receptors Used in this Assessment**

Receptor Group	Description
A) ≤10 m nearshore static gear vessels targeting crab/lobster in the nearshore region	Small (≤10 m) vessels setting static gear (pots) in the nearshore region around NW Anglesey. Nearshore region defined as between 0-1 km offshore. Part of the ECC lies within this 0-1 km nearshore region
B) ≤10 m and >10 m static gear vessels targeting whelk/crab/lobster in the MDZ	Mixture of ≤10 m and larger >10 m vessels setting static gear (pots) further offshore (1-5 km) than Group A. Their activity coincides with part of the ECC and also the main MDZ array.

C) >10 m mobile gear vessels targeting whitefish and/or scallops in the MDZ and surrounding area	Larger (>10 m) vessels that operate at least 2 km offshore. These vessels may occasionally fish within the MDZ but never within the ECC.
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30. For all fishing receptors, it is important to recognise that sensitivity is not static over time. The operating environment for commercial fishing vessels changes from year to year reflecting changes in the parameters that guide the activities. For commercial fishing receptors, this includes changes to: the fisheries management regime (including area closures); the abundance and distribution of target species; changes in market prices and preferences; fuel costs; and in response to entrepreneurial behaviour by individual vessel operators.
31. Sensitivity to, and therefore the significance of, an impact, can thus change over time, as vessel operators adapt to new conditions, assuming the initial impact is not so severe as to render a business or operation unviable.
32. This capacity to adapt to changing circumstances is an important consideration when considering the sensitivity of a receptor to disturbance over time. Many receptors in the fishing sector are able to adapt to change by differing degrees, bearing in mind individual vessel capacity and restrictions beyond an individual's control, such as regulatory restrictions (e.g., quota). This capacity to adapt is considered for certain impacts in this assessment, including loss of access to historical fishing grounds or marks, and displacement. For these impacts, the level of disturbance assessed is forecast to diminish over time, as fishing vessels work to mitigate any disturbance experienced, in conjunction with mitigation measures put in place for the Project.

**Table 14-5 Definitions of the Receptor Sensitivity Levels (Commercial Fisheries)**

Sensitivity	Description
High	<ul style="list-style-type: none"> <li>▪ Low spatial adaptability due to limited operational range and ability to deploy only one gear type.</li> <li>▪ Limited spatial tolerance due to dependence upon a single ground.</li> <li>▪ Low recoverability due to inability to mitigate loss of fishing area by operating in alternative areas</li> </ul>
Medium	<ul style="list-style-type: none"> <li>▪ Some spatial adaptability due to extent of operational range and/ or ability to deploy an alternative gear type.</li> <li>▪ Moderate spatial tolerance due to dependence upon a limited number of fishing grounds.</li> <li>▪ Limited recoverability with some ability to mitigate loss of fishing area by operating in alternative areas.</li> </ul>
Low	<ul style="list-style-type: none"> <li>▪ High spatial adaptability due to extensive operational range and/ or ability to deploy a number of gear types.</li> <li>▪ High spatial tolerance due to ability to fish numerous fishing grounds.</li> <li>▪ High recoverability due to ability to mitigate loss of fishing area by operating in a range of alternative areas within the wider region.</li> </ul>
Negligible	<ul style="list-style-type: none"> <li>▪ Category of fishing receptor with an extensive operational range and high method versatility.</li> <li>▪ Vessel able to exploit a large number of fisheries.</li> </ul>

#### 14.4.4.2. Magnitude

33. In terms of commercial fishing activities, the magnitude of an impact on fishing receptors is defined based on the extent of the impact and duration of the impact. This takes into account the potential interactions between the construction, operation and maintenance (O&M), repowering and decommissioning phases of the Project and fishing activities by commercial fishing receptors.
34. The magnitude of the effect has been considered in terms of spatial extent, duration, likelihood, frequency, nature of change, and reversibility (where appropriate). Extent is the spatial extent over which the impact would occur in relation to the value of annual landed catch derived from a certain area. Extent therefore, estimates the area of historical fishing grounds or fishing marks that would be occupied by project infrastructure, activities and operations. As discussed previously, individual vessels within the commercial fishing sector have fishing grounds that are significantly smaller in area than the overall area fished by the local fleet, thus at individual vessel level, magnitude may be higher or lower than the fleet average.
35. Duration is defined as the length of time over which the impact would occur and is measured in fishing seasons. The profitability of commercial fishing vessels is often strongly linked to whether or not they supply bulk markets, in which case margins are typically tighter than for vessels supplying niche or high value markets.
36. However, all commercial fishing that targets seasonal fisheries is dependent on access to the fishery during the main season. Exclusion from fishing grounds for an entire season could, therefore, have serious implications for these sectors. Thus, duration of an impact is measured in terms of the length of time the impact would occur over fishing seasons.
37. **Table 14-6** outlines the criteria used for assessing magnitude of effect on commercial fisheries.

**Table 14-6 Definitions of Magnitude of Effect (Commercial Fisheries)**

Magnitude	Description
High	The impact would affect an area from which the majority of a commercial fishing receptor's annual value of landings is caught. The effect would be permanent and/or result in irreplaceable change and would be certain to occur.
Medium	The impact would affect an area from which a moderate proportion of a commercial fishing receptor's annual value of landings is caught. 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 of a commercial fishing receptor's annual value of landings is caught. The effect would be short- to medium-term though reversible change and could possibly occur.
Negligible	The impact would affect an area from which a very small proportion of a commercial fishing receptor's annual value of landings is caught. Effect is short-term, intermittent and reversible and unlikely to occur.

#### 14.4.4.3. Impact significance

38. The significant of an impact can be determined by combining the magnitude of the impact and the sensitivity of the receptor using the matrix outlined in **Table 14-7**.

39. The matrix approach ensures a consistent approach and limits the subjectivity of the impact assessment arising from expert judgement. Definitions of the impact significance are provided in **Table 14-8**.
40. A confidence value of high, medium or low will be assigned to the assessment of potential impacts, based on the confidence in the evidence used to make the assessment.

**Table 14-7 Impact Assessment Matrix**

		Negative Magnitude				Beneficial Magnitude			
		High	Medium	Low	Negligible	Negligible	Low	Medium	High
Sensitivity	High	Major	Major	Moderate	Minor	Minor	Moderate	Major	Major
	Medium	Major	Moderate	Minor	Minor	Minor	Minor	Moderate	Major
	Low	Moderate	Minor	Minor	Negligible	Negligible	Minor	Minor	Moderate
	Negligible	Minor	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible	Minor

**Table 14-8 Impact Significance Definitions**

Value	Definition
Major	Major and significant disturbance to the receptor (commercial fishing activity) that could not be mitigated by a change in receptor operating patterns, and which risks rendering the receptor unviable.
Moderate	Moderate disturbance to the receptor (commercial fishing activity) that would be difficult to mitigate by a change in receptor operating patterns, and which could result in a reduction in receptor value.
Minor	Minor disturbance to the receptor (commercial fishing activity) that could be mitigated by a change in receptor operating patterns, and/or would not result in a significant reduction in receptor value.
Negligible	No discernible disturbance to the receptor (commercial fishing activity).

#### 14.4.4.4. Mitigation measures

41. Where an impact assessment identifies that an aspect of the Project is likely to give rise to significant environmental impacts, mitigation measures have been proposed, targeted at avoiding impacts or reducing them to acceptable levels. These can comprise embedded mitigation or additional mitigation (see **Chapter 4, Project Description** for an overview of the embedded mitigation measures relevant to the Project). Additional mitigation measures are outlined where relevant in **Section 14.7**.

#### 14.4.4.5. Cumulative Impact Assessment

42. Cumulative impacts are assessed through consideration of the extent of influence of changes to commercial fisheries from the Project alone and those arising from the Project cumulatively or in combination with other reasonably foreseeable plans and projects.

### 14.5. EXISTING ENVIRONMENT

43. The characterisation of the existing environment is undertaken using data sources listed in the Data Sources (**Section 14.4.2** and **14.4.3**) sections above plus other relevant literature.

44. The limitations exist with data used to inform the existing environment section of this chapter. These are outlined in **Table 14-9** and have been taken into account during the impact assessment:

**Table 14-9 Data Sources and Associated Limitations**

Data set	Limitation
Marine Management Organisation (MMO) UK fleet landings by selected ICES Rectangle (2012-2016)	<ul style="list-style-type: none"> <li>At the time of writing, data were only available up to and including 2016</li> </ul>
MMO UK and foreign fleet landings into the UK by port (2013-2017)	<ul style="list-style-type: none"> <li>At the time of writing, data were only available up to and including 2017</li> </ul>
Welsh Government, Marine Planning Portal, NRW – Sea Fish Atlas; (2010)	<ul style="list-style-type: none"> <li>Data gained from a one-off study in 2010, nothing more recent available</li> </ul>
MMO GIS dataset for UK and Non-UK >15m vessel fishing activity (2007-2010)	<ul style="list-style-type: none"> <li>Data only available until 2010 due to data privacy</li> <li>Inshore fleet not generally represented as only &gt;15m vessels</li> </ul>
MMO Fishing activity data for UK Vessels >15m, using Vessel Monitoring Systems data (2013-2016)	<ul style="list-style-type: none"> <li>At the time of writing, data only available until 2016</li> <li>Inshore fleet not generally represented as only &gt;15m vessels</li> </ul>

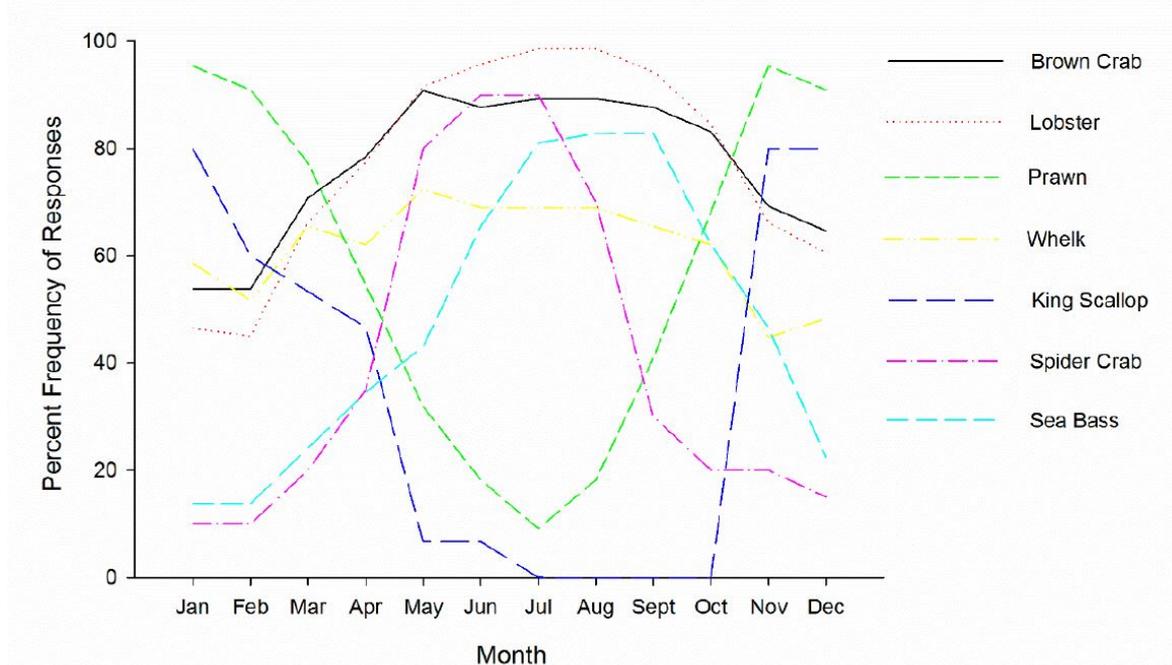
#### 14.5.1. Welsh Context

45. The waters around Wales provide an important variety of fishing areas and species for commercial activity, with Welsh waters targeted by both large (>10 m) offshore vessels and smaller ( $\leq 10$  m) inshore vessels as well as hand gatherers and commercial net fishermen for diadromous (migratory) species, including salmon and sea trout. The most common type of vessel in Welsh waters are vessels  $\leq 10$  m that typically fish in inshore waters, with the most frequent vessel length being between 5-6 m. Vessels >10 m fish both within and outside the 12 nm boundary of Welsh waters.

##### 14.5.1.1. Welsh Target Fisheries

46. In Welsh waters, shellfish are the most important target species with a small amount of demersal fish also being targeted. Shellfish are the most landed species into Welsh ports by UK vessels, specifically scallops, whelks and crabs (Pantin et al., 2015). Other important shellfish species include lobster, Norway lobster, and razor clams. Key demersal target species include cod, haddock, ling, monkfish, plaice, ray, skate and sole. Pelagic fish landings from this area are mainly of herring and mackerel, and of relatively less economic importance compared to shellfish and demersal species.
47. Although shellfish species are the most important commercial species in Welsh waters, there is a lack of consistent and quality data for these species (with the possible exception of scallops) across all UK waters. As a result, sound stock assessments have not been achievable at regional levels (Pantin et al., 2015).
48. The whelk fishery comprises the largest current fishing area in Welsh waters (Pantin et al., 2015) at a total of 6,640 km<sup>2</sup>. Brown crab and lobster also have large fishery areas. The main non-shellfish species that has the greatest fishing area is sea bass.

49. Another key characteristic of fisheries in Welsh waters is seasonality, with the majority of vessels targeting different species, using different gear types, at different times of the year so as to maximise income. Broad, regional-level seasonal trends for different fishing activity in Welsh waters are shown in **Plate 14-1**.



**Plate 14-1 Seasonal Trends in Fishing Activity by Month in Welsh Waters, as reported by Fishers (from Pantin et al., 2015).**

50. Different commercial species are targeted by different sectors of the fishing fleet. The inshore (predominantly  $\leq 10$  m) fishing fleet targets a wide range of species including bass, crabs, scallops, lobster and whelks in the nearshore region. Many of these species are of high quality and, therefore, high commercial value due to the methods of capture used and short time between capture and landing.
51. Potting for shellfish is the key fishing activity in Welsh coastal waters. Lobster, spider crab, brown crab, velvet crab, crayfish and prawns are all targeted. The whelk fishery in is also highly profitable.
52. Hand-gathering for cockles, mussels, periwinkles and razor clams occurs around the coast of Wales.
53. Beam trawling targeting plaice and sole is also conducted in Welsh waters, specifically off North Wales. Historically, scallop dredging was mainly south and west of the Isle of Man, but in 2007 efforts intensified within Cardigan Bay. Demersal trawling (using otter trawls for plaice, sole and rays through the summer, and whiting during winter) takes place mainly off South-west Wales. Beach seining catches bass or mullet in a number of localities around North Wales.
54. There are no established pelagic trawl fisheries around the coasts of Wales. Hand lining and rod and line fishing are widespread and occur both commercially and recreationally in inshore

waters, as is the use of set nets targeting particularly sea bass in summer but also rays and other species throughout the year (Evans and Hintner, 2012).

55. Recreational sea angling is particularly popular in the UK with Wales offering the opportunity to use a wide range of techniques and target species including shore fishing for bass, cod and whiting, as well as boat fishing for black bream and for tope. Though the main season for sea angling is the summer, it extends into late spring and winter in areas that are more accessible, including the waters around Anglesey.

#### **14.5.1.2. Ports**

56. The Welsh fleet operates from ports all over Wales, with the most active ports being Milford Haven, Fishguard, Holyhead, Saundersfoot and Swansea (MMO, 2016). Offshore fishing vessels are mainly concentrated at Milford Haven in the South and Holyhead in the North (MMO, 2016).

### **14.5.2. Fishing Activity in the Study Area**

#### **14.5.2.1. Spatial-Temporal Trends**

57. The coastline in the study area is generally very rugged, dominated by rocky outcrops with extensive sandy beaches only near estuaries and in sheltered bays. As a consequence, fishing activity is restricted by prevailing westerly weather during the winter. There exist a few naturally protected areas around Holyhead and Anglesey (National Assembly Wales, 2000).
58. The majority of boats fish within 6 nm of the coast, potting for lobsters, crabs and whelks and netting for flatfish, cod, bass, mullet, herring, salmon and sea trout. Some vessels from ports in the study area and adjacent North Wales coast also participate in the Cardigan Bay scallop fishery, which generally takes place outside the 12-mile limit and involves vessels from other parts of the UK.
59. Large visiting beam trawlers fish the shallow bay between Anglesey and Cumbria, often landing into Holyhead and Liverpool to their own transport. Lobsters provide the main resource for many fishermen operating in the study area and greater waters of North Wales. Pots are generally set between April and November, although pots set in sheltered areas in winter take an important bycatch of velvet crabs. Brown crabs provide an important resource Anglesey, where boats of 5–8m set pots out to 6nm from the coast and larger boats, some equipped with vivier tanks, target brown crabs further offshore. Whelks are taken in pots set off Anglesey, as well as the Lley Peninsula, and further south in Cardigan Bay (Walmsley & Pawson, 2007).

#### **14.5.2.2. Distribution of Fishing Effort**

60. The spatial distribution of fishing activity/value in the study area (ICES rectangle 35E5) is presented below via the review and analysis of vessel monitoring systems (VMS) data obtained from the MMO for the period 2013-2016.
61. As shown in **Figure 14-3 (Volume II)**, ICES rectangle 35E5 had a moderate level of annual fishing effort (>96,000-192,000 kilowatt/days) during the years 2013, 2015 and 2016; while in in 2014 fishing effort was slightly lower (>48,000-96,000 kilowatt/days). In a regional context, ICES

rectangles further north have higher levels of annual fishing effort; while rectangles to the east and west have lower levels of fishing effort; and fishing levels directly to the south are typically the same or slightly higher than rectangle 35E5.

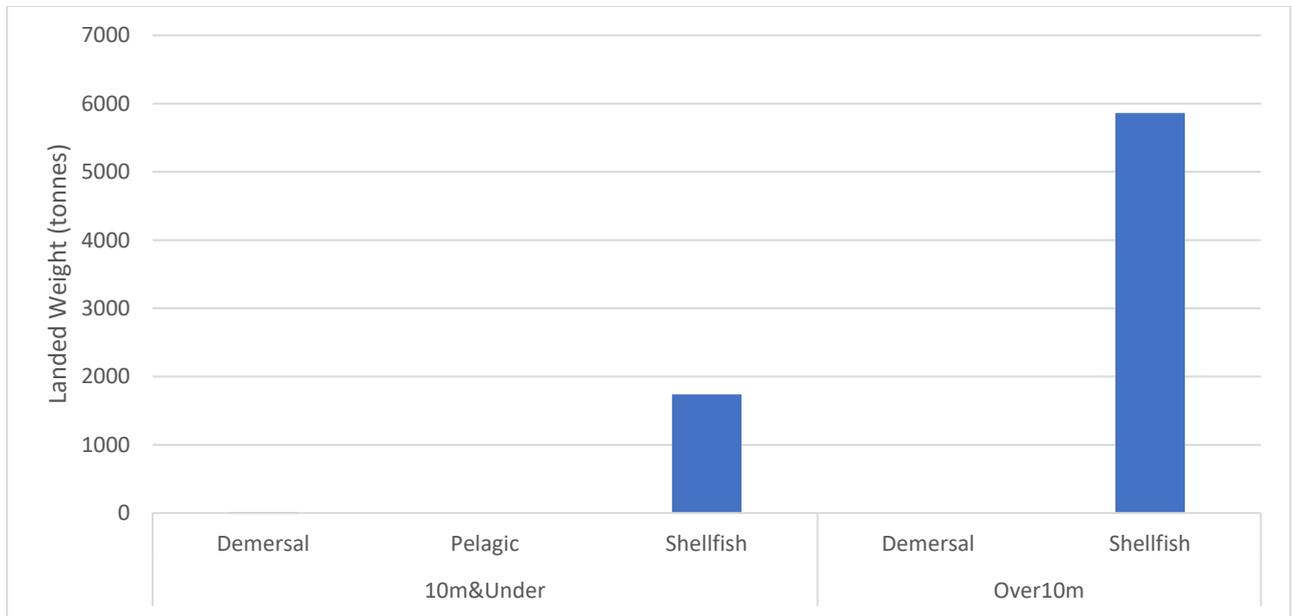
62. Fishing effort by >15m vessels using mobile gears in 35E5 was typically low (**Figure 14-4, Volume II**). Many of the subdivided areas of ICES rectangle 35E5 had no fishing effort by this fishing class, with the most common hours of fishing effort in the subdivisions being very low (<100 hours) (across all years), typically accruing a low value (<£10,000) (**Figure 14-5, Volume II**). The rectangles north of 35E5 have typically higher levels of effort and acquired value from this fishing activity.
63. Fishing by vessels >15m in the MDZ was low (<100 hours per year) and acquired a low monetary value (<£10,000) (**Figure 14-4 and Figure 14-5, Volume II**), similar to the level of fishing for the full study area. This is true across the whole site in 2015 and 2016, and in the northern portion of the site in 2013 and 2014. There was no effort by fishing vessels >15 m using mobile gear in the southern portion of the MDZ in 2013 and 2014. This low level of activity reflects the difficult fishing conditions in and around the MDZ due to the tidal regime and relatively proximity to the coast.
64. Fishing effort by vessels >15 m using static gears in the MDZ are higher than those using mobile gears (**Figure 14-6, Volume II**). In 2013 and 2014, there was a medium level (100-500 hours) of fishing effort by vessels >15 m using static gear in the northern half of the MDZ, and no such fishing effort in the southern half. In 2015, the northern half of the MDZ was subject to the same amount of fishing level, but the southern half was subject to a higher level (500-1000 hours) of fishing effort. This higher level of fishing effort was reported across the whole MDZ in 2016. It can be inferred therefore that there was an overall increase in the fishing effort of vessels >15 m using static gears in the MDZ for the period 2013-2016.
65. The same trend is observed for value of landings from fishing vessels >15 m using static gear in the MDZ (**Figure 14-7, Volume II**). Value generated was very low (<£2,000) in the northern half of the MDZ during 2013 and 2014 (no value from the southern half as no effort); increasing to a moderate value (£2,000-8,000) across the MDZ in 2015; and was a maximum of up to £30,000 across the MDZ in 2016.
66. The waters in ICES rectangle 35E5, the study area, have high levels of fishing by vessels >15 m using static gears in comparison to nearby rectangles (**Figure 14-6, Volume II**). In 2013 there were generally low fishing levels throughout the waters off north-west Wales (most commonly <100 hours of effort in rectangles displayed in **Figure 14-6, Volume II**). Fishing effort was higher in these waters in 2014 and 2015, with more subdivided areas receiving fishing effort of >100 hours. In 2016, there was a notable shift in effort (and value) from the north of ICES rectangle 35E5 and the two rectangles north of ICES 35E5 (36E5 and 36E6) to the south of 35E5 and the ICES rectangle to the south (34E5), with the MDZ representing the northern limit of more intense fishing effort and value.

#### 14.5.2.3. Key Commercial Species in the Study Area

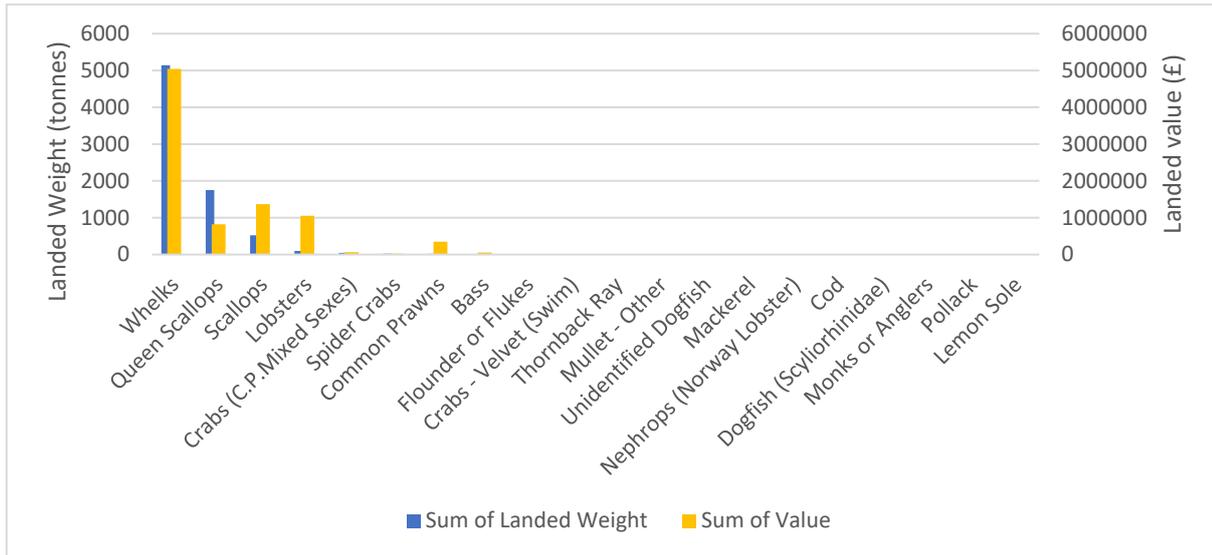
67. Data on the total landed weight and value of landings by all vessels in the ICES rectangle 35E5 (the study area) for the period 2013-2017 have been obtained from the MMO and assessed.

Over this period in the study area, a total of 7,610 tonnes of fish (all species) was landed, with an equivalent value of £8,794,979. Of this, 1,748 tonnes (23 %) were landed by ≤10 m vessels and (23 %), and 5,861 tonnes (77 %) were landed by >10 m vessels.

- 68. The majority of this total weight landed was shellfish (7,599 tonnes; 99.8 %) species. Shellfish dominated the catches of vessels in both size groups (**Plate 14-2**). Of the total landings weight from vessels >10 m, 5,860 tonnes were of shellfish species, with the remaining one tonne being of demersal fish species. Vessels ≤10 m caught 9 tonnes of demersal fish species and 0.5 tonnes of pelagic fish species; the remaining 1,739 tonnes were of shellfish.
- 69. With respect to individual species, within ICES Rectangle 35E5, whelk was the most important commercially landed species, accounting for 5,142 tonnes of the total weight (68 %), and £5,042,329 of the total value (58 %) (**Plate 14-3**). Other important species in terms of greatest weight landed included queen scallops, scallops, lobsters, and crabs. Crustacea form a lesser part of the component of total landings of catches.



**Plate 14-2 Sum of Landed Weight from ICES Rectangle 35E5 by Vessel Size and Species Group (2013-2017)**  
 (Source: MMO)

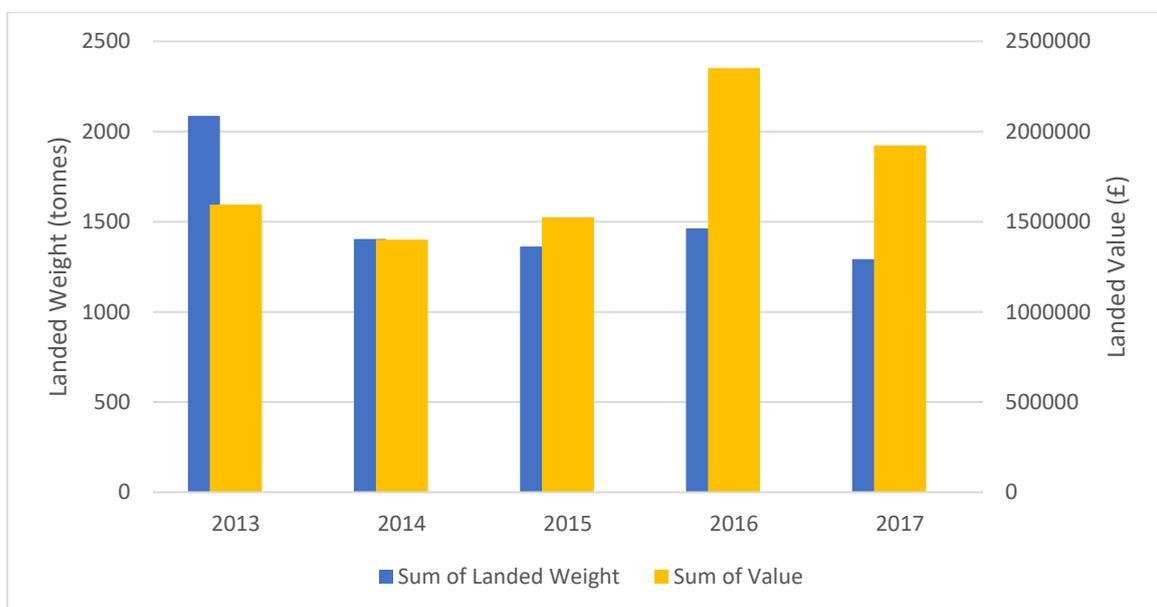


**Plate 14-3 Species Caught within ICES Rectangle 35E5 by Sum of Landed Weight (Tonnes) and Corresponding Value (£) 2013-2017 (Source: MMO)**

#### 14.5.2.4. Temporal Trends in Landings

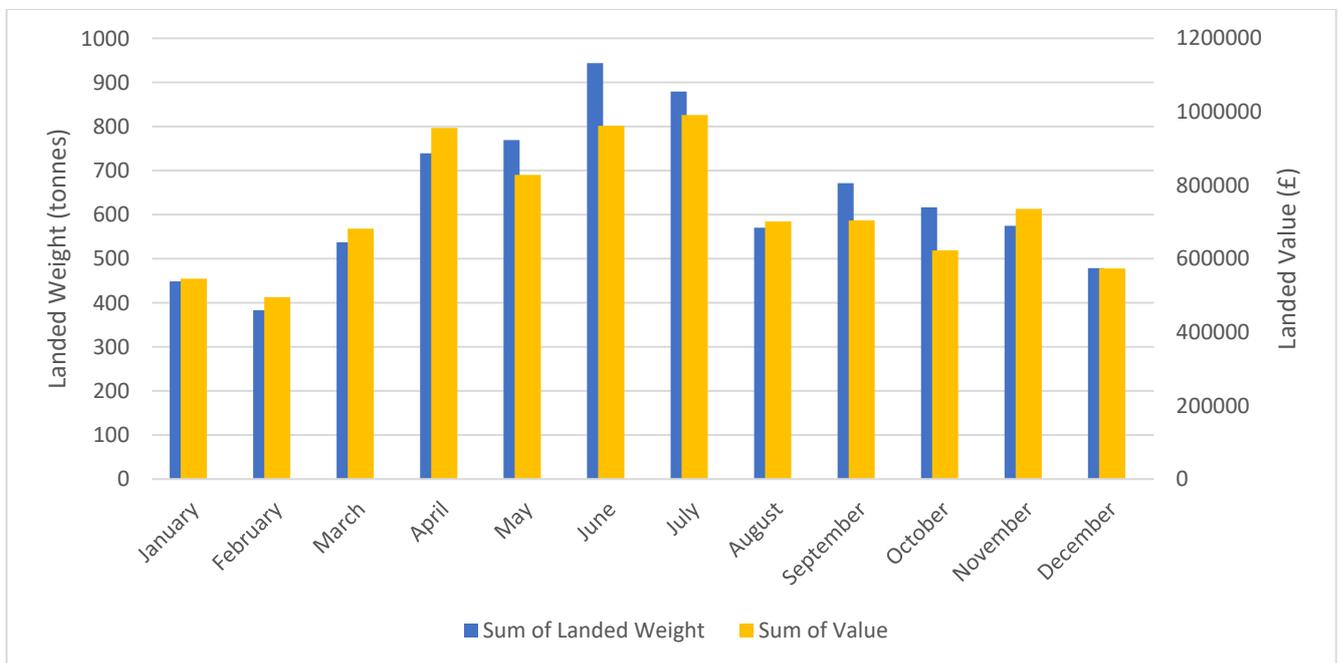
70. The landings by weight varied within ICES Rectangle 35E5 between 2013-2017 (**Plate 14-4**), however there is a general pattern in decrease of landed weight over the years. The greatest weight of landings recorded for the area was in 2013, totalling 2,087 tonnes, whereas the lowest year was 2017, with 1,292 tonnes landed. One deviation from this trend was 2016, which had a higher total landed weight (1,463 tonnes) than the previous two years.

71. This overall downwards trend is not apparent in the total value of landings however, which varied between years. The highest annual value of landings was £2,351,970 in 2016, more than £40,000 more than the next most valuable year, 2017. The years 2013-2015 were all of approximately similar total value of landings, within a range of approximately £20,000.



**Plate 14-4 Annual Trends in Sum of Landed Weight and Value from ICES Rectangle 35E5: 2013-2017 (Source: MMO)**

72. It should be noted that a general decrease in longlining activity has been reported by the WFA in the vicinity of the Project.
73. In terms of intra-annual variation, landed weight for all species/vessels combined over the period 2013-2017 peaked in June/July from ICES rectangle 35E5 (see **Plate 14-5**). The months April-May were also notably higher than the rest of the year, indicating a spring/early summer busy period of fishing in the vicinity of the study area. After the busy period there is a notable drop in both landed weight and value in August; the following months remain relatively consistent before another dip in winter months of December-February.
74. For the top five individual species landed in ICES rectangle 35E5, the study area, **Plate 14-6** details the key periods for landings by weight and value from MMO data. As whelk is the most landed species its seasonal trend follows closely that of the total landed weight across species. Conversely, scallop species show a peak away from the summer months; queen scallops have a peak in October, and for scallops (species unidentified) the peak is in November and January, with no landings at all during the summer months. Lobster and crab show a peak in June-July that declines steadily through autumn to a low in the winter months. This likely reflects that pots are most set between April and November, with fewer pots left out in the winter months.



**Plate 14-5 Seasonal Trends in Sum of Landed Weight and Value from ICES rectangle 35E5: 2013-2017 (Source: MMO)**

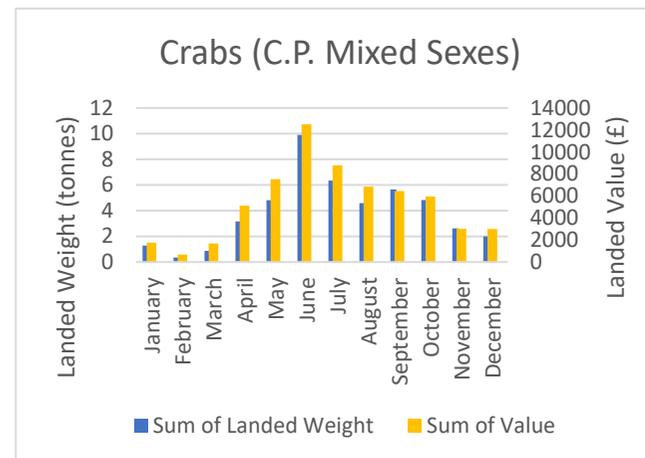
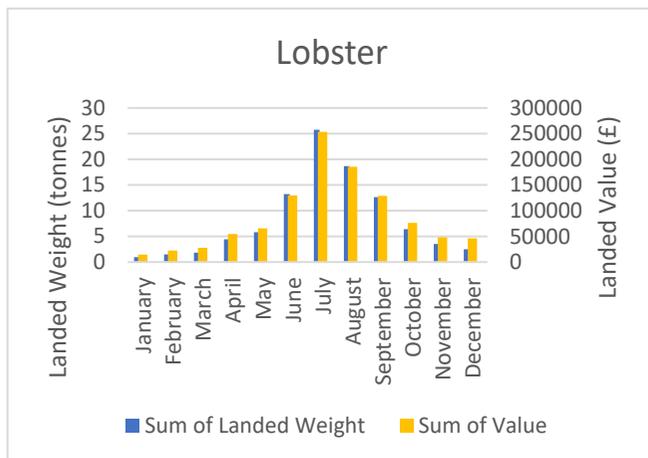
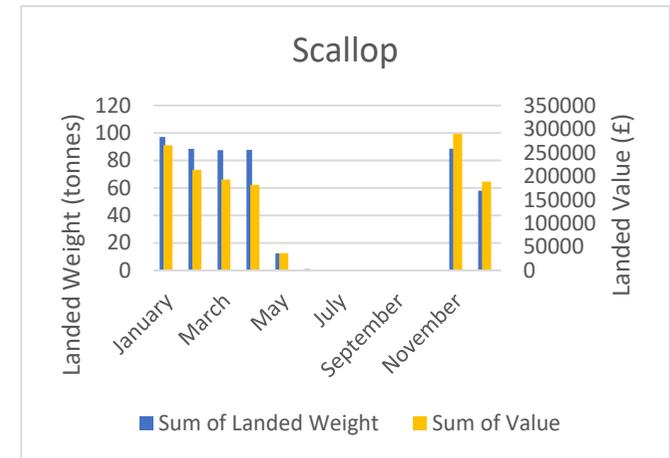
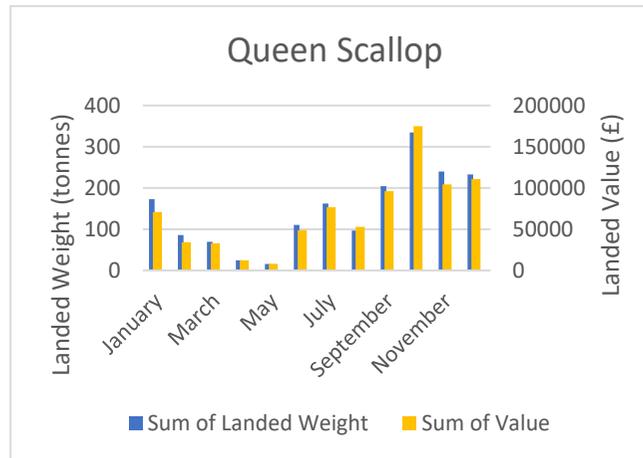
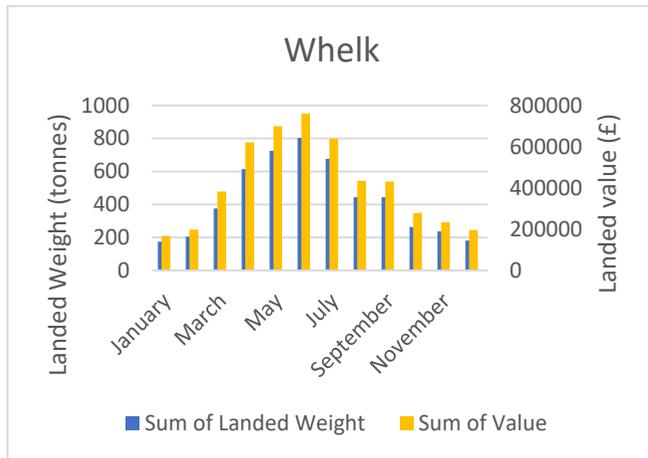


Plate 14-6 Seasonality in the Top 5 Species (35E5) by Landed Weight and Value: 2013-2017 (Source: MMO)

### 14.5.3. Local Ports

#### 14.5.3.1. Ports by Relative Effort

75. The closest main fishing port to the MDZ is Holyhead port which is one of the most important traditional commercial fisheries hubs in Wales, one of a network of such ports around the north-west Wales coastline. Other fishing ports in this region include Amlwch, Morfa Nefyn, Beaumaris, Pwllheli, Caernarvon and Conway. **Table 14-10** lists the number of registered vessels at the main regional ports, based on the latest MMO vessel list (March, 2019).

**Table 14-10 Registered Vessels by Ports (source, MMO, 2019)**

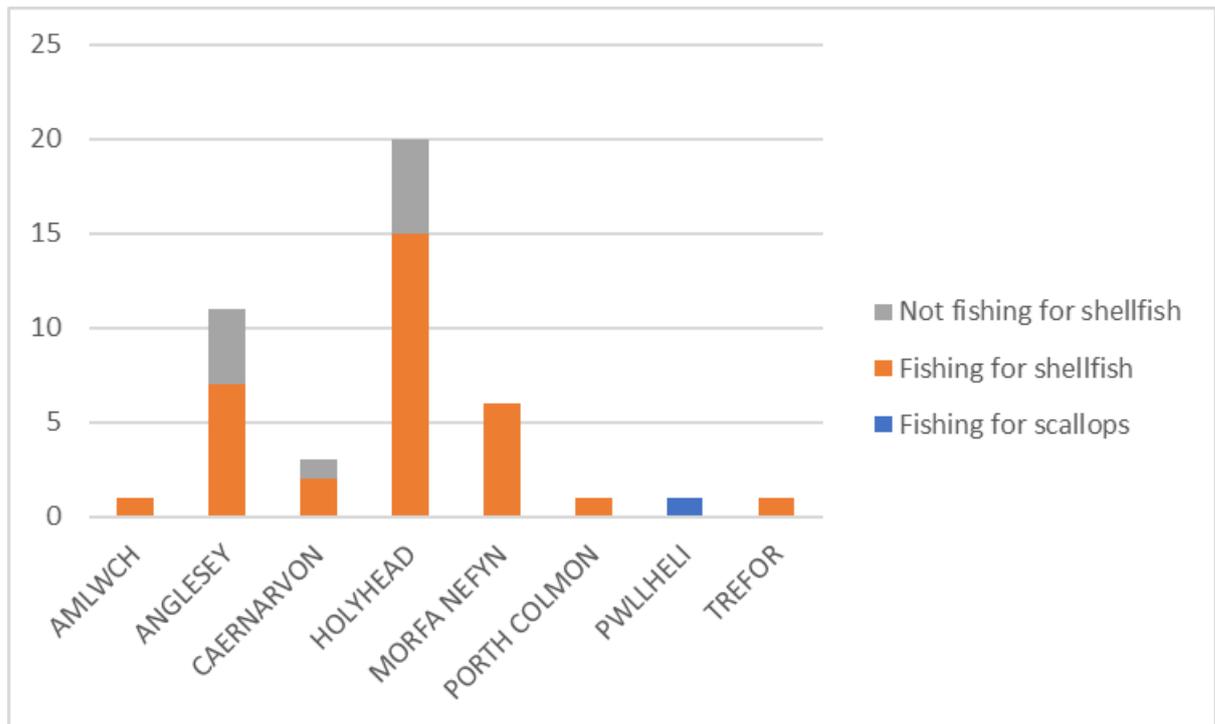
Port	≤10 m vessels	>10 m vessels
Holyhead	18	1
Conway	14	1
Cemaes Bay	4	0
Caernarvon	6	0
Beaumaris	1	0
Amlwch	4	1
Bangor	4	0
Morfa Nefyn	8	0
Pwllheli	14	2

76. Fishing effort (kilowatt/days) for selected regional ports for the period 2013-2017 is displayed in **Figure 14-3 (Volume II)**. The port of Holyhead has a consistently high level of fishing effort (>40,000 kilowatt/days) in all years; Amlwch had the same high level of fishing effort in 2014-2016. Such a high level of fishing effort was reported for Morfa Nefyn in 2013, however this decreased to a medium level (19,000-40,000 kilowatt/days) in 2014-2016, akin to the levels reported for Conway and Penrhyn in most years. Other minor ports as displayed in **Figure 14-3 (Volume II)** include Pwllheli, Aberdaran, and Caenarvon, as these had moderate fishing effort (8,000-19,000 kilowatt/days) in at least one of the years.

77. A list of vessels likely to fish in or near the area was also compiled as part of the baseline assessment by the Fisheries Liaison Officer (FLO) for the Project. This identified a total of 44 vessels that may fish in or near the MDZ area (**Plate 14-7**). The most common port of origin was Holyhead, followed by Anglesey, Morfa Nefyn and Caenarvon. There was one vessel from each of Amlwch, Porth Colmon, Pwllheli and Trefor. The majority of vessels (42 of 44) were ≤10 m in length. Of the two vessels >10 m, one originated from Holyhead, and one originated from Pwllheli.

#### 14.5.3.2. Target Species in Area by Port

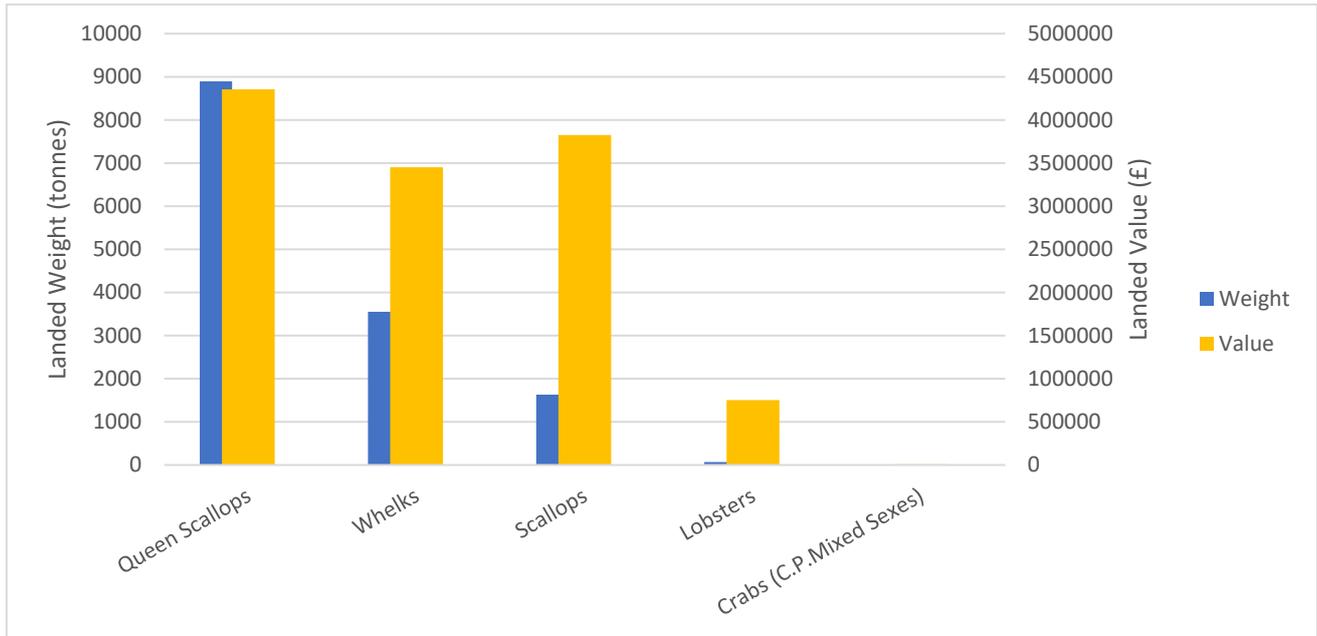
78. Of the 44 vessels identified via the Project FLO in summer 2018, a total of 33 were identified as fishing for shellfish in or near the MDZ area. Only the >10 m vessel from Pwllheli was identified as fishing for scallops. This is not likely to be in the MDZ itself as the MDZ is not subject to fishing activity for scallops (see **Section 14.5.3.4**).



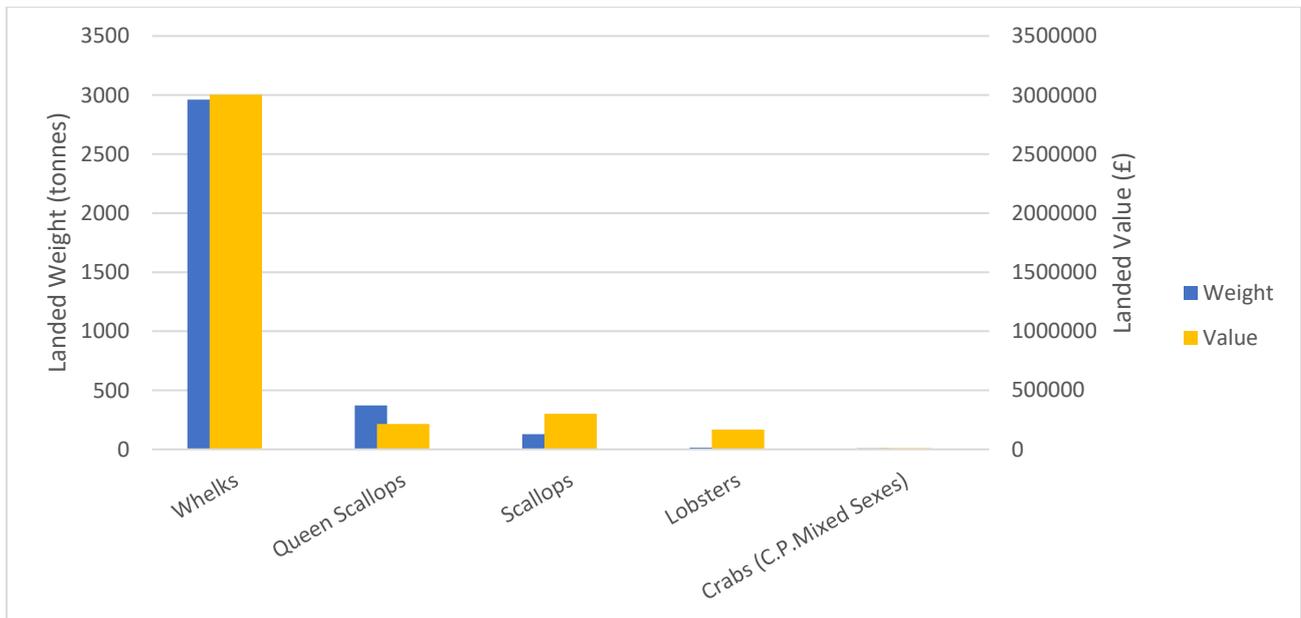
**Plate 14-7 Key Fishing Activity by Local Ports**

### 14.5.3.3. Landings from Key Ports

79. As can be inferred from **Plate 14-7**, the ports of Holyhead and Amlwch have consistently high effort (>40,000 kilowatt/days in ≥3 years for the period 2013-2017). The port of Morfa Nefyn had similarly high effort in 2013, though slightly lower in subsequent years. Nonetheless, Morfa Nefyn has been identified as an important port to consider as part of the consultation. As a result, Holyhead, Amlwch, and Morfa Nefyn have been assessed in terms of the landings into port.
80. For the port of Holyhead, the top five species landed are queen scallops, whelks, scallops, lobsters and crabs (**Plate 14-8**). The most landed species by weight and value is the queen scallop, which accounts for 8,892 tonnes with corresponding value of £4,354,767.
81. At Amlwch port the majority of landings in terms of weight and value are of whelks (**Plate 14-9**). Landings of this species between 2013-2017 totalled 2,961 tonnes with a corresponding value of £3,002,663. Other top landed species included queen scallops, scallops, lobsters, and crabs.
82. Similar to Amlwch, the landings at Morfa Nefyn are dominated by whelk, of which 1,885 tonnes with corresponding value of £1,646,768 was landed between 2013-2017 (**Plate 14-10**). Other important landed species included scallops, lobster, crabs (c.p. mixed sexes), and common prawns.



**Plate 14-8 Top 5 Species in Terms of Landed Weight into Holyhead (2013-2017) (Source: MMO)**



**Plate 14-9 Top 5 Species in Terms of Landed Weight into Amlwch (2013-2017) (Source: MMO)**

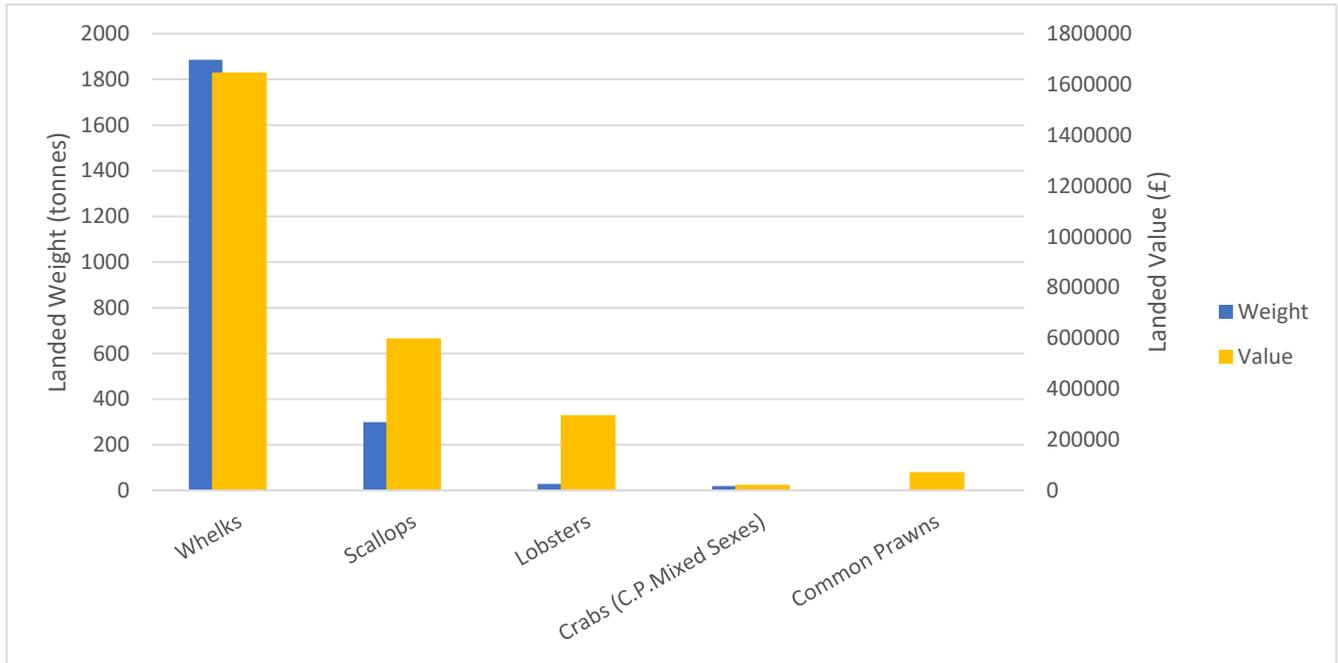


Plate 14-10 Top 5 Species in Terms of Landed Weight into Morfa Nefyn (2013-2017) (Source: MMO)

#### 14.5.3.4. Fishing Activity in the Study Area and MDZ

83. Within the MDZ commercial fishing activity is relatively limited, primarily due to the strong tidal currents that exist in this area. In the nearshore region, defined as the eastern boundary of the MDZ up to the MHWS mark, but over-lapping with the export cable corridor (ECC), fishing activity increases, via  $\leq 10$  m static gear vessels.
84. **Figure 14-18a** and **Figure 14-18b (Volume II)** display information available via Lle, the Welsh Marine Planning Portal, which is itself based on information previously collated via the SeaFishMap and FishMapMon programmes. The FishMapMon project involved the collation of spatial data showing the distribution of various commercial and recreational fisheries around Anglesey by gear type. The data did not differentiate between different target species but by fishing activity type and was collated on the basis of responses from 48 commercial fishers, 543 recreational sea anglers and potters, and 26 charter boat operators.
85. This figure illustrates that mobile gear activity within the MDZ is limited to handlining, which only occurs in the small part of the MDZ that is within 1 km of the shore. No trawling occurs directly within the MDZ. The nearest trawling activity is light otter trawling which occurs in the deeper, lower tidal current areas to the west and south of the MDZ. Otter trawling only occurs in the northeast and southwest corner of the study area, more than 15 km from the MDZ. Heavy beam trawling occurs to the southwest of the MDZ, no nearer than 5 km away, but is more common widespread in other nearby ICES rectangles than 35E5 (the study area).
86. In terms of static gear activity, the MDZ lies within an area where static gear is deployed, both pots for crab/lobster and also whelks. The crab/lobster potting area almost completely overlaps the MDZ, with whelk pots deployed further offshore within parts of the MDZ that have muddy/fine sand sediments. Potting for whelks occurs throughout most of the study area, indicating a large

amount of suitable habitat. To the southeast of the MDZ and in common with other coastal areas around Anglesey, set nets are also deployed.

87. As the majority of the fishing fleet around Anglesey is focussed on scallop fishing and potting, the average size of the vessels is relatively small (<15 m). There are also several large vessels (>15 m) that operate in the area (a total of 6 in 2015) (MarineSpace, 2015). Although a significant fishery for some local vessels, fishing for king scallops is mostly focussed to the south in Caernarfon Bay and to the northeast of Anglesey; it does not occur in the MDZ. Fishing for queen scallops occurs in similar areas though over a smaller spatial extent and at lower intensity levels. It also does not occur in the MDZ. There are also small patches of mussel seed dredging at either end of the Menai Strait, in addition to Holyhead port. Light otter trawling of the lowest intensity level occurs in a similar area to scallop fishing, with areas of higher intensity levels along the coast where Anglesey meets north Wales.
88. The greatest extent of bottom set nets occurs offshore to the northeast of Anglesey and is typically of low intensity, though there are localised areas of higher intensity levels including one adjacent to the south coast of Holy Island, albeit not in the MDZ.
89. Angling of all types (charter boat, private boat and shore angling) occur throughout the coastal waters of Anglesey, including in the MDZ, though in limited numbers due to the tidal conditions.
90. Hand gathering by professionals occurs in the intertidal waters around Anglesey, though casual collection is restricted to the Menai Strait. It is not thought to occur on the coast adjacent to the MDZ.

#### **14.5.3.5. Local Fishing Patterns and Species**

91. Within the MDZ, catch in the nearshore (up to 10 m contour) comprises mostly velvet crab, green shore crab and lobster. Whelks are typically caught on a neap tide using baited pots on long lines. Beam trawlers are used to catch scallops during slack water. There is also fishing for skates in the deeper waters, using fixed netting or Danish ring netting methods.
92. It is reported by local fishermen that there are significant runs of pelagic fish in the study area, however, these are not targeted as no quota is available for them.

#### **14.5.4. Fishing Vessel Traffic**

93. In addition to data collated and assessed via MMO sources and local consultation, additional information on marine traffic (including fishing vessel activity) in the area around the MDZ was collected via three marine traffic surveys undertaken as part of the NRA process in Aug/Sep 2017; Mar/Apr 2017; and Apr 2019. The fishing vessel tracks as determined during the surveys are displayed in **Figure 14-9 (Volume II)**.
94. These surveys were undertaken to inform the Navigational Risk Assessment (NRA) for the Project, which forms part of **Chapter 15, Shipping and Navigation**.
95. Much of the official fisheries data from MMO sources and the first two Project-specific marine traffic surveys were presented to the WFA in a meeting in November 2018, and also during targeted stakeholder consultation undertaken to inform the NRA process. Whilst the WFA

accepted that commercial fishing activity was low within the main MDZ compared to other areas off the Welsh coast (primarily due to strong tidal conditions), they also commented that the marine traffic data showed a lower level of inshore vessel activity (potting) than they would have expected, as numerous vessels have been observed by fishermen to target this area (WFA, *pers. comm*, 2018). In particular, WFA highlighted during the consultation that the nearshore region of Abraham's Bosum where the nine export cables will make landfall is an area subject to a high intensity of potting by several vessels (WFA, *pers. comm*, 2018).

#### 14.5.5. Summary of Existing Environment

96. Based on review of official MMO landings and activity data, combined with feedback from local consultation, review of registered vessel lists (March 2019) and data from Project-specific marine traffic (radar/visual) surveys, there is a low level of commercial fishing activity within the MDZ/ECC compared to other areas off the Welsh coast.
97. Trawling is concentrated offshore, north, south and west of the MDZ, as is scallop dredging. There appears to be targeted whelk fishery (static gear) within the MDZ but this is limited in scale compared to other fisheries for this species elsewhere off the Welsh coast. It should be noted that there appears to be limited appropriate habitat for whelks in the MDZ (see **Chapter 9, Benthic and Intertidal Ecology**), therefore this may be an artefact of the scale of data collection.
98. Within the study area (ICES rectangle 35E5), the key commercial species, based on weight and value of landings are whelk, scallops, crab and lobster. These same species are also the main ones landed at the three most important local ports, namely Holyhead, Amlwch and Morfa Nefyn.
99. The nearshore region supports a relatively high intensity of <10 m vessels deploying static gear for crab/lobster, and there is specific activity within the landfall/nearshore region (Abraham's Bosum).

### 14.6. IMPACT ASSESSMENT

#### 14.7. OVERVIEW OF POTENTIAL IMPACTS

##### 14.7.1. Overview

100. The following assessment provides a summary of all impacts identified during scoping study and those which have been noted as the EIA has progressed. Each impact is not necessarily relevant to all stages of the Project, and thus impacts have been assessed within the stage of the Project at which they will occur (construction, operation (including repowering) and decommissioning). Further, these impacts are comprised of both direct and indirect impacts.
101. Impacts are classified as follows:
  - Direct impacts: these may arise from impacts associated with the construction, operation and maintenance, repowering or decommissioning of the Project;
  - Indirect impacts: these may be experienced by a receptor that is removed (e.g. in space or time) from the direct impact (e.g. noise impacts upon fish which are a prey resource for fish or mammals); and

- Inter-relationships between impacts; or Cumulative impacts: these may occur as a result of the Project in conjunction with other existing or planned projects within the study area for each receptor.

### 14.7.2. Embedded Mitigation

102. The following assessment provides a summary of all impacts identified during scoping study and those which have been noted as the EIA has progressed. These impacts are not relevant to all stages of the Project, and thus impacts have been assessed within the stage of the Project at which they will occur (construction, operation and decommissioning). Further, these impacts are comprised of both direct and indirect impacts.
103. Menter Môn has committed to several techniques and engineering designs/modifications inherent as part of the Project, during the pre-application phase, in order to avoid a number of impacts or reduce impacts as far as possible. Embedding mitigation into the project design is a type of primary mitigation and is an inherent aspect of the EIA process (see **Chapter 4, Project Description** for further details). A range of different information sources has been considered as part of embedding mitigation into the design of the Project including engineering preference, ongoing discussions with stakeholders and regulators, commercial considerations and environmental best practice.

### 14.7.3. Worst Case Parameters

104. The worst-case parameters assumed for each individual potential impact on commercial fisheries are detailed below in **Table 14-11**. Further information on the methodology used during each phase is provided in **Chapter 4, Project Description**.

**Table 14-11 Commercial Fishing Impacts: Worst-Case Scenarios**

Impact	Project Phase	Worst-Case Scenario Assumptions
Loss of access to fishing grounds due to construction activity	Construction / Decommissioning	Assumes full build out of 240 MW over a 10 year period.
Collision risk between commercial fishing vessels and construction vessels	Construction / Decommissioning	<ul style="list-style-type: none"> <li>▪ Device installation = total of 4,306 vessel days. In practice will be done by up to 3 separate vessels working in parallel.</li> <li>▪ Hub installation = total of 1,800 vessel days (will be built in parallel with arrays – see below).</li> <li>▪ Export cable installation = up to 180 days (9 x blocks of 20 days, with each block continuous, but the 9 blocks spread across a nominal 5 year out to 240 MW).</li> <li>▪ Export cable protection installation = up to 108 days (9 x blocks of 12 days, to begin up to 1 month after commencement of export cable laying (above)).</li> <li>▪ Cable tail installation = up to 20 days for all 9 cable tails</li> </ul>

Impact	Project Phase	Worst-Case Scenario Assumptions
		<ul style="list-style-type: none"> <li>▪ Inter-array cable installation = up to 1,110 days (assumes no more than 2 arrays built in parallel at any time).</li> </ul> <p>During any construction phase, 500 m safety zones will be applied for around all construction vessels in order to enable safe working. This will include a rolling 500 m zone around any cable installation vessels.</p>
Obstruction to regular fishing vessel transit routes	Construction / Decommissioning	<p>Passage through the MDZ to regional fishing grounds will be affected during the construction phase due to the presence of installation vessel.</p> <p>During any construction phase, 500 m safety zones will be applied for around all construction vessels in order to enable safe working.</p>
Interference with static fishing gear due to additional vessel traffic	Construction / Decommissioning	<p>There will be daily installation vessel traffic between the selected installation port (likely to be Holyhead) and the MDZ. The increased passage of vessels in the area around the MDZ will increase the risk of damage to static gear along the routes that installation vessels may take from port to site.</p>
Supply chain opportunities for local fishing vessels	Construction / Decommissioning	<p>There may be the opportunity for commercial fishing vessels to provide marine operation support during the construction phase of the Project. Based on the Menter Môn Fisheries Supply Chain Study (MarineSpace, 2015), the main areas of opportunity in construction and maintenance support, in addition to the estimated maximum number of vessel days for each support type, are as follows:</p> <ul style="list-style-type: none"> <li>▪ Support for mooring installation vessels during the maximum of 7,189 days for installation</li> <li>▪ Debris recovery: 2 instances during construction, assume 1 day each: 2 days</li> <li>▪ Navigational marker buoy deployment, servicing and recovery – maximum total of 60 marker buoys, assumed total 4 days for deployment (240 days total), 4 days per year for maintenance during life cycle of Project (37 years) (8,880 days total) – 9,120 days</li> <li>▪ Guard vessels/safety standby – 2 guard vessels required on standby during installation (up to 10 year build out) (total of 7,300 days); 1 guard vessel per maintenance activity, which is assumed to last 2 days per month through life cycle (37 years) (888 days total); 8,188 days</li> <li>▪ Crew transfers (divers, engineers etc.) and transport of small maintenance parts – one vessel required in call-off capacity during construction (3,650 days); one vessel required per one</li> </ul>

Impact	Project Phase	Worst-Case Scenario Assumptions
		maintenance activity which will be required per month, each lasting 2 days: 8,188 days <ul style="list-style-type: none"> <li>▪ Dive/diver equipment support – 10 days per Project (of which there are 80, totalling 800 days) during construction; 2 days per month during operation; 8,188 days</li> <li>▪ Site visits – 5 half-day trips per year during Project (37 years): 92.5 days</li> </ul>
Collision risk between commercial fishing vessels and project infrastructure	Operation	For full 240 MW, may be up to: <ul style="list-style-type: none"> <li>▪ 620 small devices within the MDZ</li> <li>▪ Up to 120 seabed mounted hubs or up to 93 floating hubs</li> <li>▪ Up to 60 navigation marker buoys</li> <li>▪ Up to 5 environmental monitoring platforms</li> <li>▪ Up to 9 export cables</li> <li>▪ Up to 740 array cables</li> </ul>
Loss of access to fishing grounds and displacement of fishing effort to adjacent grounds	Operation	For full 240 MW, may be up to: <ul style="list-style-type: none"> <li>▪ 620 small devices within the MDZ</li> <li>▪ Up to 120 seabed mounted hubs or up to 93 floating hubs</li> <li>▪ Up to 60 navigation marker buoys</li> <li>▪ Up to 5 environmental monitoring platforms</li> <li>▪ Up to 9 export cables</li> <li>▪ Up to 740 array cables</li> </ul> <p>Assumed for worst-case that all fishing activity excluded from entire 35.0 km<sup>2</sup> of the MDZ array area over lifetime of the Project.</p> <p>Assumed that nearshore static gear vessels could still operate in cable corridor in operational phase.</p>
Reduction in abundance of target species and reduced supply of catch to established local buyers	Operation	For full 240 MW, may be up to: <ul style="list-style-type: none"> <li>▪ 620 small devices within the MDZ</li> <li>▪ Up to 120 seabed mounted hubs or up to 93 floating hubs</li> <li>▪ Up to 60 navigation marker buoys</li> <li>▪ Up to 5 environmental monitoring platforms</li> <li>▪ Up to 9 export cables</li> <li>▪ Up to 740 array cables</li> </ul> <p>Presence of these devices have potential to affect local fish stocks/target species. These have been assessed in <b>Chapter 10, Fish and Shellfish Ecology</b> as having a worst-case scenario of a minor adverse impact on any fish/shellfish receptor group. Worst case for each receptor group:</p> <ul style="list-style-type: none"> <li>▪ Crab/lobster (nearshore) – no pathway for negative effect on target species</li> </ul>

Impact	Project Phase	Worst-Case Scenario Assumptions
		<ul style="list-style-type: none"> <li>▪ Whelk/Crab/Lobster (MDZ) – complete loss of target fishery in MDZ</li> <li>▪ Whitefish and/or Scallops – complete loss of target fishery in the Project area</li> </ul>
Presence of seabed fasteners	Operation	<p>Up to 204.5 km of array and 40.5 km of export cable will be deployed for the full 240 MW capacity with the majority surface-laid on seabed.</p> <p>Also associated mooring chains and anchor blocks, device foundations, and seabed monitoring equipment,</p> <p>Will be distributed across the MDZ and all have potential to create fasteners to commercial fishing gear.</p>
Supply chain opportunities for local fishing vessels	Operation	As per above parameters for supply chain opportunities during Construction/Decommissioning.
Impacts via repowering	Operation	As repowering will take place within the operational phase of the project, during which it has been assumed all fishing activity will be excluded from the MDZ for safety reasons, there will be no additional impact on commercial vessels over and above those already assessed within existing operational impacts.

#### 14.7.4. Potential Impacts during Construction

##### 14.7.4.1. Construction Impact 1: Loss of Access to Fishing Grounds due to Construction Activity

105. For the worst-case assumptions detailed in **Table 14-11**, it is assumed that the full 240 MW will be built out over a series of phases.
106. Due to the phased approach, fishing activity will not be excluded from the entire MDZ area (35 km<sup>2</sup>) and export cable corridor during construction; instead there is expected to be a progressive increase in the area of seabed made inaccessible to fishing activity as construction progresses, until the maximum capacity is installed. However, as some construction activities may be conducted in parallel across the offshore site (combined MDZ and ECC), a conservative worst-case scenario is applied for this impact assessment, whereby fishing activity is assumed as excluded from the entire site (35 km<sup>2</sup>) for the duration of the construction period.
107. During construction it will be necessary to implement a safety zone of up to a 500 m radius on a rolling basis around areas wherever installation activities are taking place at any given time. This is in line with industry standard guidance notes<sup>3</sup>. Safety zones minimise the risk of collision between installation vessels in the area and ensure the safety of all personnel involved in

<sup>3</sup> DECC, 2011: Applying for Safety Zones around Offshore Renewable Energy Installations.

construction works. All vessels, including fishing vessels, will be temporarily excluded from such safety zones.

108. Similar 500 m exclusion zones will be implemented around cable installation vessels for the duration of cable installation works.
109. As detailed in the existing environment section of this chapter (**Section 14.5**), commercial fishing activity in the main MDZ array area is low compared to other areas off the Welsh coast. The three main receptors defined in this assessment all have differing sensitivity, based on the criteria set out in **Table 14-5**.

#### **14.7.4.1.1. ≤10 m Nearshore Static Gear Vessels Targeting Crab/Lobster in the Nearshore Region**

110. The sensitivity of this commercial fisheries receptor group, comprising ≤10 m vessels that deploy static gear in the nearshore (0-1 km) region in and around Abraham's Bosom, 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 types and to fish different grounds.
111. The main element of construction activity that will affect this receptor is the installation of the up to 9 export cable and cable tails/HDD works in the nearshore region. These works will be staggered over the construction period, with the duration of each export cable installation predicted to be approximately 20 days with a further 20 days to install the 9 cable tails. After each export cable installation, it is assumed that there would then be a gap of several months (possibly years) before more export cable installation is undertaken. Of this 20 days of works per export cable only approximately 5 days (25 %) of works will be focused in the nearshore region in/around Abrahams Bosum. The remainder of works will be within the MDZ. The 20 days of cable tail works will take place in the immediate nearshore region, i.e. within 1km of the landfall area, where the main scope for disturbance to his ≤10 m static gear vessel receptor group exists.
112. Therefore, the magnitude of this effect is Low in the nearshore region that this receptor group utilises, due to the relatively short-term nature of works and the fact that the area affected would only represent an area where a minor proportion of catches from these vessels was obtained (assumed that these <10 m vessels deploy static gear along the entire nearshore region off NW Anglesey, not just in this single, small embayment.
113. An assessment of a **minor adverse** impact significance on <10 m vessels deploying static gear in the nearshore region is made.

#### **14.7.4.1.2. ≤10 m and >10 m Static Gear Vessels Targeting Whelk/Crab/Lobster in the MDZ**

114. Within the MDZ, a small number of vessels deploy static gear, with a focus on whelk as the main target species, with crab and lobster also be targeted in some areas. The sensitivity of this receptor group of vessels is judged to be Low as they have a high spatial adaptability and ability to fish numerous other fishing grounds in the wider area.
115. Vessels will be affected by potential construction activity within the MDZ, including export and array cable installation and device deployments. The worst-case scenario for installation of 240 MW of devices, associated infrastructure (hubs) and also array cables and export cables

within the boundary of the MDZ has been estimated as 10 years (see **Table 14-11**). However, it is important to recognise that continuous construction and installation activity over 10 years is unlikely to occur in reality. Instead, there would be periods of relatively intense construction activity during which fishing activity would be disrupted, interspersed with periods of low activity.

116. Noting the intermittent nature of such construction activity, and the fact that the MDZ array area represents an area where only a minor proportion of annual landings from this receptor group of vessels is taken, the magnitude of effect is defined as Low.

117. This results in a **minor adverse** impact significance on  $\leq 10$  m and  $>10$  m vessels targeting whelk (and crab/lobster) further offshore in the MDZ from loss of access to fishing grounds during construction.

#### 14.7.4.1.3. **>10 m Mobile Gear Vessels Targeting Whitefish and/or Scallops in the MDZ and Surrounding Area**

118. The third commercial fishing receptor identified via the baseline review are  $>10$  m mobile gear vessels targeting whitefish and/or scallops. Based on data collated as part of this assessment, including area-specific information from FishMapMon and Lle, fishing activity by these larger mobile gear vessels occurs at a low intensity in and around the MDZ compared to other areas off the North Wales coast.

119. The sensitivity of these vessels is judged to be Low as they exhibit high spatial adaptability (due to extensive operational range) and also are able to operate in a range of alternative areas across the region.

120. As the MDZ and cable corridor area does not appear to be a particularly important fishing ground for this receptor type and is assessed as only contributing a small proportion of the annual value of landings for these vessels, the magnitude of effect is judged to be Negligible.

121. This results in a **negligible** impact significance on  $>10$  m vessels targeting whitefish and/or scallops further offshore in the MDZ via loss of access to fishing grounds during construction

#### 14.7.4.1.4. **Mitigation**

- Local fishermen to be notified of timing and location of planned construction works via Notice to Mariners;
- Project-specific FLO to be appointed during construction phase; and
- All construction vessels to exhibit appropriate lighting and markings at all times.

#### 14.7.4.1.5. **Residual Impact**

- $<10$  m nearshore static gear vessels: **minor adverse impact**.
- $<10$  m and  $>10$  m static gear vessels in MDZ area: **minor adverse impact**.
- $>10$  m mobile gear vessels in/around MDZ area: **negligible impact**.

#### **14.7.4.2. Construction Impact 2: Collision Risk Between Commercial Fishing Vessels and Construction Vessels**

122. The worst-case parameters for construction are detailed above. It is clear that due to the scale of the proposed Project, there will be periods of very high construction activity in and around the site for a period of up to 10 years. However, this level of activity will not be constant and will be in shorter, focused periods of construction, within discrete parts of the site, sometimes alone, and sometimes in parallel with other activities in other parts of the site.
123. During construction, there will be an increased risk of collision between fishing vessels and construction vessels (including main device/cable installation vessels and smaller support vessels) due to the construction activity. As this specific impact relates to navigational safety, it has been assessed formally via the Navigation Risk Assessment (NRA) process, with key conclusions presented in **Chapter 12, Shipping and Navigation**.
124. In summary however, this assessment concluded that whilst risk of collision between fishing vessels and construction traffic did exist, this could be reduced to a Low risk level by careful planning of traffic routeing and promulgation of this information to local vessels.

#### **14.7.4.3. Construction Impact 3: Obstruction to Regular Fishing Vessel Transit Routes**

125. During construction, in addition to specific potential collision risk impacts (as above), potential also exists for the presence of construction and support vessels to create obstructions to fishing vessels wishing to transit this area to reach other fishing grounds and/or to return to local ports to land catch.
126. During construction there will be a 500 m safety zone around all major installation vessels, and also a rolling 500 m exclusion zone around any cable installation vessels. Where infrastructure has been deployed but not fully installed or commissioned, i.e. surface laid cables, guard vessels and/or safety marker buoys will be used to mark affected areas. All this will result in fishing vessels that currently pass through either the MDZ array or the ECC to reach fishing grounds and/or return to local ports such as Holyhead potentially having to take alternative routes to avoid any exclusion zones.
127. This has the potential to create impacts on fishing vessels via increased steaming time with subsequent increased fuel usage (cost) and also requiring some (smaller) vessels to adopt routes that may push them closer inshore to avoid the MDZ (increased risk due to proximity of coast) or further offshore (increased risk due to further distance offshore, with related larger sea conditions that may be unsuitable for smaller vessels).

##### **14.7.4.3.1. ≤10 m Nearshore Static Gear Vessels Targeting Crab/Lobster in the Nearshore Region**

128. The sensitivity of this commercial fisheries receptor group, which is focused on the <10 m vessels that deploy static gear in the nearshore region in and around Abraham's Bosom, is judged to be Medium because although they have some spatial adaptability, this is relatively limited, as is their ability to deploy alternative gear types and fish different grounds.

129. The main element of construction activity that will affect this receptor is the installation of the up to 9 export cable and cable tails/HDD works in the nearshore (0-1 km) region. These works will be staggered during construction, with the duration of each export cable installation predicted to be approximately 20 days with a further 20 days to install all of the 9 cable tails. After each export cable installation, it is assumed there will be a gap of several months (possibly years) before more export cable installation is undertaken. Of the 20 days of works per export cable, only an estimated 5 days (25 %) of works will be focused in the nearshore region in and around Abrahams Bosom (remainder of works will be within the MDZ and any parts of the ECC >1 km offshore. All 20 days of cable tail works will take place in the nearshore region, where the main scope for disturbance to the <10 m static gear vessel receptor group exists.
130. The magnitude of impact is Low in the nearshore region that this receptor group utilises, due to the fact that for the majority of time, even during peak construction periods, these vessels will be able to use existing inshore transit routes to and from port.
131. This results in a **minor adverse** impact significance on this receptor group.

#### 14.7.4.3.2. ≤10 m and >10 m Static Gear Vessels Targeting Whelk/Crab/Lobster in the MDZ

132. Within the MDZ, a small number of vessels deploy static gear, with a focus on whelk as the target species, although crab and lobster will also be targeted in certain areas. The sensitivity of this receptor group is judged to be Low as they have a high spatial adaptability and ability to fish numerous other fishing grounds in the area (WFA, *pers. comm*, 2018).
133. These vessels will be affected by potential construction activity within the MDZ, including export and array cable installation and device deployments. The worst-case scenario for installation of 240 MW of devices, associated infrastructure (hubs), plus array and export cables within the boundary of the MDZ has been estimated as up to 10 years. However, it is important to recognise that construction and installation activity will not be constant for this length of time. Instead, there would be periods of relatively intense construction activity during which fishing activity would be disrupted, interspersed with periods of less, or no activity.
134. Many vessels will work within a number of fishing grounds in the study area and whilst there may be some disruption to steaming routes/times if they had to avoid areas of construction activity, the magnitude of this effect is judged to be Low as such disruption will be short-term.
135. This results in a **minor adverse** impact significance on ≤10 m and >10 m vessels targeting whelk (and crab/lobster) further offshore in the MDZ from obstruction to regular fishing transit routes.

#### 14.7.4.3.3. >10 m Mobile Gear Vessels Targeting Whitefish and/or Scallops in the MDZ and Surrounding Area

136. The third commercial fishing receptor identified via the baseline review are >10 m mobile gear vessels targeting whitefish and/or scallops. Based on data collated as part of this assessment, including area-specific information from FishMapMon and Lle, fishing activity by these larger mobile gear vessels occurs at a low intensity in and around the MDZ compared to other areas off the North Wales coast. The sensitivity of these vessels is judged to be Low as they exhibit

high spatial adaptability (due to extensive operational range) and also are able to operate in a range of alternative areas across the region.

137. As the MDZ and cable corridor area does not appear to be a particularly important fishing ground for this receptor type and is assessed as only contributing a small proportion of the annual value of landings for these vessels, the magnitude of effect is judged to be Negligible. This negligible effect magnitude also recognises that these larger vessels will have greater capacity and ability to alter transit routes around the MDZ as/when construction activity is underway.
138. A **negligible** impact on >10 m vessels targeting whitefish and/or scallops in the MDZ and surrounding area is assessed.

#### 14.7.4.3.4. Mitigation

- Local fishermen to be notified of all location and timing of planned construction works via Notice to Mariners;
- Project-specific FLO to be appointed during construction phase;
- If required following consultation with the local fishing industry, agreed transit routes around/through the MDZ to potentially be developed during the construction phase. This approach has been successfully adopted on OWF projects around the UK coast; and
- All construction vessels to exhibit appropriate lighting and markings at all times.

#### 14.7.4.3.5. Residual Impact

- ≤10 m nearshore static gear vessels: **minor adverse impact**.
- ≤10 m and >10 m static gear vessels in MDZ area: **minor adverse impact**.
- >10 m mobile gear vessels in/around MDZ area: **negligible impact**.

#### 14.7.4.4. Construction Impact 4: Interference with Static Fishing Gear due to Additional Vessel Traffic

139. During the construction phase, there will be a much greater amount of vessel traffic in and around the MDZ. This includes transit of construction vessels between the site and the local port designated as the construction base. This increased level of traffic will include small, fast support vessels as well as larger construction/cable installation vessels.
140. Due to proximity of the MDZ to the coast, the area around the MDZ and any transit routes to/from local ports is likely to have a large amount of static gear deployed by vessels. This is a reflection of the main nearshore fishery in this region, namely potting for crab and lobster. The combination of increased (non-fishing) vessel traffic and large amounts of static gear has the potential to create impacts via damage and/or loss of gear, with the subsequent financial impacts on local fishermen.

#### 14.7.4.4.1. ≤10 m Nearshore Static Gear Vessels Targeting Crab/Lobster in the Nearshore Region

141. This receptor group is the one most susceptible to the impact of damage or loss of gear due to additional vessel traffic as they will be the primary source of the static gear in the area. The sensitivity of this receptor group is assessed as Medium because they have some spatial adaptability, although this is relatively limited, as is their ability to deploy alternative gear types and fish different grounds.
142. Assuming that construction vessels may transit to and from the site on an almost daily basis during the construction phase, passing through areas where large amounts of static gear are expected and in an area from which a moderate proportion of this receptor group's annual value of landings is caught, the magnitude of this impact is assessed as Medium. The impact would be long-term though reversible and is likely to occur.
143. This results in an assessment of **moderate adverse** impact significance on this receptor group.

#### 14.7.4.4.2. ≤10 m and >10 m Static Gear Vessels Targeting Whelk/Crab/Lobster in the MDZ

144. Within the MDZ and surrounding area, a small number of vessels also deploy static gear, with a focus on whelk as the target species, even though crab and lobster will also be targeted in certain areas. The sensitivity of this receptor group is assessed as Low as they have a high spatial adaptability and ability to fish numerous fishing grounds.
145. As described for the ≤10 m nearshore receptor, the magnitude of this impact is assessed as Medium due to the high potential level of construction vessel activity and potentially high amount of static (whelk pots) gear in the area in which vessel transits may occur.
146. This results in a **minor adverse** impact on this receptor via potential loss/disruption of static gear by construction vessels.

#### 14.7.4.4.3. >10 m Mobile Gear Vessels Targeting Whitefish and/or Scallops in the MDZ and Surrounding Area

147. The third commercial fishing receptor identified via the baseline review are >10 m mobile gear vessels targeting whitefish and/or scallops. Based on data collated as part of this assessment, including area-specific information from FishMapMon and Lle, fishing activity by these larger mobile gear vessels occurs at a low intensity in and around the MDZ compared to other areas off the North Wales coast. The sensitivity of vessels in this receptor group to this potential impact is assessed as Negligible as it relates to potential loss/damage to static gear.
148. The magnitude of impact is assessed as negligible due to relating to static gear.
149. This results in a **negligible** impact on this receptor via potential loss/disruption of static gear by construction vessels.

#### 14.7.4.4.4. Mitigation

- Local fishermen to be notified of location and timing of planned construction works via Notice to Mariners;

- Project-specific FLO to be appointed during construction phase; and
- Key areas of static gear deployment to be provided by local fishermen and used to develop agreed transit routes around/through the MDZ that aim to minimise damage to static gear.

#### 14.7.4.4.4.1. Residual Impact

- ≤10 m nearshore static gear vessels: **minor adverse** impact.
- ≤10 m and >10 m static gear vessels in MDZ area: **negligible** impact.
- >10 m mobile gear vessels in/around MDZ area: **negligible** impact.

#### 14.7.4.5. Construction Impact 5: Supply Chain Opportunities for Local Fishing Vessels

150. During the construction phase of the Project, commercial opportunities other than core fishing activities may arise for suitable local commercial fishing vessels. The scope for commercial fishing vessels to potentially provide support to this Project was assessed in detail in a study commissioned by Menter Môn in 2015 and delivered by MarineSpace and Aquatera (MarineSpace, 2015) (**Appendix 14.1**).

151. This study considered the following:

- Tidal energy industry requirements (for marine services);
- Vessels / skills / equipment needed to enable requirements;
- Local supply chain (this involved engagement with Anglesey fisheries community to assess type and suitability of available vessels and skills and review the potential and appetite for diversification);
- A summary of options for collaboration between tidal sector and commercial fishing industry; and
- Recommendations and proposed Key Actions.

152. With respect to the construction phase of potential tidal projects (in this case the Morlais Project), the study identified the following areas of potential support that could be provided by local commercial fishing vessels:

- Support for mooring installation vessels – floating tidal devices require moorings and whilst it would likely require larger stable vessels for the main installation process, additional support would likely be required during the O&M phase, i.e. checking and/or re-positioning of surface marker buoys;
- Debris recovery – there will inevitably be debris or lost objects that needs to be recovered from incidents during the operational phase. Depending on the size of the debris this could potentially be recovered by fishing vessels using grapples and/or nets;
- Navigational marker buoy deployment, servicing and recovery – marker buoys are a (MCA) requirement during the operational phase and these will need regular checking and potential servicing back onshore;

- Guard vessels / safety standby – guard vessels may be a MCA requirement during certain stages of the construction phase. Many fishing vessels will be able to perform this task;
- Fisheries Liaison Officer (FLO) services – with the fishing industry being one of the most important stakeholders to offshore projects, FLO's are usually employed to act as the main point of communication between the Project and local fishing communities. A FLO will be required throughout the lifetime of a project;
- Crew transfers (divers, engineers etc.) and transport of small components/parts needed in the construction phase. Personnel will be required to be transported to the site during the construction phase, and often small maintenance parts will need to be shipped out;
- Diver/diver equipment support – divers may be required during construction activities. Vessels would be required to transport them to site and to support equipment; and
- Site visits for project developers, stakeholders and PR – The Project is a high-profile project and it is expected that there will be a significant amount of interest from stakeholders, hence it is expected that vessels would be needed to provide site visits during the construction phase.

153. The study found that the value of potential contracts associated with vessel use in the MDZ could be as much as £3.5m over the next 10 years if the Project develops as envisaged (MarineSpace, 2015). This includes up to £1.4m during the construction phase.

154. This requirement for vessels during all stages of the planned projects around Anglesey presents a significant opportunity for local vessel owners and operators. Established marine service providers and charter vessel operators from elsewhere in the UK, as well as on Anglesey e.g. Holyhead Towing, will also be interested in these opportunities. This could also represent further opportunities for personnel with offshore experience to act as crew and vessel support, where specific experience of the conditions around Anglesey will be particularly valuable.

155. Menter Môn have a remit to maximise the economic benefit to Anglesey hence are keen to work with the local commercial fishing sector to take advantage of these opportunities where possible.

#### **14.7.4.5.1. ≤10 m Nearshore Static Gear Vessels Targeting Crab/Lobster in the Nearshore Region**

156. The sensitivity of this receptor group is assessed as Medium as although they have some spatial adaptability, this is relatively limited, as is their ability to deploy alternative gear types and fish different grounds.

157. The magnitude of impact (beneficial) is judged to be Low. Due to the type and size of vessels within this receptor group, opportunities for formal project-related marine operational support during the construction phase may be more limited than for larger vessels. This is mainly due to the equipment/deck-space available on smaller vessels and the need to ensure compliance with at least the following requirements:

- Compliance with MGN 280 (Code of Practice for Small Vessels in Commercial Use for Sport, Pleasure, Workboats and Pilot boats under 24m;

- Compliance with SCV (Small Commercial Vessel) Code;
- Holds a valid SCV certificate for Area Categories 2 / 3 (for operation up to 60 / 20 miles from a safe haven; and
- Appropriate Employers Liability and Third Party Liability cover under the terms and conditions of its own insurance.

158. The vessel Skipper or one or more of the crew will also need to hold the following certification, or be able to demonstrate the following competencies:

- Basic Sea Survival Course Certificate;
- Evidence of First Aid Training;
- Radio Operator's Certificate;
- Medical Fitness Certificates;
- Evidence of Radar Training;
- Approved Engine Course (if towing or lifting over 1000 tonnes); and
- RYA Professional Practices and Responsibilities (PPR).

159. Overall, although potential marine operation supply chain opportunities will arise for this receptor group, only a **minor beneficial** impact significance is assessed on this receptor group.

#### 14.7.4.5.2. ≤10 m and >10 m Static Gear Vessels Targeting Whelk/Crab/Lobster in the MDZ

160. Further offshore, within the MDZ array and surrounding area, a small number of larger vessels also deploy static gear, with a focus on whelk as the target species, even though crab and lobster will also be targeted in certain areas. The sensitivity of this receptor group is judged to be Low as they have a high spatial adaptability and ability to fish numerous fishing grounds.

161. All the same opportunities as outlined above will apply to this receptor group, although the fact that larger (>10 m vessels) make up this receptor mean that they will be more suited/capable of undertaking some of these activities. Therefore, the magnitude of effect is judged to be Medium.

162. This results in a **minor beneficial** impact significance for this receptor group.

#### 14.7.4.5.3. >10 m Mobile Gear Vessels Targeting Whitefish and/or Scallops in the MDZ and Surrounding Area

163. As this is a beneficial impact being assessed, the definition of receptor sensitivity requires slight amendment. For the purpose of this assessment, the sensitivity of this receptor is judged to be Medium, with the criteria defined as "moderate vessel suitability to provide marine operation support during the construction phase".

164. This judgement is based on the larger vessel size represented by this receptor group, with associated increased vessel/equipment/staff capabilities and certifications compared to smaller (<10 m) vessels).

165. The magnitude of this potential impact is assessed as Medium. For receptor sensitivity, a slightly amended criteria has been used to define magnitude of this effect: “effect will potentially provide a moderate source of revenue for a vessel and is likely to occur”. This is based on the potential for this type of larger (>10 m) vessels to support the Project (as identified in the 2015 Supply Chain Study commissioned by Menter Môn; MarineSpace, 2015)
166. Therefore, a **moderate beneficial** impact significance is predicted for this receptor group via support on marine operations during the construction phase of the Project.

#### 14.7.4.5.4. Mitigation

167. No mitigation required. However, to increase opportunities for local fishing vessels to support the Project, the Action Plan provided as part of the 2015 study (MarineSpace, 2015) (**Appendix 14.1, Volume III**) should be reviewed and, where appropriate updated. Discussions should then be held between Menter Môn and the local fishing community to identify what needs to be done to maximise these opportunities.

#### 14.7.4.5.5. Residual Impact

- ≤10 m nearshore static gear vessels: **minor (beneficial) impact**
- ≤10 m and >10 m static gear vessels in MDZ area: **minor (beneficial) impact**
- >10 m mobile gear vessels in/around MDZ area: **moderate (beneficial) impact**

#### 14.7.5. Potential Impacts during Operational Phase

##### 14.7.5.1. Operational Impact 1: Collision Risk between Commercial Fishing Vessels and Project Infrastructure

168. The worst-case parameters for the operational phase are detailed in **Table 14-11**. It is clear that due to the scale of the proposed Project, there will be a large amount of infrastructure within the site during the operational phase, including surface devices, mid-water devices, seabed mounted devices, electrical cables, mooring cables, monitoring platforms and navigation buoys.
169. In terms of the worst-case scenario for this effect, it has been assumed that all commercial fishing activity will be excluded from the main MDZ site during the operational phase to reduce risk of collision between fishing vessels and project infrastructure. As this specific impact relates to navigational safety, it has been assessed formally via the Navigation Risk Assessment (NRA) process, with key conclusions presented in **Chapter 12, Shipping and Navigation**.
170. In summary, a range of potential impacts on fishing vessels were identified within the NRA, including contact between fishing vessels and devices; contact between fishing vessels and other (construction) vessel types; snagging/obstruction; and grounding of fishing vessels.
171. The overall severity of consequences on fishing vessels during the operational phase (including repowering) were considered to be major (C4) due to the potential for loss of life and notable damage to vessel(s). The frequency of occurrence was considered remote (F5) due to the presence of embedded mitigations. This indicated an overall risk ranking of (C4 x F5) = As Low As Reasonably Possible (ALARP).

#### **14.7.5.2. Operational Impact 2: Loss of Access to Fishing Grounds and Displacement of Fishing Effort onto Adjacent Grounds**

172. Noting from the above that the worst-case scenario assumes no fishing activity will be permitted within the main MDZ (array) area in order to minimise risk of vessel/project infrastructure collision, this will have a consequent effect of (a) reducing the amount of available fishing grounds for certain vessels and (b) pushing any displaced vessels onto adjacent grounds which may result in increased competition/pressure with vessels that already fish such areas.

##### **14.7.5.2.1. ≤10 m Nearshore Static Gear Vessels Targeting Crab/Lobster in the Nearshore Region**

173. This receptor group is the least susceptible to this impact as their activity is focussed outside the MDZ, within the nearshore region (0-1km). As there will be no permanent project infrastructure on the sea surface in this area, i.e. devices/hubs which will all be located within the MDZ array, fishing could continue in this area in the operational phase. Seabed infrastructure in the form of export cables and cable protection will be installed in this region but with appropriate care, static gear, which is the main gear type used in this area, will be able to be deployed.

174. The sensitivity of this receptor group is assessed as Medium as although they have some spatial adaptability, this is relatively limited, as is their ability to deploy alternative gear types and fish different grounds.

175. Assuming that, as detailed above, deploying static gear in the nearshore area between the MDZ array and the coast can continue in the operational phase, and that these vessels are not completely displaced from this area, the magnitude of this impact is assessed as Negligible. The impact would be long-term though reversible and is likely to occur.

176. This results in a **minor adverse** impact on this receptor.

##### **14.7.5.2.2. ≤10 m and >10 m Static Gear Vessels Targeting Whelk/Crab/Lobster in the MDZ**

177. Further offshore, within the MDZ array and surrounding area, a small number of vessels also deploy static gear, with a focus on whelk as the target species, even though crab and lobster will also be targeted in certain areas. The sensitivity of this receptor group is judged to be Low as they have a high spatial adaptability and ability to fish numerous fishing grounds.

178. The magnitude of this effect is judged to be Medium because vessels will be displaced from their potential fishing ground for the entire operational phase, i.e. long-term effect.

179. This results in a **minor adverse** impact significance on this receptor group due to potential loss/disruption of static gear by construction vessels.

#### 14.7.5.2.3. >10 m Mobile Gear Vessels Targeting Whitefish and/or Scallops in the MDZ and Surrounding Area

180. The third commercial fishing receptor identified via the baseline review are >10 m mobile gear vessels targeting whitefish and/or scallops. Based on data collated as part of this assessment, including area-specific information from FishMapMon and Lle, fishing activity by these larger mobile gear vessels occurs at a low intensity in and around the MDZ compared to other areas off the North Wales coast. The sensitivity of these vessels to this potential impact is judged to be Negligible as these vessels have an extensive operational range and high method versatility and the MDZ site does not represent a key fishing ground for them (due to tidal conditions).
181. The magnitude of impact assessed as Low as only a minor proportion of these commercial fishing receptor's annual value of landings is caught in this area.
182. This results in a **negligible** impact significance on this receptor group as a result of loss of access to fishing grounds within the MDZ and displacement onto adjacent fishing grounds.

#### 14.7.5.2.4. Mitigation

- Where local vessels are able to demonstrate a clear loss in annual income due to loss of fishing grounds within the MDZ, Menter Môn will enter into discussions on appropriate forms of financial assistance.

#### 14.7.5.2.5. Residual Impact

- <10 m nearshore static gear vessels: **minor adverse impact**.
- <10 m and >10 m static gear vessels in MDZ area: **minor impact**.
- >10 m mobile gear vessels in/around MDZ area: **negligible impact**.

#### 14.7.5.3. Operational Impact 3: Reduction in Abundance of Target Species and Reduced Supply of Catch to Established Local Buyers

183. The presence of the MDZ Project, with associated active tidal devices and electrical infrastructure has the potential to alter the abundance of target fish species in the area via a range of effects (noise, EMF, barrier effect etc). All impacts on fish and shellfish have been assessed in **Chapter 10, Fish and Shellfish Ecology**. The assessments presented in that chapter concluded no more than minor adverse impacts on any fish/shellfish receptor group and therefore, it is assessed that there will be no significant reduction in target species for commercial fisheries in this offshore site due to the MDZ Project.

#### 14.7.5.3.1. ≤10 m Nearshore Static Gear Vessels Targeting Crab/Lobster in the Nearshore Region

184. The sensitivity of this receptor group is assessed as Medium as although they have some spatial adaptability, this is relatively limited, as is their ability to deploy alternative gear types and fish different grounds.

185. There is no identified pathway by which the key target species for this receptor group (crab/lobster) could reduce in abundance due to the presence of project infrastructure (cables) in this nearshore region. In fact, the presence of subsea cables and associated cable protection may create new forms of refuge habitat for these species, possibly even leading to increased abundances.
186. The magnitude of this effect is judged to be Negligible as no reduction in abundance in crab/lobster in this nearshore region is predicted over the operational phase.
187. This results in a **minor adverse** impact on this receptor.

#### 14.7.5.3.2. ≤10 m and >10 m Static Gear Vessels Targeting Whelk/Crab/Lobster in the MDZ

188. Further offshore, within the MDZ array and surrounding area, a small number of vessels also deploy static gear, with a focus on whelk as the target species, even though crab and lobster will also be targeted in certain areas. The sensitivity of this receptor group is assessed as Low as they have a high spatial adaptability and ability to fish numerous fishing grounds.
189. As it is assumed that these vessels will not be able to fish within the MDZ, the focus of this assessment is the potential for these vessel's target species (crab/lobster/whelk) to reduce in abundance due to the Project. As detailed above, the assessment on fish and shellfish receptors presented in **Chapter 10, Fish and Shellfish Ecology** have not predicted any significant reductions in abundance of any species via the MDZ Project. There is also a possibility that the removal of fishing pressure from the MDZ area (albeit it is noted that this activity is already low in this area) will actually enable stocks of crab/lobster/whelk to expand, potentially benefiting the wider area, where fishing would still be permitted.
190. Overall, even with potential beneficial impacts on stocks due to reduced fishing pressure, the magnitude of this impact is assessed as Low due to no reduction in abundance in key commercial target species within the MDZ is predicted over the operational phase.
191. This results in a **minor adverse** impact significance for this receptor group.

#### 14.7.5.3.3. >10 m Mobile Gear Vessels Targeting Whitefish and/or Scallops in the MDZ and Surrounding Area

192. The sensitivity of these vessels to this potential impact is assessed as Negligible as these vessels have an extensive operational range and high method versatility and the MDZ site does not represent a key fishing ground for them (due to tidal conditions).
193. The magnitude of impact is assessed as Low, as only a minor proportion of these commercial fishing receptor's annual value of landings is caught in this area.
194. This results in a **negligible** impact on this receptor.

#### 14.7.5.3.4. Mitigation

195. None proposed.

#### 14.7.5.3.5. Residual Impact

- ≤10 m nearshore static gear vessels: **minor adverse impact.**
- ≤10 m and >10 m static gear vessels in MDZ area: **minor impact.**
- >10 m mobile gear vessels in/around MDZ area: **negligible impact.**

#### 14.7.5.4. Operational Impact 4: Presence of Seabed Fasteners

196. The presence of the MDZ Project, with all its associated active tidal devices, mooring equipment (chains/cables) and electrical infrastructure, including surface-laid subsea cables, has the potential to create a series of seabed fasteners for commercial fishing vessels operating in this region.
197. As this potential impact is primarily a safety issue for commercial fishing vessels, it has been fully considered and assessed as part of the NRA process (see **Appendix 15., Volume III**) and presented in **Chapter 15, Shipping and Navigation.**
198. In summary however, this impact was identified, assessed and provided with a risk score of 5.13 which equates to an overall risk ranking of ALARP.
199. With respect to the individual fishing receptor groups that form the basis of this assessment, additional comment is provided.

#### 14.7.5.4.1. ≤10 m Nearshore Static Gear Vessels Targeting Crab/Lobster in the Nearshore Region

200. The sensitivity of this receptor group is assessed as Medium because although they have some spatial adaptability, this is relatively limited, as is their ability to deploy alternative gear types and fish different grounds.
201. Even though the majority of subsea project infrastructure will be located within the MDZ array area, and not within the nearshore region where these vessels predominantly fish, there will be some project infrastructure in this area, in particular up to nine subsea export cables. As sediment cover is greater in parts of the nearshore region, such as the 'Abraham's Bosom' embayment, the sections of the subsea cables in this area may be buried to approximate depths of 0.5-1.5 m, therefore reducing the scope for interaction with (static) fishing gear. However, in nearshore regions where sediment cover is less and thus, burial is not possible, these unburied cables may well represent seabed fasteners.
202. The magnitude of this effect is assessed as Low because exposed cables would only affect an area that represented a minor proportion of the annual value of landings caught by this receptor group.
203. This results in a minor **adverse** impact significance for this receptor group.

#### 14.7.5.4.2. ≤10 m and >10 m Static Gear Vessels Targeting Whelk/Crab/Lobster in the MDZ

204. Within the MDZ array and surrounding area, a small number of vessels also deploy static gear, with a focus on whelk as the target species, even though crab and lobster will also be targeted

in certain areas. The sensitivity of this receptor group is assessed as Low because they have a high spatial adaptability and ability to fish numerous fishing grounds.

205. As it is assumed that these vessels will not be able to fish within the MDZ due to navigational safety issues, a Negligible impact is assessed due to no route existing for interaction between these vessels and any potential seabed fasteners.
206. This results in a **negligible** impact significance for this receptor group (assuming that these vessels do not fish in the MDZ area in operational phase).

#### 14.7.5.4.3. >10 m Mobile Gear Vessels Targeting Whitefish and/or Scallops in the MDZ and Surrounding Area

207. The sensitivity of these vessels to this potential impact is assessed as Negligible as these vessels have an extensive operational range and high method versatility and the MDZ site does not represent a key fishing ground for them (due to tidal conditions).
208. As for the previous receptor group, it has been assumed that these vessels will not be able to fish within the MDZ due to navigational safety issues. Therefore, a Negligible magnitude of impact is assessed, resulting in a **Negligible** impact significance predicted due to no scope for interaction between these vessels and potential seabed fasteners.

#### 14.7.5.4.4. Mitigation

209. Project embedded mitigation, as detailed in **Chapter 4, Project Description**, includes:
- Ensuring devices marked as per International Association of Lighthouse Authorities (IALA) Guidance and Aids to Navigation;
  - Promulgation of information via Notices to Mariners (NtM);
  - GPS off station alarm / SCADA monitoring system;
  - Site boundaries marked in accordance with Trinity House;
  - Surveyed and charted as required by UKHO;
  - Restrict Navigation through the MDZ;
  - Exclusion of fishing within the MDZ; and
  - Establish no anchoring areas.

#### 14.7.5.4.5. Residual Impact

- ≤10 m nearshore static gear vessels: **negligible impact**.
- ≤10 m and >10 m static gear vessels in MDZ area: **negligible impact**.
- >10 m mobile gear vessels in/around MDZ area: **negligible impact**.

#### **14.7.5.5. Operational Impact 5: Supply Chain Opportunities for Local Fishing Vessels**

210. During the operational (and maintenance/repowering) phase of the Project, commercial opportunities other than core fishing activities may arise for suitable local commercial fishing vessels. The scope for commercial fishing vessels to potentially provide support to this Project was assessed in detail in a study commissioned by Menter Môn in 2015 and delivered by MarineSpace and Aquatera (MarineSpace, 2015).

211. This study considered the following:

- Tidal energy industry requirements (for marine services);
- Vessels / skills / equipment needed to enable requirements;
- Local supply chain (this involved engagement with Anglesey fisheries community to assess type and suitability of available vessels and skills and review the potential and appetite for diversification;
- A summary of options for collaboration between tidal sector and commercial fishing industry; and
- Recommendations and proposed Key Actions.

212. With respect to the operational and maintenance/repowering phase of potential tidal projects (in this case the Morlais Project), the study identified the following areas of potential support that could be provided by local commercial fishing vessels:

- Support for mooring installation vessels – floating tidal devices require moorings and whilst it would likely require larger stable vessels for the main installation process, additional support would likely be required during the O&M phase, i.e. checking and/or re-positioning of surface marker buoys;
- Debris recovery – there will inevitably be debris or lost objects that needs to be recovered from incidents during the operational phase. Depending on the size of the debris this could potentially be recovered by fishing vessels using grapples and/or nets;
- Navigational marker buoy deployment, servicing and recovery – marker buoys are a (MCA) requirement during the operational phase and these will need regular checking and potential servicing back onshore;
- Guard vessels / safety standby – guard vessels may be a MCA requirement during certain stages of the operational phase. Many fishing vessels will be able to perform this task;
- Fisheries Liaison Officer (FLO) services – with the fishing industry being one of the most important stakeholders to offshore projects, FLO's are usually employed to act as the main point of communication between the Project and local fishing communities. An FLO will be required throughout the lifetime of a project;

- Crew transfers (divers, engineers etc.) and transport of small maintenance parts – Personnel will be required to be transported to the site during the operational phase, and often small maintenance parts will need to be shipped out;
- Diver/diver equipment support – divers may be required during O&M activities. Vessels would be required to transport them to site and to support equipment; and
- Site visits for project developers, stakeholders and PR – the Project is a high-profile project and it is expected that there will be a significant amount of interest from stakeholders, hence it is expected that vessels would be needed to provide site visits during the operational phase.

213. The study found that the value of potential contracts associated with vessel use in the MDZ could be as much as £3.5M over the next 10 years if the Project develops as envisaged (MarineSpace, 2015). This includes up to £300k/year during the operational lifetime of the Project.

214. This requirement for vessels during all stages of the planned projects around Anglesey presents a significant opportunity for local vessel owners and operators. Established marine service providers and charter vessel operators from elsewhere in the UK, as well as on Anglesey e.g. Holyhead Towing, will also be interested in these opportunities. This could also represent further opportunities for personnel with offshore experience to act as crew and vessel support, where specific experience of the conditions around Anglesey will be particularly valuable.

215. Menter Môn, the third-party managers of the Project, have a remit to maximise the economic benefit to Anglesey hence are keen to work with the local commercial fishing sector to take advantage of these opportunities where possible.

#### **14.7.5.5.1. ≤10 m Nearshore Static Gear Vessels Targeting Crab/Lobster in the Nearshore Region**

216. The sensitivity of this receptor group is judged to be Medium as although they have some spatial adaptability, this is relatively limited, as is their ability to deploy alternative gear types and fish different grounds.

217. The magnitude of this (beneficial) effect is judged to be Low. Due to the type and size of vessels within this receptor group, opportunities for formal project-related marine operational support may be more limited than for larger vessels. This is mainly due to the equipment/deck-space available on smaller vessels and also the need to ensure compliance with at least the following requirements:

- Compliance with MGN 280 (Code of Practice for Small Vessels in Commercial Use for Sport, Pleasure, Workboats and Pilot boats under 24m);
- Compliance with SCV (Small Commercial Vessel) Code;
- Holds a valid SCV certificate for Area Categories 2 / 3 (for operation up to 60 / 20 miles from a safe haven); and

- Appropriate Employers Liability and Third Party Liability cover under the terms and conditions of its own insurance.

218. The vessel Skipper or one or more of the crew will also need to hold the following certification, or be able to demonstrate the following competencies:

- Basic Sea Survival Course Certificate;
- Evidence of First Aid Training;
- Radio Operator's Certificate;
- Medical Fitness Certificates;
- Evidence of Radar Training;
- Approved Engine Course (if towing or lifting over 1000 tonnes); and
- RYA Professional Practices and Responsibilities (PPR).

219. Overall, although potential marine operation supply chain opportunities will arise for this receptor group, only a **minor beneficial** impact significance is predicted on this receptor group.

#### **14.7.5.5.2. ≤10 m and >10 m Static Gear Vessels Targeting Whelk/Crab/Lobster in the MDZ**

220. Further offshore, within the MDZ array and surrounding area, a small number of larger vessels also deploy static gear, with a focus on whelk as the target species, even though crab and lobster will also be targeted in certain areas. The sensitivity of this receptor group is judged to be Low as they have a high spatial adaptability and ability to fish numerous fishing grounds.

221. All the same opportunities as outlined above will apply to this receptor group, although the fact that larger (>10 m vessels) make up this receptor mean that they will be more suited/capable of undertaking some of these activities. Therefore, the magnitude of effect is judged to be Medium.

222. This results in a **minor beneficial** impact significance on this receptor group.

#### **14.7.5.5.3. >10 m Mobile Gear Vessels Targeting Whitefish and/or Scallops in the MDZ and Surrounding Area**

223. As this is a beneficial impact being assessed, the definition of receptor sensitivity requires slight amendment. For the purpose of this assessment, the sensitivity of this receptor is judged to be Medium, with the criteria defined as “moderate vessel suitability to provide marine operation support during the O&M phase”.

224. This judgement is based on the larger vessel size represented by this receptor group, with associated increased vessel/equipment/staff capabilities and certifications compared to smaller (<10 m) vessels).

225. The magnitude of this potential effect is judged to be Medium. As for receptor sensitivity, a slightly amended criteria has been used to define magnitude of this effect: “effect will potentially

provide a moderate source of revenue for a vessel and is likely to occur". This is based on the potential for this type of larger (>10 m) vessels to support the Project (as identified in the 2015 Supply Chain Study commissioned by Mentor Môn; MarineSpace, 2015)

226. Therefore, a **moderate beneficial** impact significance is predicted on this receptor group via support on marine operations during the O&M phase of the Project.

#### 14.7.5.5.4. Mitigation

227. No mitigation required. However, to increase opportunities for local fishing vessels to support the Project, the Action Plan provided as part of the 2015 study (MarineSpace, 2015) (**Appendix 14.1, Volume III**) should be reviewed and, where appropriate updated. Discussions should then be held between Mentor Môn and the local fishing community to identify what needs to be done to maximise these opportunities.

#### 14.7.5.5.5. Residual Impact

- ≤10 m nearshore static gear vessels: **minor (beneficial) impact.**
- ≤10 m and >10 m static gear vessels in MDZ area: **minor (beneficial) impact.**
- >10 m mobile gear vessels in/around MDZ area: **moderate (beneficial) impact.**

#### 14.7.5.6. Operational Impact 6: Impacts during repowering

228. During the operational (and maintenance) phase of the Project, repowering will also be undertaken.

229. For the purpose of defining impact assessment parameters for the repowering phase, an assumption has been made that 50 % of the tenants will undertake repowering, i.e. for 50 % of the tenants, their infrastructure will be removed and replaced (potentially with different infrastructure by a different tenant). For the other 50 % of tenants, their infrastructure will remain over the lifetime of the project.

230. As repowering will take place within the operational phase of the project, during which it has been assumed all fishing activity will be excluded from the MDZ for safety reasons, there will be no additional adverse impact on commercial vessels over and above those already assessed within existing operational impacts.

231. Potential beneficial impacts from supply chain support have already been assessed for the entire operational phase, inclusive of repowering (see Operational Impact 5).

#### 14.7.6. Potential Impacts during Decommissioning

232. The same type of potential impacts that arose through the construction phase would occur during decommissioning, including:

- Loss of access to fishing grounds (due to decommissioning activity);
- Collision risk between commercial fishing vessels and decommissioning vessels;
- Obstruction to regular fishing vessel transit routes;

- Interference with static fishing gear due to additional vessel traffic; and
- Supply chain opportunities for local fishing vessels.

233. In addition, the operational phase impact from “seabed fasteners may occur if decommissioning is done over a long time period (likely).
234. The sensitivity of the three receptor groups is judged to remain the same as per the construction phase impacts, and the magnitude of effect is also judged to be the same (although, in practice, will likely be less for decommissioning compared to construction). Therefore, the same conclusions on impact significance are predicted (see **Table 14-14**).

#### 14.7.7. Cumulative Impacts

235. A draft list of projects and plans that, together with the Project, have the potential to result in cumulative or in-combination impacts is given in **Appendix 26.1 (Volume III)**.
236. For this Cumulative Impact Assessment (CIA) the consideration of which projects may result in cumulative or in-combination impacts on commercial fisheries receptors has been based upon the Project-specific impact assessment and expert judgement.
237. As described in this chapter, the majority of impacts on commercial fisheries receptors associated with the Project have a spatial extent that is limited to the site and the immediate surroundings. As such it is only projects that will affect the immediate local environment that shall be screened in for consideration in the cumulative assessment. A nominal buffer of ~20 km has been chosen as a worst-case maximum extent over which impacts may overlap i.e. accumulate.
238. Any projects beyond 20 km are screened out of this CIA (this includes the proposed Nova/ YnNi Llŷn tidal project in Bardsey Sound which is located >50 km from the MDZ) on the basis that they are beyond the spatial extent of impacts from the Project. In addition, any projects that do not involve any construction in the marine environment have also been screened out.
239. On this basis, the only identified project considered within this cumulative assessment is Minesto’s Holyhead Deep project which is located less than 1 km from the western boundary of the MDZ. A single 0.5 MW device was installed in summer 2018 but an EIA scoping report for an up to 80 MW development was submitted to NRW in 2017.

##### 14.7.7.1. Potential Cumulative Impacts During Construction

240. The main potential cumulative impacts on commercial fisheries receptors during construction relate to:
- Loss of access to fishing grounds due to construction activity occurring in both the MDZ and Minesto sites at the same time;
  - Increased collision risk between commercial fishing vessels and construction vessels associated with both these sites;
  - Obstruction to regular fishing vessel transit routes due to construction works occurring in both the Minesto and MDZ sites at the same time;

- Interference with static fishing gear due to additional construction vessel traffic from both the Minesto and MDZ sites; and
- Increased supply chain opportunities for local fishing vessels.

241. The significance of these impacts from the Project alone have been fully considered and assessed in preceding sections. The main receptor groups that will potentially be affected by cumulative impacts are the <10 m and >10 m static gear vessels in MDZ area and the >10 m mobile gear vessels in/around MDZ area.
242. The main MDZ assessment concluded that these receptor groups would be impacted during the construction phase of the MDZ, via the impacts listed above. It is assumed that the same type of impacts (disruption/loss of access to fishing grounds/collision risk etc.) will occur cumulatively if construction is carried out at the same time on the MDZ and Minesto sites. Therefore, scope exists for these impacts to increase in significance.
243. However, when considered in detail, even with the adverse impacts occurring at the same time, the magnitude of effect is not judged to increase to a degree that would alter the overall impact significance, i.e. from “moderate” used in some of the MDZ assessments to “high”. This is based on the fact that the criteria for a high magnitude effect to arise on any of these receptors is an effect “*that affects an area from which the majority of a commercial fishing receptor’s annual value of landings is caught*”. Even when the MDZ and Minesto projects are considered together, any disruption/loss of access/damage to gear, will not be focused on an area that represents where the majority of a vessels annual catches are made.
244. Therefore, for the adverse impacts on commercial fishing receptors that may arise cumulatively via the MDZ and Minesto project, the significance is judged to remain no greater than **minor adverse**.
245. For the beneficial impact (supply chain opportunities), the same principles apply in that if construction on the MDZ and Minesto sites was undertaken at the same time, potential exists for cumulative beneficial impacts.
246. Even with two potential sources of supply chain support from the two projects, the conclusions on impact significance presented for the MDZ Project alone are judged to remain valid, i.e. there will be a beneficial impact ranging from **minor beneficial** to **moderate beneficial** for the main fish receptor groups, with the most benefit potentially for >10 m vessels with more capacity to work in both the MDZ and Minesto sites.
247. This conclusion is presented on the basis that the amount of additional supply chain opportunities from the two projects considered together, whilst greater than for the MDZ alone, will not be great enough to increase the significance of beneficial impact using the criteria in the impact assessment methodology, i.e. to increase the impact significance to a major beneficial impact for the >10 m vessels receptor group, it would have to be assumed that the two projects together would “*potentially provide a major source of revenue for a vessel and is likely to occur*”.

#### 14.7.7.2. Potential Cumulative Impacts During Operation (and Repowering)

248. The main potential cumulative impacts on commercial fisheries receptors during the operational phase relate to:
- Collision risk between commercial fishing vessels and project infrastructure in the MDZ and Minesto sites;
  - Loss of access to fishing grounds and displacement of fishing effort onto adjacent grounds due to presence of MDZ and Minesto infrastructure;
  - Reduction in abundance of target species and reduced supply of catch to established local buyers due to presence of MDZ and Minesto projects;
  - Presence of seabed fasteners within both sites; and
  - Supply chain opportunities for local fishing vessels for both the MDZ and Minesto sites.
249. As per the construction phase impacts, the significance of these impacts from the Project alone have been fully considered and assessed in preceding sections. The main receptor groups that will potentially be affected by cumulative impacts in the operational phase are again the  $\leq 10$  m and  $>10$  m static gear vessels in MDZ area and the  $>10$  m mobile gear vessels in/around MDZ area.
250. The main MDZ assessment concluded that these receptor groups would be impacted during the operational phase of the MDZ, via the impacts listed above. It is assumed that the same type of impacts (disruption/loss of access to fishing grounds/collision risk etc.) will occur cumulatively if both sites are operational at the same time. Therefore, scope exists for these impacts to increase in significance.
251. However, when considered in detail, even with the adverse operational phase impacts occurring at the same time, the magnitude of effect is not judged to increase to a degree that would alter the overall impact significance, i.e. from “moderate” used in some of the MDZ assessments to “high”. This is based on the fact that the criteria for a high magnitude effect to arise on any of these receptors is an effect “*that affects an area from which the majority of a commercial fishing receptor’s annual value of landings is caught*”. Even when the MDZ and Minesto projects are considered together, the area of disruption/loss of access/damage to gear from both sites combined (MDZ; 35km<sup>2</sup> plus Minesto AfL area of 9.1 km<sup>2</sup> = 44.1 km<sup>2</sup>) , will not equate to the high magnitude effect criteria (an area that represents where the majority of a vessels annual catches are made).
252. Therefore, for the operational phase adverse impacts on commercial fishing receptors that may arise cumulatively via the MDZ and Minesto project, the significance is judged to remain no greater than Minor Adverse.
253. For the beneficial impact (supply chain opportunities), the same principles apply in that if the operational phase of the MDZ and Minesto sites overlapped (which is expected), potential exists for cumulative beneficial impacts.
254. However, even with two potential sources of supply chain support from the two projects, the conclusions on impact significance presented for the MDZ Project alone are judged to remain

valid, i.e. there will be a beneficial impact ranging from **minor beneficial** to **moderate beneficial** for the main fish receptor groups, with the most benefit potentially for >10 m vessels with more capacity to work in both the MDZ and Minesto sites.

255. This conclusion is presented on the basis that the amount of additional supply chain opportunities from the two projects considered together, whilst greater than for the MDZ alone, will not be great enough to increase the significance of beneficial impact using the criteria in the impact assessment methodology, i.e. to increase the impact significance to a major beneficial impact for the >10 m vessels receptor group, it would have to be assumed that the two projects together would “potentially provide a major source of revenue for a vessel and is likely to occur”.

#### 14.7.7.3. Potential Cumulative Impacts During Decommissioning

256. The same type and significance of cumulative impacts as described for the construction phase would potentially arise if decommissioning of the MDZ and Minesto projects occurred simultaneously, resulting in no greater than **minor adverse** impacts.

#### 14.7.8. Inter-relationships

257. **Table 14-12** lists out the inter-relationships between this chapter and other chapters within the ES.

**Table 14-12 Inter-Topic Relationships**

Topic and description	Related Chapter	Where addressed in this Chapter	Rationale
Fish and Shellfish Ecology	Chapter 10	Section 14.7.5	Both chapters consider the potential effects of the Project impacts on any fish/shellfish receptor group
Shipping and Navigation	Chapter 15	Section 14.7.4 and 14.7.5	Both chapters consider the potential effects of the Project on access to the to area and effects on vessel movements

#### 14.7.9. Interactions

258. The impacts identified and assessed in this chapter have the potential to interact with each other, which could give rise to synergistic impacts as a result of that interaction. The worst case impacts assessed within the chapter take these interactions into account and for the impact assessments are considered conservative and robust. For clarity the areas of interaction between impacts are presented in **Table 14-13**, along with an indication as to whether the interaction may give rise to synergistic impacts.

**Table 14-13 Potential Interaction Between Impacts**

Potential interaction between impacts					
Construction/Decommissioning	1. Loss of access to fishing grounds	2. Collision risk	3. Obstruction	4. Interference with static fishing gear	5. Supply chain opportunities
1. Loss of access to fishing grounds due to construction activity	-	No	Yes	Yes	No

<b>Potential interaction between impacts</b>					
2. Collision risk between commercial fishing vessels and construction vessels	No	-	No	Yes	No
3. Obstruction to regular fishing vessel transit routes	Yes	No	-	Yes	No
4. Interference with static fishing gear due to additional vessel traffic	Yes	Yes	Yes	-	No
5. Supply chain opportunities for local fishing vessels	No	No	No	No	-
<b>Operation</b>	1. Collision risk	2. Loss of access to fishing grounds	3. Reduction in abundance of target species	4. Presence of seabed fasteners	5. Supply chain opportunities
1. Collision risk between commercial fishing vessels and project infrastructure	-	No	No	Yes	No
2. Loss of access to fishing grounds and displacement of fishing effort onto adjacent grounds	No	-	Yes	No	No
3. Reduction in abundance of target species and reduced supply of catch to established local buyers	No	Yes	-	No	No
4. Presence of seabed fasteners	Yes	No	No	-	No
5. Supply chain opportunities for local fishing vessels	No	No	No	No	-

#### 14.8. SUMMARY

259. This chapter has provided an overview on the potential impacts which may occur on commercial fisheries within the several stages associated with the development of the Project: construction, operation and maintenance, and decommissioning.

260. For clarity on the assessment, and to recognise the differing sensitivity of size/types of fishing vessels to potential impacts, three “receptor groups” have been defined and used within the assessment:

- ≤10 m nearshore static gear vessels targeting crab/lobster in the nearshore region;
- ≤10 m and >10 m static gear vessels targeting whelk/crab/lobster in the MDZ; and

- >10 m mobile gear vessels targeting whitefish and/or scallops in the MDZ and surrounding area.

261. **Table 14-14** collates the determinations of each of the impacts assessed and is presented as a summary of the determinations. It is evident that the vast majority of the impacts to commercial fisheries receptors throughout the various stages of development are likely to be of minor adverse significance, even when assessed with the worse-case scenario. Some potential moderate adverse impacts are predicted but with successful implementation of appropriate mitigation measures, these will be reduced to minor adverse/negligible significance.
262. These assessment conclusions reflect the fact that even though commercial fishing activity has been assumed to be completely excluded from the main MDZ array site for the lifetime of the Project, only a low level of activity currently occurs in this area, therefore, exclusion will not create significant impacts on vessels who will be able to target alternative grounds (as they currently do).
263. Potential beneficial impacts may arise on commercial fishing receptors via opportunities to support marine operations at all Project stages. A detailed review of these opportunities was presented in a study commissioned by Menter Môn in 2015 (MarineSpace, 2015).



**Table 14-14 Summary of Potential Impacts on Commercial Fisheries Associated with the Development of the Project**

Potential Impact	Impact Magnitude	Receptor Sensitivity	Impact Significance	Additional Mitigation Measures	Residual Impact
<b>Construction Phase</b>					
1. Loss of access to fishing grounds due to construction activity	Medium Low Low	≤10 m nearshore static: Low ≤>10 m MDZ static: Low >10 m MDZ mobile: Negligible	Minor adverse Minor adverse Negligible	<ul style="list-style-type: none"> <li>▪ Local fishermen to be notified of all planned construction works via Notice to Mariners;</li> <li>▪ Project-specific FLO to be appointed during construction phase;</li> <li>▪ All construction vessels to exhibit appropriate lighting and markings at all times; and</li> <li>▪ Construction activities to be planned as far as possible so that they are focussed in discrete areas at any one time, i.e. not spread out across entire site.</li> <li>▪ Where local vessels are able to demonstrate a clear loss in annual income due to loss of fishing grounds within the MDZ, Menter Môn will enter into discussions on appropriate forms of financial assistance.</li> </ul>	Minor adverse Minor adverse Negligible



Potential Impact	Impact Magnitude	Receptor Sensitivity	Impact Significance	Additional Mitigation Measures	Residual Impact
2. Collision risk between commercial fishing vessels and construction vessels					See Chapter 12 – Shipping & Navigation
3. Obstruction to regular fishing vessel transit routes	Medium Low Low	≤10 m nearshore static: Low ≤>10 m MDZ static: Low >10 m MDZ mobile: Negligible	Minor adverse Minor adverse Negligible	As per Impact 1 plus: <ul style="list-style-type: none"> <li>Where required, agreed transit routes around/through the MDZ to be developed and agreed between Menter Môn and local fishing vessels. This approach has been successfully adopted on OWF projects around the UK coast;</li> </ul>	Minor adverse Minor adverse Negligible
4. Interference with static fishing gear due to additional vessel traffic	Medium Low Negligible	≤10 m nearshore static: Medium ≤>10 m MDZ static: Medium >10 m MDZ mobile: Negligible	Moderate adverse Minor adverse Negligible	As per above 1 plus: <ul style="list-style-type: none"> <li>Key areas of static gear deployment to be provided by local fishermen and used to develop agreed transit routes around/through the MDZ that aim to minimise damage to static gear.</li> </ul>	Minor adverse Negligible Negligible
5. Supply chain opportunities for local fishing vessels	Medium Medium Medium	≤10 m nearshore static: Low ≤>10 m MDZ static: Low >10 m MDZ mobile: Medium	Minor beneficial Minor beneficial Moderate beneficial	No mitigation required. However, to increase opportunities for local fishing vessels to support the Project, the Action Plan provided as part of the 2015 study (MarineSpace, 2015, <b>Appendix 14.1, Volume III</b> ) should be reviewed and, where appropriate	Minor beneficial Minor beneficial Moderate beneficial



Potential Impact	Impact Magnitude	Receptor Sensitivity	Impact Significance	Additional Mitigation Measures	Residual Impact
				updated. Discussions should then be held between Menter Môn and the local fishing community to identify what needs to be done to maximise these opportunities.	
<b>Operational Phase (including repowering)</b>					
1. Collision risk between commercial fishing vessels and project infrastructure					See Chapter 12 – Shipping & Navigation
2. Loss of access to fishing grounds and displacement of fishing effort onto adjacent grounds	Negligible Medium Low	≤10 m nearshore static: Medium ≤>10 m MDZ static: Low >10 m MDZ mobile: Negligible	Minor adverse Minor adverse Negligible	Where local vessels are able to demonstrate a clear loss in annual income due to loss of fishing grounds within the MDZ, Menter Môn will enter into discussions on appropriate forms of financial assistance.	Minor adverse Minor adverse Negligible
3. Reduction in abundance of target species and reduced supply of catch to established local buyers	Negligible Low Low	≤10 m nearshore static: Medium ≤>10 m MDZ static: Low >10 m MDZ mobile: Negligible	Minor adverse Minor adverse Negligible	None proposed	Minor adverse Minor adverse Negligible
4. Presence of seabed fasteners	Low Negligible Negligible	≤10 m nearshore static: Medium ≤>10 m MDZ static: Low >10 m MDZ mobile: Negligible	Minor adverse Negligible Negligible	<ul style="list-style-type: none"> <li>▪ Ensuring devices marked as per International Association of Lighthouse Authorities (IALA) Guidance and Aids to Navigation</li> <li>▪ Promulgation of information via NtM;</li> <li>▪ GPS off station alarm / SCADA monitoring system;</li> </ul>	Negligible Negligible Negligible



Potential Impact	Impact Magnitude	Receptor Sensitivity	Impact Significance	Additional Mitigation Measures	Residual Impact
				<ul style="list-style-type: none"> <li>▪ Site boundaries marked in accordance with Trinity House;</li> <li>▪ Surveyed and charted as required by UKHO;</li> <li>▪ Restrict Navigation through the MDZ;</li> <li>▪ Exclusion of fishing within the MDZ; and</li> <li>▪ Establish no anchoring areas.</li> </ul>	
5. Supply chain opportunities for local fishing vessels	Low Medium Medium	≤10 m nearshore static: Medium ≤10 m MDZ static: Low >10 m MDZ mobile: Medium	Minor beneficial Minor beneficial Moderate beneficial	No mitigation required. However, to increase opportunities for local fishing vessels to support the Project, the Action Plan provided as part of the 2015 study (MarineSpace, 2015; <b>Appendix 14.1, Volume III</b> ) should be reviewed and, where appropriate updated. Discussions should then be held between Menter Môn and the local fishing community to identify what needs to be done to maximise these opportunities	Minor beneficial Minor beneficial Moderate beneficial
6. Impacts via repowering	As repowering will take place within the operational phase of the project, during which it has been assumed all fishing activity will be excluded from the MDZ for safety reasons, there will be no additional adverse impact on commercial vessels over and above those already assessed within existing operational impacts (above).  Potential beneficial impacts from supply chain support have already been assessed for the entire operational phase, inclusive of repowering (see Operational Impact 5).				
<b>Decommissioning</b>					



<b>Potential Impact</b>	<b>Impact Magnitude</b>	<b>Receptor Sensitivity</b>	<b>Impact Significance</b>	<b>Additional Mitigation Measures</b>	<b>Residual Impact</b>
As per impacts 1-5 in construction phase					

## 14.9. REFERENCES

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